HOUSING MARKET IMPERFECTIONS: THE LIFE CYCLE HYPOTHESIS AND HOMEOWNERSHIP

By

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TABLE OF CONTENTS

LIST OF TABLES

Abstract of Thesis Presented to the Graduate School
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Homeownership is one of the most common financial aspirations of households in the United States. It has historically been an integral part of the so-called “American dream” (Bostic, Calem & Wachter, 2004). Numerous studies outline the associated positive externalities to homeownership (Glaeser & Sacerdote 2000; Glaeser & Shapiro 2003); and as a result of these multifaceted benefits, policy makers and academicians have paid careful attention to its determinants. The present study employs the 2010 Survey of Consumer Finances (SCF) to explore the relationship of housing market barriers and the likelihood of homeownership utilizing the Modligiani’s life cycle hypothesis under the assumption of a non-frictionless market. Binomial logistic regression is used to survey the impact of the following: information asymmetry, borrowing constraints, structural barriers, housing tax preferential treatments and time preference on the probability of being a homeowner. Important implications derived from this study, as it relates to the notion of household life cycles, might benefit multiple interested parties such as financial planners and housing professionals who are rendering recommendations to their clients, educators and researchers assisting the

public in making informed choices, and governmental policymakers attempting to secure the financial well being and interests of households.

CHAPTER 1
INTRODUCTION

One of the most common financial aspirations of households in the United States is homeownership. Indeed, the desire to be a homeowner has historically been an integral part of the so-called “American dream” (Bostic, Calem & Wachter, 2004). Numerous studies outline the spillover benefits of homeownership (Glaeser & Sacerdote 2000; Glaeser & Shapiro 2003). Its impact is reflected at the macro- and micro-level in the economy. For instance, from a macro-economic perspective, housing is vital to the nation’s growth; the macroeconomic contributions are materialized through construction, remodeling and other aspects of the industry. A micro-level perspective is exampled by price appreciation, household’s wealth, and equity accumulation, among others. Nonetheless, homeownership benefits are not only of an economical nature as research studies have shown that homeownership is related to increased education for children, residential stability, lower teen pregnancy rates, and a higher lifetime annual income for children (DiPasquale & Glaeser 1999; Galster 1983; Rossi & Weber 1996; Aaronson, 2000). Also, it has been linked to pride, partially to social status, and to amenities—both within the dwelling unit and within the environment (Carliner, 1974). As a result of these multifaceted benefits that homeownership brings for both households and the economic system as a whole, policy makers and academicians have paid careful attention to the determinants of homeownership.

Over the past 150 years, U.S. homeownership trends have experienced several significant changes resulting from various socio-economic and political events. A homeownership rate of 48% remained relatively constant from 1890 up to the Great Depression that started in 1921. As a result of this economic downturn, homeownership

rates progressively declined to 44% by 1940. Rates then began increasing for the subsequent decades. Such an increase was significant and evident; the homeownership rate rose to 65% by 1970 (Masnik, 2001). This dramatic and uninterrupted growth for farm and non-farm housing was attributed to the prosperous period after World War II (Gale, Gruber & Stephens-Davidowitz, 2007). Specific contributors to this increase were the steady rise of households' incomes, permanent mortgage programs, the rise in marginal tax rate for middle income households, and the introduction of other pivotal federal housing policies through the creation and expansion of several national institutions devoted to support homeownership. The rate consistently grew during the 1990s, and by 2005 the homeownership rate had reached an historical high of 69%—although this represented a real growth of only less than 4 points over the preceding 30 years (Gale, Gruber & Stephens-Davidowitz, 2007). Later, the rate experienced a significant decrease due to the 2007 global financial crisis during which there was a house price crash. In an attempt to bring relief for current homeowners and encourage homeownership, the government enacted the American Recovery and Reinvestment Act of 2009. Nonetheless, the 2012 house market remains unstable and fragile at an estimated 65.5% homeownership rate (Callis & Kresin, 2013). When considering renting versus buying, many households simply have, or believe they have, no other choice but to rent. The result of such dilemma is reflected in the consecutive decrease in homeownership rate for the last five years (Callis & Kresin, 2013). Economists and researchers predict this rate will remain steady for approximately two more years before bottoming out. Eventually, it is expected that the nation will reach a long-term housing demand-and-supply equilibrium (Guggenmos et al, 2012). Though,

this will depend on several factors such as interest rates, the tax code, and individual attitudes towards housing as an investment.

Being that homeownership rates are of extreme importance for households and the economy, it is crucial to scrutinize its determinants. Many have been identified throughout time (Maisel 1966; Kain & Quingley, 1972). For example, the relative price of rental and owner-occupied housing is an underlying factor that researchers commonly agree plays an important role in the likelihood of owning a house. Carliner (1974) explains that the relative price of owner-occupied housing is composed of tax rates, mortgage terms, and income tax deductions which at any given time are essential functions of a complex model of the after-tax household's income.

One major theory that has been widely used in the field of economics is the life cycle hypothesis (LCH). Researchers and economists have utilized the LCH for making important macroeconomic inferences about the private and public provision of social security, the implications of the stock market on the economy, the impact of demographic changes on national saving and in economic growth, and the determinants of national wealth (Deaton, 2005). Additionally, microeconomic questions can be partially answered through use of the LCH. How much should be saved for retirement or for descendant's education? How much insurance should one purchase? How should households allocate their portfolios across various assets? These are just some examples of such microeconomic decisions (Bodie, Treussard & Willen, 2007).

One main postulate of this theory is that individuals' current rates of consumption and savings can be explicated as a function of those individuals' current position in the life cycle—determined by age and present wealth (Artle & Varaiya, 1978). The standard

LCH model[1] posits that perfectly rational individuals will choose consumption, not expenditure, as a path for maximizing life utility. It is important to highlight that the level of consumption will be governed by intertemporal preferences. Ultimately, the goal should be to keep their marginal utility of expenditure constant over time. However, for optimum consumption to be constant, the LCH model assumes there is no uncertainty—that is, the interest rate and the rate of time preference is zero (Japelli, 1999). Generally, the simplified model is divided into stages through which individuals pass. For instance, the early or youth stage refers to the years in which little income is earned. The middle-aged stage, the working years, sees most of the wealth and resource accumulation. The model culminates in the final stage of retirement whereupon individuals begin to dissipate wealth and social security. In other words, the wealth of the ideal individual increases up to retirement after which there is a smooth decrease.

Although LCH has provided much guidance for making decisions at the macro and microeconomic level, many researchers have challenged the standard model as it makes particular assumptions. Barnheim and Scholz (1993) explicated that in practice, life cycle decisions are closely dependent on factors such as labor earnings, investment strategies, macroeconomic trends and a plethora of other risk determinants. The LCH's assumes that the individual has an almost perfect expectation regarding future economic prices, household composition, and life span, along with the other assumptions about rationality and self-control. These numerous assumptions simply limit the model. Japelli (1999) supported these allegations by arguing that realistic examples of wealth accumulation depend on household preferences, interest rates,

[1] Modigliani & Brumberg (1954)

market imperfections and uncertainty, and life cycle variations within household structure.

In this study, I question the assumption of a frictionless market. I presume that if the market is imperfect, rather than being idealized, then, risk factor may shift and financial barriers should arise over time (Yang, 2009). Such barriers and variations play an important and influential role in general homeownership rates. Thus, the main research objective of this study is to explore market constraints—specifically, financial barriers, and their impact on the likelihood of homeownership by utilizing the LCH under the assumption of a non-frictionless market. Important implications and conclusions of this study, as it relates to the notion of household life cycles, might benefit multiple interested parties such as financial planners and housing professionals rendering recommendations to their clients, educators and researchers helping the public to make informed choices, and governmental policymakers attempting to secure the financial well-being and interests of households.

CHAPTER 2
LITERATURE REVIEW

The life cycle hypothesis (Modigliani & Brumberg, 1954; Mondigliani & Ando, 1957; Ando & Mondigliani, 1963; Modigliani, 1986), and more specifically its application on consumption and investment in housing, is used as a cornerstone for the formulation of hypotheses to be proposed in this study. Before introducing the life cycle hypothesis (LCH) itself, it is relevant to first understand neoclassical economic theories— that branch of economic theories in which LCH is comprised. Afterwards, the premises of life-cycle hypothesis and assumptions relevant to this study are further explained. A survey of literature is offered for each variable utilized in this research. Finally, the chapter concludes with a statement of the proposed hypotheses pertinent to this study.

Neoclassical Economic Theories: General Postulates

Neoclassical economic theories of asset accumulation and consumption are characterized by several mutual assumptions. For example, under the lens of these theories, individuals are deemed as rational beings seeking to maximize benefits and minimize costs; individual utility is assumed to be a function of consumption. In addition, neoclassical economic theories assume there is little difference between income and assets as both are seen as economic resources that might be utilized for consumption. Particularly, this set of theories pays special attention to the variable of time by proposing that individuals have to make choices between present and future consumption. An important assumption is that such choices are normally a product of independent individuals' preferences and opportunity sets (Beverly & Sherraden, 1999). Within the several existing neoclassical theories, Modigliani's life cycle hypothesis is

one of the most well known, along with Friedman's permanent income hypothesis (Friedman, 1957).

Modligiani's Conventional Life Cycle Hypothesis

Consistent with the general postulates of neoclassical economic theories, the LCH proposes that households and individuals aim to increase and maximize their lifetime utility by leveling consumption while navigating through periods in the life cycle stages which are generally proxied by age and wealth. Consumption and asset accumulation mirror an individual's or household's stage in the life cycle. At the same time, LCH is an intertemporal framework that posits that both individuals and households pay close attention to long-term consumption opportunities, as there is awareness that current decisions may affect future options. In turn, this notion is then applied to investment and asset accumulation decisions—more specifically to durable goods, an important aspect considered in this study. As with most durable goods, purchasing a home is seen as an investment decision; and for most families equity in owner-occupied homes is the dominant form of wealth (Kain & Quingly, 1975). LCH suggests that households' preferences change with age, marital status, retirement, expectations about future financial assets and resources, and family structure. These factors (commonly known as life-cycle variables) also change over the time. As these factors fluctuate as individuals move through various life cycle stages so also does consumption, which in this case represents the demand for housing.

In the housing literature, researchers agree that multiple factors influence the likelihood of being a homeowner, including the life-cycle variables. Previous studies have examined the impact of income, race, age, marital status and family size on the likelihood of being a homeowner (Maisel, 1966; Kain & Quigley, 1972; 1975; David,

1962). Using data from the 1967 Survey of Economic Opportunity (SEO), Carliner (1974) extrapolated previous findings (Maisel, 1966; Kain & Quingly, 1972) to the nation as a whole. He found that demographic variables such as marital status, age, and family size are highly correlated with the likelihood that a household owns its home. Additionally there was a positive correlation between income and homeownership rates. More figuratively, an increase of income of $1,000 increased the likelihood of homeownership by 2% (1971 homeownership rates).

However, although the LCH has been highly and prominently used in the area of housing and consumer economics as it provides a foundation for understanding economics patterns across life cycle stages, the original and simplified version of this theory fails to realistically illustrate asset accumulation and housing demand in the real-world financial market context (Beverly & Sherraden, 1999). For example LCH has previously assumed that financial capital markets are perfect. This can be appreciated in this prototype where earnings are stochastic and are the only source of uncertainty used in this model; market frictions are not considered. Significant and pragmatic variables such as inequality on market access to information and prices, governmental regulation or taxes, and barriers to entry or exit in the market are completely ignored in this model (Dornbusch & Fischer, 1993). Because of these limitations, the theory has been subject to several appropriate criticisms.

For example, Barheim and Scholz (1993) highlight that, in practice, access to market information and financial preparedness among individuals is not egalitarian. A household, in isolation, with no training, practice or access to information is not likely to act as the looking-forward utility maximizer suggested by LCH. Bernheim (1994)

concluded from his empirical studies that a great number of households in America lack financial sophistication and relevant access to information. These limitations impede their making optimal decisions regarding consumption. Further, Lusardi (2007) determined that financial literacy is linked with poor financial decision-making, lack of stock market participation and poor borrowing constraints. The research highlighted the widespread financial illiteracy among particular groups such as women, African-American and Hispanics. Moreover, several studies (Barneim & Scholz,1993; Bunting, 1991; Diamond and Hausman,1984) have shown that this notion of market inequality harshly affects low-income households. Based on these previous findings, these households were less prone to save and accumulate assets at an optimum rate. Also, they exhibited more often very low levels of savings and asset accumulation; and even worse, often had negative levels.

Nonetheless, other reasons lead individuals to vary from the optimal lifetime consumption profile. The LCH posits that a household's consumption through the life stages is smooth. For this to be possible, it is required that individuals have current inflows greater that their outflows in order to liquidate liabilities (if any), contribute towards retirement, and have credit vehicles available to compensate should inflows fall short in order to finance optimum consumption. In reality, imperfect credit markets and uncertainties pertinent to future income preclude households from access to borrow against futures income (Modigliani, 1986). Consequently, some households are unable to achieve optimal consumption. For instance, individuals with irregular earnings or with low lifetime earnings are more prone to face liquidity constraints or market access constraints. This problem is heightened in many low-income households, as many may

never earn an income substantial enough to exceed their consumption needs. Japelli (1999) explained the implication of frictions in the market; constraints early in the life cycle or uninsurable income risk may alter the process of wealth accumulation. By assuming a model with imperfect markets, households accumulate wealth before retirement at the higher rate than would be necessary under perfect markets. Thus, income risk and liquidity constraints increase the concavity of the LCH's wealth accumulation function.

As most households do not exist in the assumed scenario of a perfect financial market, this assumption must be challenged (and is in this study) as it may introduce bias on the suggested optimum saving and consumption rate. And more specifically, this study examines the financial barriers variables as part of the market imperfection component. I hypothesize that these constraints influence the likelihood of being a homeowner during different life cycle stages. Several studies have already proposed models of the life cycle under the assumption of imperfect markets. Yang (2009) explored the housing consumption pattern by offering a modified life-cycle behavior quantitative model. The prototype took into consideration variables such as uninsurable-income risk, borrowing constraints, the lack of an annuity market to insure against an uncertain lifetime, and the transaction costs for trading houses. The author concluded that the borrowing constraint variable helped explain the housing consumption profiles of accumulation of housing stock early in life in the United States. Yang (2009) implied that young agents would be renters until they accumulate enough wealth to make the down payments. Young households, in an effort to accumulate housing stock early in the cycle, are willing to hold a major fraction of their wealth as housing. Halket &

Vasudev (2009) supported this notion that households rent in the early stage due to borrowing constraint in the mortgage market, but added other factors in the formula, such as the profile of earning and desire for mobility. Several other studies have concluded financial market constraints to be significant factors in the decision of ownership (Linneman et al., 1997; Haurin, Hendershott & Watcher, 1996; Zorn, 1989).

But financial position, liquidity and borrowing constraints are an incomplete set of barriers, and I propose in this study that the preferential tax treatment of housing capital in the economy affects the likelihood of being a homeowner as well. Gervais (2002) stated that tax code provisions offer an incentive for individuals to own rather than rent. However, this incentive is biased towards owning larger houses, thus distorting the lifetime profile and composition of individuals' savings. Presumably, the implications of including these imperfect market variables might help further explain the position of low-income households under the lens of the LCH framework. Below, the variables considered and explored in this study are further surveyed in the housing and economic literature.

Demographic Variables

Age. Consistent with LCH, in general, ownership rates continuously increase as age increases. Carliner (1974) suggested that age was highly and significantly correlated with the likelihood of being a homeowner. In his research, he found that homeownership rates rise from 23% for households under 25 to 84% for families with head of household 65 or over. Similarly, other studies (Maisel, 1966; David, 1962) supported the idea that homeownership is positively correlated with age of head of household.

It is important to clarify that this study explores the likelihood of being a homeowner rather than the likelihood of becoming a homeowner. This is a crucial clarification considering that the possibility of becoming a homeowner near retirement year becomes less likely according to life cycle theory (Bodie, Treussard & Willen, 2008). And, homeownership rates remain virtually unchanged after age 55. Some individuals in the retirement stage might decide to trade to another unit, upsizing and downsizing their current unit as a correction of the disequilibrium between occupants and house size. However, in the absence of a change in family structure, older households are unlikely to move (Munnell, Soto & Aubry, 2007). Painter and Lee (2009) also supported this notion by suggesting that age is not linked to housing tenure preferences for older households. However, life changing events such health conditions could be determinant for house tenure transitions for households in the retirement stage.

Household size and composition. Family structure and its size are variables closely tied to the life cycle hypothesis' postulates. As age increases, household size and composition change; and also they are expected to change in conjunction with marital status (Kain & Quigley, 1972). For many households, the timing of household formation and the arrival of new members (children, for example) coincide with plans to buy a house (Chiuri & Japelli, 2003; Rosen, 1979). Econometric studies on the determinant of homeownership and home purchase have indicated, for instance, that ownership rates are greater for married couples with children than for married couples without children and single individuals (David, 1963; Maisel, 1966).

Consistent with the findings from previous studies, Carliner (1974) explained that the probability of owning increases with household size primarily because larger households almost always included children. His findings stated there was a significant difference in ownership rates between the following particular comparison groups: households with less than 3 members, and households with three or more members. Adjusted ownership rates for one and two person households were 60%, for three and four person households 68%, and for households with five or more 69%.

Marital status. This variable has been associated with household stability, a determinant on the decision on buying or renting. Thus, this variable could serve as a mediator in the likelihood of being a homeowner. Carliner (1974) studied the variable of stability of a household by measuring specific areas of the household such as size, income, marital status, or taste. The research found that an expected change in any of these would likely have an impact on the probability of being a homeowner. In addition, almost 71% of households headed by married couples owned their homes and fewer than 46% with unmarried heads did. Interestingly, other studies indicated that married couples are slightly more likely to be homeowners than widows. However, both married couples and individual widows were notably more prone to being homeowners than single individuals (Maisel, 1966).

Race. Under some circumstances, race has been correlated to differences in homeownership among different groups. Carliner (1974) reported that after adjusting for other variables blacks owned less often than whites: 38% of all black households were headed by women, compared to 21% of all white households. Additionally, combined with the variable of marital status, 12% of black households were headed by an

unmarried individual versus 9% for white. Only 50% of black households, compared to 70% of white households were headed by married couples. The difference in average income between whites and blacks explained a larger portion of differences in ownership than any other factors, which accounted to 5.1%. For the adjusted differences in all these categories, a dummy variable was included for non-whites; and the coefficient for such dummy was -0.17 significant at the 1% level. This difference is probably due to discrimination in the markets of housing and credit. Likewise, Rosen (1979) found that the race and gender of the head of household was statistically significant to the probability of owning a home. Households led by females and black households overall are less likely to be homeowners.

Income. In general, income, in combination with other life cycle variables, plays an important role in the probability of being a homeowner. *Cetis paribus*, as income rises, marginal tax rates rise, and the advantage of investment in owner-occupied housing over other forms of investment also rises. Specific studies have demonstrated the relationship between income and homeownership rates. For instance, Carliner (1974) explicated that for the entire sample used in the study, the change on homeownership was 1.62 per each $1,0000 (1966 dollars of family income). More precisely, he found that the income coefficient for young married families was more than twice as large, while the coefficient for older married families was slightly lower. Older owners whose incomes have decreased since buying their homes would be slow to readjust their consumption of housing by moving to smaller quarters. On the other hand, young renters whose income had recently increased would be quick to move up. This is

consistent with the life-cycle hypothesis. It is significant to mention that all these estimates of income elasticities have been based on one years measured income.

Market Imperfection Variables

Information Asymmetry

Lack of significant access to information (Berheim, 1994) and lack of general financial literacy (Lusardi, 2008) could be translated as financial barriers that lead to wrong financial decision-making. Indeed, asymmetric information among consumers is likely to generate barriers across stages in the life cycle (Chiuri & Japelli, 2000). Braunstein and Welch (2002) explicated that consumers with financial knowledge deficiencies lack the tools to make decisions that are advantageous to their particular economic situation. Such deficiencies can negatively affect households' daily financial decisions, as well as, their long-term goals such as buying a home or financing retirement. Many studies suggest that poor borrowing decisions (i.e. excessive borrowing or high-cost mortgage selection) and, in general, financial management behavior are connected to lack of knowledge and lack of basic financial concepts (Lusardi, 2007; 2008; Moore, 2003; Bucks & Pence 2008). On the other hand, Kozup and Hogarth (2008) emphasized the importance of financial education and its role in contributing to households making optimum decisions about goals, needs, and values. In general, households with higher financial literacy and financial education are positively correlated to improved credit use, a better consumer financial management, and compliance and adherence of suggested financial practices (Hilgert et al., 2003; Hogarth & Hilgert, 2002; Cude et al., 2006; Braunstein & Welch, 2002). It is relevant to mention that an improved financial behavior does not necessarily follow solely from an increase in financial information. Studies suggest that financial education, provided

through financial counseling or intervention, can certainly affect financial behavior (Lusardi, 2002; 2004; Bernheim & Garret, 2003; Clark & D'Ambrossio, 2008). Finally, informed households help to create more a competitive and more efficient market (Braunstein & Welch, 2002).

Borrowing Constraints

Several studies have suggested that financing constraint constitutes one of the main barriers to homeownership (Rosethal, 2002; Yao & Zhang, 2005; Cocco, 2005; Luengo-Prado, 2006). Rosenthal (2002) provided an extensive and comprehensive literature review on the impact of borrowing constraints on homeownership. In summary, he posited that, *ceteris paribus*, if borrowing constraints (down payment, house-to-income ratios, and total debt payment-to-income ratios) are removed, homeownership rates would rise, as it was likely that households would change their housing tenure. Furthermore, in a effort to create a model consistent with observed life cycle housing consumption profiles, Yang (2009) proposed a version of the life cycle model that took into consideration financing market frictions such as uninsurable labor income risk, transactions costs for trading houses, and borrowing constraints. She concluded that borrowing constraints were crucial in explicating the accumulation of housing early in the life cycle: younger households aimed to accumulate housing stock quickly, thus delaying non-housing consumption due to the existence of borrowing constraints.

Interestingly, households in the retirement stage are unlikely to decrease their housing stock because of high transaction costs for trading housing units. In fact, Painter and Lee (2009) showed that age was not directly associated to housing tenure choice for older households. Specifically, for the purpose of this study, I emphasize and

pay careful attention to three main dimensions: credit worthiness, and liquidity constraints.

Credit worthiness. Barakova et al. (2003) evaluated the probability of credit quality as a potential barrier to homeownership. The results demonstrated that financing constraints had significant effects on the likelihood of being a homeowner. For example, if households with poor credit scores would have had cleaner records, their homeownership would have increased by 10%. Consistently, Rosenthal (2002) determined that bankruptcy and history of delinquency on loan payment—important component of one's credit score—could be seen as actual barriers to homeownership. Moreover, it is important to consider not only actual barriers, but also perceived barriers by consumers. The notion of discouragement from lenders is considered as a barrier in this study. Carliner (1974) suggested that even if families were able to save for a down payment and were willing to take the risk of ownership, mortgage lenders still might not be willing to lend to them, as there are minimum limits of credits worthiness to which borrowers are subject.

Liquidity constraints. Carliner (1974) explained that households (especially low-income households) might have experienced difficulty in successfully saving and meeting the current expenses of owning a home. Hence, without emergency reserves, they might be less willing than richer households to assume the risks that homeownership demands. When exploring how homeownership rates change, Chiuri and Japelli (2000) stressed the importance of both demand side factors (household formation and composition), and supply side factors such as mortgage market imperfection. In their study, market imperfection was defined as the size of mortgage

market and down payment ratios. Controlling for demographic factors, they found that credit availability and mortgage market imperfections did actually affect the homeownership profile. For example, the timing of buying a house was closely related to consumers' down payment ratios—the lower the down payment ratio, the earlier the purchase. The study indicated that younger people tend to face a higher level of liquidity constraint to homeownership as they had to save before they could buy.

Structural Barriers

Sharraden (1991) theorized that assets accumulations were principally the outcome of institutionalized mechanisms involving explicit connections, rules, subsidies and incentives. His proposed theory of welfare based on assets paid special attention to the crucial role of financial institutions in savings and assets accumulation. Institutionalized arrangements very often offer access and incentives to accumulate assets (retirement plans, for example). More precisely in the context of homeownership, the use of institutionalized mechanisms to buy a house provides households with incentives and housing tax benefits. For instance, buying a home with mortgage financing enables taxpayers to deduct the interest paid on the mortgage note. Sherraden (1991) suggested that it would be rational for households who had access to these institutions to use their mechanisms to save and accumulate assets. Moreover, Beverly and Sherraden (1999) explicated the role of institutional determinants such as facilitating savings, financial education, institutionalized mechanisms, and incentives and subsidies in saving practices. They acknowledged that these institutional savings processes shape households' saving behaviors. They suggested household access to institutionalized mechanisms was positively correlated with higher saving rates. They

elaborated further in pointing out that institutionalized saving opportunities are secure and convenient.

Gutter et al. (2012) explained the implications of structural barriers for households, mainly for those families with low- and moderate-incomes. The lack of access to financial institutions could influence some households' savings and asset accumulation decisions, especially for some low- and moderate-income families. Being unbanked could represent a real or perceived market constraint that could result in missing market opportunities such as utilizing mainstream financial institutions.

Tax Preferential Treatment

For those households that own a house and itemize their deductions, an evident tax advantage is extended through the current U.S. Tax System. Rosen (1979) explained that through itemization, homeowners' incomes were understated by the sum of net rent (also called imputed rent), mortgage interest, and property taxes. Thus, the deductibility of property taxes and mortgage interest could be seen as an implicit subsidy from the system. Several research studies have suggested a direct connection between these existing tax incentives available in the system and the likelihood of being a homeowner. For example, property taxes (Ihlanfeldt & Boehm, 1983; Slitor, 1976) and mortgage interest-deductibility (Halket & Vasudev, 2009) encourage homeownership; or in other words, it makes the price of owning favorable to renting.

Nonetheless, most of the existing home ownership incentives in the U.S. Tax System are selective in the sense that only qualifying taxpayers are able to take advantage of them. Particularly, the deduction of mortgage interest and paid property taxes is only available to those tax filers who are in the position to itemize their deductions. In contrast, several non-itemizing households, mainly those with low or

moderate income, do not have the opportunity to perceive the benefits of such house policies if they were to buy a home. Thus, the inability to benefit from these advantages might be perceived as a barrier by those unqualified households.

Indeed, the notion that the effect of taxation on homeownership is closely tied to income classes has been document by several studies (Carasso, Steuerle & Bell, 2005; Bevery & Sherraden, 1999; Slitor, 1976; Carliner, 1974). The expectation is that at higher income levels, property taxes and mortgage interest deductibility increase homeownership. To some degree, high-income and itemizing households with large mortgage notes could use homeownership as a tax shelter. For instance, when buying a house, it encourages individuals to borrow more and buy larger homes than they otherwise might have done (Gale, Gruber & Stephens-Davidowitz, 2007).

On the other hand, Beverly and Sherraden (1999) reported that low-income households (and homeowner who are in a lower marginal tax rate) did not generally benefit from tax incentive because they were less likely to own their own homes (Eller & Fraser, 1995). Carliner (1974) hypothesized that the reason wealthy households frequently own more than poor households was because of the imputed rent that results from owning house stock as it is exempt from income taxation; therefore, owners enjoyed an additional return on this investment equal to their marginal tax rate times the imputed rent.

Hence, these deductions are mostly beneficial for high-income households rather than for those with low or moderate income, or households with lower marginal tax rates. Carasso, Steuerle, and Bell (2005) revealed that federal rental policies tend to subsidize low-income households, which results in discouragement of homeownership

for these cohorts. Thus, itemizing versus non-itemizing may be seen as a barrier by consumers when making a decision about a housing unit purchase.

Time Preference

The notion of time is crucial when utilizing the life cycle hypothesis in economics, as consumption decisions are ruled by a set of intertemporal preferences. Time preference refers to the opportunity cost of trading current utility for future satisfaction (Gutter et al., 2012). James (2009) highlighted the importance of considering the current lengths of households' planning horizons (an example of time preference) when predicting homeownership rates. He posited that besides external barriers (e.g. borrowing constraints, unit prices and interest rates), families might face an internal barrier of behavioral choice by heavily discounting future costs and benefits. The study reported that renters exhibited a considerably shorter financial planning horizon than homeowners did. Having a myopic planning horizon strategy or a high level of time discounting, then, can represent a barrier for households' routes to homeownership, as becoming a homeowner usually involves the trade off or delay of current consumption for future utility. Additionally, consider a study that discusses the financial implications of future orientation— a household's capacity to cogitate, deliberate and plan about future decisions (Shobe & Page-Adams, 2001). In the study, future orientation is proposed to act as a mediator between assets and individual/societal well being. It reported that for high-and-moderate-income families, economic security facilitated the process of planning for the future; whereas for low income-households, financial decisions might have to be made on a daily basis. Sharreden (1991) noted this previously in a study showing that asset depravation limited future orientation. And, the study suggested this would have negative social and economic repercussions for these households (e.g.

households instability, personal inefficacy, low community involvement). In more economic terms, Finke, Huston and Weaver (2003), and Finke and Huston (2004) supported a notion that time preference would be a predictor for household net worth and asset accumulation. And, these households' time preferences may be linked between the psychological concepts of impulsiveness or impatience and the LCH construct of utility maximization (Gutter et al., 2012). For the purpose of this study, time preference is treated as a psychological factor.

Summary

- Under the lens of neoclassical economics theories, rational individuals act based on a cost-benefit analysis dynamic; they aim to obtain greater benefits on the situation in question or/and minimize costs. The notion of time is crucially relevant in the possibility of adopting an action or making a particular decision over others. In the financial context, for instance, individuals constantly ponder whether to consume now or in the future.

- Precisely, this study employs Mondligiani's life cycle hypothesis (LCH), which is founded in the neoclassical branch of economics theories. Consistently, it posits that individuals attain to maximize utility (satisfaction) by smoothing consumption through the different life cycle stages. It is crucial to mention that LCH assumes that markets are frictionless.

- Consistent with the postulate of the LCH, the financial and housing literature suggest that the life cycle variables— that is age, marital status, and household size and composition—are highly correlated with the likelihood of being a homeowner. Other demographic variables such as income and race exhibit a high level of significance in homeownership rates (Carliner, 1974).

- Other variables not comprised in the LCH framework, but under the umbrella of market imperfections have been found correlated to homeownership rates. Previous research studies have reported that borrowing and liquidity constraints (Barakova et al., 2003; Rosenthal, 2002; Carliner, 1974), tax preferential treatment (Carasso, Steuerle & Bell, 2005; Carliner, 1974) and planning horizon (James, 2009) are significantly related to homeownership rates.

Hypotheses

In this study, the hypotheses are formulated under the extension of the conventional Mondigliani's life cycle hypothesis model. More precisely, I propose that in

order to adapt the LCH to a more practical basis, market frictions exist and are present in this model. The considered market imperfections in this study are conceived as potential barriers for some households in the likelihood of being a homeowner.

- H_1: Households with an increase level of information asymmetry are less likely to be homeowners.
- H_2: Households with greater level of actual and perceived borrowing constraints are less likely to be homeowners.
- H_3: Households that report higher levels of structural barriers (access to institutionalized mechanisms) are less likely to be homeowners.
- H_4: Households that are ineligible for housing tax preferential treatments are less likely to be homeowners.
- Households with a more myopic time preference are less likely to be homeowners.

CHAPTER 3
DATA AND METHODOLOGY

Data Set

The present study uses the 2010 Survey of Consumer Finances (SCF) sponsored and conducted by the Federal Reserve Board in conjunction with The U.S. Treasury Department, and collected by the National Opinion Research Center at the University of Chicago. In the 2010 Survey of Consumer Finances, 6,492 families/households were interviewed (Bricker, Kennickell, Moore & Sabelhaus, 2012).

The SCF is a triennial cross-sectional survey of American households. Information on households' financial statements, pension and retirement accounts, income and other sources, and general demographics are gathered in this survey. The pieces of detailed information of American households' finances obtained from this survey are unique as no other study in the United States collects similar information with level of specificity. Importantly, the SCF data is often utilized by government institutions and other agencies, as well as scholars and researchers in the various branches of economics. For the purpose of this study, this data set is ideal in that it includes a rich and comprehensive source of information—either through direct or subjective measure and computation—on households' mortgage, taxes, financial position and future expectation.

It is relevant to mention some potentially problematic issues regarding this data set. The consideration of these is of extreme importance for the purpose of this study. The first issue of concern is the SCF's oversampling of high-income households, whereby; this data set does not offer a representative sample of the U.S. population as a whole. Nonetheless, the survey provides weights that might be used to approximate

close estimates of the U.S. population (Kennickell, McManus & Woodburn, 1996; Aizcorbe, Kennickell & Moore, 2003). When comparing the effect of using weighted versus unweighted data in multivariate analysis, Lindamood, Hanna and Bi (2007) find that these effects exhibited little difference.

A second issue worth scrutinizing is the multiple imputation method used for missing data in this data set. When collecting data, it is likely to have missing data due to several reasons such as unintentional mistakes and skipped answers. Missing and omitted data often result in issues of efficiency and bias for user (Montalto & Sung, 1996). Thus, different methods exist to deal with missing data. Some methods use multiple regression to approximate and substitute the missing data based on identified and known attributes of the survey respondents. For instance, a valid response category might be randomly assigned to replace the missing data, or the mean of the values available from those participants who actually responded might be utilized for such replacement (Lindamood, Hanna & Bi, 2007). Since 1989, The SCF has opted to employ the multiple imputation method with the ultimate goal of providing the best possible estimate for missing data. This method uses multivariate statistical techniques to replace the omitted data; consequently, the result of this process is multiple complete data sets. In the case of the SCF, the multiple implication results in five different sets of data. Each of these data sets is denoted as *implicate*. In other words, for each respondent five different sets of data are available. The main benefit of following this procedure is that the SCF data files contain no missing values; however, a careful treatment of these five sets would be required in order to aptly analyze this data. Indeed, Lindamood, Hanna and Bi (2007) highlight the importance of how to analyze

these multiple implicates. They explain that while it is possible to use just one implicate, this would defeat the purpose of multiple implicates and even worse, it could result in biased results. Ideally all five implicates should be used though the employment of Rubin (1987, 1996) *repeated-imputation inference* method (RII). Montalto and Sung (1996) explicate that the result of replacing missing values through imputation techniques is an intrinsic phenomenon of extra variability in the data. RII, then, allows researchers to estimate such variability. The effect of using this technique is the estimation of variances that more closely represent the true variances, at least more approximate than if only one implicate is used. Montalto and Yuh (1998) elaborate further on the advantages of using RII techniques: "RII techniques produce more efficient estimates and provide a basis for more valid inferences" (97). Indeed, studies demonstrate that using point estimates add estimate of variance calculated through RII technique offer a foundation for more valid inference and test of significance than if only one implicate would have been used (Montalto & Sung, 1996; Montalto, Hanna & Bi, 2007). Thus, it is ideal for researchers and scholars using the SCF to take full advantage of the benefits of repeated multiple imputations in an effort to make better inferences and minimize bias.

In this study, for the descriptive statistics part, data is weighted in order to make the sample more representative of the U.S. population as a whole. Moreover, I utilize all five data sets or implicates provided by SCF. Specifically, I use the suggested Rubin's (1987) repeated-imputation technique in order to lump all the information into one set and adjust for imputation error.

Dependent Variable

In this study, the likelihood of being a homeowner constitutes the dependent variable in this study. In order to determine homeownership, two specific questions are used from the 2010 Survey of Consumer Finances: “Do you a) own this house, b) own it as part of condo, c) co-op, d) townhouse association, e) own part of it f) pay rent g) or neither owns nor rents?” and “How much did it cost when you originally acquired it?” For respondents to be considered homeowners they must meet two requirements: they must indicate any choice but “pay rent” or “neither owns nor rents.” And at the same time, they must report home value greater than 0. If answers are different than these conditions, then, households are considered non-homeowners. With this screening, I am interested in including individuals/households who have a legal right to sell and/or transfer their property. Also, it is important to highlight whether or not the respondents live in housing unit that is a farm/ranch or mobile home. This is necessary as farm/ranch owners are excluded as they might use or potentially use the property for business purposes. Because preferential tax treatment is a barrier considered in this study, I believe including them would potentially create bias on tax advantages for homeowners. Respondents are coded 1 if they are homeowners, 0 otherwise.

Independent Variables

Demographics: Life Cycle Variables

As previous studies well document, life cycle variables are highly correlated with the likelihood of being a homeowner. For the purpose of this study, life cycle variables refer to age, marital status, household structure (specifically, the presence of a child/dependent in the household) and household size. In order to measure these variables three particular questions from the SCF are utilized.

To determine the age of the respondents, we use the reported age. For a greater grade of accuracy and consistency, the age has been matched with the reported date of birth of the respondents. In this study, age is coded continuously.

The household type of respondents is directly determined from the following question, “Are you currently married or living with a partner, separated, divorced, widowed, or have never been married?” Particularly, “married” or “living with partner” will be consider “coupled-households;” otherwise, households will be referred as “non-coupled households, ” which includes “separated”, “divorced”, “widowed” and “single”. Non-coupled respondents will be classified based on reported sex: either “uncoupled and male respondent” or “uncoupled female respondent.”

In addition, the presence of offspring (children) is measured by using the indicated number of dependents under the age of 19. Four categories were used to measure this variable: coupled households with at least 1 child; coupled households with 0 children; non-coupled households with at least 1 child; and non-coupled household with 0 children. It is relevant to highlight that for tax purposes, an individual who is 24 or under, and full-time student may qualify as dependent. However, it is difficult to ascertain these attributes from the information provided in the data set.

Finally, household size is included in this study. The reported number of people in the primary economic unit is used for this purpose. Note that the reported number of members in the household excludes those who do not usually live there and who are financially independent. This variable is coded continuously.

Other Demographic Variables

Although the following are not seen as life cycle variables, the literature suggests that there is a strong association between some of these variables such as race and

income, and the likelihood of being a homeowner. The inclusion and measurement of these variables is crucial then. The SCF classifies respondents into the following race/ethnicity categories: white and non-white. I am aware of this limitation and the potential implication for this study. However, I believe this classification is adequate given the limitations on the data set.

In addition, the variable education is considered. The number of years of formal education is used to measure this variable. The following categories are employed: less than high school, completed high school, some college, and completed college and/or more.

Finally, we turn our attention to the households' financial variable of income. The SCF gathers thorough information on the financial position of households and individuals. Annual income is calculated by using components such as salary/wages, investment dividends, among others. In this study this variable is coded in four categories: households earning less than $25,000, between $25,000 and 64,999, between $65,000 and $110,000, and more than $110,000.

Market Imperfection Variables

Information Asymmetry

In this study, information asymmetry is measured by surveying the numbers of sources of information used by respondents when making borrowing and credit decisions. The variable is broken down in three dimensions: asymmetry in professional, internal and external sources of information among respondents. More precisely, professional sources of information refer to contact with or financial counseling of a lawyer, accountant, banker, broker, financial planer, insurance agent, or real estate broker. Personal internal sources of information include magazine/newspapers and

books, internet/online service, friend relative, past experience, material from work/business contact, other personal research, and other institutional sources. Finally, external sources of information consider material in the mail, television/radio, advertisements, telemarketing and other media material.

Borrowing Constraints

For the purpose of this study, borrowing barriers are divided into two groups: a) credit worthiness and b) liquidity constraints. The SCF contains several questions allowing for the measurement of this variable in multiple ways. The measurements are analyzed in two dimensions—actual and perceived barriers. To be more precise, to assess the relationship of estimated credit worthiness and the likelihood of homeownership, respondents' FICO scores are estimated. Five components determine FICO score: payment history (35%), amount owed (30%), length of credit history (15%), types of credit in use (10%) and new credit (10%). In this study, I am able to obtain approximates of 75% of FICO score—that is, payment history, amount owed and types of credit in use. I am aware of this limited estimate, but I believe it still reflects an adequate portion of the respondents' actual FICO score. Payment history is measured with the following question, "Thinking about Visa, Mastercard, Discover, American Express, and store cards that you can pay off over time, do you almost always, sometimes, or hardly ever pay off the total balance?" The amount owed or credit usage is calculated by using the current debt to credit limit ration. Finally, types of credit are measured by looking at the presence of mortgage loans, student loans and car loans.

Perceived credit discouragement is also explored under the umbrella of credit worthiness. More precisely, I use the following question to capture this variable: "In the

past five years, has a particular lender or creditor denied you (or your partner) any request or lowered the amount for which you applied?"

Liquidity constraints are directly measured by using the emergency fund ratio. This is calculated by dividing liquid assets (cash and cash equivalents) by monthly expenses. Ideally, households and individuals should have a 3 to 6 month emergency expense fund. Generally, a rate greater than 10 % is deemed as acceptable. In this study and for comparison purposes, a 6-month fund emergency fund ratio is utilized.

Structural Barriers

For this variable several questions regarding access and use of financial institutions are considered. Access, in particular, is measured in terms of distance from the financial institutions and workplace or residence. It is asked with the question, "Roughly, how many miles is the office or ATM (cash machine) of this institution from your home or workplace/home or workplace of the person who uses it most often?" The variable is coded continuously. Using the reported number of financial institutions in which respondents currently have an account, loan or regularly do personal financial business, I assess the use of financial institution. For the purpose of this study financial institutions comprise banks, saving and loans, credit unions, brokerages, and loan companies, but no institution in which respondents have only credit cards or business accounts. Number of financial accounts is coded continuously.

Tax Preferential Treatment

This variable is evaluated first by simply utilizing the following question "Did/will you itemize deductions?" The variable is coded 1 if yes, 0 otherwise (this includes "no" and "did not file" or "does not expect to do so"). Secondly, I am interested in measuring the ownership of at least one tax-advantaged account or investment, which is defined in

this study as a tax strategy. Tax advantaged investments refers to tax exempt bonds and tax exempt mutual funds. Tax advantaged accounts include Keogh, 401(k), 403(b) and tax advantaged savings accounts.

Market Uncertainty

Economic outlook is used as a proxy for uncertainty as measured by utilizing a particular question from the SCF on future expectation on the economy: “Over the next five years, do you expect the U.S. economy as a whole to perform better, worse, or about the same as it has over the past five years?” The variable is coded in the following categories: better, same and worse.

Moreover, the variable of planning horizon is utilized in this study. I use the following question to capture individuals’ and households’ choice of time presence: “In planning or budgeting your family's saving and spending, which of the following time periods is most important to you (and those residing family members)?” The answers are grouped in the following categories: less than 5 years, and more than 5 years. These categories allow comparing group comparisons with differing time preferences (less myopic respondents vs. more myopic respondents).

Sample Size

In this study, the sample size totaled 6,473 households. Precisely, 4,067 households were homeowners and 2,406 non-homeowners. It is significant to mention that households who indicated living in a mobile home or whose housing unit was identified as farm/ranch were excluded. The reason for this decision lies primarily in the bias that housing units used as both dwelling units and business units might potentially introduce in the study. In the case of mobile home owners, it is important to treat this group separately as several factors such as credit/borrowing terms, payment term’s

time component, asset depreciation and mobility likely diverge from the more traditional acquisition of housing units included in the focus of this study. For detailed information on the criteria that was used to classify households as either homeowners or non-homeowners, refer to the dependent variable section in this chapter.

Analysis

The analysis started with a measurement of the sample variables or descriptive analysis. The sample profile (frequencies and percentages/means and standard deviation) included all independent variables presented by homeowners and non-homeowners. It is important to highlight that for descriptive statistics the sample was weighted in order to be representative for the U.S. population. Furthermore, bivariate analysis, which included chi-square test and t-test, was performed as a part of the descriptive analysis. For t test, Montalto and Sung (1996) coding for scalar variables was use in this study. Afterwards, binomial regression was used to explore the effects of the demographic variables and the imperfect market variables (deemed as the variable of study in this research) on the likelihood of being a homeowner. The use of this statistical technique is appropriate for this study as the binomial regression is designed for model in which the dependent variable is the result of a series of two possible disjointed outcomes (homeowners and non-homeowners, in this case). In other words, logistic regression is a variant of multiple regressions. The relationship between a categorical dependent variable (homeowners or non-homeowners) and several predictors or independent variables (demographic and market imperfection variables) is assessed. The odds of being a homeowner are estimated based on the values of the independent variables.

CHAPTER 4
FINDINGS AND RESULTS

Bivariate Analysis

This section presents the bivariate results for each dependent variable used in this study. The analysis compares the variables by the independent variable homeownership status, precisely that is homeowner versus non-homeowner. The tables at the end of this chapter display the complete results of the analysis.

Life Cycle Variables

Age, marital status and the presence of offspring are, theoretically speaking, the main variables comprised in the life cycle theory. The consulted housing literature suggests strong associations between each of these variables and homeownership rates.

Age. Homeowners' average age was 54.26 years old, whereas non-homeowners displayed an average age of 44.34 years old. T test showed that homeowners were more likely to be older than non-homeowners ($t=22.96$, $p<0.001$).

Marital status. The results of chi square test displayed significant differences in marital status by homeownership status. Specifically, 42.05% of the respondents who indicated living in a coupled household were homeowners and 15.99% of similar marital status reported not being homeowners ($\chi^2=389.81$, $p<.001$). For those respondents who specified being single or a non-coupled household, the sub-variable gender was considered in the statistical test. The χ^2 test outcome exhibited that 13.37% of the respondents were female non-coupled households and homeowners, while 13.16% were not homeowners ($\chi^2=142.22$, $p<.001$). On the other hand, 6.92% of the

participants in the sample were male non-coupled households and homeowners, and 8.51% were non-homeowners (χ^2=153.6958, p<.001).

Household size. The average number of members in the household for those who indicted being homeowners was 2.66; whereas for those who reported being non-homeowners, the average number of members in the household was 2.46.

Based on the t test results, homeowners were significantly more likely to have larger household size than their counterparts (t=5.1703, p<0.001).

Presence of offspring. Chi square values revealed that statistical differences existed among the categories used: coupled household with at least one child, coupled household with no child, non-coupled household with at least one child, and non-coupled household with no child. More precisely, for those respondents who indicated the presence of at least one child, 15.61% were part of a coupled household and homeowners, 7.69% coupled household and non-homeowner, 2.55% non-coupled household and homeowner, and 4.43% non-coupled and non-homeowner. On the other hand, for those individuals who responded with absence of offspring in the household, 26.44% were coupled households and homeowners, 8.31% coupled households and non-homeowners.

Other Demographics Variables

Although not considered as being core factors in the life cycle hypothesis model, these variables have exhibited high and influential correlation in the likelihood of being a homeowner in previous studies.

Race. The chi square test indicated that there were significant differences in race between homeowners and non-homeowners (χ^2=327.46, p<.001). The results were as follows: for whites, 49.07% were homeowners while 21.70% were non-white; and in the

case of non-whites, 13.36% and 15.96% were homeowners and non-homeowners respectively.

Education. For the variable education, each of the categories used in this study exhibited significant differences by homeownership status. Precisely, for those who indicated having attained an educational level of less than high-school 5.77% were homeowners and 7.60% non-homeowners (χ^2=156.50, $p<.001$); high school, 18.17% homeowners and 12.7% non-homeowners (χ^2=14.93, $p<.001$); some college, 14.2% homeowners and 9.56% non-homeowners (χ^2=5.75, $p<.05$); and college and graduate school, 24.20% homeowners and 7.80% non-homeowners (χ^2=229.23, $p<.001$).

Income. The χ^2 test results showed that there were significant differences in the following income ranges compared by homeownership status: for those households that reported earned income less than $25,000, 9.06% were homeowners and 17.44% non-homeowners (χ^2=787.43, $p<.001$); for those in the-more-than $65,000-but less-than-$110,000 range, 15.63% were homeowners and 3.51% non-homeowners (χ^2=244.07, $p<.001$); and for those who indicated having earned more that $110,000, 13.22% were homeowners and 1.34% non-homeowners (χ^2=380.38, $p<.001$). There was no significant difference for the income category of $25,000-65,000.

Market Imperfection Variables

Information Asymmetry

Homeowners were significantly more likely to consult greater number of professional sources when making financial decision than their counterpart (t=12.44, $p<0.001$). Similarly, homeowners were more prone to consult a greater number of personal sources than those who reported being non-homeowners (t=2.97, $p<0.05$). No

significant difference was exhibited between homeowners and non-homeowners in the number of external sources used when making financial decision.

Borrowing Constraint

Credit worthiness (FICO score components). When comparing homeowners against non-homeowners, χ^2 test results suggest that there were significant differences for the following: the type of credit accounts—that is revolving and installment credit—and credit history.

A total of 51.25% indicated having revolving credit and being a homeowner whereas 16.65% reported having revolving credit but not being a homeowner. Conversely, 11.08% of the respondents specified having no revolving credit account and being a homeowner compared to 21.08% who indicated the absence of revolving credit type and not being a homeowner.

Homeowners' credit usage ratio (M=39.13, SD=612.50) differed from the credit usage ratio reported by non-homeowners (M=16.77, SD=219.31). T test outcome suggested that homeowners were more prone to have a greater credit usage ration than non-homeowners (t=2.11, p<0.5).

Moreover, of the total respondents in this study, those who indicated having at least one installment credit account, 28.08% were homeowners while 17.43% were not. And for those who reported having no installment credit-type whatsoever, 34.25% of the total respondents were homeowners compared to 20.24% who were not.

As stated previously, credit history exhibited significant differences among homeowners and non-homeowners. Specifically, of those who were homeowners, 30.56% reported paying their revolving accounts always on time, 20.43% indicated paying not always or never on time, while 30.56% suggested not having a card. On the

other hand, in the case of those who were not homeowners, 7.29% reported paying their revolving accounts always on time, 9.20% not always or never on time, and 21.17% informed not having at least one revolving account.

Actual constraints. Chi square test showed significant differences in being turned down or accepted by financial institutions when comparing respondents by homeownership status (χ^2=61.20, p<.001). The sample profile was as follows: 11.15% indicated being turned down and being homeowners while 9.52% were turned down and were not homeowners. Conversely, 51.18% reported having not been turned down and being homeowners whereas 27.85% said not been turned down but being non-homeowners.

Perceived constraints. Perceived discouragement (expected credit denial by financial institutions) exhibited significant differences between homeowners and non-homeowners (χ^2=312.56, p<.001). Of the total respondents, 2.38% reported having perceived credit constraints and being homeowners, compared to 11.08% non-homeowners who expected the same credit discouragement from financial institutions. Also, 54.96% said being homeowners and would not expect any perceived credit denial by financial institutions whereas 26.58% reported being non-homeowners and expected no perceived credit constraints whatsoever.

Liquidity constraints. T test results displayed no significant difference in emergency fund ration between homeowners and non-homeowners.

Structural Barriers

The number of financial accounts owned by homeowners (M=2.74, SD=1.66) differed significantly from the number owned by non-homeowners (M=1.59, SD=1.21).

In fact, homeowners were more prone to have a greater number of financial accounts than those who were non-homeowners (t=31.92, $p<0.001$).

No statistical difference was found in the distance to financial institutions between homeowners and non-homeowners.

Housing Tax Preferential Treatment

Significant differences in the two items employed for measuring this variable—household's ability to itemize ($\chi2=1193.77$, $p<.001$)., and the ownership of at least one tax advantaged account ($\chi2=750.37$, $p<.001$)—existed in this sample when comparing homeowners against non-homeowners. For household's ability to itemize, 40.10% were homeowners and able to itemize while 7.56% indicted being non-homeowners yet have the ability to itemize for the tax year. Moreover, significant differences in the ownership of at least one tax advantaged investments and accounts existed with 38.65% of homeowners and 10.13% of non-homeowners. On the other hand, 23.69% of homeowners and 27.54% of non-homeowners indicated not holding either a tax advantaged account or investment.

Time Preference

Chi square test results suggested significant differences in planning horizon between homeowner and non-homeowners ($\chi2=194.69$, $p<.001$). Precisely, of total respondents, those who indicated a planning horizon of more than 5 years, 23.54% were homeowners and 7.97% were non-homeowners. And those who indicated having a planning horizon of less than 5 years, 38.79% were homeowners while 29.70% reported being non-homeowners.

There were no significant differences in the other time preference variable—that is expectation of economy's performance.

Binomial Logistic Regression

Demographic Variables

Regression analysis results indicated age, household type, household size and race were significantly related to the likelihood of being a homeowner.

More precisely, both the variables age and age-square were highly significant indicating a quadratic relationship between age and homeownership. Thus, it suggested that as age increases the probability of being a homeowner increases but it decreases after certain point later in the life span.

As mentioned previously household type was significant in the regression model. Non-coupled households (single or others) led by females were less likely to be homeowners than coupled household (married couples and cohabitators). Similarly, non-coupled households with a male head of household were significantly less likely to be homeowners than coupled-households or female non-coupled households.

Moreover, race was significant associated with the likelihood of being homeowners. Non-white respondents were significantly less likely to be homeowners than white-household respondents.

Finally, all income categories were significantly related to the likelihood of being a homeowner. Precisely, households that reported earning less than $25,000 per year were significantly less likely to own a house than those earning in $25,000-$64,999 income range. Conversely, those respondents who reported total earnings of $65,000-110,000 or more than $110,000 were more likely to be homeowners than those in the reference group ($25,000-64,999).

Market Imperfection Variables

Information Asymmetry

None of the items used to measure information asymmetry were statistical significant in this regression model.

Borrowing Constraints

Credit denial and perceived credit denial were the only two items under the umbrella of borrowing constraints that were significant in this model. Being turned down by financial institutions in the last 5 yeas was negatively associated with homeownership. Likewise, a perceived expectation of credit denial was highly and negatively related to the likelihood of being a homeowner. The odds indicated that households that were denied credit were 82% less likely to be homeowner as otherwise similar households whose credit petitions were not denied. Similarly, those households who perceived a credit denial were 62% less likely to be homeowner as otherwise similar households who did not anticipate a credit denial from lenders.

The rest of the items used to capture the borrowing constraints variable—FICO score components and liquidity constraints—were not statistically significant in this model.

Structural Barriers

The number of financial accounts owned by respondents was statistically significant in this model. Having a greater number of financial accounts was highly correlated to being a homeowner. Based on the odds ratio for the number of financial accounts, the likelihood of being a homeowner increased 1.32 times for each financial account used.

The distance to financial institution offices, the other item used to measure the dimension of structural barriers was not significant in this regression.

Tax Preferential Treatment

Both items utilized under this variable—ability to itemize and ownership of tax advantaged account and investments—were statistically significant to the probability of being a homeowner. Specifically, those households that were able to itemize were drastically more prone to be homeowners than those ineligible or unable to itemize. In addition, owning at least one tax advantaged investment and/or account (TAIA) was significantly related to the likelihood of being a homeowner. The odds ratio for itemizing households indicated that were 3.18 times more to be homeowners than non-itemizing households. Likewise, households with at least 1 TAIA were 1.40 times more likely to be homeowners than those who hold none TAIA.

Market Uncertainty

Economic outlook was significant in this model. More precisely, Respondents who expected the economy to worsen in the next 5 years were less likely to be a homeowner than those who expected the economy to perform the same. Finally, financial planning horizon was also significantly related to the likelihood of being a homeowner, indicating that less myopic households were more likely to own a home than those with lower financial planning horizon. The odds ratio for planning horizon of more than 5 years indicated that less myopic households were 1.121 times more likely to be homeowners that those households with a more myopic approach to time preference.

Table 4-1. Bivariate analysis: Sample profile and demographics by homeownership status

Variable	Frequency (percentage) / Mean (SD)		Significance test
	Homeowner	Non-homeowners	
Age	54.26 (15.87)	44.34 (17.30)	t=22.96***
Household type			
Coupled-households	2723.17 (42.05%)	1035.92 (15.99%)	χ^2=389.81***
Non-coupled household			
Male	448.29 (6.92%)	551.03 (8.51%)	χ^2=153.69***
Female	865.73 (13.37%)	852.48 (13.16%)	χ^2=142.22***
Household size	2.66 (1.44)	2.46 (1.52)	t=5.17***
Presence of offspring			
Coupled household with at least 1 child	1011.32 (15.61%)	497 (7.69%)	χ^2=18.34***
Couple household with no child	1711.82 (26.43%)	538.10 (8.31%)	χ^2=277.56***
Non-coupled household with at least 1 child	165.08 (2.55%)	286.69 (4.43%)	χ^2=137.61***
Non-coupled household with no child	1148.94 (17.74%)	1116.83 (17.24%)	χ^2=200.62***
Race			χ^2=327.46***
White	3178.11 (49.07%)	1405.49 (21.70%)	
Nonwhite	859.04 (13.26%)	1033.94 (15.96%)	
Education			
Less than high school	373.60 (5.77%)	492.05 (7.60%)	χ^2=156.50***
High school	1176.61 (18.17%)	822.62 (12.7%)	χ^2=14.93***
Some college	919.48 (14.20%)	619.44 (9.56%)	χ^2=5.75*
College and more	1567.48 (24.20%)	505.30 (7.80%)	χ^2=229.23***
Income			
Less than $25,000	587.03 (9.06%)	1129.49 (17.44%)	χ^2=787.43***
$25,000 -$64,999	1581.49 (24.42%)	995.69 (15.37%)	χ^2=1.71
$65,000-$110,000	1012.51 (15.63%)	227.29 (3.51%)	χ^2=244.07***
More than $110,000	856.11 (13.22%)	86.95 (1.34%)	χ^2=380.38***

*p<0.05,** p<0.01, ***p<0.001

Table 4-2. Bivariate analysis: sample profile and market imperfection variables by homeownership status

Variable	Frequency (percentage) / Mean (SD)		Significance test
	Homeowner	Non-homeowners	
Information asymmetry			
Professional sources	0.75 (0.87)	0.50 (0.74)	t=12.44***
Personal sources	1.35 (1.12)	1.27 (1.07)	t=2.97**
External sources	0.40 (0.72)	0.38 (0.6884)	*t=1.34*
Borrowing constraints			
FICO components			
Type of credit			
Revolving credit			χ^2=1008.31***
Having revolving credit	3319.29 (51.25%)	1078.27 (16.65%)	
Not having revolving credit	717.86 (11.08%)	1361.17 (21.02%)	
Installment credit			χ^2=0.91
Having at least 1	1818.88 (28.08%)	1128.86 (17.43%)	
Having none	2218.28 (34.25%)	1310.57 (20.24%)	
History payment			
pay off almost always	1979.57 (30.56%)	472.43 (7.29%)	χ^2=568.87***
pay off almost never	1322.24 (20.42%)	595.61 (9.20%)	χ^2=50.68***
do not have cards	735.34 (11.35%)	1371.28 (21.17%)	χ^2=1000.60***
Credit usage ratio	39.13 (612.50)	16.77 (219.31)	t=2.11*

*p<0.05,** p<0.01, ***p<0.001

Table 4-2. Continued

Variable	Frequency (percentage) / Mean (SD) Homeowner	non-homeowners	Significance test
Credit denial			χ^2=61.20***
Being turned down	722.39 (11.15%)	635.73 (9.82%)	
Not being turned down	3314.76 (51.18%)	1803.7 (27.85%)	
Perceived credit denial			χ^2=312.56***
Perceived being turned down	477.87 (7.38%)	717.87 (11.08%)	
Perceived not being turned down	3559.28 (54.96%)	1721.56 (26.58%)	
Emergency fund ratio	779.51 (45450.98)	16.59 (523.55)	*t*=1.07
Structural barriers			
Distance to financial institutions	8.75 (73.33)	11.88 (101.58)	*t*=-1.32
Number of financial accounts	2.74 (1.66)	1.59 (1.2110)	*t*=31.92***
Tax preferential treatment			
Ability to itemize			χ^2=1193.77***
Households itemize	2597.13 (40.10%)	489.77 (7.56%)	
Households do not itemize	1440.03 (22.23%)	1949.66 (30.10%)	
Tax advantaged investment and accounts			χ^2=750.37***
Having at least 1	2503.16 (38.65%)	655.96 (10.13%)	
Having none	1534 (23.69%)	1783.47 (27.54%)	
Market uncertainty			
Expectation of economy's overall performance in the next 5 years			
Better	2114.88 (32.65%)	1281.21 (19.78%)	χ^2=0.012
Worse	725.82 (11.21%)	474.67 (7.33%)	χ^2=2.20
Same	1196.45 (18.47%)	683.55 (10.55%)	χ^2=1.92
Planning horizon			χ^2=194.69***
More than 5 years	1524.89 (23.54%)	515.90 (7.97%)	
Less than 5 years	2512 (38.79%)	1923.53 (29.70%)	

*p<0.05,** p<0.01, ***p<0.001

Table 4-3. Logistic regression for likelihood of being a homeowner-demographics

Variable	Parameter	Odds ratio
Age	0.09***	1.10
Age square	-4.71E-04***	1.00
Household type (coupled households)		
Male non-coupled household	-0.43***	0.65
Female non-coupled household	-0.24*	0.79
Household size	0.17	1.18
Presence of offspring		
Coupled household (no child)	-0.03	0.97
Non-coupled household (no child)	0.10	1.10
Race (white)	-0.47***	0.63
Education (college or more)		
Less than high school	-0.04	0.96
High school	0.17	1.18
Some college	0.01	1.01
Income ($25,000 -$64,999)		
Less than $25,000	-0.51***	0.60
$65,000-$110,000	0.28*	1.32
More than $110,000	0.42**	1.52

*p<0.05,** p<0.01, ***p<0.001

Table 4-4. Logistic regression for likelihood of being a homeowner-market imperfection

Variable	Parameter	Odds ratio
Market imperfection variables		
Information asymmetry		
Professional source	-0.03	0.96
Personal source	0.06	1.07
External source	0.04	1.04
Borrowing constraints		
FICO components		
Type of credit		
Revolving credit (not having revolving credit)	0.71	2.04
Installment credit (having none)	-0.14	0.86
Credit usage ratio	1.20E-04	1.00
History payment (almost always)		
Pay off almost never	-0.16	0.85
Do not have cards	-0.08	0.91
Credit denial (being turned down)	-0.19*	0.82
Perceived credit denial (perceived being turned down)	-0.46***	0.62
Emergency fund ratio	2.68E-05	1
Structural barriers		
Distance to financial institutions offices	-3.34E-04	3
Number of financial accounts	0.28***	1.32
Tax preferential treatment		
Ability to itemize (household does not itemize)	1.16***	3.18
Tax advantaged investment and accounts (having none)	0.34***	1.40
Market uncertainty		
Expectation of economy's performance in the next 5 years (same)		
Better	0.02	1.02
Worse	-0.24*	0.78
Planning horizon (less than 5 years)	0.19*	1.21

*p<0.05,** p<0.01, ***p<0.001

CHAPTER 5
DISCUSION, CONCLUSIONS AND IMPLICATIONS

Discussion

Hypotheses

Information asymmetry. Hypothesis 1 indicated that households with an increased level of information asymmetry were less likely to be homeowners. T test results showed that there were significant differences between homeowners and non-homeowners in terms of the quantity of information from sources consulted when making financial decisions. The study's outcome revealed that there was a very strong level of significance in the relationship between fewer professional sources of information consulted in credit decision-making, and the probability of not being a homeowner. Also, t test results moderately suggested a significant relationship between fewer personal sources of information consulted in financial decision-making, and non-homeowners. External sources of information such as material in the mail and television/radio advertisements did not exhibit any significant association to homeownership.

Borrowing constraints. Hypothesis 2 stated that households with greater level of actual and perceived borrowing constraints were less likely to be homeowners. Chi square test showed that significant differences existed in several items when measuring the variable of borrowing constraints between homeowners and non-homeowners. For instance, from the FICO score factors, having revolving credit type, history payment categories and debt-to-credit-limit (credit usage) ratio significantly differed between homeowners and non-homeowners. In addition, the outcome from the logistic regression model suggested association between being turned down by a financial

institution in the last 5 years, and the likelihood of being a non-homeowner. Finally, the regression model showed that the expectation or perception of being turned down by institutions was strongly and significantly associated with non-homeowners.

Structural barriers. Hypothesis 3 proposed that households with higher levels of structural barriers or access to institutionalized mechanisms would be less likely to be homeowners. T test revealed that non-homeowners were more likely to have fewer financial accounts than their counterpart. Regression analysis suggested the same notion by indicating a very strong and positive, significant relationship between homeowners and greater numbers of accounts with financial institutions. Distance to financial institutions was not significant in the statistical tests, t test, nor was it for the binomial logistic regression.

Tax preferential treatment. Hypothesis 4 states that households unable to afford housing tax preferential treatments or tax advantaged vehicles were less likely to be homeowners. Chi square test outcome showed that there were significant differences in tax preferential treatment variables between homeowners and non-homeowners. Additionally, based on the regression results, there were statistical indications to conclude that homeowners overall were more prone to itemize and also to own at least one tax advantaged investment/account as opposed to those who indicated being non-homeowners; thus, supporting the proposed hypothesis 4.

Time preference. Hypothesis 5 states that those households with a more myopic time preference would be less likely to be homeowners. First, chi square test indicated that homeowners' time preferences significantly differed from non-homeowners' preferences. Regression analysis confirmed these results. Respondents with a planning

horizon of more than 5 years were more likely to be homeowners than those who indicated a planning horizon of less than 5 years. Thus, it showed a strong relationship between a less myopic perspective in terms of planning horizon and homeownership. Furthermore, the outcome from the regression provided an indication that those households that expected the economy to worsen (or in other words who anticipated a negative economic outlooks) were less likely to be homeowners. Therefore, the strong evidence obtained from these statistical procedures was supportive to the hypothesis proposed in the dimension of time preference.

Discussion of Findings

The housing literature has well documented the very influential role of life cycle variables and homeownership rates. The results obtained in this study reflect previous findings on the effect of life cycle variables such as age, marital status, and household size. The results on this study are very consistent with the ones described in Carliner (1974).

Given that the presence of offspring has been widely researched and that its significant relationship has been highlighted in multiple studies (e.g. Kain & Quigley, 1972; Chiuri & Japelli, 2003; Rosen, 1979; David, 1963; Maisel, 1966) it was surprising that this particular variable exhibited little level of significant in the likelihood of being a homeowner. Although, homeowners and non-homeowners displayed differences in the presence of offspring the household, the results were not strong enough to suggest a strong correlation (in any possible direction) between the variables.

From the other demographics variables utilized in this research, race and income exhibited strong statistical indications to homeownership. These findings are consistent with results presented previously by other researchers (e.g Carliner, 1974). Particularly,

the variable income confirmed an intuitive relationship with homeownership. This relationship was anticipated as it is an important and influential component in the model formulated by Modigliani & Brumberg (1954).

It was unexpected, nevertheless, to observe the variable education to show no significant correlation with homeownership whatsoever. It is crucial to note that in the current study, this variable not only measured educational attainment but also served as a proxy for financial education, which literature would suggest to be an influential factor in financial decision-making decisions such as borrowing and credit assessments. In fact, previous have shown that a higher level of financial education could be translated into more favorable housing decision-making (Lusardi, 2007; 2008; Moore, 2003; Bucks & Pence 2008). Perhaps due to the limitation of educational attainment used as a proxy, the financial education dimension was explored with a very limited scope. Further research—in which the employment of a different methodology would be considered for the variable financial education—might be required for a better exploration of this variable. At the same time, we should ponder if really education by itself (not financial education) could necessarily influence in the likelihood of being a homeowner. It is worthwhile to explore current statistical facts such as percentages of students that have access to college or who graduate from college, yet are unemployed or underemployed. Or also to consider whether graduating college students with average student loan debt actually have the market opportunity to become homeowners as expected in the life cycle hypothesis.

Information asymmetry. The results obtained in this research reflected to a certain degree the findings of other studies. For instance, Chiuri and Jappelli (2000)

suggested from a more general perspective that information asymmetry is likely to create some sort of barriers across stages in the life cycle. Berheim (1994) posited that inequality in access to information is likely to influence in the process of financial decision-making. The results confirmed both dimensions as was revealed by the cited studies above: with fewer and asymmetric access to sources of information (professional or personal), the likelihood of being a homeowner is less likely. Therefore, to some degree, being less informed or having an unequal access to different professional and personal sources of information might represent a barrier—or at the very least, it might represent a disadvantage for households in achieving the likelihood of higher rates of homeownership. It is important to mention that although it is not absolute to believe that being a homeowner is the optimum homeownership status, it is very well known that informed households and homeownership do introduce positive externalities such as the creation of a more competitive and more efficient market that not only imminently impact the household unit but the economy and society as a whole (Braunstein & Welch, 2002).

Moreover and specifically to this study, the results provided significant indications to determine that households that consulted a greater number of professional (e.g. certified public accountant, certified financial planner, broker, insurance agent) and personal sources (e.g. past experience, friends and relatives, own research) of information were more prone to be homeowners. Such suggestive relationship leads to comment on the importance that professionals in the field of financial planning might play in advising clients when financial decision-making, especially when rendering opinion on the best practices and options on credit and borrowing matters.

Borrowing constraints. Out of all of the imperfect market variables used in this study, borrowing constraints is perhaps the one that has been the most widely explored on an individual basis by researchers (Rosenthal, 2002; Yao & Zhang, 2005; Cocco, 2005; Luengo-Prado, 2006). In this research study, though, the borrowing constraints items are surveyed in a model that conjunctively tests for other imperfect market variables at the same time. The results from the bivariate analysis are extremely consistent with previous findings (Barakova et. al., 2003; Rosenthal, 2003; Carliner, 1974). Almost all items utilized to measure this dimension (i.e. FICO score components, perceived and actual credit denial) were statistically different between homeowner and non-homeowners. These results to some extent were expected given the mediating interaction that borrowing constraints could have in consumption—an important piece of the life cycle hypothesis. From the inferential statistics, two items—actual credit denial, and perceived credit denial—showed significant association with non-homeowners. To some degree, the potential effect of being denied when applying credit lines and other loans is somewhat intuitive in the probability of being homeowner. Influential and mediator factors such as credit worthiness, liquidity constraints might be implicitly in such relationship. Nonetheless, it was surprising that out of all the other borrowing constraint items, the expectation of being denied for credit was highly significant and negatively related to being a homeowner. Given that the question used in this item filtered out for households who had a perception of being denied and thus have refrained themselves from applying to credit, I think that the notion of a more psychological interaction in terms of borrowing discouragement may exist. Further

exploration on perceived financial and credit barriers could potentially bring meaningful implications in the study of psychological financial attitudes.

Finally, it was certainly unanticipated that the FICO score components would exhibit no significance in the inferential statistical test. Based on the grounds that in practice financial institutions and lenders heavily rely on this measure to extend loans to consumers, the relationship between these factors and homeownership was expected to be clear and pronounced.

Structural barriers. Consistent with the findings and explanation on Gutter et al. (2012) that the lack of access to financial institutions could influence some households' savings and asset accumulation decisions, the current study showed that the number of financial accounts held by households was positively related to being a homeowner or the likelihood of asset accumulation. On the other hand, non-homeowners, based on the bivariate analysis, were more prone to hold fewer financial accounts than homeowners. Therefore, the notion of the propensity of being unbanked and underbanked suggested by Gutter et al. (2002) may be seen as constraints in attaining higher rates of homeowners. At the same time, the results highlight the importance of access to institutionalized mechanisms that could potentially provide individuals with housing benefits of multiple natures (e.g. tax benefits, credit payment flexibility). For future research, I think it would be noteworthy to explore closely and in a more individualist approach, the relationship between different types of institutionalized mechanisms and homeowners.

A dimension tested under the structural barrier umbrella was the distance to financial institutions. This variable was not significant in either, bivariate or inferential

analysis. It is reasonable to attribute these results to the availability of electronic and data banking, and an increase in households' access to a computer network. The change in both has been positive and enormous in the recent decades: virtual banking has been more widely accepted and trusted by consumer; and households have had more access to education in new technologies. Undoubtedly, nowadays virtual communication and electronic transactions in the banking industry has revolutionized the way households access and do business with financial institutions. Hence, technology has greatly reduced physical barriers to access to and usage of banking institutions that many households historically had (Bell & Hogarth, 2009).

Tax preferential treatment. The results obtained under the scope of this variable were all highly consistent with previous findings in the housing literature. For example, several studies have suggested a positive and direct relationship between tax incentives, opportunities or strategies, and the likelihood of being a homeowner (Ihlanfeldt & Boehm, 1983; Slitor, 1976; Halket & Vasudev, 2009). Such association was reflected in the results as both items used in this study—ability to itemize, and the ownership of tax-advantaged account—were statistically significant in the regression model. As concluded from the results, homeowners were more likely to itemize and to own at least one tax-advantaged account/investment. For homeowners, the ability to itemize lies in great part in whether the taxes and interests paid on the property exceed the standard deduction for a specific tax year. Thus, the combined results in this section might highlight the importance and link between institutional mechanisms/vehicles and itemization. In other words, *ceteris paribus*, having a home yet not a mortgage loan with

a financial institution would most likely result in the inability to itemize. A trichotomous model might be a representation of the interaction of these three variables in a model.

Time preference. Consistently with the results on James (2009), the factor-planning horizon exhibited high level of significant differences between homeowners and non-homeowners. The regression analysis confirmed, indeed, that those with less myopic planning horizon were more likely to be homeowners. Thus, the results led us to conclude that failing to financially plan in advanced could represent a barrier in homeownership consumption. It is important to comment that planning horizon refers to the actual planning/budgeting for future financial course of actions. The role of financial planning and professionals in the field is then crucial in helping and advising clients on how to make optimum financial decisions. Remember that, especially in this case, the object in question is whether or not households are homeowners or not. The consumption of housing units comes with a series of financial steps and commitments (e.g. building credit score-strategy, down payment requirement), that professionals might use in financial planning and are the ideal tools to help mitigate potential barriers that prevent households in achieving their goals.

Conclusions

Based on the results obtained in this research and the consulted housing literature, two main and general conclusions can be drawn from this study. The first conclusion refers to the confirmation of several market imperfection barriers present in the interaction and likelihood of housing consumption, which have been ignored by the empirical-based model proposed in the life-cycle hypothesis. The second conclusion deals with the intrinsic and developed limitations of the model, which to a degree

restrain the model to reflect an accurate picture of the present housing units consumption pattern.

If we recall the main objective of this research was to explore the relationship between homeownership and the assumption of a non-frictionless market employing the life cycle hypothesis as a base model. The challenge to the model assumed that the market was imperfect by controlling specific market variables. In other word, rather than idealizing the prototype, risk and pragmatic financial factors were taken into consideration in order to determine whether they would constitute a predictor to homeownership. Based on the findings in this research, we can conclude that the life cycle hypothesis is limited in scope, failing to capture many financial aspects—in this study perceived as barriers—that greatly influence housing consumption and more precisely homeownership rates. Such limitation is partly tied to the fact that the model is an empirical approximation of the subject in study—that is the likelihood of being a homeowner.

However, other model's constraints might come from the unfitted application of an old and outdated model to the current economics settings. This last statement leads to make important remarks on economical, sociological and psychological factors that should be reconsidered.

The life cycle hypothesis was developed in the early 1950's, just a few years after the end of World War II. This period was characterized by the migration of households from rural to urban areas; the birth and development of suburbs was the result of such migration. The housing boom and growth of suburbs was facilitated in a big part by incentives such as the availability of credit and financing packages and

stimulus provided by the government (e.g. Federal Housing Administration Insured loan). The life cycle hypothesis, then, was an empirical model adapted to approach housing consumption patterns in that period of time. Therefore, the assumptions made in this hypothesis were suitable for households with social and economical characteristics particularly associated to households in the 1950's. For instance, the idea of a traditional nuclear home was the prevalent household composition and common denominator in the society at that time; the American dream was strongly associated with owning a housing unit and consequently being part of the emerging "middle class."

However, it has been well documented of the evolution and pragmatic change in households' demographic characteristics and consumers' preferences over the last five decades. The household structure categories have changed greatly including now a great portion of single parents in the society. The inclusion of women in the workforce has positioned households in a different scenario in terms of economic and purchasing power. The longevity of individuals due to an improvement in quality of life and the introduction of new technologies have elongated the so called "life cycle," an important component in this model. The exponential growth of racial minorities such as Hispanic/Latinos and African Americans have radically changed the composition of the U.S. population. The homeownership distribution is questionable of being normally distributed and may be rather more credibly binomial. The American dream has been less linked to the idea of owning a house (the stigmatization of renting has seemingly decreased). The economic and consumption preferences and expectation of young professionals have evolved critically; identifying and demanding new housing "needs"

and “wants.” All of these are just some examples that put in perspective new factors that should be taken into account when analyzing and exploring homeownership rates in current time.

Implications

Researchers. Within the framework of life cycle hypothesis, there is a need of further exploration on several variables such as financial education, race (without lumping all minorities groups together), tax advantaged investment and accounts, among others. Time series studies that might compare and contrast changes in demographic characteristics, financial attitudes and preferences might be beneficial for a better understating of historic housing consumption patterns.

Additionally, one general implication of this study is the important call for the academic community to work in the development and adaptation of an economic model—preferably theory-based—that includes and reflects the changes experienced in demographics and consumer preferences over the last decades.

Policy Makers. In the effort of securing financial well being and housing interests in the U.S., policy makers must be aware of, and consider the changes, in households’ characteristics and preferences over the last 60 years. The identification of new housing needs, the change and emergence of new household structures, and the current distribution of homeownership in the U.S. are just a few examples of the key components that policy makers should include in the formulation, development and enactment of new housing and social policies

Financial planners and other professionals in the field. The results in this study confirm previous findings on the suggestive relationship between access to professional help or sources of information, and the likelihood of being a homeowner.

Such correlation, in a way, highlights the importance that professionals in the field of financial planning play in advising clients with financial decision-making. In housing, precisely, professional opinion on credit and borrowing issues, tax planning and the use of tax strategies might help mitigate actual and perceived barriers that restrain households in achieving their housing goals.

LIST OF REFERENCES

Aaronson, D. (2000). A note on the benefits of homeownership. *Journal of Urban Economics, 47*(3), 356-336.

Aizcorbe, A.M., Kennickell, A.B. & Moore, K.B. (2003). Recent changes in U.S. family finances: Evidence from the 1998 and 2001 Survey of Consumer Finances. *Federal Reserve Bulletin, 89*, 1-32.

Aldo, A. & Modigliani, F. (1963). The life cycle hypothesis of saving: aggregate implications and tests. *The American Economic Review, 53*(1), 55-84.

Artie, R. and Varaiya, P. (1978). Life cycle consumption and homeownership. *Journal of Economic Theory*, *18*(1), 35–58.

Barakova, I., Bostic, R., Calem, P. & Wachter, S. (2003). Does credit quality matter for homeownership? *Journal of Housing Economics, 12*(4), 318-336.

Bell, C.J. & Hogarth, J.M. (2009). U.S. households' access to and use of electronic banking, 1989-2007. *Federal Reserve Bulletin, 95*(1), 1-23.

Bernheim, D. (1994). Personal saving, information and economic literacy: New directions for public policy. *Tax Policy for Economic Growth in the 1990's.* Washington, DC: American Council for Capital Formation.

Bernheim, D. & Scholz, J. (1993), Private saving and public policy. *Tax Policy and the Economy*, James Poterba Ed. MIT Press.

Bernheim, D. & Garrett, D. (2003). The effects of financial education in the workplace: Evidence from a survey of households. *Journal of Public Economics, 87*(1), 1487-1519.

Beverly, S. & Sherraden, M. (1999). Institutional determinants of saving: implications for low-income households and public policy. *The Journal of Socio-Economics, 28*(4), 457-473.

Bodie, Z., Treussard, J. & Willen, P. (2007). The theory of life-cycle saving and investing. *Public Policy Discussion.* Boston, MA: Federal Reserve Bank of Boston.

Bostic, R., Calem. P. & Wachter, S. (2004). Hitting the Wall: Credit as an Impediment to Homeownership; In N. Retsinas & E. Belsky (Eds.)*Building Assets, Building Credit: Creating Wealth in Low-Income Communities.*

Braunstein, S. & Welch, C. (2002). Financial literacy: An overview of practice, research and policy. *Federal Reserve Bulletin, 88,* 445-457.

Bricker, J., Kennickell, A., Moore, K. & Sabelhaus, J. (2012). Changes in U.S. family finances from 2007 to 2010: Evidence from the Survey of Consumer Finances. *Federal Reserve Bulletin, 98*(2), 1-80.

Bucks, B. & Pence, K. (2008). Do homeowners know their mortgage terms? *Journal of Urban Economics. 64*(2), 218-233.

Bunting, D. (1991). Savings and the distribution of income. *Journal of Post Keynesian Economics, 14*(1), 3-22.

Callis, R. & Kresin, M. (2013). Residential vacancies and homeownership in the first quarter 2013. *U.S. Department of Commerce.* Washington, DC: Government Printing Office.

Carasso, A., Steuerle, C.E. & Bell, E. (2005). How to better encourage homeownership. *Tax Policy Issues and Options, 12*(1), 1-7.

Carliner, G. (1974*)*. Determinants of home ownership. *Land Economics, 50*(2), 109-119.

Chiuri, M. & Jappelli, T. (2000). Financial markets imperfections and homeownership: An international comparison. Working paper 44 CSEF, University of Salerno.

Chiuri, M. & Jappelli, T. (2003). Financial market imperfections and home ownership: a comparative study. *European Economic Review, 47(*5), 857-875.

Clark, R. & D'Ambrosio, M. (2008). Adjusting retirement goals and saving behavior: The role of financial education. *Overcoming the saving slump: How to increase the effectiveness of financial education and saving programs.* Chicago, IL: University of Chicago Press.

Cocco, J. (2005). Portfoloio Choice in the presence of housing. *Review of Financial Studies, 18*(1), 535-567.

Cude, B., Lawrence, F., Lyons, A., Metzger, K.,LeJeune, E., Marks, L. & Machtmes, K. (2006). College students and financial literacy: What they know and what we need to learn. *Proceedings of the Eastern Family Economics and Resource Management Association*, 102-109.

David, M. (1962). *Family Composition and Consumption.* Amsterdam: North-Holland Publishing Company.

Deaton, A. (2005). Measuring poverty in growing world. *The Review of Economic and Statistics, 87*(1), 1-19.

Diamond, P*.* & Hausman, J. (1984). Individual retirement and savings behavior. *Journal of Public Economics, 23*(1), 81-114.

DiPasquale, D. & Glaeser, E. (1999). Incentives and Social Capital: are homeowners better citizens? *Journal of Urban Economics, 45*(2), 354-384.

Dornbusch, R. & Fischer, S. (1993). *Moderate inflation. World Economic Review, 7*(1), 1-44.

Eller, T.J. & Fraser, W. (1995). Asset ownership of households: 1993. *Current Population Report, Series P70-47.* Washington, DC: U.S. Department of Commerce, Bureau of the Census.

Finke, M.S., Huston, S.J. & Weaver, D. (2003). Time preference and intertemporal decision making: Evidence from the health and retirement study. In Jinkook Lee (ed.). *Consumer Interests Annual*, 49.

Finke, M.S. & Huston, S.J. (2004). Risk and myopic financial decisions. *Journal of Personal Finance, 3*(3), 99-112.

Friedman, M. (1957). *A theory of the consumption*. Princeton, NJ: Princeton University Press.

Gale, W., Gruber, J. & Stephens-Davidowitz, S. (2007) Encouraging homeownership through the tax code. *Tax Notes*, 1171-1189.

Galster, G. (1983). Empirical evidence on cross-tenure differences in home maintenance and conditions. *Land Economics, 59(*1), 107-113.

Gervais, M. (2002). Housing taxation and capital accumulation. *Journal of Monetary Economics, 49(*7), 1461-1489.

Glaeser, E. & Sacerdote, B. (2000). The social consequences of housing. *Journal of Housing Economics, 9(*1), 1-23.

Glaeser, E. & Shapiro, J. (2003). The benefits of the home mortgage interest deduction. *Tax Policy and The Economy*, *17*(1).

Guggenmos, S. et al. (2012). Multifamily demand forecast*. Freddie Mac Multifamily Research Perspectives.*

Gutter, M., Hayhoe, C., DeVaney, S., Kim, J., Bowen, C., Cheang, M., Cho, S., Evans, D., Gorham, E., Lown, J., Mauldin, T., Solheim, C., Worthy, S. & Dorman, R. (2012). Exploring the relationship of economic, sociological and psychological factors to the savings behavior of low-to-moderate income household. *Family and Consumer Sciences Research Journal, 41*(1), 86-101.

Halket, J. & Vasudev, s. (2009). Homeownership, savings and mobility over the life-cycle.

Haurin, D. Hendershott, P. & Watcher, S. (1996). Wealth accumulation and housing choices of young households: An exploratory investigation. *Journal of Housing Research, 7*(1), 33-57.

Hilgert, M. A., Hogarth, J. M., & Beverly, S. G. (2003). Household financial management: The connection between knowledge and behavior. *Federal Reserve Bulletin, 89*(1)*,* 309–322.

Hogarth, J. & Hilgert, M. (2002). Financial knowledge, experience and learning preferences: Preliminary results from a new survey on financial literacy. *Consumer Interest Annual 48*.

Ihlanfeldt, K. & Boehm, T. (1983). Property taxation and the demand for homeownership. *Public Finance Quarterly, 11*(1), 47-66.

James, R.N., III. (2009). Tenant time preference as a barrier to homeownership. *Applied Economics Letters, 16* (10), 1073-1077.

Japelli, T. (1999). The age-wealth profile and the life cycle hypothesis: A cohort analysis with a time series of cross-sections of Italian households. *Review of Income and Wealth, 45*(1), 57-75.

Kain, J. & Quigley, J. (1972). Housing market discrimination, homeownership and savings behavior. *The American Economic Review, 62*(3), 263-277.

Kain, J. & Quigley, J. (1975). Introduction to housing markets and racial discrimination: A microeconomic analysis. *National Bureau of Economic Research*, 1-8.

Kennickell, A.B., McManus, D.A. & Woodburn, R.L. (1996). Weighting design for the 1992 Survey of Consumer Finances. *Federal Reserve Board, MIMEO.*

Kozup, J. & Hogarth, J. (2008). Financial literacy, public policy and consumers' self protection-more questions, fewer answers. *Journal of Consumer Affairs, 42*(2), 127-136.

Lindamood, S., Hanna, S. D., & Bi, L. (2007). Using the Survey of Consumer Finances: Methodological considerations and issues. *Journal of Consumer Affairs*, *41*(2), 195-214.

Linneman, P. Megbolugbe, I. Wachter, S. & Cho, M. (1997). Do borrowing constains change U.S. homeownership rates? *Journal of Housing Economics, 8*(1), 217-232.

Luengo-Prado, M. (2006). Durables, nondurables, down payments and consumption excesses. *Journal of Monetary Economics, 53*(1), 1509-1539.

Lusardi, A. (2002). Preparing for retirement: The importance of planning costs? *National Tax Association Proceedings 2002*, 148-154.

Lusardi, A. (2004). Savings and the effectiveness of financial education in Olivia S. Mitchell and Stephen Utkus (eds.). *Pension Design and Structure: New Lessons from Behavioral Finance*. Oxford: Oxford University Press.

Lusardi,A. (2008). Household saving behavior: The role of literacy, information and financial education programs*. NBER Working Paper 13824.*

Maisel, S. (1966). Rates of ownership, mobility and purchase. *Essays in Urban Land Economics.* Los Angeles, CA: University of California Real Estate Research Program.

Masnick, G. (2001). Homeownership trends and racial inequality in the United States in the 20th century. *Joint Center for Housing Studies*, Cambridge, MA: Harvard University Press.

Modigliani, F. & Brumberg, R. (1954). Utility analysis and the consumption function: An interpretation of cross-section data in Kenneth K. Kurihara, ed., *Post-Keynesian Economics*. New Brunswick, NJ: Rutgers University Press.

Modigliani, F. & Ando, A. (1957). Tests of the life cycle hypothesis of savings: comments and suggestions. *Bulletin of the Oxford University Institute of Economics & Statistics, 19*(2), 99-124.

Modligiani, F. (1986). Life cycle, individual thrift, and the wealth of nations. *The American Review, 76*(3), 297-313.

Montalto, C. P. & Sung, J. (1996). Multiple imputation in the 1992 Survey of Consumer Finances. *Financial Counseling and Planning, 7*(1), 133-146.

Montalto, C.P. & Yuh, Y. (1998). Estimating nonlinear models with multiply imputed data. *Financial Counseling and Planning, 9*(1), 97-101.

Moore, D. (2003). Survey of Financial Literacy in *Washington State knowledge, behavior, attitudes and experiences*. Pullman, WA: Social and Economic Sciences Research Center, Washington State University.

Munnell, A. Soto, M. & Aubry, J. (2007). *Do people plan to tap their home equity in retirement?* Issue in Brief 7-7. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Painter, G. & Lee, K. (2009). Housing tenure transitions of older households: Life cycle, demographic, and familial factors. *Regional Science and Urban Economics, 39*(6), 749-760.

Rosen, H. (1979). Housing decisions and the U.S. Income Tax: An econometric Analysis. *Journal of Public Economics, 11(*1), 1-23.

Rosenthal, S. (2002). Eliminating credit barriers: how far can we go? *In Low-income homeownership: Examining the unexamined goal.* Cambridge, MA: Joint Center for Housing Studies.

Rossi, P. & Weber, E. (1996). The social benefits of homeownership: Empirical evidence from national surveys. *Housing Policy Debate, 7*(1), 1-35.

Rubin, D.B. (1987) *Multiple Imputation for Nonresponse in Surveys*. New York, NY: J. Wiley & Sons.

Rubin, D.B. (1996) Multiple imputation after 18+ years. *Journal of the American Statistical Association, 91*(1), 473-489.

Sherraden, M. (1991). *Assets and the poor: A new American welfare policy*. Armonk, NY: M.E: Sharpe, Inc.

Shobe, M.A. & Page-Adams, D. (2001). Assets, future orientation, and well-being: exploring and extending Sherraden's framework. *Journal of Sociology and Social Welfare, 28*(3), 109-118.

Slitor, R. (1976). Rationale of the present tax benefits for homeowners. *Housing in the Seventies-National Housing Policy Review.* Washington, DC: U.S. Government Printing Office

Yang, F. (2009). Consumption over the life cycle: How different is housing? *Review of Economic Dynamic, 12*(3), 423-443.

Yao, R. & Zhang, H. (2005). Optimal consumption and portfolio choices with risk labor income and borrowing constraints. *Review of Financial Studies, 18*(1), 197-239.

Zorn, P. (1989). Mobility-tenure decision and financial credit: Do mortgage qualification requirements constrain homeownership? *AREUEA Journal, 17*(4), 1-16.

BIOGRAPHICAL SKETCH

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