

A COMPARISON OF HOUSEHOLD SAVING MOTIVES BETWEEN CHINESE AND
AMERICANS

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A COMPARISON OF HOUSEHOLD SAVING MOTIVES BETWEEN CHINESE AND AMERICANS

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ABSTRACT

The main purpose of this study is to compare the household saving motives between Chinese and Americans. The two datasets used in this study are from the 2008 Survey of Chinese Consumer Finance and Investor Education and the 2007 Survey of Consumer Finances in the United States. The likelihood of reporting precautionary saving motive, education saving motive, and retirement saving motive was tested by logistic regression analysis. This study concluded that Chinese households were more likely to report the precautionary and education saving motives, when compared with American households. In terms of the retirement saving motive, only Chinese households placed in the first and second household income groups were more likely to perceive the retirement saving motive than their counterpart Americans. There was no difference in perceiving the retirement motive between Chinese and Americans for all the other household groups. The stronger motivation to save for Chinese than for Americans serves as a good explanation for the higher saving rates in China than in the United States. Policy makers and financial planners can use the findings to target particular population who are less motivated to save, and to help them realize the importance of saving and conduct necessary saving behaviors.

Chapter I

Introduction

The importance of savings as a means to provide household financial security has been widely recognized by researchers and practitioners (Rha, Montalto, & Hanna, 2006). Precautionary savings provide an emergency cushion for households in case of sudden income loss. Households distribute their income over their life stages by saving for retirement in order to have a relative stable lifetime level of living. It is also likely that households refrain their current consumption to save for purchasing a house, or for their children's education.

Chinese and Americans engage in differing saving behaviors, which is reflected by differences in household saving rates between China and the United States. According to National Bureau of Statistics of China (1999-2008), the Chinese household saving rate, calculated by dividing household savings by household disposal income, has been higher than 25%, at least since 1992. Conversely, Bureau of Economic Analysis (2010) reported that the American household saving rate has been lower than 10% since 1988.

The importance of savings and the heterogeneity of saving behaviors have attracted the attention of researchers. Several saving theories have been proposed to explain household saving behavior, such as the permanent income hypothesis (Friedman, 1957), the life-cycle hypothesis (Modigliani and Brumberg, 1954), and the relative income hypothesis (Duesenberry, 1967). In addition, empirical studies have been

conducted to examine determinants of household saving behavior. Socio-economic characteristics have been found to affect household savings; such as age, family composition, education, income and wealth. Some researchers also emphasized the importance of psychological factors on household savings. Based on Ajzen's (1991) theory of planned behavior, Warneryd (1999) presented a model of saving behavior, indicating that saving motives affect saving behaviors. Compared with people without saving motives, those with saving motives would be more likely to conduct the related saving behavior. For example, Huston and Chang (1997) found that households with an emergency saving motive were more likely to hold adequate emergency funds.

Given the large number of studies that have been conducted to understand household saving behavior, research about saving motives that underlie household decisions is relatively limited, although the importance of studying saving motives has been recognized (Warneryd, 1999). A few studies examined the hierarchical structure of saving motives (e.g. Canova, Rattazzi, & Webley, 2005). Xiao and Noring (1994) investigated factors that determined household saving motives. Xiao and Fan (2002) compared the saving motives of Chinese and American urban workers, but their Chinese data was from Guangzhou, a lone city in China.

This study is the first to use two national datasets to compare differences in household saving motives between Chinese and Americans, to better explain the difference in their saving rates and to understand the differences in their saving behaviors. This study also examines determinants of household saving motives, which will shed light on factors of household saving behavior. Investigating households' saving motives can also provide evidence about which saving theory is more applicable in the real world.

The next chapter reviews relevant literature, including concepts, features, and theories related to saving motives, the impact of saving motives on saving behaviors, and the determinants of household saving motives. Chapter three presents a conceptual framework based on the theory of human motivation. Data, statistical method and empirical model are presented in chapter four. Chapter five presents the statistical results. Chapter six summarizes the findings and presents discussions and limitations of this study.

Chapter II

Literature Review

This chapter reviews literature concerning concepts, features, and theories related to saving motives, along with studies that investigate the impact of saving motives on saving behaviors. This chapter also reviews research that explores the importance of saving motives reported by households from various countries. Finally, studies that investigate factors that directly affect household saving motives are discussed.

2.1 The Concept of Saving Motive

According to Emmons (1989), the motive is a “disposition to be concerned with and to strive for a certain class of incentives or goals”. In studying the multifaceted nature of intrinsic motivation, Reiss (2004) defined motives as “reasons people hold for initiating and performing voluntary behavior”. Reiss (2004) further stated that motives “indicate the meaning of human behavior”, “may reveal a person’s values”, and “often affect a person’s perception, cognition, emotion, and behavior”.

Reiss (2004) introduced a theory of 16 basic desires, which has continued to be developed since 1995. At first, 15 fundamental motives were assessed and were included in a motive list by Reiss and Havercamp (1998). Later, the 16th motive, the saving motive, was added into the list. According to Reiss (2004), the saving motive was defined as the “desire to collect”. Under his definition, saving was not restricted to saving money;

It could mean “hoarding food and other materials” as well. Zhang (1986) defined saving motives as the thought or idea to save for certain goals and the internal force to save. There were two necessary conditions for the existence of a saving motive. One was an intrinsic condition: people’s desire to meet their expenditure needs by saving or borrowing due to the imbalance between expenditure and income. The other was an extrinsic condition: income must be high enough for individuals to meet daily expense needs before saving motives are generated.

Based on the above discussion, in this study, saving motives can be defined as the desire or the reason to collect money for a valued goal. Saving motives can reflect individual financial needs and influence saving behavior.

2.2 Categories of Saving Motives

Previous literature identified various saving motives. In discussing factors affecting the propensity to consume, Keynes (1936) stated eight different saving motives which led individuals to substitute future consumption for current consumption.

1. “To build up a reserve against unforeseen contingencies” (the precautionary motive);
2. “To provide for an anticipated future relationship between the income and the needs of the individual or his family different from that which exists in the present, as, for example, in relation to old age, family education, or the maintenance of dependents” (the life-cycle motive);
3. “To enjoy interest and appreciation, i.e. because a larger real consumption at a later date is preferred to a smaller immediate consumption” (the intertemporal substitution motive);

4. “To enjoy a gradually increasing expenditure, since it gratifies a common instinct to look forward to a gradually improving standard of life rather than the contrary, even though the capacity for enjoyment may be diminishing” (the improvement motive);
5. “To enjoy a sense of independence and the power to do things, though without a clear idea or definite intention of specific action” (the independence motive);
6. “To secure a *masse de manoeuvre* to carry out speculative or business projects” (the enterprise motive);
7. “To bequeath a fortune” (the bequest motive);
8. “To satisfy pure miserliness, i.e., unreasonable but insistent inhibitions against acts of expenditure” (the avarice motive).

Browning and Lusardi (1996) summarized the saving motives proposed by Keynes (1936) as the precautionary motive, the life-cycle motive, the intertemporal substitution motive, the improvement motive, the independence motive, the enterprise motive, the bequest motive, and the avarice motive. Browning and Lusardi (1996) proposed an additional motive, the downpayment motive, which was defined as the desire “to accumulate deposits to buy houses, cars, and other durables”.

Katona (1975) grouped saving motives into four categories: saving for emergency; saving for retirement; saving for children and family needs; other motives, including purchasing a house, investing in a business, purchasing durable goods, or paying for vacations and other trips.

Callen and Thimann (1997) stated that saving motives can be categorized into four groups: “to provide resources for retirement and bequests”; “to finance expected large lifetime expenditures (including house purchase and education)”; “unexpected

losses of income (precautionary saving)”; and “to smooth the availability of financial resources over time to maintain a more stable consumption profile”.

Horioka and Watanabe (1997) grouped saving motives into life-cycle motives, precautionary motives, and bequest motives.

1. Life-cycle motives: motives arising from “temporary imbalances between income and expenditures at various stages in one’s life cycle...”; For example, “saving for one’s leisure, marriage, and retirement expenses, one’s consumer durables and housing purchases, and one’s children’s education and marriage expenses”.

2. Precautionary motives: motives arising from “uncertainties concerning future income and/or expenditures”; Examples are “saving for income fluctuations, unemployment, illness, accidents, natural disasters, and longevity risk”.

3. Bequest motives: motives arising from “the desire to leave assets behind to one’s children and other heirs in the form of *inter vivos* transfers and/or bequests”.

Other studies analyzed Chinese characteristics, and proposed saving motives for Chinese households. The investigation of Zhang (1986) identified five saving motives: precautionary motives, profit motives, saving for major purchases, saving as a habit (thrift), and unconscious saving motives. Cui (1999) proposed six saving motives for Chinese households. These motives are saving for increasing income, saving for earning interest, life-cycle motives, saving for children (including the bequest motive), precautionary motives, and saving as a habit (thrift). Xu (2000) mentioned that Chinese household saving motives included saving for income uncertainty, children’s education, housing purchases, medical expenses, and precautionary motives.

In summary, saving motives mentioned above can be categorized into five groups, which are saving as a habit, life-cycle motives, precautionary motives, bequest motives, and wealth management (Table 2-1). Saving as a habit refers to the situation where people do not explicitly express a reason for saving but, rather they exhibit savings as a behavior. Life-cycle motives are the desire to save for expected events to smooth consumption through lifetime, including saving for retirement, education, and major purchases. Precautionary motives refer to saving for uncertainty in the future, including uncertainty concerning income, longevity, medical expenses, etc. Saving for the benefit of next generations is defined as a bequest motive. Wealth management refers to saving for the growth of money, such as investing to earn interest, dividends, or capital gains.

Table 2-1

Summary of Saving Motive Categories by Study

	Saving as a habit	Life-cycle motives	Precautionary motives	Bequest motives	Wealth management
Browning and Lusardi (1996):		The downpayment motive			
Callen and Thimann (1997)		Saving for provide resources for retirement; to finance expected large lifetime expenditures; to smooth the availability of financial resources over time to maintain a more stable consumption	Unexpected losses of income	Bequest motives	
Cui (1999)	Saving as a habit (thrift)	life-cycle motives; saving for children	Precautionary motives	Bequest motives	Saving for increasing income; saving for earning interests
Horioka and Watanabe (1997)		Life-cycle motives	Precautionary motives	Bequest motives	
Katona (1975)		Saving for retirement; saving for children and family needs; other motives, including purchasing a house, investing in a business, purchasing durable goods, or paying for vacations and other trips	Saving for emergency		
Keynes (1936)	The independence motive; the avarice motive	Life-cycle motives	Precautionary motives	Bequest motives	The intertemporal substitution motive; the enterprise motive
Xu (2000)		Saving for children's education, housing purchases	Precautionary motives; medical expenses		
Zhang (1986)	Saving as a habit (thrift); unconscious saving motives	Saving for major purchases	Precautionary motives		Profit motives

2.2 Multiplicity and Hierarchical Structure of saving motives

There are two important features of saving motives: the multiplicity of motives and their hierarchical structure. Maslow (1954) stated that behavior is multi-motivated, and it is unusual for a behavior to have only one motivation. A household can have a precautionary saving motive to buffer future income uncertainty and, at the same time, can have a bequest motive to benefit the next generation.

Empirical studies confirmed the multiplicity of saving motives (Xiao & Fan, 2002; Xiao & Noring, 1994). In the 1983-2007 Survey of Consumer Finances (SCF), respondents were asked what were the household's most important reasons for saving. Multiple responses were provided by respondents and, at most, six reasons have been allowed to be reported since the 1998 SCF. Using the 1986 SCF, Xiao and Noring (1994) found that 32% of total respondents reported two saving motives, and 19% reported three saving motives. Using the 1998 SCF and the Chinese data collected from workers in Guangzhou, China, Xiao and Fan (2002) stated that most Americans claimed two saving motives and most Chinese claimed more than two saving motives. Although the technique used to collect data is not essentially the same, results indicate the multiplicity of saving motives.

The other important feature of saving motives is the hierarchical structure. According to the theory of human motivation (Maslow, 1954), human needs are hierarchical. The bottom of the hierarchy is the physiological needs. When the physiological needs are well satisfied, the safety needs emerge to be the dominant needs. Following the same logic, after the safety needs have been gratified, human needs move from love to esteem needs, then to self-actualization needs (Maslow, 1954).

Previous studies found that saving motives followed Maslow's (1954) hierarchical structure (Canova, Rattazzi, & Webley, 2005; DeVaney, Anong, & Whirl, 2007; Lindqvist, 1981; Xiao & Fan, 2002; Xiao & Noring, 1994). According to Warneryd (1999), Lindqvist (1981) proposed the hierarchy of saving motives based on the frequency of motives reported by households. The hierarchy was, from the bottom to the top, saving for cash management, unforeseen emergencies, attaining a desired goal, and wealth management. In addition, he suggested there was a movement along the hierarchy, which might follow the stages of the household life-cycle.

Xiao and Noring (1994) identified six saving motives, which were saving for daily expenses, purchases, emergencies, retirement, children, and growth. The authors conducted Chi-square tests to analyze households' perceived saving motives. It was found that with an increase in family financial resources, saving motives moved up from daily expense motive to emergency motive, and further to retirement, children, and growth motives.

Using data collected in 1998, Xiao and Fan (2002) also found a hierarchical structure of saving motives similar to Xiao and Noring (1994) except the emergency motive. The exception was explained by differences in data and analysis methods between two studies. Xiao & Noring (1994) used data from the 1986 SCF, whereas Xiao and Fan (2002) used the 1998 SCF data. In addition, there was no multivariate analysis in Xiao and Noring (1994). In contrast, logistic analysis was conducted to provide evidence for the hierarchical structure of saving motives in the 2002 study by Xiao and Fan (2002).

Canova, et al. (2005) collected data from 302 members of the Exeter School of Psychology's general public panel, and analyzed a hierarchy of saving motives. They

identified 15 salient saving goals including saving for autonomy, money availability, speculation, purchases, security, holidays/hobbies, projects, precaution, saving habit and money value, self-esteem, household, self-gratification, retirement, avoiding debt, and old age/illness. The authors conducted the network analysis to complete a hierarchical cognitive diagram about saving motives. The findings showed that at the bottom of the hierarchical structure were more concrete motives (purchases, holidays/hobbies, and money availability), at the top were more abstract motives (self-esteem and self-gratification), and at the intermediate level were motives in between (the other 10 saving goals).

Using the 2001 SCF data, DeVaney, Anong, and Whirl (2007) proposed a hierarchy of saving motives based on Boeree (1998) and Boeree (2006). These motives were physiological, safety, security, love/societal, esteem, and self-actualization needs. DeVaney et al. added a "no savings" category. Safety needs were saving for buying a home and other precautionary motives. Security needs included "saving for retirement and for the future". Love and societal needs were saving for children's education, etc. Esteem needs included saving for buying a second home, for vacation, and for home improvement. Self-actualization, the highest level need, was saving for charity, for purchasing a business, and for "enjoying life to the fullest".

Song (2003) identified a six-level hierarchical structure of saving motives of Chinese households. The hierarchy was, from the bottom to the top, unconscious saving (no specific motive), precautionary motives, saving for children and old parents, saving for family members' wedding or death, major purchases, and wealth management.

As shown in Table 2-1, researchers studied different saving motives. For example, Horioka and Watanabe (1997) categorized saving motives into three groups: life-cycle motive, precautionary motive, and bequest motive. Besides the three motives in Horioka and Watanabe (1997), Cui (1999) stated saving as a habit, saving for increasing income, and saving for earning interest. Due to the differences in saving motives studied, the hierarchical structures of saving motives proposed are not completely the same. However, saving for daily expenses and precautionary motives are at relatively low levels in the hierarchy, life-cycle motives are at the intermediate levels, and wealth management or saving for profit is at the top of the hierarchy.

2.3 Theories Related to Saving Motives

In modern economic theory, saving is defined as the residual of income from consumption (Lunt & Livingstone, 1991). Individuals maximize their utility as a function of current and future consumption given certain resources. The theory of saving is technically a theory of consumption. Under this definition, saving is a passive action, since individuals are motivated to consume rather than to save. The only motive behind an individual's behavior is the maximization of his/her utility. However, the assumptions of these theories have suggested some specific saving motives, such as life-cycle motives, precautionary motives, and bequest motives (Ando & Modigliani, 1963; Barro, 1974; Carroll, 1997; Friedman, 1957; Hubbard, Skinner, & Zeldes, 1994; Kimball, 1990; Kurz, 1984; Skinner, 1988).

The life cycle hypothesis is the most influential saving theory. According to the life cycle hypothesis, households allocate their lifetime resources by borrowing and saving to maximize their utility (Ando & Modigliani, 1963). They attempt to smooth

their consumption throughout the life cycle, which implies a life-cycle saving motive. Friedman's permanent income hypothesis postulates that family consumption is determined by permanent income, the perpetual annuity of family net worth, which implies a bequest motive (Bryant, 1990; Friedman, 1957). At the same time, a life-cycle saving motive can be implied from the permanent income hypothesis as well, since the hypothesis assumes that a family's consumption is a constant proportion of the permanent income. Barro (1974) and Kurz (1984) proposed the inter-generational transfer model assuming that households care not only about their own consumption but also the welfare of their offspring, which implies a bequest saving motive. Some researchers incorporated uncertainty in the analysis of household saving behavior and proposed precautionary saving models (Carroll, 1997; Hubbard, Skinner, & Zeldes, 1994; Kimball, 1990; Skinner, 1988), which allow for the precautionary saving motive.

The relative income hypothesis (Duesenberry, 1967) proposed that household saving decisions depend on not only total resources, but also on consumption behaviors of their counterpart households. A household's relative social class determines the level of consumption and savings. A household derives the satisfaction from consuming as much as, or more than their peers. Thus, under the relative income hypothesis, the saving motive is the desire to maintain a consumption/savings level comparable to their peers.

These theories have four limitations. Katona (1960) criticized the definition of saving in economic theories. It might be technically correct, but it is not consistent with people's perception of saving (Katona, 1960). Katona (1960) stated that saving is "not merely a consequence of not spending but rather the result of substantial pressures

directed toward achieving highly valued goals of life”. Thus, saving is an active action, and individuals are motivated to save for particular goals.

Second, according to the above theories, all individuals are assumed to have the same saving motive. However, Browning and Lusardi (1996) stated that it was impossible for the saving behaviors of all members of a population, at any given time, to be explained by a single saving motive. Empirical studies also found that households with varying characteristics had different saving motives (Xiao & Fan, 2002; Xiao & Noring, 1994).

Third, individuals’ saving motives are assumed to be stable over their lifetime. According to Maslow (1954), however, “satisfactions generate new motivations”. When the emergency fund level reserved by the household is high enough to buffer unexpected uncertainty, precautionary motives will be replaced by some other unsatisfied motives. Browning and Lusardi (1996) also suggested that it was unlikely that an individual’s saving behavior over a long period of time could be explained by a single saving motive. Lu and Cheng (1999) discussed changes of household saving motives in China. In the 1970’s, saving for purchasing a TV and a refrigerator were the most important saving motives. With the increase in income, most households started saving for purchasing automobiles and houses at the beginning of the 1990’s. Since 1998, the Chinese government conducted a series of reforms on housing, education, and medical care. Under expenditure and income uncertainty, households started to have additional precautionary motives.

Fourth, all components of wealth are assumed to be fungible in these theories (Xiao & Anderson, 1997). Shefrin and Thaler (1988) relaxed this assumption and

developed the behavioral life-cycle hypothesis. According to their model, households are assumed to consider their different components of wealth (current income, current assets, and future income) as nonfungible. Propensities to save in the three mental accounts are different.

In summary, traditional economic saving theories can be used to explain individual or household saving behavior under certain conditions, but the heterogeneity of saving motives may make these theories inapplicable in the real world. In order to better understand household saving behavior, it is important to study the influence of different household characteristics on perceived saving motives.

2.4 The Impact of Saving Motives on Saving Behaviors

Saving motive can influence household saving behavior. Based on Ajzen (1991)'s Theory of Planned Behavior, Warneryd (1999) presented a model of saving behavior. According to this model, a household's saving behavior depends on individuals' intentions to save (saving motives), perceived control of saving, and past saving.

Katona (1975) developed a theory of saving that combines economic factors and psychological factors. According to this theory, saving was a function of two groups of variables: ability to save and willingness to save. Ability to save was typically estimated by aggregate data on disposable income. Willingness to save can be measured by a variety of psychological variables. Katona (1975) used the Index of Consumer Sentiment as a measure of willingness to save in time-series analyses, which was computed from subjective data collected from households to indicate the degree of optimism or pessimism in a population. People with more saving motives were more willing to save, because individuals with mutually reinforcing motives were more likely to conduct the

corresponding action than those with only one motive (Katona, 1960). Thus, the number of saving motives can be a good measure of willingness to save. Furthermore, compared to people without a saving motive, those with a saving motive would be more likely to conduct the related saving behavior. Empirical studies provided evidence for this statement (Bi & Montalto, 2004; Cavanagh & Sharpe, 2002; Chen & DeVaney, 2001; Huston & Chang, 1997; Shum & Faig, 2006; Xiao, 1997; Zhong & Xiao, 1995).

Previous studies found that the precautionary motive had a positive effect on household emergency fund level. Huston and Chang (1997) found that households with an emergency saving motive were more likely to hold adequate emergency funds. The investigation of Chen and DeVaney (2001) also found a positive relationship between having an emergency saving motive and the adequacy of emergency funds.

Studies that analyzed the influence of reporting a retirement saving motive on household retirement savings found that having a retirement saving motive had an impact on retirement plan contributions, but no impact on retirement adequacy. Using data from the 1995 SCF, Xiao (1997) studied the effect of worker saving motives on 401(k) plan contributions. The amount and the percentage of salary contributed to a 401(k) plan were used as measures of 401(k) plan contributions. The results of tobit analysis showed that the retirement saving motive was positively related to both measures of 401(k) contributions. Cavanagh and Sharpe (2002) investigated the impact of debt levels on retirement savings using the 1998 SCF data. The findings of probit analysis provided evidence that the retirement saving motive had a positive relationship with the decision to participate in discretionary retirement savings. Yuh, Montalto, and Hanna (1998) examined the retirement adequacy of pre-retirement households using the 1995 SCF data.

They found that retirement saving motive had no significant effect on household retirement adequacy. The findings of Yun, Hanna, and Montalto (1998) and Yao, Hanna, and Montalto (2003) also showed that retirement as a saving goal was not related to the adequacy of retirement wealth.

Saving motives were found to have an effect on household portfolio allocation. Based on data from the 1989 SCF, Zhong and Xiao (1995) estimated determinants of household bond and stock allocation. Findings of the tobit analysis indicated that having the motives to save for emergency and children significantly increased household bond holdings, and having a growth saving motive was positively related to stock holdings. Using data from the 1992 - 2001 SCF, Shum and Faig (2006) investigated factors that determined household stock holdings. Results of the probit analysis showed that reported education, household purchases, and retirement as saving motives increased the likelihood of stock ownership.

2.5 Saving Motives of Households in Different Countries

Household saving motives vary from country to country, which implies that culture and economic environment may influence household saving motives.

Katona (1975) used surveys conducted by Survey Research Center in 1960 and in 1966 to study the frequency of different saving motives reported by representative samples (households) in the United States. Analysis of the 1960 data showed that 46% of households reported that they saved for rainy days (emergencies, illness, unemployment), 27% saved for retirement, 25% saved for children's needs, 8% saved for buying a house, and 6% saved for purchasing durable goods. Frequencies obtained in 1966 showed a few differences in percentages, but the rank of saving motives was the same. Very few

households reported saving for earning future income (in the form of interest or dividends) or for leaving wealth to their heirs.

The SCF is the most frequently used data to study saving motives in the United States. Of the households participating in the 1983 SCF, 43% reported that the most important reason for saving was preparing for emergency, with 15% reporting saving for retirement (Carroll, 1997). Using the 1995 SCF data, Gist, Wu, and Ford (1999) studied saving adequacy and saving motives of baby boomers in the United States. They found that 29% of boomers claimed the precautionary motive as the most common reasons for savings, 23% claimed saving for retirement, and 22% claimed saving for investment. Bucks, Kennickell, Mach, and Moore (2009) studied the frequency of saving motives reported using the 1998 - 2007 SCF data. The top two saving motives were saving for retirement and precautionary motives. Saving for education was the third most reported motive except that in the 2007 survey, the frequency of saving for purchases was higher than saving for education.

Xu and Li (2007) examined saving motives of Chinese households, using data collected from Chongqing, China. Results of the network analysis showed that 61% of households reported safety motives, 54% reported saving for major purchases, 53% reported saving for improving standard of living, 48% reported precautionary motives, while 45% reported self-satisfaction as a saving motive.

Alessie, Lusardi and Aldershof (1997) analyzed data from the 1987-1989 Socio Economic Panel (SEP) in Holland. The findings showed that 22% of households reported precautionary motives, 13% reported saving for purchasing a house, 12% reported saving for purchasing a car, with only 2% reported saving for retirement.

Johnson (1999) examined saving motives of new Canadians of Asiatic origins. The results of chi-square tests indicated that the three most frequently perceived saving motives by savers were, in order, precautionary motives, children's education, and purchasing a house.

Harris, Loundes, and Webster (2002) studied the determinants of saving in Australian families. One thousand two hundred Australian families were randomly chosen and interviewed by telephone. The result showed that the three most frequently reported saving motives were saving for retirement, holidays, and rainy days. Saving for purchasing a house, paying off debts, education, purchasing durable goods, and for a bequest were the next five most frequently reported saving motives.

There have been two empirical studies that compared the saving motives of Chinese and Americans. Fan, Xiao, and Xu (1998) examined the saving motive differences between Chinese and American college students. Data were collected from college students in Shanghai and Guangzhou in China and Minnesota in the United States. The findings showed that in contrast with abstract saving motives (e.g. "for better things in the future") reported by Chinese students, American students were more likely to report concrete saving motives (e.g. saving for purchasing durable goods). Using data from the 1998 SCF and data collected in Guangzhou, China, Xiao and Fan (2002) explored differences in six saving motives between urban Chinese and Americans workers. The six saving motives were saving for daily expenses, major purchases, emergencies, retirement, children, and investment. For the Chinese sample, the most frequently reported motive was saving for children, and the next five most reported motives were, in order, emergency, retirement, major purchases, daily expenses, and

investments. In contrast, saving for retirement was the most frequently reported motive for American workers, followed by saving for emergency, major purchases, children, investment, and daily expense. They concluded that compared to Americans, Chinese were more likely to be motivated to save for daily expenses, emergencies, children, and investment. Americans were more likely to save for major purchases and retirement. They attributed differences in saving motives to the influence of culture and economic development.

2.6 Factors that Determine Household Saving Motives

A substantial heterogeneity in saving motives has been recognized (Browning & Lusardi, 1996). Browning and Lusardi (1996) stated that it was impossible for all saving behaviors of all members of a population at a given time to be explained by a single saving motive, which implies that individuals with different characteristics have different saving motives. However, there have been relatively few studies on the impact of household characteristics on saving motives. Due to the hierarchical structure of saving motives, households' characteristics have different influences on different level saving motives.

2.6.1. Financial Resources

According to Maslow's theory of human motivation, higher level needs emerge after lower level needs are gratified. With the increase of financial resources, financial needs will expand from lower level needs to higher level ones. Income and wealth level are indicators of household financial resources, and were found, by empirical studies, to influence household saving motives. The probability of perceiving low-level saving

motives was greater for households with fewer financial resources, whereas households with greater levels of financial resources were more likely to report high-level motives.

Kurz (1984) found that households at the bottom 50% of income group in the United States contributed little net aggregate saving, and he pointed out that this result encouraged the proposition that the behaviors of a number of these households were consistent with the life-cycle hypothesis, which implies that these households have life-cycle motives. Kurz (1984) also concluded that 20 to 25% of the private wealth was held by the richest 1% of households, and he suggested that they must behave according to inter-generational transfer hypothesis, which provides the evidence that these households have bequest motives.

Using the 1986 SCF data, Xiao and Noring (1994) investigated the effect of household characteristics on perceived saving motives. Results of chi-square tests showed that income and wealth levels influenced household saving motives. Households with low income were more likely to claim a motive of saving for daily expenses, those with middle incomes were more likely to claim an emergency motive, and those with high incomes were more likely to claim purchase, retirement, children, and growth motives. In addition, Xiao and Noring (1994) concluded that households holding the lowest 25% net worth were more likely to claim daily expense and purchase motives, those with the middle 50% were more likely to claim an emergency motive, and those with the highest 25% were more likely to claim retirement, children, and growth motives.

Browning and Lusardi (1996) mentioned that saving motives held by wealthy households were different from the less wealthy ones, but they did not analyze factors that might determine this difference.

Xiao and Fan (2002) investigated saving motives of urban Chinese and American workers. Results produced by the logistics analysis showed that income had an effect on saving motives perceived by Chinese and Americans. Compared with the top quartile income group, both Chinese and American households in the bottom 30%, as defined by income, were more likely to report saving for daily expenses. The association between income and saving for major purchases in China and in the United States was inconclusive, which could be evidence that the level of saving for major purchases in the hierarchy was different between Chinese and Americans. For Chinese households, income had a positive effect on reporting saving for major purchases. For American households, income was negatively related to saving for major purchases. They also found that income had a negative influence on Chinese households' retirement saving motive, and a positive influence on saving for children. Compared to American households from the top income quartile, those from the other three groups were less likely to report saving for investment.

DeVaney, Anong, & Whirl (2007) used data from the 2001 SCF to analyze the likelihood of movement along the hierarchy of saving motives, and factors that determined the movement. Results of continuation ratio analysis showed that household income was positively related to the movement from both no savings level and saving for luxuries to higher level motives.

2.6.2. Demographic Factors

Saving motives may differ with the household's life-cycle stage (Xiao & Noring, 1994; Horioka & Watanabe, 1997; Warneryd, 1999). Using Chi-square tests, Xiao and Noring (1994) found that life cycle variables influenced perceived saving motives

differently. The likelihood to report a purchase motive was higher for those married and single heads under 45, without children. The likelihood to report daily expense motive was higher for those married heads at the age of 45 or older, without children, and in the labor market. Single heads with children were more likely to report daily expense motive, but less likely to report an emergency motive. Single working heads at the age of 45 or older and married retired heads were more likely to claim a retirement motive. The likelihood to report saving for children was higher for those married heads under 45 with children. In general, by marital status, married heads had a higher probability of reporting saving for retirement and children, and single heads were more likely to report saving for daily expense. In terms of the presence of children, heads with children were more likely to be motivated to save for purchase and children, when compared to those without children.

Horioka and Watanabe (1997) used household data from a Japanese Government survey to investigate the amount of net saving for 12 motives including saving for retirement, illness, education, marriage, rebuilding, purchasing a house, durable goods, leisure expenses, the payment of taxes, purchasing a business, bequests and other reasons. The results showed that the age and the life-cycle stage of the head of the household influenced households' saving motives.

Using data from the Socio-economic Panel (SEP) in the period 1987-89, Alessie, et al. (1997) examined household wealth and income in the Netherlands. They found that age had an influence on household saving motives. Compared to households with the head at an age above 40, those under 40 years old were more likely to perceive purchasing a house as a saving motive.

Using Chinese and American data in 1998, Xiao and Fan (2002) found that age had a negative effect on both Chinese and Americans households reporting saving for major purchases. In addition, they concluded that age was positively related to reporting a retirement motive for American workers.

DeVaney, et al. (2007) found age had negative effect on the progress from no savings, basic needs and security levels to higher level motives, whereas age had a positive effect on the movement from saving for societal and saving for luxuries to higher level motives.

Using data from the 1983–1986 SCF, Yilmazer (2008) studied the effect of children's college expenses on household savings. Cross-tabulation was conducted to study the relationship between household saving motives and the number of children. She found that the number of children was negatively related to the percentage of households perceiving children's education as the most important reason for saving.

Gender

Female heads tended to save for daily expenses, and male heads were more likely to save for retirement, children, and growth (Xiao & Noring, 1994). However, no multivariate analysis was conducted to confirm this chi-square result in Xiao and Noring (1994). Households with a male head were more likely to progress from saving for safety to motives higher in the hierarchy, but they were less likely to move up from saving for security and for luxuries to other higher level motives (DeVaney, Anong, & Whirl, 2007).

Race

Using the 1992 SCF data, Lee, Hanna, and Siregar (1997) studied the determinants of perceiving children's education as a saving motive. The findings showed

that, when compared to White, non-Hispanic parents, Asian and Hispanic parents were more willing to save for children's education.

Education

The Chi-square tests of Xiao and Noring (1994) showed that those with higher levels of educational attainment were more likely to save for purchases, retirement, children, and growth. Lee, Hanna, and Siregar (1997) employed logistic analysis to indicate that high education level increased the likelihood for parents to save for children's college. Xiao and Fan (2002) found that, when compared to American workers with less than a high school education, those with a college education were more likely to save for retirement. The continuation ratio analysis of DeVaney, et al. (2007) found that education was positively related to the progress from the levels of no savings to higher level motivations and from safety to higher level motivations as well.

Occupation

Compared to those with other occupations, self-employed heads were more likely to save for daily expenses (Xiao & Noring, 1994). The likelihood of Chinese workers in professional occupations reporting a saving motive for children was lower than those in other occupations (Xiao & Fan, 2002).

Family size

DeVaney, Anong, & Whirl (2007) found that family size had an influence on the movement along the hierarchy. The findings of Xiao and Fan (2002) showed that American households were more likely to report a saving motive for major purchases as household size increased.

2.6.3. Other Factors

Home ownership

Xiao and Noring (1994) concluded that saving for retirement and children were more likely to be reported by home owners, and saving for purchases was more likely to be reported by non-homeowners, since they might plan for purchasing a house. Logistic analysis of Xiao and Fan (2002) showed that the likelihood of home owners perceiving a retirement motive was higher for home owners than renters among American households.

Health status

Households with better health status were more likely to move from saving for basic needs and for safety to higher level motivations (DeVaney, Anong, & Whirl, 2007).

Culture and economic development

Xiao and Fan (2002) compared the saving motive differences between urban Chinese and American workers. The authors concluded that Americans were more likely to perceive saving for major purchases and retirement, whereas Chinese were more likely to perceive saving for daily expenses, emergencies, children, and investment. They attributed the results to the differences in cultures and economic development. Using data collected from households in the northwest part of China, Sun (2004) explored factors that determine household saving motives. The findings provide the evidence that borrowing constraints, expectation to future economic development and future income had effects on reported saving motives.

2.7. Concluding Remarks

This chapter reviews concepts of motives and saving motives studied by previous researchers, and defined saving motives based on these concepts. Features and

saving theories related to saving motives and their limitations are reviewed. Moreover, previous literature showed that saving motives can influence saving behaviors, which provides the evidence that the analysis of saving motives contributes to the understanding of saving behaviors. Studies that focused on the frequency of saving motives reported by households from different countries, and determinants of saving motives showed substantial heterogeneity among saving motives.

Chapter III

Theoretical Framework

This chapter presents a theoretical framework based on the theory of human motivation and the relative income hypothesis, which formulates the theoretical basis for the empirical analysis in this study. In the first section, the theory of human motivation is introduced, and the application of the theory in analyzing household saving motives is presented. In the second section, the economic, social and cultural differences between China and the United States are compared. The relative income hypothesis is presented in the third section. The conceptual framework is developed in the following section. Research hypotheses will be presented in the last section of the chapter.

3.1 Theory of Human Motivation

The theory of human motivation is often used as a conceptual framework in studies on household saving motives. Maslow (1954) proposed a hierarchy of five levels of needs, which, from the bottom to the top, are “the physiological needs”, “the safety needs”, “the belongingness and love needs”, “the esteem needs” and the “the self-actualization needs”. According to the theory of human motivation, the hierarchical structure is determined by the gratification of needs. Higher levels of needs will emerge as long as the lower levels of needs are satisfied.

Xiao and Fan (2002) stated that financial needs are one facet of human needs. According to the definition of saving motives, financial needs can be reflected by saving motives. Thus, saving motives demonstrate a similar hierarchical structure as human needs, implying that the movement of household saving motives along the hierarchy is influenced by family financial resources (Xiao & Fan, 2002). Xiao and Fan (2002) and Xiao and Noring (1994) confirmed the hierarchy of saving motives. Therefore, in this study, a hierarchical structure between household saving motives and financial resources is assumed to exist. Households with low financial resources tend to have low level saving motives, whereas households with high financial resources tend to have high level saving motives. As the increase of financial resources and the satisfaction of low level needs, low level saving motives will disappear, and relatively high level saving motives will become the dominant motives. Based on the theory of human motivation and previous literature, for both Chinese and Americans, the precautionary motive is a low level saving motive, and the education motive and the retirement motive are high level saving motives.

3.2 Economic and Cultural differences between China and the United States

The hierarchical structure between household saving motives and financial resources may be affected by economic and cultural differences between China and the United States (Xiao & Fan, 2002). According to the World Development Indicators database of the World Bank, the 2008 GDP per capita of China is \$3,263, whereas that of the United States is \$46,716. Due to the substantial gap in GDP per capita and different stages of economic development, it is likely that households in China and in the United

States have different perception of the level of a particular need. For example, purchasing a car is a low level need in the United States. However, in China, the public transportation system is well developed, and households' disposable income is relatively low. It is highly likely that purchasing a car is a higher level need in China than in the United States. Moreover, additional financial needs of Chinese households may arise from the economic reform starting in 1978. The economic reform substantially increased per capita income in urban China, but at the same time dramatically increased household future income and consumption uncertainty (Meng, 2003). In the pre-reform era, each urban worker was guaranteed employment for the entire lifetime (Meng, 2000). However, since the mid-1990s, urban unemployment has become a growing concern in China (Meng, 2003). According to the 1995 and the 1999 Urban Household Income and Expenditure Survey, the unemployment rate had increased from 8.5% to 17.3%. The reform in the labor market has increased households' precautionary saving motive by bringing substantial income uncertainty to urban households. In addition, during the reform period, the burden of housing, medical care, pensions, and children's education, which were previously provided by the state-owned enterprises, were gradually shifting to each household, which motivated households to save for purchasing a house, building more emergency funds, retirement, and children's education. Without undergoing these dramatic reforms, American households might not have such strong financial needs, and thus may be less likely to have corresponding saving motives.

Culture value is another factor that may influence households' perspectives on the relative hierarchical position of saving motives. According to the classification of Chinese culture by the Chinese Cultural Connection (1987), thrift and being conservative

are two of forty core values of the Chinese population. These two values lead people to perceive positive attitudes toward savings. In addition, taking a long range view is regarded as a culture value in describing Chinese time orientation, which implies that Chinese are more likely to be future-oriented and to have positive attitudes toward saving, thus they are more likely to perceive particular saving motives than Americans. For example, it is more likely for Chinese households to have a retirement motive than for Americans because Chinese are more future-oriented.

3.3 The relative income hypothesis

Keynes (1936) proposed the absolute income hypothesis, which asserts that the consumption level of a household is determined by its absolute income. Consumption increases as absolute income increases, but as a decreasing rate. The relative income hypothesis was proposed by Duesenberry (1967). According to this theory, households classify themselves in a particular social class, and their consumption and saving decisions are based on comparing their consumption with that of their peers in the same social class. A household derives satisfaction from consuming as much as, or more than its peers, and does not gain satisfaction if they consume less than its peers. Because the household bases consumption and saving decisions on its peers' consumption level, changes in the household' consumption is inelastic to changes in income. As long as the change in income is within a short period and in a small amount, the household will not change its consumption level. If the household predicts that the change in income is permanent, it will adjust itself to a different social class, and will change the consumption level accordingly. In this study, I employed the absolute income hypothesis in comparing the difference in household saving motives between Chinese and Americans, given that

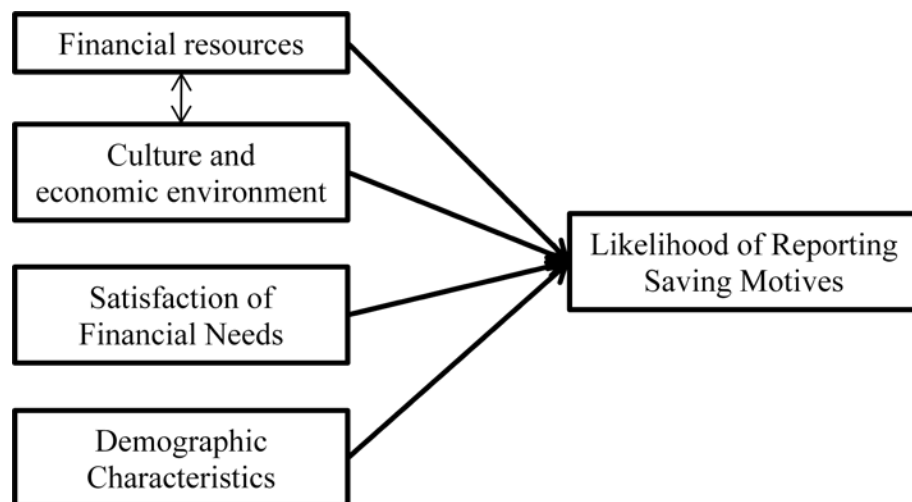
Chinese have lower income and net worth levels than Americans in absolute value. In addition, due to the fact that the cultural and economic environment are different in China and in the United States, and households imitate the consumption and saving behaviors of their peers, it is likely that the effect of relative financial resources on household savings and saving motives are different across countries. Thus, the relative income hypothesis guides the analysis within households in each country.

3.4 Conceptual Framework

Based on the theory of human motivation, the relative income hypothesis as well as cultural and economic environmental differences between China and the United States, the conceptual model for this study is shown in Figure 3-1. The likelihood of reporting certain saving motives depends on financial resources, satisfaction of financial needs, culture and economic environment, and demographic characteristics.

Figure 3-1

Conceptual Framework



3.5 Research Hypothesis

Hypothesis 1: There is no difference between Chinese and Americans in terms of the precautionary saving motive.

The precautionary savings prepare households for future unexpected financial uncertainty, such as income loss. On the basis of the theory of human motivation and previous literature, the precautionary saving motive is a low level motive. Chinese households have a lower level of financial resources than Americans. It is likely, therefore, that Chinese are more likely to report the precautionary saving motive, when compared to Americans. In addition, the economic reform in labor market has increased the likelihood of Chinese households' precautionary saving motive by bringing substantial income and expense uncertainty to urban households.

Hypothesis 2: There is no difference between Chinese and Americans in terms of the education saving motive.

The education saving motive includes saving for the respondent and the children's education. According to the theory of human motivation and previous literature, the education motive is a high level saving motive. Due to the fact that American households have higher level financial resources, they are more likely to report the education saving motive than Chinese households. However, substantially influenced by Confucian values and the one-child policy, Chinese parents are willing to sacrifice their own consumption to provide their children better education opportunity. In addition, since the economic reforms, the heavy burden of higher education costs has been shifted to households, which increases the need for education savings. Especially, in recent years, the trend to send children study abroad also increases the financial needs for education. Thus,

Chinese household may be more likely to report the education saving motive than Americans. Given the conflicting reasoning in terms of the education motive, a null hypothesis is proposed: there is no difference in perceiving the education saving motives by households from different countries.

Hypothesis 3: There is no difference between Chinese and Americans in terms of the retirement saving motive.

Based on the theory of human motivation and previous literature, the retirement saving motive is a high level motive, and Americans are more likely to report the retirement saving motives than Chinese. Furthermore, by year 2016, the current pay-as-you-go Social Security system will incur a “persistent cash flow deficit” (Economic Report of the President, 2002, p. 86), which implies that employees born after 1953 may receive less benefit from Social Security. Due to the Social Security crisis, it is likely that American households are motivated to save for retirement. However, given that the economic reforms in China shifted the burden of pensions from the state to the households, Chinese households may also be strongly motivated to save for retirement. Thus, the effect of country of origin on household reporting the retirement saving motive is inconclusive, which is also tested by a null hypothesis.

The precautionary saving motive is a lower level motive, and hence the likelihood of reporting this motive should increase with the increase in household financial resources (income and net worth). Households with higher future uncertainty are more likely to encounter future emergencies and should be motivated to save for emergencies. Emergency fund level and health insurance ownership are two variables to measure satisfaction of the need for precautionary savings. Households with adequate emergency

fund levels should no longer report the precautionary saving motive, because they have already met the need to save for emergencies. Households with health insurance coverage should be less likely to report the precautionary saving motive. Older households should be more likely to report the precautionary saving motive than younger households, given that the deterioration of their health status may require large amount of medical expenses. Married households are responsible for the well-being of all family members, which should result in a stronger motivation to save for emergencies. Higher education achievement prepares people to be strong candidates in the job market, and hence people with higher education level are more likely to have a stable job, or even when they suddenly lose their job, it is easier for them to find the next job. Thus, education achievement should have a positive effect on reporting the precautionary saving motive. Compared to employees, those who are self-employed or not currently working bear higher future uncertainty, which motivates them to save for emergencies.

As discussed in hypothesis 2, income and net worth should have a positive effect for the Chinese, but have a negative effect for Americans on reporting the education saving motive. Emergency fund level, health insurance ownership, and income uncertainty represent satisfaction of the need for precautionary savings. When the need for precautionary savings is satisfied, households are more likely to move to a higher level need (the education saving motive or the retirement saving motive) and thus are less likely to report the education saving motive. With the increase of age, the need to pursue an additional education degree reduces, and hence the likelihood of reporting the education saving motive decreases accordingly. Unmarried households and households without children are less likely to save for children's education. People with higher

education achievement already satisfy their education need, which reduces their motivation to save for education.

Saving for retirement is a higher level saving motive. Households with higher financial resources (income and net worth) are more likely to report the retirement saving motive. It is likely that younger households have not yet realized the importance of retirement, or they are under the pressure of pursuing other financial goals, so they should be less likely to report the retirement saving motive than older households. Some households within the above 60 years old group may have already retired when surveyed, so they should no longer report the retirement saving motive. Households with higher education achievement may be well informed of the importance of retirement savings and financial security, and hence they are more likely to report the retirement saving motive. Compared to employees, those who are self-employed or not currently working may not have a retirement plan provided by employer, and are less likely to save for retirement.

Chapter IV

Empirical Methodology

This chapter first introduces the empirical goals of this research. Then, the two datasets used in this study: the 2008 Survey of Chinese Consumer Finance and Investor Education (CCFIE) and the 2007 Survey of Consumer Finances (SCF) in the United States are presented as optimal data for meeting the goals of the research. The advantages and limitations of using these two data sets are discussed. The second section presents variables included in the statistical models. The last section explains the empirical model and the statistical approach to the tests of hypotheses.

The goals for this research are:

- 1) To compare the differences in reporting the precautionary, education, and retirement saving motives between Chinese and Americans;
- 2) To investigate factors which determine the likelihood of reporting the precautionary, education, and retirement saving motives for both Chinese and Americans.

4.1 Data

4.1.1. Chinese Data

The data of the Chinese sample in this study are from the 2008 Survey of Chinese Consumer Finance and Investor Education (CCFIE). Sponsored by the Citi Foundation,

the CCFIE is an annual, national survey conducted by the China Center for Financial Research (CCFR) in Tsinghua University of China. Information on the distribution of assets and liabilities, income and expenses, consumption and investment patterns, demand for financial products and services, and consumer finance education is provided in the CCFIE survey.

The CCFIE survey employed the probability proportional to size (PPS) method, without replacement, to form the sample. The population was stratified by an administrative division: municipalities directly under the Central Government, sub-provincial cities, and prefecture-level cities. Cities were disproportionately selected in each administrative level (2 out of 4 municipalities, 5 out of 15 sub-provincial cities, and 8 out of 268 prefecture-level cities). Totally, 15 cities, located in the East, Middle, West, and Northeast part of China, were selected to reach a geographically representative sample of Chinese urban households. Districts in these cities were randomly sampled based on their population distributions, and the households were then randomly selected from these chosen districts. Since the disproportionately selection of cities from each administrative level and the different number of sample households selected from each city, a weight variable was constructed to account for these properties of sample design so that the sample households in the survey would be representative of the total population of Chinese urban households.

4.1.2. American Data

The data of the American sample in this study are from the 2007 Survey of Consumer Finances (SCF). The SCF is a triennially survey of United States households sponsored by the Board of Governors of the Federal Reserve System in cooperation with

the Statistics of Income Division of the Internal Revenue Service. The 1983 and 1989 SCFs data were collected by the Survey Research Center at the University of Michigan. Since 1992, data have been collected by the National Opinion Research Center at the University of Chicago. The survey provides detailed information on the financial characteristics of United States households. These data include information on households' assets and liabilities, incomes, pensions, the use of financial services, and labor force participation, as well as households' demographic characteristics and their perceptions.

To provide accurate information on the distribution of many financial variables, this survey employed a dual-frame sample including an area-probability sample and a special list sample. The area-probability sample provides sufficient coverage of broadly-distributed variables (e.g. credit card debt, automobile ownership, and home ownership). The list sample includes wealthy households, who hold a disproportionately large share of assets. A weight variable (x42001) is provided in the survey to account for the properties of the sample design. Multiple imputation procedure is used to handle missing data, which will be discussed in the following section.

The descriptive analyses in this study are weighted using the recommended sampling weights to produce point estimates for the entire population. The logistic regression analyses are not weighted.

Since only households from urban cities were sampled in the 2008 CCFIE survey, households with members in the farming, forestry, or fishing industries were excluded from the American sample to make the American sample more comparable with the Chinese sample. Cases with relevant, yet missing, data in the 2008 CCFIE survey were

dropped from the analysis. As a result, there are 2,066 households in the Chinese sample and 4,366 households in the American sample.

For the purpose of comparing the differences in Chinese and American saving motives, the 2008 CCFIE and the 2007 SCF are the best data sets that can be obtained at this time. The two data sets were collected nationwide, including comparable information on household saving motives, financial situation, and demographic characteristics. However, there is slightly difference in the collection year. The 2008 CCFIE was collected in 2008, and the 2007 SCF was collected in 2006. Also, the sample of the 2008 CCFIE was selected among households in urban cities using the probability proportional to size (PPS) without replacement method, whereas the sample of the 2007 SCF was chosen among households nationwide using a unique dual-frame sampling technique. It is likely that the technique used in Chinese data cannot provide accurate information of the financial status of Chinese wealthy people.

4.2 Variables

4.2.1 Dependent Variables

The 2008 CCFIE survey asks a question to collect information about household saving motives:

“What are your most important household saving motives?”

1. “Principal safety and interest earnings”
2. “Housing purchases and home improvements/repairs”
3. “Purchasing cars and other durable goods”
4. “Retirement”
5. “Children’s and own education”

6. “Emergencies”

7. “Other reasons”

Respondents were asked to provide three most important saving motives.

The 2007 SCF also asks a question about household saving motives:

“People have different reasons for saving, even though they may not be saving all the time. What are your most important reasons for saving?”

Respondents provided up to six among thirty-five reasons for saving. In order to be comparable with Chinese saving motive question, these responses are categorized into seven groups of saving motives, which are the precautionary motive, saving for housing purchases, auto/other durable goods, education, retirement, and wealth management, and other reasons.

Table 4-1

Categories of Saving Motives in Chinese and American Data

Chinese Data	American Data
Principal safety and interest earnings	Investments reasons (to get interest, to be diversified, to buy other forms of assets) Wealth preservation; maintain lifestyle
Housing purchases and home improvements/repairs	To move Buying own house Purchase of cottage or second home for own use Home improvements/repairs
Purchasing cars and other durable goods	Wedding, Bar Mitzvah, and other ceremonies Buy a car, boat or other vehicle Buy durable household goods, appliances, home furnishings; hobby and recreational items; for other purchases not codable above or not further specified; "buy things when we need/want them"; special occasions
Retirement	Retirement/old age
Children’s and own education	Children's education; education of grandchildren Own education; spouse/partner's education; education-- not known for whom
Emergencies	Reserves in case of unemployment In case of illness; medical/dental expenses Emergencies; "rainy days"; other unexpected needs; for "security"

	and independence
Other reasons	Other saving motives

Among the seven groups of saving motives, three of them are constructed as the dependent variables in this study. They are precautionary saving motives (Precautionary), education saving motives (Education), and retirement saving motives (Retirement). In Chinese data, saving for purchasing cars are combined with saving for other durable goods, but the levels of these two motives in the hierarchy are fairly different, which makes it impossible to investigate the level of the auto/other durable goods saving motive. Saving for other reasons has the similar problem, since what saving motives are included in this category is unknown in Chinese data. The housing motive includes saving for purchasing houses and home improvement. In China, household may regard purchasing houses as an investment due to the limited investment tools. Thus, the level of the housing motive is not clear. In terms of the wealth management saving motive, it is not precisely equivalent in Chinese data and in American data, since for the Chinese sample, the wealth management motive only refers to saving for principal safety and interest earning, but for the American sample, it also includes saving for investment, such as purchasing other forms of assets.

The Precautionary variable equals to 1 if the respondent reported the precautionary saving motive and 0 otherwise. If the respondent reported saving for children's or own education, the Education variable equals to 1 and 0 otherwise. The Retirement variable is coded as 1 if saving for retirement was the respondent's reason for saving, else it is coded as 0.

4.2.2 Independent Variables

The independent variables used in the multivariate analysis include financial resource, satisfaction of financial needs, country of origin, and demographic characteristic variables. Xiao and Fan (2002) and Xiao and Noring (1994) found that income, as a measure of financial resources, had a significant impact on household saving motives. Xiao and Noring (1994) also found in the chi-square analysis that net worth had an effect on household saving motives. DeVaney et al. (2007) tested the movement along the hierarchy and concluded that income influenced the progress of saving motives in the hierarchy. Thus, income and wealth are indicators of financial resources. Income uncertainty, emergency fund level, health insurance ownership, home ownership, and self-perceived retirement adequacy represent the satisfaction of corresponding financial needs. Demographic characteristics include age, gender, marital status, the presence of children, education, and employment status. Six interaction terms (country variable* financial resource variable) are included to account for the interaction effects. Table 4-1 presents the summary of independent variables (including main effects and interaction terms) included in the logistic regression.

Table 4-2

Summary of Independent Variables

Variable	Description
Financial Resource	
Income	The first quartile; the second quartile; the third quartile; the fourth quartile (reference group)
Net Worth	The first quartile; the second quartile; the third quartile; the fourth quartile (reference group)
Satisfaction of Financial Needs	
Income Uncertainty	Less than 30% normal income; 30% - 49% normal income; 50% - 79% normal income; 80% or above (reference group)
Emergency Fund Level	Meet emergency fund guideline or not: yes; no (reference group)
Home Ownership	Having at least one house or not: yes; no (reference group)
Health Insurance Ownership	Having health insurance or not: yes; no (reference group)
Self-perceived Retirement Adequacy	Perceiving having adequate retirement wealth or not: yes; no (reference group)
Country of Origin	
Country	Chinese; Americans (reference group)
Demographic Characteristics	
Age	less than 25 years old; 25 to 34 years old; 35 to 40 years old; 41 to 50 years old; 51 to 60 years old; above 60 years old (reference group)
Gender	Female; male (reference group)
Marital status	Married or living with a partner; others (reference group)
Presence of Children	Presence of children in the households; no children in the households (reference group)
Education	less than high school; high school diploma; some college or bachelor's degree; graduate school (reference group)
Employment Status	Salary earner (reference group); self-employed; not currently working
Interaction Variables	China*First Income Quartile, China*Second Income Quartile, China*Third Income Quartile, China*First Net Worth Quartile, China*Second Net Worth Quartile, and China*Third Net Worth Quartile

Financial Resources

Household annual income and net worth are used as financial resource variables.

Chinese household annual income is measured by after-tax income in 2008 Chinese yuan, and grouped into four categories representing the quartiles of the income distribution for the Chinese sample. For the American sample, household annual income is calculated by before-tax income in 2006 dollars, and grouped into four categories by quartiles of the income. The four dichotomous variables are:

For Chinese sample	For American sample	
$\leq 28,000$ yuan	$\leq \$24,600$	=1 if yes, =0 otherwise
28,001 ~ 40,000 yuan	\$24,601 ~ \$46,000	=1 if yes, =0 otherwise
40,001 ~ 70,000 yuan	\$46,001 ~ \$84,000	=1 if yes, =0 otherwise
$> 70,000$ yuan	$> \$84,000$	=1 if yes, =0 otherwise (reference)

Net worth is calculated by subtracting household total debts from total assets.

Since all asset variables were collected as categorical variables in the 2008 CCFIE survey, for each household, the median of each category was selected as the value of the asset, and then the total asset was imputed by adding up values of all asset categories together.

Net worth is then grouped into four categories by quartile.

For Chinese sample	For American sample	
$\leq 155,000$ yuan	$\leq \$14,240$	=1 if yes, =0 otherwise
155,001 ~ 370,000 yuan	\$14,241 ~ \$121,820	=1 if yes, =0 otherwise

370,001 ~715,000 yuan	\$121,821 ~ \$367,930	=1 if yes, =0 otherwise
> 715,000 yuan	> \$367,930	=1 if yes, =0 otherwise (reference)

Satisfaction of Financial Needs

Income uncertainty, emergency fund level, home ownership, health insurance ownership and self-perceived retirement adequacy are included as proxies of the satisfaction of financial needs.

The 2008 CCFIE question about the respondent’s expectation about income uncertainty asks

“What percentage of your household annual income is guaranteed, stable income?”

The 2007 SCF also asks a similar question about income uncertainty. Four dichotomous variables are created: less than thirty percent, thirty percent to forty-nine percent, fifty percent to seventy-nine percent, and eighty percent or above (reference group).

The adequacy of emergency fund level is calculated by dividing household liquid assets by monthly income. If the household liquid asset level is larger than three month income, the variable is coded as 1, 0 otherwise. If one or more members in the household have health insurance, the variable is coded 1, 0 otherwise. If the household owns at least a house, home ownership equals 1, and 0 otherwise. If the household respondents perceive that they have enough retirement wealth, self-perceived retirement adequacy variable is coded as 1, else it is coded as 0.

Country of Origin

A country variable (China) is constructed based on household country of origin. Chinese households are coded 1, and American households are coded 0.

Demographic Characteristics

Demographic characteristic variables included age, gender, marital status, presence of related children, education achievement and employment status. For Chinese data, the information of financial respondents is used. For American data, the information provided by household head is used. Age of head/financial respondent is measured with six dichotomous variables: less than 25 years old, 25 to 34 years old, 35 to 40 years old, 41 to 50 years old, 51 to 60 years old, and above 60 years old. Treating age as a categorical variable has advantage over using a continuous variable concerning nonlinear effects of age or cohort effect. Above 60 years old group is used as reference group.

If the household head/financial respondent is female, the female variable equals 1 and 0 otherwise. Marital status is measured as a dichotomous variable, with 1 indicating that the respondent is currently married. Presence of related children in the household is coded as 1 if the respondent reported one or more children living in the household and 0 otherwise. Education achievement of the head/financial respondent is measured with four dichotomous variables: less than high school, high school diploma, some college or bachelor's degree, and graduate school (reference group). Employment status is measured as three dichotomous variables: employee, self-employed, and not currently working. If the head/financial respondent of household was working for someone else, his/her employment status is defined as employee (reference group). The household

head/financial respondent who was working for his/herself is regarded as self-employed. Those who are retired, or not currently employed were treated not currently working.

Interaction variables

An interaction effect refers to “the effect of an independent variable on a dependent variable differs depending on the value of a third variable” (Jaccard, 2001). In a regression model, an interaction term, for example $X1*X2$, implies that the effect of $X1(X2)$ on the dependent variable is not constant across levels of $X2(X1)$ (Hosmer & Lemeshow, 2000). According to the conceptual framework, the effect of financial resource variables on the likelihood of reporting particular saving motive is different across countries. Thus, interaction terms are used to account for the slope effects.

4.2.3 Characteristics of Chinese and American Samples

Table 4-3 provides a comparison between the Chinese sample and the American sample. The chi-square tests showed that there was significant difference in each variable between Chinese sample and American sample, except for the percentage of household heads with a Bachelor degree or some college and salary earners.

Characteristics of Chinese Sample

In Chinese sample, 2,066 households were included in the analysis. Among financial respondent of households, 52.6% of them were female, and 72.3% were married. More than half of households have children (59.1%). Most financial respondents were at age 50 or below, and only 12.1% were above 50 years old. Those with less than high school degree accounted for 16.9% of the sample, those with high school degree accounted for 38.7%, those with Bachelor degree or some college accounted for 42%,

and only 2.5% of them had graduate degree. The majority of financial respondents were working for others (59.3%), 26.2% of them were self-employed, and 14.6% were not currently working. The majority of households perceived they had relatively stable normal income, 33.7% of them reported that their normal income was above 80% of the income of the survey year, and 36.7% reported that their normal income was between 50% and 79% of the income. Eighty-five percent of households had at least a house, 88.7% met emergency fund guideline, 30.15 perceived adequate retirement wealth, and 89.9% were covered by health insurance.

Characteristics of American Sample

In American sample, there are 4,366 households included in the analysis. Among heads of households, 27.9% of them were female, and 58.5% were married. About 44% of households had children. Only 5.3% of household heads were under age 25, 16.3% were between 25 and 34 years old, 11.1% were between 35 and 40 years old, and 21.6% were between 41 and 50 years old, 18.4% were between 51 and 60 years old, and 27.2% were above 60 years old. Those with less than high school degree accounted for 13.3% of the sample, those with high school degree accounted for 32.8%, those with Bachelor degree or some college accounted for 42.3%, and only 11.7% of them had graduate degree. The majority of financial respondents were salary earners (59.9%), 10.2% of them were self-employed, and 29.9% were not currently working. Above 90% of households reported that their normal income was above 80% of the income in the survey. About 69% of households had houses, 21.9% met emergency fund guideline, 51.9% perceived adequate retirement wealth, and 41.4% were covered by health insurance. It is interesting to notice that the percentage of owning houses, meeting emergency fund

guideline, and having health insurance coverage were substantially higher for Chinese than for Americans.

Table 4-3

Descriptive Statistics of the Samples

Sample Characteristics	Chinese Sample (n=2,066)	American Sample (n=4,066)	Chi-square tests
Number of Households	2,066	4,066	
Age			
Less than 25	15.7%	5.3%	***
25-34	33.8%	16.3%	***
35-40	20.0%	11.1%	***
41-50	18.4%	21.6%	**
51-60	8.0%	18.4%	***
Above 60	4.1%	27.2%	***
Female	52.6%	27.9%	***
Married	72.3%	58.5%	***
Presence of Related Children	59.1%	43.9%	***
Education			
Less than high school	16.9%	13.3%	***
High school	38.7%	32.8%	***
Bachelor or Some College	42.0%	42.3%	
Graduate Degree	2.5%	11.7%	***
Employment Status			
Employee	59.3%	59.9%	
Self-employed	26.2%	10.2%	***
Not Working	14.6%	29.9%	***
Income Uncertainty			
Less than 30% Normal Income	7.9%	0.4%	***
30%-49% Normal Income	21.7%	1.1%	***
50%-79% Normal Income	36.7%	3.8%	***
80% or above	33.7%	94.6%	***
Liquid assets/expenditure ≥ 3	73.8%	21.9%	***
Home Ownership	85.4%	68.6%	***
Self-perceived Retirement Adequacy	30.1%	51.9%	***
Health Insurance Ownership	89.9%	41.4%	***
Income	69,878	82,295	***
Net worth	539,026	557,441	***

Note. In Chinese sample, income and net worth are measured in Chinese Yuan (RMB); In American sample, income and net worth are measured in United States dollar. The exchange rate on December 31, 2008: 1 USD = 6.8346 RMB.

4.3 Statistical Methods

4.3.1 Bivariate Analysis

A cross-tabulation of four saving motives by country is conducted to examine the percent distribution of saving motives between Chinese and American. *T*-tests were employed to test the hypothesis without controlling for other variables.

4.3.2 Logistic Regression Model

Logistic regression model is an important nonlinear regression model. The most distinguished characteristic of logistic regression model is that the dependent variable in the model is dichotomous, whereas the dependent variable in multiple linear regression model is usually continuous. In addition, there are differences in the method of estimation and model error term assumptions. In linear regression model, ordinary least squares estimation is the general method to derive the estimators. In logistic regression model, the maximum likelihood estimation method provides estimators of the unknown parameters. Instead of assuming normal distributed and constant error terms in the linear regression, in the logistic regression, normal distributed error terms are inappropriate, because each error term can only have two values and does not follow normal distribution. Also, because of dichotomous dependent variable, error variances are not constant.

Another important difference between linear and logistic regression model is that the mean of dependent variables is not modeled in logistic model, and instead the mean of a log transformation is modeled (Jaccard, 2001). Assume that there are k independent variables, and the conditional probability that the dependent variable equals to 1 is denoted $P(Y=1|\mathbf{x}) = \pi(\mathbf{x})$. The multiple logistic regression model is presented as follows:

$$G(\mathbf{x}) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \varepsilon$$

Where $G(\mathbf{x}) =$ _____

Odds ratio is used to interpret the logistic regression output; It is imputed by the exponential of regression coefficient.

Concordance level is used in logistic regression to measure the proportion of correct predictions. If the predicted value is consistent with the observed value, then they are concordant.

4.3.3 Likelihood Ratio Test

The likelihood ratio test is used to determine whether one or one subset of independent variables significantly contributes to the logistic regression model.

The likelihood ratio test is based on a comparison of restricted and unrestricted models (Kutner, Wasserman, Nachtsheim, & Neter, 2004). A likelihood ratio test uses the twice negative of the difference between log likelihood ratio from the restricted model and that from the unrestricted model to obtain a value that follows chi-square distribution. The degree of freedom of chi-square distribution is equal to the number of variables omitted from the unrestricted model to obtain the restricted model. The test statistic for the likelihood ratio test, denoted by G^2 , is:

$G^2 = -2\log(\text{likelihood of the restricted model/likelihood of the unrestricted model})$.

4.3.4 Model Specification

Multiple logistic regression models will be used since the dependent variable is dichotomous and there are more than one independent variables. The dependent variables are the log transformation of the likelihood of reporting a certain saving motive.

The empirical model in this study is presented as follows:

$$\text{Log} (P_i / (1-P_i)) = \beta_0 + \beta_i X_i + \varepsilon_i$$

Where subscript i represents the i^{th} observation, P_i is the probability of reporting a particular saving motive (the precautionary motive, the education motive, or the retirement motive; X_i is a vector of independent variables, including financial resource, satisfaction of financial needs, country of origin, demographic characteristic, and interaction variables; and ε_i is random error.

4.3.5 Interaction Effects

An interaction effect refers to “the effect of an independent variable on a dependent variable differs depending on the value of a third variable” (Jaccard, 2000). In a regression model, an interaction term, for example $X_1 * X_2$, implies that the effect of $X_1(X_2)$ on the dependent variable is not constant across levels of $X_2(X_1)$ (Hosmer & Lemeshow, 2000)). Interaction terms should be interpreted carefully. The following table will indicate how to calculate the interaction effect in this study. Assume that there are three independent variables X_1 , X_2 and $X_1 * X_2$, and that X_1 and X_2 are dummy variables.

$$\text{Log} (P_i / (1-P_i)) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_1 * X_2 + \varepsilon_i$$

For example, X_1 is the China variable (1 if it is Chinese households; 0 if not), X_2 is First Income Quartile variable (1 if the household is in the first income quartile group;

0 if not; the fourth income quartile is the reference group), and P_1 is the probability to report the precautionary saving motive. There are two ways to interpret the interaction term. First, compare Chinese and Americans in the first income quartile. For those households in the first income quartile, the odds ratio for Chinese to report the precautionary motive is $\exp(\beta_1 + \beta_3)$, and the odds ratio for Americans to report the precautionary motive is $\exp(\beta_1)$. Second, for households from each country, compare those in the first income quartile and those in the fourth income quartile. If the household is from China, then the odds ratio for those in the first income quartile group is $\exp(\beta_2 + \beta_3)$ compared to those in the fourth income quartile group. If the household is from the United States, then the odds ratio for those in the first income quartile group is $\exp(\beta_2)$ compared to those in the fourth income quartile group.

Table 4-4

Calculation of Odds Ratio for Interaction effects

	Calculation
The effect of X_1 on $\text{Log}(P_i / (1 - P_i))$	$\beta_1 + \beta_3 X_2$ (take derivative by X_1)
Odds Ratio (OR)	$\text{Exp}(\beta_1 + \beta_3 X_2)$ If $X_2=1$, then $\text{OR} = \text{EXP}(\beta_1 + \beta_3)$ If $X_2=0$, then $\text{OR} = \text{EXP}(\beta_1)$
The effect of X_2 on $\text{Log}(P_i / (1 - P_i))$	$\beta_2 + \beta_3 X_1$ (take derivative by X_2)
Odds Ratio (OR)	$\text{Exp}(\beta_2 + \beta_3 X_1)$ If $X_1=1$, then $\text{OR} = \text{EXP}(\beta_2 + \beta_3)$ If $X_1=0$, then $\text{OR} = \text{EXP}(\beta_2)$

4.4 Multiple Imputation

It is common that survey data contain missing values (Montalto & Sung, 1996). Missing values cause problems in efficiency and biasness of estimation. Since 1989, a multiple imputation (MI) method was used by the SCF to analyze datasets with missing

value. The purpose of MI is to achieve the best possible estimates of the true but unobserved values of variables that are missing. Stochastic multivariate methods are used to substitute a missing value with two or above two values in MI method. In the SCF, based on an estimate of the conditional distribution of the data, variables with missing values were imputed five times repeatedly, which produced five complete datasets. Thus, the number of observations in the full SCF dataset is five times the actual number of respondents. All five implicates are used for this study.

Montalto and Sung (1996) provided the detailed calculation of the point estimate and total variance when analyzing the SCF datasets:

$$\bar{Q}_M = \frac{\sum_{i=1}^m Q_i}{m} \quad (4.1)$$

$$\bar{U}_M = \frac{\sum_{i=1}^m U_i}{m} \quad (4.2)$$

$$B_M = \frac{\sum_{i=1}^m (Q_i - \bar{Q}_M)^t (Q_i - \bar{Q}_M)}{m - 1} \quad (4.3)$$

$$T_M = \bar{U}_M + (1 + m^{-1})B_M \quad (4.4)$$

$$\sigma = \sqrt{T_M} \quad (4.5)$$

Where

$m = 5$ implicates

Q_i ($i=1, \dots, m$) represents the five point estimates from the five imputations.

\bar{Q}_M is the average of the five estimates, which is the best point estimator.

\bar{U}_M = the average of the “within” imputation variance

B_M = the “between” imputation variance

T_m = total variance

σ = standard deviation

Chapter V

Results and Discussions

This chapter presents results from statistical analysis. Descriptive results are shown in the first part. Multivariate results are presented in the following section, which includes the logistic regression analysis on the likelihood of perceiving precautionary, education and retirement saving motives.

5.1 Descriptive Statistics

5.1.1 Saving Motives by country

The one-tail t-test results in Table 5-1 show that Chinese were more likely to report all three saving motives (precautionary motive, education motive, and retirement motive) than Americans without controlling other factors.

It is worth noticing that the most frequently reported saving motives are different across countries, which is consistent with previous literature. The precautionary saving motive, the education saving motive, and the retirement saving motive are three most frequently reported motives by Chinese, whereas for Americans, they are, in order, the retirement saving motive, the precautionary saving motive, and the education saving motive. This result indicates that the importance of saving motives varies by country, and reflects differences in households' current financial needs.

Table 5-1

Percent Indicating Each of the Saving Motives by Country

Saving Motive	Chinese (%)	American (%)	T Test
Precautionary Motive	59.77%	35.03%	***
Education Motive	58.53%	18.79%	***
Retirement Motive	51.04%	44.52%	***

Note. Respondents are allowed to report more than one saving motive. *** p< 0.001.

5.2 Multivariate Analysis

This section presents the results of logistic regression analysis. Interaction terms are included in the logistic regression to account for the interaction effects between country of origin and financial resources. Interpretation of the estimated coefficients and odds ratios in this model is different from that of a model that consists of only the main effects.

5.2.1 Likelihood of Reporting the Precautionary Saving Motive

Table 5-2 shows the logistic analysis of the likelihood of perceiving the precautionary motive. The first hypothesis in this study is that there is no difference between Chinese and Americans in terms of the precautionary saving motive. Results of logistic regression reject this hypothesis. The results indicated that compared to Americans, Chinese were significantly more likely to have the precautionary saving motive. For those in the first income quartile, Chinese households were 665% more likely to report the precautionary saving motive than American households, and for those in the second income quartile, Chinese households were 465% more likely to report the precautionary motive than American households. For those in the first and second net worth quartiles, the likelihood of reporting the precautionary saving motive was higher

for Chinese than for Americans. For those who are not in the first and second income/net worth groups, Chinese were 227% more likely to report the precautionary saving motive than Americans. Since the economic reforms in 1978, Chinese households have been exposed to higher future income and expenditure uncertainty. The state no longer guaranteed lifetime employment. The government is not responsible assigning jobs for college graduates. In the United States, the unemployment insurance and various welfare programs provide relatively sound social safety net, whereas in China, there are no such insurance and welfare programs, and households always resort to family support or previous savings in case of sudden income loss. Therefore, Chinese are strongly motivated to save for future emergencies.

Income and net worth have conflicting effects on reporting the precautionary saving motive for Chinese households. Given that the precautionary saving motive is a lower level motive, it is expected that income and net worth would have negative effects on reporting this motive. However, the results show that only income positively affects the likelihood of reporting the precautionary saving motive for Chinese, which can be explained by the theory of human motivation. In contrast, wealthy Chinese are more likely to report the precautionary saving motive than those with lower wealth level. It is likely that wealthy Chinese demand a much higher level of emergency fund, considering their high living standards. In addition, most wealthy Chinese accumulate their wealth in their own business, which associates with higher risks. Precautionary saving motive reflects people's perception of future uncertainty. Thus, wealthy Chinese might be more motivated to save for emergencies to account for future uncertainty.

For both Chinese and Americans, compared to households whose normal income was 80% or above of income reported in the survey, those with 30% to 49% normal income were less likely to perceive the precautionary saving motive. Both Chinese and American households with a house were 25% more likely to have the precautionary saving motive than those without home ownership. The presence of related children had a negative effect on the likelihood of reporting the precautionary saving motive. The likelihood of reporting the precautionary saving motive was higher for those who were not currently working than those employees. Age had no significant effect on reporting precautionary saving motive. Although younger households and older households may encounter different emergencies, adequate emergency fund level is necessary for every household regardless of their age. It is worth noticing that those with related children were less likely to save for emergencies than those without related children, which might be associated with the decision making process for a household to have a child. Households should be more likely to have a child if they are financially well prepared.

Three satisfaction variables are associated with precautionary saving motive: income uncertainty, emergency fund level, and health insurance ownership. High income uncertainty, inadequate emergency fund level, and no health insurance are signs that the financial needs to prepare for emergencies are not well satisfied, and thus should have positive effects on reporting the precautionary saving motive. However, results from multivariate analysis do not support this statement. Income uncertainty was not found to increase the likelihood of reporting the precautionary motive for Chinese and Americans as well. A possible explanation is that those who are risk averse are more willing to pursue a job with low income uncertainty, and at the same time, their prudence leads

them to perceive stronger precautionary saving motive (Browning & Lusardi, 1996). Unfortunately, this relationship cannot be tested by using the data in this study. Further study could investigate whether this self selection affects the perceived precautionary saving motive. Households without adequate emergency fund and not covered by health insurance were not found to increase the likelihood of reporting the precautionary saving motive. These findings should call for consumer education. The appropriate emergency fund level could help households alleviate the stress of income loss and avoid foreclosure or bankruptcy. It is highly likely that households who do not have adequate emergency funds will endure financial distress when they are suddenly unemployed. The absence of a precautionary saving motive shows that they have not realized the importance of saving for emergency. Financial planner and advisors should help their clients understand the necessity of emergency funds and start perceiving the precautionary saving motive.

Table 5-2

Logistic Analysis of the Likelihood of Perceiving the Precautionary Saving Motive

Sample Characteristic	Coefficient	Precautionary	
		S.E.	Odds Ratio
Intercept	-1.0018	0.0000	
China	1.1853 ***	0.0000	3.27
Income (reference category= Fourth Quartile)			
First Quartile	-0.0002	0.9987	1.00
Second Quartile	0.0739	0.5354	1.08
Third Quartile	0.1556	0.1432	1.17
Net worth (reference category= Fourth Quartile)			
First Quartile	0.1159	0.4543	1.12
Second Quartile	0.1555	0.2198	1.17
Third Quartile	0.0022	0.9836	1.00
Income Uncertainty (reference category= 80% or above)			
Less than 30% Normal Income	-0.0039	0.9791	1.00
30%-49% Normal Income	-0.3702 **	0.0013	0.69
50%-79% Normal Income	-0.1728	0.0503	0.84
Liquid assets/expenditure > = 3	0.0250	0.7208	1.03
Home Ownership	0.2232 *	0.0156	1.25
Self-perceived Retirement Adequacy	-0.0047	0.9330	1.00
Health Insurance Ownership	0.0804	0.2845	1.08
Age (reference category = Above 60)			
Less than 25	-0.0199	0.8944	0.98
25-34	0.1991	0.0927	1.22
35-40	0.0753	0.5417	1.08
41-50	0.1256	0.2353	1.13
51-60	0.0920	0.3547	1.10
Female	0.0169	0.8113	1.02
Married	0.0725	0.3450	1.08
Presence of Related Children	-0.1299 *	0.0368	0.88
Education (reference category= Graduate Degree)			
Less than high school	-0.0698	0.5625	0.93
High school	-0.0768	0.4294	0.93
Bachelor or Some College	-0.0024	0.9772	1.00
Employment Status (reference category=Salary Earner)			
Self-employed	-0.0207	0.7700	0.98
Not Working	0.1797 *	0.0266	1.20
China*First Income Quartile	0.8493 ***	0.0001	2.34
China*Second Income Quartile	0.5459 **	0.0035	1.73
China*Third Income Quartile	0.2852	0.1045	1.33
China*First Net Worth Quartile	-0.5780 **	0.0068	0.56
China*Second Net Worth Quartile	-0.6543 ***	0.0010	0.52
China*Third Net Worth Quartile	-0.2077	0.2501	0.81
Concordance	65.38		
Chi-sq test of likelihood ratio	573.93102 ***		

Note. * p< 0.05, ** p< 0.01, *** p< 0.001.

The interaction terms should be interpreted carefully. Please refer to Section 4.3.5 for calculation of the odds ratio for interaction terms. For example, for those households in the first income quartile, the odds ratio for Chinese to report the precautionary motive is $\exp(1.1853+0.8493) = 7.65$. For those in the second income quartile, the odds ratio for Chinese to report the precautionary motive is 5.65, when compared to Americans. Similarly, for those in the second net worth quartile, the odds ratio is 1.84. For those in the third net worth quartile, the odds ratio is 1.70.

5.2.2 Likelihood of Reporting the Education Saving Motive

Table 5-3 presents logistic regression results of perceiving the education saving motive. The second hypothesis of this study is that there is no difference between Chinese and Americans in terms of the education saving motive. Results from the logistic regression reject this hypothesis. The results show that Chinese households are more likely to report the education saving motive than American households. For those in the third income quartile, Chinese were 403% more likely to report saving for education than Americans. Compared to Americans in the second and third net worth quartile group, their Chinese counterparts were more likely to report the education saving motive. For those who did not belong to the above categories, Chinese households were 189% more likely to report the education saving motive than American households.

Given that there are two opposite arguments about the relationship between country of origin and perceiving the education saving motive, a null hypothesis was tested. According to the theory of human motivation and previous studies, American households are more likely to report the education saving motive than Chinese households. However, it is likely that Chinese households hold high financial needs for education savings. The education saving motive includes saving for self and children's education. According to the age distribution, it is highly possible that for Chinese sample, most respondents refer the education motive to saving for children's education. Influenced by the Confucianism, Chinese households respect children's education, and are willing to save for education. Also, since the economic reforms, education costs have been shifted to ordinary Chinese households. Consequently, Chinese households are strongly motivated to save for education.

For both Chinese and Americans, those in less than 25 age group, 25 to 34 group, 35 to 40 group, and 41 to 50 group were all significantly more likely to report saving for education, when compared to those above 60 years old. Those who are age 60 or older usually completed their education, so they should not have a strong motive to save for their own education. In addition, households who have the intention to save for their children's education should conduct their saving behaviors when there are still many years before the use of the education fund. Thus, those older household heads should have already passed that life stage and put saving for retirement as their priority.

Married households were 65% more likely to perceive the education saving motive than those unmarried, because married households are more likely to expect a child in future. Households with children were 564% more likely to report saving for education than those without children. Compared to household heads/financial respondents with graduate degree, those with less than Bachelor degree were about 30% less likely to report the education saving motive. Parents have high education achievement would expect their children to pursue their education in a similar way, and hence perceive strong education saving motive. It is also likely that those with graduate degree still have balance on student loans. The motivation to save for education is to pay off their student loans.

Table 5-3

Logistic Analysis of the Likelihood of Perceiving the Education Saving Motive

Sample Characteristic	Education		Odds Ratio
	Coefficient	S.E.	
Intercept	-3.3558	0.0000	
China	1.0610 ***	0.0000	2.89
Income (reference category= Fourth Quartile)			
First Quartile	-0.0860	0.6663	0.92
Second Quartile	-0.1997	0.2321	0.82
Third Quartile	-0.1026	0.4646	0.90
Net worth (reference category= Fourth Quartile)			
First Quartile	0.0796	0.6954	1.08
Second Quartile	-0.1129	0.4980	0.89
Third Quartile	-0.2243	0.1356	0.80
Income Uncertainty (reference category= 80% or above)			
Less than 30% Normal Income	0.3250	0.0835	1.38
30%-49% Normal Income	0.1986	0.1456	1.22
50%-79% Normal Income	0.1522	0.1587	1.16
Liquid assets/expenditure >= 3	0.1275	0.1491	1.14
Home Ownership	-0.0646	0.5827	0.94
Self-perceived Retirement Adequacy	0.0759	0.2853	1.08
Health Insurance Ownership	-0.1578	0.1096	0.85
Age (reference category = Above 60)			
Less than 25	0.9958 ***	0.0000	2.71
25-34	1.2575 ***	0.0000	3.52
35-40	1.3024 ***	0.0000	3.68
41-50	0.9196 ***	0.0000	2.51
51-60	0.1984	0.2009	1.22
Female	0.0500	0.5733	1.05
Married	0.5011 ***	0.0000	1.65
Presence of Related Children	1.8926 ***	0.0000	6.64
Education (reference category= Graduate Degree)			
Less than high school	-0.3292 *	0.0352	0.72
High school	-0.3003 *	0.0189	0.74
Bachelor or Some College	-0.1816	0.1072	0.83
Employment Status (reference category=Salary Earner)			
Self-employed	-0.0325	0.7083	0.97
Not Working	0.0875	0.4180	1.09
China*First Income Quartile	-0.0653	0.8075	0.94
China*Second Income Quartile	0.3031	0.1913	1.35
China*Third Income Quartile	0.5546 **	0.0093	1.74
China*First Net Worth Quartile	0.2956	0.2528	1.34
China*Second Net Worth Quartile	0.7594 **	0.0015	2.14
China*Third Net Worth Quartile	0.6174 **	0.0051	1.85
Concordance	85.28		
Chi-sq test of likelihood ratio	2488.52862 ***		

Note. * p< 0.05, ** p< 0.01, *** p< 0.001.

Please refer to Section 4.3.5 for calculation of the odds ratio for interaction terms. For those in the third income quartile, the odds ratio for Chinese to report the education motive is 5.03, when compared to Americans. Similarly, for those in the second net worth quartile, the odds ratio is 6.17. For those in the third net worth quartile, the odds ratio is 5.36.

5.2.3 Likelihood of Reporting the Retirement Saving Motive

Results in Table 5-4 show that the likelihood of reporting the retirement saving motive was higher for Chinese than for Americans. The third hypothesis in this study states that there is no difference between Chinese and Americans in terms of the retirement saving motive. The results partially support this hypothesis. Chinese were more likely to perceive the retirement saving motive than Americans for first and second household income groups. For those in the first income quartile, Chinese were 120% more likely to report saving for retirement as Americans. For those in the second income quartile, Chinese were 93% more likely to report saving for retirement as Americans. For households who were not included in the above groups, there was no difference in reporting the retirement saving motive between Chinese and Americans. As mentioned in the theoretical basis chapter, Chinese should be more likely to save for retirement than Americans, since the economic reform has changed the retirement plan system, and there is no sound social security system in China. The opposite statement is supported by the theory of human motivation: Saving for retirement is a higher level financial need, and Americans generally have higher financial resources. Therefore, Americans should be more likely to have the retirement saving motive. The multivariate analysis seems to partially support the former argument, and provides evidence that the additional financial needs do increase the likelihood of reporting the retirement saving motive.

The effects of income and net worth on the likelihood of reporting the retirement saving motive were different across countries (Table 5-4). In Chinese sample, when compared to those in the fourth income quartile, households in the first income quartile were 120% more likely, and those in the second quartile were 93% more likely to report

the retirement saving motive. In American sample, when compared to those in the fourth income quartile, households in the first income quartile were 67% less likely, and those in the second quartile were 54% less likely to report the retirement saving motive. In both Chinese and American sample, households in the first net worth quartile were 32% less likely to report saving for retirement than those in the fourth quartile. For both Chinese and Americans, given that income and net worth increased the likelihood of reporting the retirement saving motive, saving for retirement is a high level motive.

Home ownership had a positive effect on reporting the retirement saving motive. Those who were covered by health insurance were 55% as likely to report saving for retirement as those who were not covered. The effect of age on retirement saving motive was not consistent across different age groups. Generally speaking, younger households were less likely to save for retirement. However, those at age 41 to 60 were more likely to report the retirement saving motive, when compared to those above 60 years old. Women were 19% more likely to report saving for retirement. Those without high school degree were 74% as likely to report the retirement saving motive as those with graduate degree. Compared to employees, the self-employed were 26% less likely to save for retirement, and those who were not currently working were 36% less likely to report saving for retirement.

Age had a U-shape pattern with reporting retirement saving motive. It is likely that younger households may have more urgent financial needs to meet, such as purchasing a house, paying for education, or purchasing durable goods, and households who are in their middle ages start to concern their standards of living at retirement. It is striking to see, from the logistic results, that self-perceived retirement adequacy had

nothing to do with reporting the retirement saving motive, implying that those without adequate retirement wealth cannot or even have not realized to save for retirement. It is highly likely that without financial planning, these households will not have financial security at retirement.

Table 5-4

Logistic Analysis of the Likelihood of Perceiving the Retirement Saving Motive

Sample Characteristic	Coefficient	Retirement		Odds Ratio
			S.E.	
Intercept	0.3502		0.0311	
China	0.2686		0.0993	1.31
Income (reference category= Fourth Quartile)				
First Quartile	-1.1196	***	0.0000	0.33
Second Quartile	-0.7728	***	0.0000	0.46
Third Quartile	-0.2024		0.0608	0.82
Net worth (reference category= Fourth Quartile)				
First Quartile	-0.3861	*	0.0169	0.68
Second Quartile	-0.1267		0.3196	0.88
Third Quartile	0.1342		0.2523	1.14
Income Uncertainty (reference category= 80% or above)				
Less than 30% Normal Income	-0.0095		0.9491	0.99
30%-49% Normal Income	0.0129		0.9123	1.01
50%-79% Normal Income	0.0987		0.2726	1.10
Liquid assets/expenditure > = 3	0.1320		0.0509	1.14
Home Ownership	0.2574	**	0.0061	1.29
Self-perceived Retirement Adequacy	-0.0607		0.2940	0.94
Health Insurance Ownership	-0.6063	***	0.0000	0.55
Age (reference category = Above 60)				
Less than 25	-0.4167	**	0.0091	0.66
25-34	-0.4785	***	0.0001	0.62
35-40	0.2202		0.0816	1.25
41-50	0.3814	***	0.0005	1.46
51-60	0.6410	***	0.0000	1.90
Female	0.1755	*	0.0152	1.19
Married	0.1303		0.0977	1.14
Presence of Related Children	-0.0991		0.1225	0.91
Education (reference category= Graduate Degree)				
Less than high school	-0.3020	*	0.0165	0.74
High school	-0.0339		0.7360	0.97
Bachelor or Some College	-0.0032		0.9703	1.00
Employment Status (reference category=Salary Earner)				
Self-employed	-0.2966	***	0.0000	0.74
Not Working	-0.4459	***	0.0000	0.64
China*First Income Quartile	0.7872	***	0.0003	2.20
China*Second Income Quartile	0.6552	***	0.0005	1.93
China*Third Income Quartile	-0.0243		0.8900	0.98
China*First Net Worth Quartile	0.2216		0.3022	1.25
China*Second Net Worth Quartile	0.2649		0.1756	1.30
China*Third Net Worth Quartile	-0.0380		0.8357	0.96
Concordance	72.3			
Chi-sq test of likelihood ratio	1054.77894	***		

Note. * p< 0.05, ** p< 0.01, *** p< 0.001.

5.2.4 Predicted Likelihood of Reporting a Particular saving motive

Based on results from the logistic regression, predicted likelihood of perceiving the precautionary, education, and retirement saving motive of Chinese and Americans by income and net worth quartile groups were calculated, controlling for other variables.

Figure 5-1 and Figure 5-2 confirm that Chinese are more likely to report the precautionary saving motive than Americans. In addition, Figure 5-1 shows that with the increase of income, the likelihood of Chinese households reporting the precautionary motive decreases, which is consistent to the expectation. It is worth noting that the likelihood of Chinese households perceiving the precautionary motive increases as net worth increases. One explanation could be that wealthy Chinese have higher demand for emergency fund, considering their high living standards. Also, most wealthy Chinese accumulate their wealth in their own business with higher risks. Given that precautionary saving motive reflects people's perception of future uncertainty, wealthy Chinese might be more motivated to save for emergencies to account for future uncertainty. The conflicting effects of income and net worth on reporting the precautionary saving motive for Chinese households cannot provide a clear picture about the hierarchical level of the precautionary motive. For Americans, there is no obvious pattern in the likelihood of reporting the precautionary motive among different income and net worth quartile groups. In contrast, there is no clear pattern for Americans of different income groups regarding perceiving the precautionary motive.

Figure 5-1

Predicted Likelihood of Perceiving the Precautionary Saving Motive of Chinese and American Households by Income Quartile Groups, Controlling for Other Variables

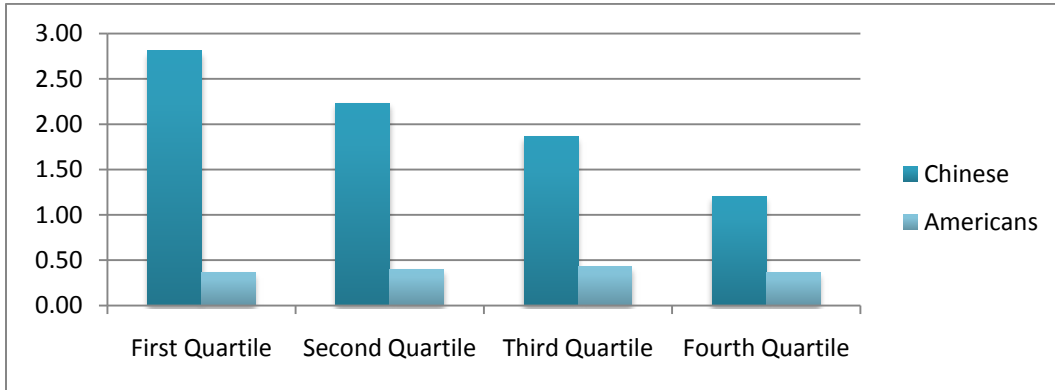


Figure 5-2

Predicted Likelihood of Perceiving the Precautionary Saving Motive of Chinese and American Households by Net Worth Quartile Groups, Controlling for Other Variables

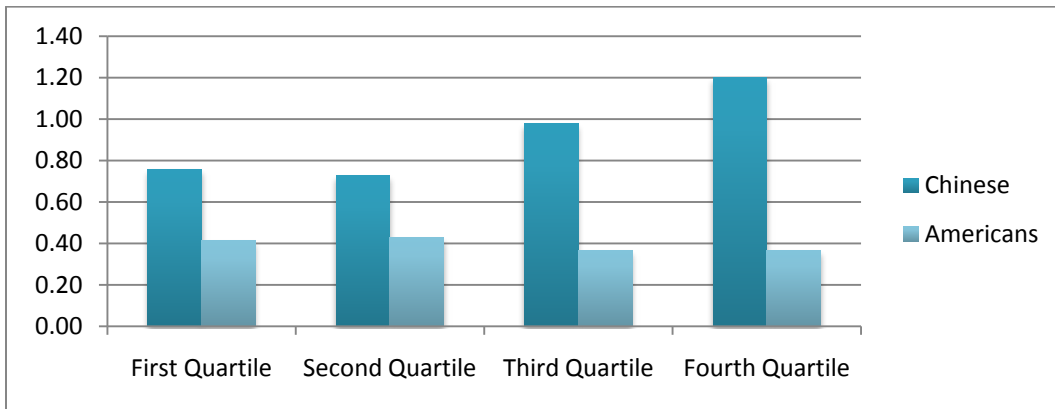


Figure 5-3 and Figure 5-4 confirm that Chinese are more likely to report the precautionary saving motive than Americans. However, the patterns of reporting the education saving motives across income and net worth quartile groups differ dramatically between Chinese and American households. In the Chinese sample, households in the second and third income quartile were more likely to report the education saving motive than those in the fourth quartile. Also, Chinese households in the first, second and third net worth quartile were more likely to report saving for education than those in the fourth quartile. These results indicate that education saving motive is placed at a lower level along the hierarchical structure according to theory of human motivation. For American households, there is no dramatic change in the likelihood of reporting the education motive among different income and net worth groups. Because the presence of children and marital status are controlled in the regression, savings for children's education is excluded from the scope of this education saving motive. Thus, these results suggest that American households with different level of income have no difference in terms of saving for their own education. Generally, Americans in the second and third income and net worth groups tend to have higher likelihood of reporting the education motive than those in the other groups. It is likely that low-income households still take the precautionary saving motive or other lower level motive as their priority and hence are less likely to report the education saving motive, compared to those in the second and third income and net worth groups. Those in the highest income and net worth quartile group might already satisfy their education needs and move to higher level needs, so they are also less likely to report the education saving motive.

Figure 5-3

Predicted Likelihood of Perceiving the Education Saving Motive of Chinese and American Households by Income Quartile Groups, Controlling for Other Variables

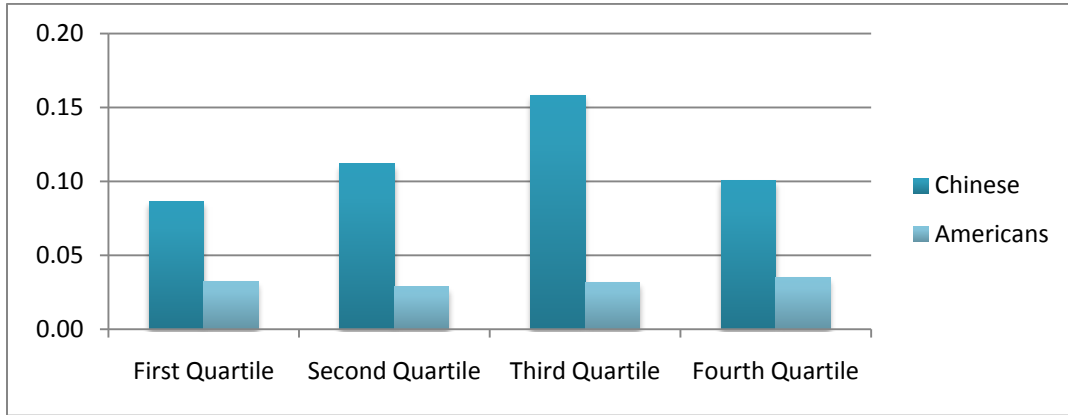


Figure 5-4

Predicted Likelihood of Perceiving the Education Saving Motive of Chinese and American Households by Net Worth Quartile Groups, Controlling for Other Variables

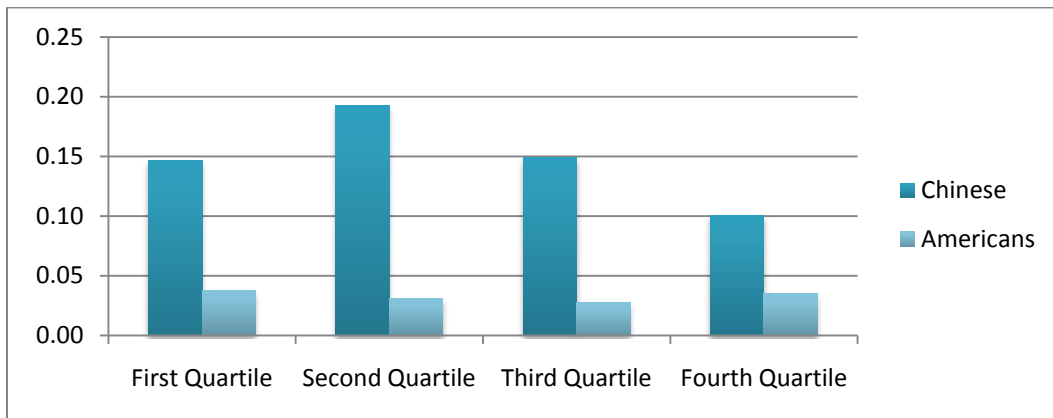


Figure 5-5 and Figure 5-6 shows that the likelihood of reporting the retirement saving motive is highest for Chinese and Americans in the fourth income quartile and is lowest for those in the first income quartile, implying that the retirement saving motive is a higher level motive for both Chinese and Americans. The high likelihood of reporting the retirement saving motive for Americans with high income can result from the tax benefits received by those high-income Americans. As net worth increases, the likelihood of reporting the retirement saving motive first increases peaks at the second net worth quartile for Chinese, but peak at the third net worth quartile for Americans, and then decreases for both Chinese and Americans. It is likely that households in the first three net worth quartile has not yet saved enough for retirement, but those in the fourth quartile has adequate retirement wealth so that they no longer need to save for retirement.

Figure 5-5

Predicted Likelihood of Perceiving the Retirement Saving Motive of Chinese and American Households by Income Quartile Groups, Controlling for Other Variables

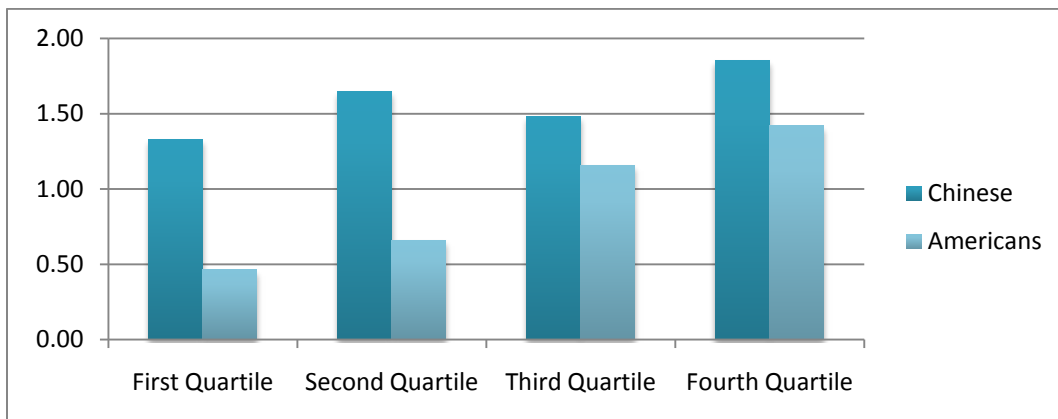
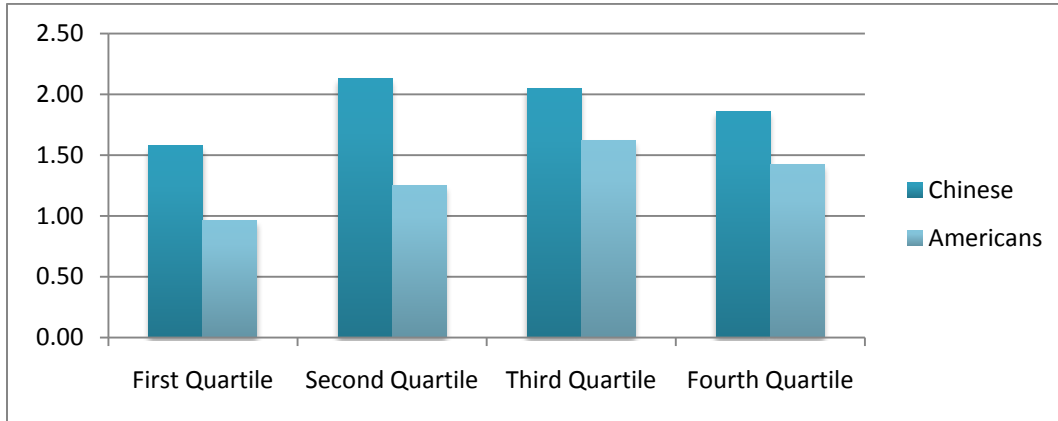


Figure 5-6

Predicted Likelihood of Perceiving the Retirement Saving Motive of Chinese and American Households by Net Worth Quartile Groups, Controlling for Other Variables



5.2.5 Results of Log-Likelihood Ratio Test

The likelihood ratio test was used to test the null hypothesis that there is no statistically significant difference between the unrestricted model and the restricted model. In this study, the unrestricted model includes the country related variables (the country of origin variable and interaction variables), and the restricted model excludes the country related variables. Based on this test (Table 5-5), the null hypothesis was rejected for all three logistic regression model, which indicates that the regressions including the country related variables explained more variance in household saving motives.

Table 5-5

Log-Likelihood Ratio Test Results

Dependent Variable	-2 Log L for the Restricted Model	-2 Log L for the Unrestricted Model	Degree of Freedom	Test Score	
Precautionary Saving Motive	8422.6698	8251.1714	7	171.4984	***
Education Saving Motive	5823.8286	5615.0574	7	208.7712	***
Retirement Saving Motive	7947.6180	7860.7146	7	86.9034	***

Note. *** p < 0.001. Unrestricted Model includes all independent Variables; Restricted Model excludes country of origin variable and interaction terms.

Chapter VI

Summary, Conclusions and Implications

The first section of this chapter summarizes major findings of the empirical analysis. The second section presents discussions and implications of this study, including implications for researchers, financial planners and policy makers. Limitations and suggestions for future research are presented in the last section of the chapter.

6.1 Summary and Conclusions

This study compares differences in reporting particular saving motives between Chinese and Americans, and investigates factors that affect Chinese and American household saving motives. The two datasets used in this study are from the 2008 Survey of Chinese Consumer Finance and Investor Education and the 2007 Survey of Consumer Finances in the United States. The conceptual framework indicates that the likelihood of reporting a particular saving motive is determined by household financial resources, satisfaction of financial needs, country of origin and demographic characteristics. Three hypotheses are derived from the conceptual framework, and three logistic regression models are conducted to test the hypotheses.

On the basis of the conceptual framework and previous literature, the logistic regression model set forth the likelihood of reporting a particular saving motive as a function of country of origin, financial resources (income and net worth), satisfaction of

financial needs (income uncertainty, emergency fund level, home ownership, self-perceived retirement adequacy, and health insurance ownership), and demographic characteristics (age, gender, marital status, presence of related children, education, and employment status). To fully account for the effect of country of origin on household saving motives, interaction terms (country of origin*financial resource variables) are included in the model. The importance of country difference as determinants of household saving motive is confirmed by the likelihood ratio test. In the following section, discussions of the results are presented.

Logistic regression analysis and likelihood ratio tests confirm differences in saving motives between Chinese households and American households. Compared to American households, Chinese households are more likely to report all three saving motives (precautionary motive, retirement motive, and education motive), except that Americans who are in the third and fourth income quartiles are more likely to report retirement saving motives than Chinese. One explanation could be that Americans with higher income would enjoy higher tax benefit from saving for retirement than those with lower income. It is highly likely that they are more likely to save for retirement in order to take the advantage of tax savings. In addition, according to theory of human motivation, retirement saving motive is a high level motive, implying that households with higher income should be more likely to report this motive. The level of income received by about 99% of Chinese urban households falls into the first and the second income quartile of American households. Thus, compared to Americans in the third and fourth quartile, Chinese and Americans in the lower income quartiles are less likely to report the retirement saving motives.

6.2 Implications

6.2.1 Implications for Researchers

Traditional saving theories assume particular saving motives for all households and ignore the heterogeneity of saving motives. The results of this study show that a household can have multiple saving motives at the same time, and households with different characteristics perceive various saving motives. Further researchers may develop more applicable saving models to account for the multiplicity and heterogeneity of saving motives among households.

The stronger motivation to save for Chinese than for Americans serves as a good explanation for the higher saving rates in China than in the United States. When investigating the differences in saving rates between countries, psychological variables, such as saving motives, as well as socio-economic variables and other characteristics should be considered and analyzed together. Researchers have been interested in analyzing various household saving behaviors, such as total savings, precautionary savings, retirement savings, education savings for children, and etc. According to the definition of saving motives, saving motives can affect saving behaviors. Thus, saving motives should be included as independent variables in analyzing household saving behaviors.

6.2.2 Implications for Public Policy Makers

There are considerable differences in policy concerns between China and the United States. In China, households are encouraged to save less and spend more. Between 1996 and 2000, saving interest rates were reduced seven times to discourage household savings, but saving rates still increased during the 1996-2000 period (Zhou,

2000). The results of this study provide evidence about why Chinese household save, and Chinese policy makers can develop strategies to implement in order to change household saving motives and further change household saving behaviors.

To improve the rationality of household saving behaviors, households without necessary saving motives should be educated, or social policy programs should be developed to provide incentive for them to set up the according saving motives. On the other hand, those who have already accumulated enough savings for one motive should be less motivated to save for that goal, compared to higher level goals. Instead, they should be advised to perceive other appropriate saving motives and adjust their saving behaviors accordingly. This study found that Chinese households with low income and not currently working were more likely to perceive precautionary saving motive than their peers. Strong precautionary saving motive results in high precautionary savings. Unemployment insurance and well developed welfare program targeting households with low income and those unemployed will effectively reduce precautionary saving motives, and further reduce the level of precautionary savings to encourage household expenditures. Also, after the economic reforms, the burden of children' education and housing has been shifted to households. Under the influence of the Chinese value system and the underdevelopment of the credit market in China, Chinese households have to save a large proportion of their income to prepare for children's education. To effectively reduce the strong education saving motives, appropriate financial education and promotion of student loans are necessary. Once households realize the available options and understand the advantages of financing the current consumption with future income,

the education saving motive will be weakened, and the corresponding savings will be reduced.

In the United States, policy makers are concerned about the low saving rates, and has encouraged households to save more by establishing various retirement saving programs and providing tax incentives. The results in this study indicate that perceiving retirement saving motives varies by income, net worth, emergency level, home ownership, age, education, and employment. Compared to Americans with higher income, those with lower income are less likely to report the retirement saving motive. Personal savings is a component of retirement wealth. Thus, it is important for low-income households to have retirement saving motive and further to accumulate adequate retirement wealth.

6.2.3 Implications for Financial Planners and Advisors

The findings of this study provides evidence about what kinds of households are more likely to have a particular saving motive, including the precautionary saving motive, the education saving motive, and the retirement saving motive. For example, results show that Chinese households with higher income were less likely to perceive the precautionary saving motive than their counterparts with lower income. Financial planners and advisors should evaluate whether it is rational for high-income Chinese not to perceive the precautionary saving motive. For those high-income households with adequate emergency funds, it is reasonable for them not to report the precautionary saving motive. However, for those high-income households without adequate emergency funds, financial planners and advisors should help them realize the importance of emergency funds in order to raise their motive to save for emergency, because it is likely that households without precautionary saving motives have not yet realized the

consequences of inadequate emergency fund. In addition, for those who hold adequate emergency funds but still report the precautionary saving motive, financial planners and advisors should help them realize that they are in a good financial situation in terms of preparing for future emergency, and educate them to perceive other necessary saving motives, such as the retirement saving motive, which can better prepare clients to enjoy future financial security. By understanding clients' saving motives, financial planners and advisors can better understand clients' current financial situation, and diagnose financial problems that may exist. By helping clients perceive accurate saving motives, planners and advisors can motivate clients to engage in the necessary financial behaviors to improve their financial well-being.

6.3. Strengths and Limitations of this Study

The first strength is that this study is the first to compare household saving motives between Chinese and Americans using national data from each country. The two datasets used in this study, Survey of Consumer Finances in United States and Survey of Chinese Consumer Finance and Investor Education, provide similar information regarding household saving motives, household financial situation and demographic and socio-economic characteristics.

Secondly, satisfaction of financial needs, as a factor that determines the likelihood of reporting a particular saving motive, is included in the conceptual framework and the statistical analysis. According to the theory of human motivation, "satisfaction generates new motivations". The addition of satisfaction variables may result in more accurate estimation and better explain the model.

Thirdly, this study includes interaction terms to account for differences in the effects of financial resource variables on dependent variables between Chinese and Americans. The inclusion of interaction terms explains the intercept effect and the slope effect as well. The addition of interaction terms can produce more accurate estimation.

Fourthly, this study employed the likelihood ratio test to examine if the country of origin variable significantly contributes to differences in Chinese and American household saving motive, which help confirm the hypothesis test besides logistic regression analysis.

There are some limitations in the study. In the 2008 Survey of Chinese Consumer Finance and Investor Education, all asset information was collected as categorical variables in order to increase the response rate. Median of each category was selected to transform the categorical variables into continuous variables. The value of assets was calculated by adding the value of all asset groups together for each household. Net worth was then calculated by subtracting liabilities from total assets. Using continuous household asset variables will result in more accurate estimation. Data with more accurate information about asset holdings will improve the analysis results.

The second limitation comes from using the same model for all saving motives. Concordance level differs among three logistic models. For the precautionary saving motive model, the concordance is 65.4%, and only a few estimated parameters of independent variables are significantly different from zero. Future research should explore other possible factors and models that determine household saving motives.

The third limitation results from the comparability of two data. Chinese data were representative of all urban households nationwide, whereas American data were

representative of all households in the United States. The information regarding whether a household lived in rural or urban area was not released, so the sample selection was conducted based on household members' occupation. Households with members in the farming, forestry, or fishing industries were excluded from the American sample. Also, the data collection year is not the same. Nevertheless, the two datasets used in this study are the best available, considering the purpose of this study.

Although this study used a country of origin variable to investigate the comparison between Chinese and American household saving motives, the effect of cultural difference and the effect of economic development are compounding. How to separate these two effects could be the interest for future research. One possible solution might be to conduct an experiment. Households with Chinese origin and American origin are randomly sampled as respondents to represent different cultural difference. A hypothetical scenario is given to all respondents in order to control for the economic environment. Analysis can be conducted based on their responses.

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