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中國都市家庭平均消費傾向:依據收入水準分析
(1992-2012)

The Average Propensity to Consume of the
Urban Chinese Household: An Analysis by
Income Level (1992 – 2012)

Student: Williman Temponi Gonçalves

Advisor : Prof. Tsoyu Calvin Lin (林左裕 教授)

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Abstract

In trying to understand the decreasing in Average Propensity to Consume (APC) of Urban Chinese Households throughout the period 1992 to 2012, this study aims to measure the impact of Education, Health, Housing, Dependence and Income Growth on the APC of the Urban Chinese Households by Income Level. Using the CEIC Database, this work uses the Quantile Regression as the main method for the quantitative analysis. The results show that Health has a negative impact on the Chinese APC; and that Education and Dependence has positive relation. For the variables Income Growth and Housing, despite of the negative impact over the APC at the national level, the same relation is different in an analysis by income level – for the wealthier families, Housing has a positive relation to the APC (differently from the less wealthier ones); and for the less wealthy households, Income Growth is positively related to the APC.

A short qualitative section, “Analysis of the Turning Points: 1995-1996 and 2000-2002”, shows that main downturns of the National APC was mainly due to (1) the increasing number of laid-off workers; and, by (2) the real variation of income. Therefore, policies that decrease uncertainties, the household expending on health and housing, and encourage stable growth, redistribute the existing wealth and increase of the size of the family would tend to increase of the APC in a long run. In contrary, drastic decrease of Income Growth or the power of purchase of the families, for example, also would lead to the increase of the APC, but in a short term due to the Duesenberry Effect – trend that afterward tend to decrease in a long run.

Keywords: APC, Chinese Household, Precautionary Savings, Life-Cycle Hypothesis ◦

Table of Contents

Acknowledgments.....	II
Abstract.....	III
List of Tables	VI
List of Graphs	VII
List of Figures	VIII
Chapter 1- Introduction.....	1
1.1 Context and Motivations	1
1.2 Objectives and Variables.....	6
1.3 Research Process	9
Chapter 2 - Literature Review.....	10
2.1 The Precautionary Savings Theory	10
2.2 The Life-Cycle Model.....	14
2.3 Treatment of the Indicators	17
Chapter 3 - Methodology and Data Information.....	20
3.1 Methodology	20
3.1.1 Quantile Regression.....	20
3.1.2 Analysis of the Turning Points: 1995-1996 and 2000-2002.....	22
3.2 Data Information	23
Chapter 4 - Results & Discussions.....	26
4.1 Empirical Results	26
4.1.1 National Level	26
4.1.2 Level of Income	29
4.2 Overall Interpretation of the results	44

4.3 Analysis of the Turning Points: 1995-1996 and 2000-2002	57
Chapter 5 - Conclusion	61
5.1 Policy Implications.....	61
5.2 Contributions & Limitations	63
5.3 Final Words	67
APPENDIX I	70
References.....	73



List of Tables

Table 1 – Variables and Indicator	7
Table 2 – Objectives of the Research	8
Table 3 – Data Description	24
Table 4 – Results of the OLS and Quantile Regression at the National Level	28
Table 5 – Results of the OLS and Quantile Regression at the Lowest Income Level	31
Table 6 – Results of the OLS and Quantile Regression at the Low Income Level	33
Table 7 – Results of the OLS and Quantile Regression at the Low-Middle Income Level	35
Table 8 – Results of the OLS and Quantile Regression at the Middle Income Level	37
Table 9 – Results of the OLS and Quantile Regression at the Upper-Middle Income Level	39
Table 10 – Results of the OLS and Quantile Regression at the High Income Level	41
Table 11 – Results of the OLS and Quantile Regression at the Highest Income Level	43

List of Graphs

Graph 1 – National APC	4
Graph 2 – APC by Income Level.....	5
Graph 3 – Variable E (1992-2012)	46
Graph 4 – Impact of Education on APC	47
Graph 5 – Variable H (1992-2012)	48
Graph 6 – Impact of Health on APC.....	49
Graph 7 – Variable PTI (1992 – 2012).....	50
Graph 8 – Impact of Housing on APC.....	51
Graph 9 – Variable D (1992 – 2012).....	52
Graph 10 – Impact of Dependence on APC.....	53
Graph 11 – Absolute Values of D and PpH	54
Graph 12 – Variable ΔY (1992 – 2012).....	55
Graph 13 – Impact of Variation of Income on APC	56

List of Figures

Figure 1 – Research Process9



1. Introduction

1.1 Context and Motivations

It is not from today that the Chinese elite knows the necessity for changing the Chinese economic grand strategy from an export-oriented and investment driven economy to a consumption-led one. Since 2006, the premier Wen Jiabao has been calling the attention for the shift of the fundamentals of the economy to have a sustainable growth in a long run (Wen, 2006). But was just with the 12th Five-Year Plan (2010-2015) that those appeals were addressed. The new FYP made clear to everyone that the new focus of the central authorities is to turn its efforts to increase its internal consumption, improve the efficiency of the economy (including the efficiency of the energy sector, naturally) and move its industries up the value-chain.

At the same time, the Chinese Government has been encouraging national industry to move toward more value-added production – which is expensive, and takes a long time for investments return in a more highly-technological industry and thus generate profitable returns. These industries with higher added-value, which differ greatly from the “traditional industry” that China was used to, needs also to win market share within a more fiercely-competitive market, and thus needs time to do so. Concomitantly, the returns of capital from the “traditional industry” have diminished (Nicholas, 2006) and internal consumption has not been responding according to the CCP’s will. In addition, the external demand for the Chinese products has also been decreasing especially after the 2008 Global Crisis.

It was just in 2010 that Wen Jiabao's call for change on the Chinese great economic strategy was finally listened to, because since then, some of heads of the party started to understand that to maintain economic growth at an acceptable rate, it was necessary to Rebalance the Chinese Economy¹. Since then, many different measures and policies have been adopted by the government, but until now, it doesn't seem to be enough, given that the participation of the final consumption expenditure (hereinafter as FCE) as a percentage of the GDP has remained stable during the recent years². Analyzing the household consumption separately, it declined sharply when compared with the previous decades – the participation of the household consumption in GDP decreased from 52%, in the beginning of 1980's to 35%, in 2008 (Baker & Orsmond, 2010). In other words, although the FCE had a slight growth during the previous years, the growth of the GDP developed on a much faster path.

Besides, China recently became the world's second largest economy (The World Bank, 2016) and is widely considered to be the economic engine of the world (Peterskovsky & Schuller, 2010). What can be seen on the international stage is the increasing dependency of the global economy on Chinese growth, along with the decreasing of returns of capital and the slowdown of its economy.

In addition, and in light of this scenario, the Chinese Government during the last decade has been trying to boost domestic household consumption, not just through independent policies, but also with the so-called Rebalancing the Chinese Economy. However, for many different reasons, its efforts are failing. According to

¹ The Rebalance of the Chinese Economy is understood as the shift of the macroeconomic policy from exported and investment oriented-driven economy to a consumption-driven economy.

² The Final Consumption Expenditure is composed by Household Consumption expenditure (hereinafter as Consumption) and Government Consumption Expenditure (here referred as Expenditure).

Nicholas (2006), the most touched-upon reasons of the non-accomplishment of this transition are many: decreasing flux of labor, the inflexibility of the Hukou system, fixed exchange rate, low interest rate, low efficiency of the economy with imbalances of the capital applied, a high rate of savings and investment concentrated in a few areas of the economy.

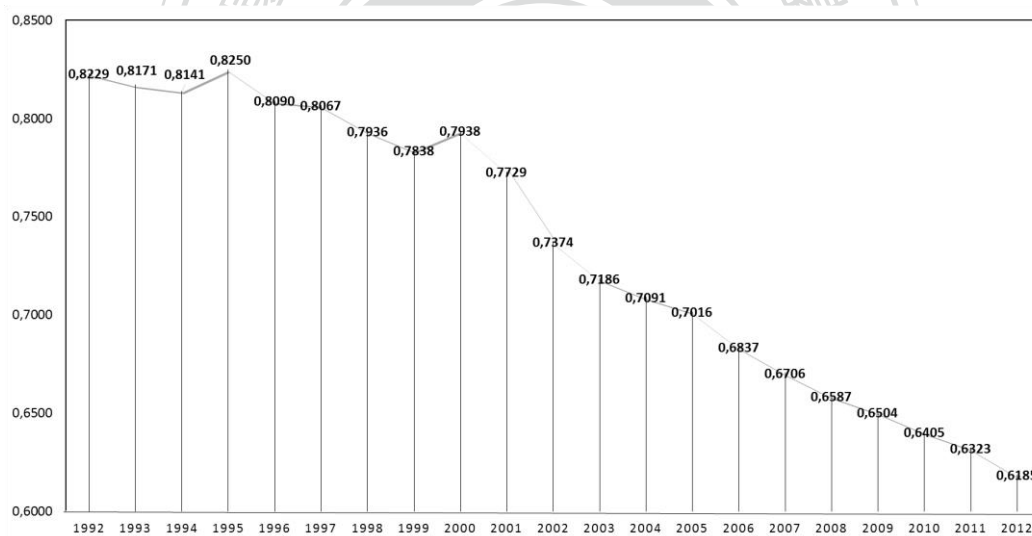
Therefore, since the world's economy is relatively dependent on the Chinese growth, and it, in turn, depends in the long run on its internal consumption, it is imperative to better understand what the reasons are that Chinese Households consume less proportionally to their income throughout this time. In other words, why is the Average Propensity to Consume decreasing?

In order to understand why the household consumption in China still remains low compared to the GDP, many authors have tried to explain this phenomenon using different approaches. Briefly introducing some: Modigliani & Cao (2004) using the Life-Cycle Hypothesis asserts that the reason of this phenomenon is explained by the fast economic growth and decrease of the non-working population (population with less than 15 years). But according to Wen (2010), based on the Permanent Income Hypothesis, shows that uncertainty about the future and borrowing constrains in an environment of high economic growth makes the Marginal Propensity to Consume decrease.

Chamon & Prasad (2010) and Meng (2003), however, use household-level data to show that the people in China are unable to smooth the incomes along their life-cycle; this is explained by the rising burden of Education, Health Care and Housing, which means that their consumption remains low for precautionary reasons as people save for a rainy day. According to another

perspective Jin, Li, & Wu (2011), also using the Chinese Urban Household-level data, found that the inequality of incomes has a negative impact on net of education expenditures. In addition, and taking the Status-Seeking Theory in consideration, they also argue that the rise of income inequality leads urban residents to save more in order to improve their social-status, especially for poorer and younger people³. But there is one consensus between all these specialists: the Average Propensity to Consume⁴ of the population is decreasing. The APC calculated by this article and considering the data from the National Household Survey, shows that it decreased from 0.89 in 1985, passing through 0.81 in 1997 (in accordance with Jin, Li, & Wu (2011)) until achieve 0.62 in 2013.

Graph 1 – National APC



Source: Calculated by the author using the compiled data from the European Institutional Investor Company (CEIC) Data Base.

In the meantime, what can be observed in China over the past few decades is a fast expansion of its economy and growth in wealth throughout its population, and at the same time, the concentration of wealth in a small section of

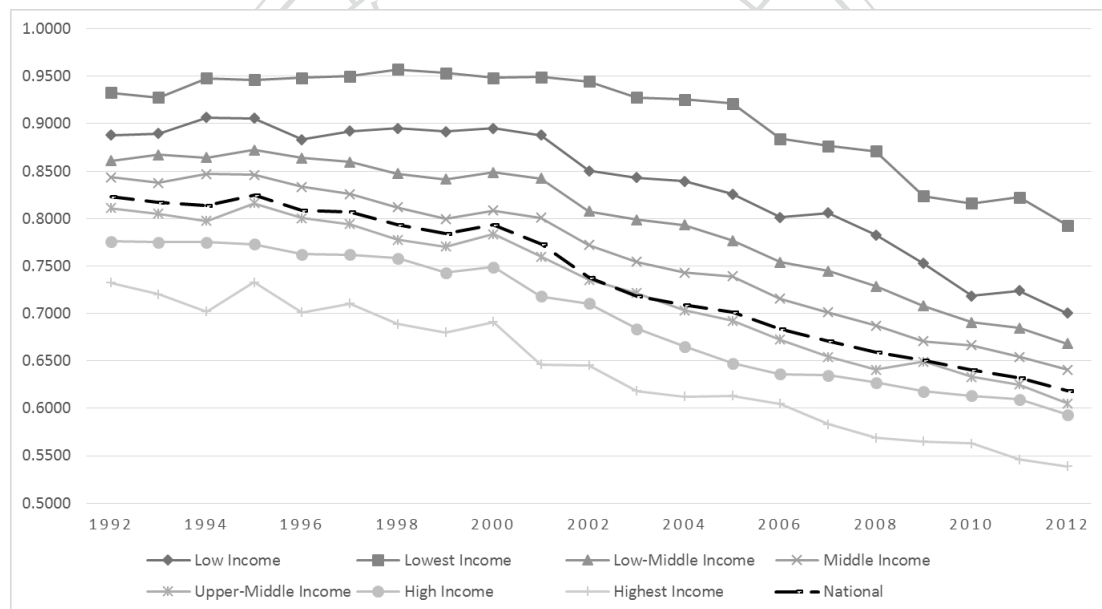
³ More details of all these approaches will be presented at the Literature Review Chapter.

⁴ Average Propensity to Consume (APC) is defined by Modigliani & Cao (2004) as the rate between Total Consumption Expenditures and Total Incomes.

society. According to the World Bank (2016) the Gini Index in China grew from 29.1 in 1981 to 42.1 in 2010 – this shows that during the past few decades, China became one of the countries with the most concentrated wealth in the world!

This concentration of wealth is also reflected in the development of the Average Propensity to Consume of the different groups shared by income level of the Chinese households, as can be seen on the “Graph 2 – APC by Level of Income”. There, the National APC is closer to the Upper-Middle Income level of the population.

Graph 2 – APC by Income Level:



Source: Calculated by the author using the compiled data from the European Institutional Investor Company (CEIC) Data Base.

The present study is shared into five chapters. The first one, Introduction, introduces the Context and Motivations of the research, which is followed by other two sections in which contains the Objectives and Variables, and the Research Process. The Literature Review comes after on the second chapter presenting the two main used theories, the Precautionary Savings Theory and the Life-Cycle

Hypothesis. The same chapter also contains a section explaining the use and treatment given to the indicators. The third chapter comes with the used Methodology and Data Information and it is followed by the fourth chapter, Results & Discussion. This chapter is the longest one and it is shared into other three sections. The first one, compile the results from the applied model; the second, presents the overall interpretation of the main findings; and the third, has an analysis of the main turning-points of the APC during the analyzed period. The fifth chapter concludes, commenting the Policy Implications, followed by Contributions & Limitations of the study; and finalizing with the final words of this research.

1.2 Objectives and Variables

That said, it is believed that in order to better understand why the Consumption in China still remains small comparing to the GDP, it is important to better understand how the independent variables interfere with the APC in each segment of the population. Thus, it is also believed that the APC is the best indicator to test the household consumption behavior instead of the total household consumption expenditure per capita exactly because it aims to know the rate of consumption compared to the total income of each year, independently to the effect of inflation.

As said, the factors that are held to have greatest impact over the consumption, may vary from author to author, but this might happen because each of them analyze the consumption from different perspectives. Thus, each of these specialists presented in their conclusions variables, which according to them, have strong influence over the consumption. In that sense, **this study aims to measure the impact of Education, Health, Housing, Dependence⁵ and Income Growth**

⁵ It is understood as “Dependence” the number of people in a household that economically depend on the others members of the same household.

over the Average Propensity to Consume of the Chinese Urban Households by Level of Income.

The focus over the level of income of the Chinese households is exactly because it was found that income inequality has a negative impact over the household consumption (Jin, Li, & Wu, 2011), but until now, there has been no prominent study on how each of these main variables impact the APC of each of the income levels. Therefore, it is believed that if this relationship could be better understood, new policies could be adopted by the Chinese government in specific for each extract of the population, if shared by Income Level.

To better illustrate, the Table 1 - Variables and Indicators presents all the variables and indicators used in this work:

Table 1 - Variables and Indicators⁶

Dependent Variable	Code	Indicators
Average Propensity to Consume	APC	Household Total Consumption Expenditure/ Household Total Income
Independent Variables		
Education	E	Consumption Exp. per Household: Recreation, Educational & Cultural Service ⁷ / Household Total Income
Health	H	Consumption Exp. per Household: Medicine & Medical Service/Household Total Income
Dependence Housing	D	N° of Person per Household – N° of Employed per Household
	PTI	Commodity Bldg. Selling Price: Residential/Household Total Income
Income Growth	ΔY	Growth between t-1 and t of Household Total Income

⁶ Each of these variables is explained in Chapter two.

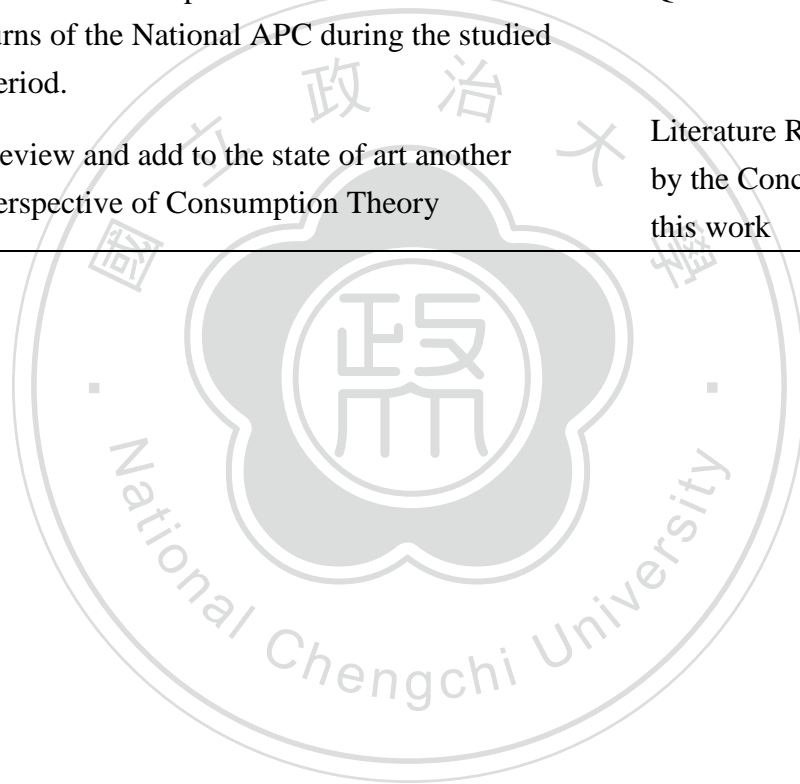
⁷ The data used to calculate the national level was “Consumption Exp. per Capita: Education”. In contrast, the data used to make the calculus by Level of Income was “Consumption Exp. per Capita: Recreation, Educational & Cultural Service”.

To illustrate the objectives of this research, follow the Table 2 –

Objectives of the Research:

Table 2 - Objectives of the Research

Objectives	Method
Obj. 1 Measure the impact of Education, Health, Housing, Dependence and Income Growth over the Average Propensity to Consume of the Chinese Urban Households by Level of Income and at the National Level.	Quantile Regression
Obj. 2 Track down the possible reasons of the main down turns of the National APC during the studied period.	Qualitative Analysis
Obj. 3 Review and add to the state of art another perspective of Consumption Theory	Literature Review and by the Conclusions of this work



1.3 Research Process

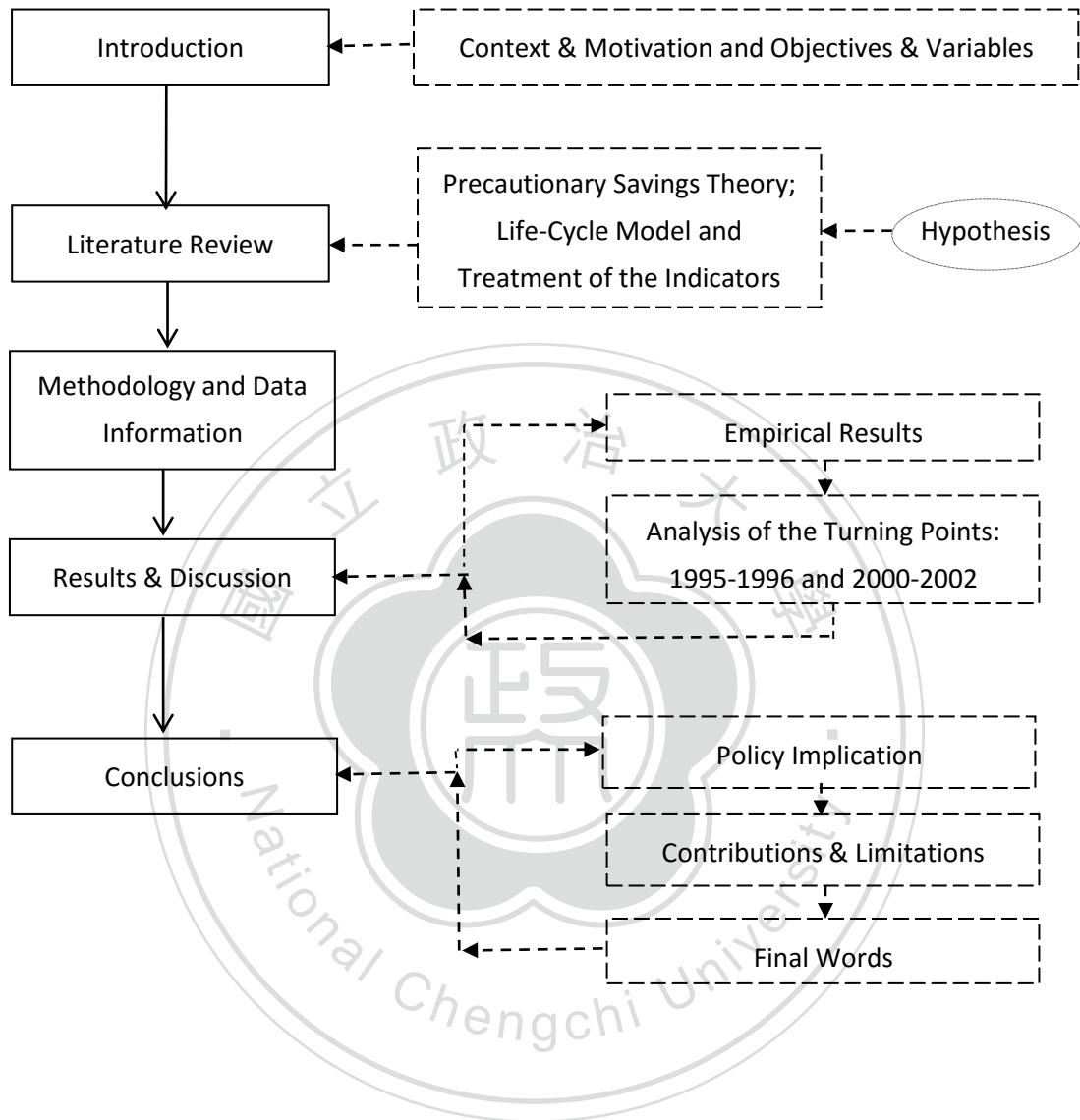


Figure 1 – Research Process

2. Literature Review

This chapter is divided into three sections. The first two sections explain the two main theories used in this thesis: The Precautionary Saving Model and the Life-Cycle Hypothesis. Each of these sections contains their main postulates, empirical applications and results. The third section explain the treatment and the reasons of the adoption of each one of the indicators.

2.1 The Precautionary Savings Theory

Although varying in their explanations, both the classical Precautionary Savings Model and Life-Cycle Model predict that households tend to increase their savings (and thus, decrease their consumption) according to the greater income uncertainty (Carroll, 1994; Engen & Gruber, 2001; Meng, 2003; Modigliani & Cao, 2004).

Leland (1968) introduced the Precautionary Saving Theory to the world explaining that the “Precautionary’ demand for saving usually is described as the extra saving caused by future income being random rather than determinate”, and argued that the function of savings is positively related to the function of uncertainty. Sandmo (1970), in turn, contributed to the debate insisting that the reasons which lead someone to save more might vary due to uncertainty on the returns of investment and on the predictability of income.

In complement to it, empirical tests found that precautionary motives are decisive determinant of the households saving and consumption behavior (Chou, Liu, & Hammitt, 2003; Engen & Gruber, 2001) and that this effect is stronger over the less wealthy families, since prudence⁸ declines in wealthier families (Chou, Liu,

⁸ Define as “the sensitivity of precautionary saving to risk”

& Hammitt, 2003; Pratt, 1964). As mentioned by Kimball (1990): “[...] if absolute prudence is increasing, labor income uncertainty will lower the marginal propensity to consume out of wealth at a given level of consumption”.

Most of the recent empirical studies related to precautionary savings understands Education, Health and Housing as the main and the most important consumptions/variables within a household; and that the variation of these variables, and not just the uncertainty of future incomes, could lead the households to save more/consume less.

Studying the relationship between the health and consumption, Chou, Liu, & Hammitt (2003) found that uncertainty over future expenses in health leads people to save more and added saying that the implementation of the National Health Insurance in Taiwan (NHI) had an impact of 8.6% - 13.7% on the savings, especially over those households with fewer savings. Furthermore, they suggest that “NHI yields a larger welfare improvement, through consumption smoothing, for households with smaller saving”.

Meng (2003), studying China, says that after the State-Owned Companies Reforms, the health-care system was no long fully provided by the state, but it became a “two-tier system” in which the state and the families started to share all the costs of health-care, and thus, it might have impacted on the household consumption.

In concordance with their results, Barnett & Brooks (2010) also found that for every additional yuan spent by the government in the healthcare system, urban Chinese families would tend to increase their consumption by 2 yuan. They explain that, with the increase of the governmental expenditures, urban households

would be able to decrease their private health-care expending. According to them, their results are compatible with the observed decrease of the urban health-care spending of the Chinese households, in the second half of the 2000`s – at that time the government expenditure on health-care increased significantly. In contrast, the same research, did not find any relationship between governmental expending on education and household consumption⁹.

Baldacci, et al. (2010), in turn, find that the high level of precautionary savings may be related to inadequate policies on “health, old-age, and the elevated private cost of higher education” – differently to the findings of Barnett & Brooks (2010) by looking from the perspective of governmental expenditures on Education. For Baldacci, et al. (2010), the government’s social spending has a non-linear impact on household savings; and governmental spending on health-care has the largest negative impact on household savings. The effects of government social expending on education, could only be observed when the “individual social spending” is considered separately. In that sense, depending on the perspective, expenditure on education might have a different relationship with the APC, which could lead to different results.

With all that said, and considering that the governmental expenditure on health and on education (understanding the restrictions previously mentioned) has a positive impact over the consumption, then the following two hypotheses can be raised:

Hypothesis 1: The more households expend on health-care, the bigger the negative impact it has on the APC.

⁹ Their results were statistically insignificant, but they argue that it might be because the data available counted just for the elementary and primary school, and that for the families, the most significant spending in education happens at the university level.

Hypothesis 2: The greater the expenditure per household on education, the larger its negative impact on the Average Propensity to Consume of the Households.

Another very important variable that might have a big impact over the household consumption is the housing factor, especially after the “massive privatization of the housing stock in China”. In 1980`s, the housing sector started to be reformed, and as a result, the official rent increased and occupants of government housing could then buy their own house so that, in 1999, the great majority of the household were already expecting to buy their own house (Meng, 2003).

In their work, Chamon & Prasad (2010) suggest that using simple regression calculations, they noticed that “savings driven by the motive of home ownership could account for about 3 percentage points of the increase in the household saving rate from 1995 to 2005” – which represents a great impact if the growth of the housing price since the real estate open-process is considered. At the beginning of 1990, only 17 percent of the households owned their own houses, and this proportion had increased to 86 percent, in 2009. Therefore, Chamon & Prasad (2010) affirm that the rise of the household saving rate can be in part explained by the massive privatization of the housing sector.

That said, then a third hypothesis related to the housing sector can be raised as:

Hypothesis 3: The bigger the rise in the rate “Housing Price/Total Income”, the bigger is its negative impact on the household Average Propensity to Consume (APC).

In summary, according to the theories and the empirical findings, this research expects to find a strong relationship between the variation of housing price, the expending on education and health and the variation of the APC.

2.2 The Life-Cycle Model

Looking from another perspective, the Theory of Consumption observed through the Life-Cycle Hypothesis (Modigliani & Brumberg, 1954) shows that the patterns of consumption may vary according to the stages of one`s life, future incomes and wealth accumulated – a person would tend to “dis-save” (spend its savings) while young and old, but would then try to accumulate during his/her middle-ages. This is because a rational person wants to “maximize utility derived from their life resources by allocating them optimally between current and future consumption” (Modigliani & Cao, 2004), which means, the rational consumer will tend to smooth their incomes over their life-cycle.

Therefore, a “prudent consumer” whenever faced by any factor of uncertainty related to their future income, will consequently try to increase their savings and/or decrease their consumption (Carroll, 1994) in order to smooth their spending throughout their life – which is also in accordance with the Precautionary Saving Model. In other words, the consumption reacts to the variations in the market value of wealth (Ando & Modigliani, 2005), and consequently it depends indirectly on the agents responsible for these variations. So, any agent that interferes with someone`s predictability of future wealth has an (in)direct affect over his/her savings/consumption.

According to Ando & Modigliani (2005) the model assumes that:

“(a) The utility function is homogeneous with respect to consumption at different points in time [...]; (b) The individual neither expects to receive nor desires to leave any inheritance [...] (c) The consumer at any age plans to consume his total resources evenly over the remainder of his life span [...]; (d) Every household has the same (expected and actual) total life and earning spans [...]; (e) The rate of return on assets is constant and is expected to remain constant.” (Ando & Modigliani, 2005)

Still according to Modigliani in an empirical application of the Life-Cycle Hypothesis (LCH) over the Chinese households, he found that the reason for the Chinese households maintain its savings rate high is because of the “high growth of income and the demographic structure of the economy” (Modigliani & Cao, The Chinese Saving Puzzle and the Life-Cycle Hypothesis, 2004).

When Modigliani & Cao (2004) refer to the demographic structure, they mean that what they call “minority” (E/M)¹⁰ decreased drastically since the implementation of the One-Child Policy in China. Since then, the ratio of people under fifteen to working population decreased more than 50 percent; and, the burden assumed by the younger generation to provide support to the older generation increased, which means by itself a stimulus to save. So, the increase of the intergenerational dependence became a negative impact on the overall levels of consumption. They found that these two effects “contributed equally more than ten basis points to the rise in the saving rate of some thirty basis points (from 3 percent to 33 percent)”. And, in addition, this effect might be related to some demographical transformations in the core of the Chinese society since the families are more nuclearized (other relatives such grandparents started to compose their own households) and the internal migration of the past decades started to develop an important role in the distributions of wealth, labor and size of the family.

¹⁰ Modigliani understands “minority” (E/M) as “Number of persons employed / Number of persons 14 years and younger”.

In contrast to the results achieved by Modigliani & Cao (2004) and the Life-Cycle Hypothesis, Chamon & Prasad (2010) using the Urban Household Survey found that the poorer, young and older Chinese people would tend to save more in comparison with other sections of the population, and thus this part of the population would tend to increase its savings instead of “dis-save”. This is explained by the “rising private burden of expenditures on housing, education, and health care”, and the authors conclude that “[...] the risk of large health expenditures can explain high savings among households headed by older persons, and that savings are also higher for households whose composition portends large education expenditures in the future”.

Therefore, assuming that the young and elderly also belong to the group of “dependents” on the working members of their family, then based on this dilemma between both authors whether the dependence has a positive relation to the APC the Hypothesis 4 is raised:

Hypothesis 4: The more the increase in the number of dependents in a household, the more this household would have incentives to save, and thus, decrease its consumption.

And in addition to Modigliani`s findings about the relation between income-growth and consumption, the Hypothesis 5 is also raised:

Hypothesis 5: Understanding that the income growth is positive in relation to the savings, then the bigger the income growth, the bigger its negative impact on the APC.

2.3 Treatment of the Indicators

This section introduces the indicators used in the calculations followed by the reasons for their use.

Most of the studies about consumption use the aggregate consumption expenditure as an independent variable, since they want to understand the direct impact of the independent variables over the consumption. As this research aims to understand what are the reasons that leads the Chinese Households to consume less proportionally to the income along the time, a different, more comprehensive model must be adopted. This study uses the proportion of this consumption over the income rather than the consumption expenditure. Variations of the study of consumption through other dependent variables can be seen for example in Barnett & Brooks (2010), which used the total savings instead of consumption expenditures. So, this is a reasonable way to understand what factors lead the behavior of this proportion (independently of inflation), other than just the variation of the nominal consumption.

Since the purchasing power of consumers and the value of currency varies according to the development of the economy, when household consumption in China is studied the obtained results are an average of the impact of a certain dependent variable over the independent one; but this does not consider the effect of inflation, the real evaluation of the income and its effect over the other expenses, such education and health. An exception in studies applied to China is the research lead by Modigliani & Cao (2004) in which inflation was considered an independent variable.

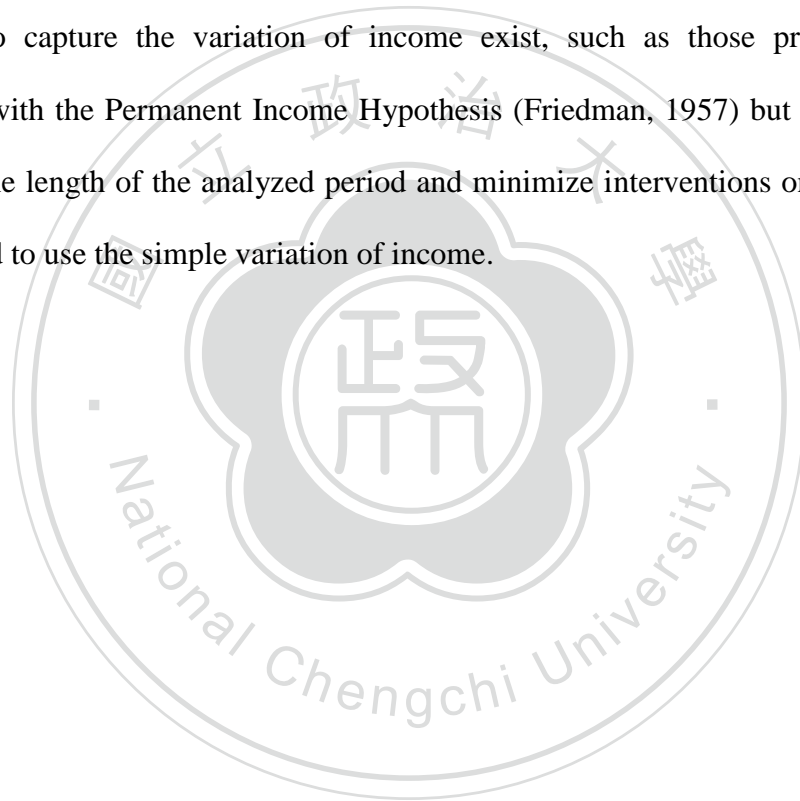
In that sense, the variables education, health and housing will have their indicator divided by the Household Total Income. This is also because the share of these expenses over the Household Total Income translates not just into the ability of the family to pay such expenses, but also tracks down the real variation of these expenses in relation to the family's income – since the analysis is made by level of income. For that, in order to find the income and expenditures (consumption, health and education) per household, the data obtained through CEIC database of income and expenses per capita was multiplied by the number of people in a household, which generated the Household Total Consumption Expenditure, Household Total Income and Consumption Exp. per Household on: (1) Recreation, Educational & Cultural Service ; and on (2) Medicine & Medical Service.

In particular, for the housing variable, the indicator PTI was obtained from the rate between Commodity Bldg. Selling Price: Residential and Household Total Income for each income level. It is understood that the impact of the housing price on the less wealthy families might be underestimated; and for the wealthiest ones, overestimated. This, in a last analysis, might alter the coefficients obtained at the extremes of the income levels. It is also understood that the housing price might vary by region and by income level, since for each level, the families would choose their real estate according to its affordability. But the insistence of this indicator is to test if and how the burden assumed by the families of buying a house would impact on the consumption, otherwise, this analysis would not be possible due to restrictions on available data.

For the variable “Dependence”, the used indicator was obtained from the difference between the N^o of persons per household and the N^o of employees per household. The use of this indicator is to check if and how the number of

dependents in a household affects the APC. As said, it is still not completely clear whether this variable impacts the propensity to consume of the families, specifically in China.

And finally, as defended by Modigliani and the Life-Cycle Hypothesis, the growth of the households` income has a negative relationship with consumption. So, to measure this variable, the indicator used is obtained simply by the difference between the income of the previous year and the current one. It is known that others methods to capture the variation of income exist, such as those proposed by Friedman with the Permanent Income Hypothesis (Friedman, 1957) but in order to maintain the length of the analyzed period and minimize interventions on data, this study opted to use the simple variation of income.



3. Methodology and Data Information

3.1 Methodology

Basically the approach used in this research, classified as quantitative, follow two steps. The main and first one consists of running the Quantile Regression, shared into quintiles, and test the effects of the independent variables over the APC. It is followed by the results of the regressions of each income level and their interpretation. The results and analysis are shown firstly for the National level and it is followed by the results for each of the income level. The second step consists of a qualitative analysis attempting to track down the possible reasons for the main downturns (drastic variations) in the National APC during the studied period.

3.1.1 Quantile Regression

The OLS Regression, also called Ordinary Least Squares, is the most used method to test and run models throughout most of the literature about theories of consumption (Chamon & Prasad, 2010; Jin, Li, & Wu, 2011; Meng, 2003; Modigliani & Cao, 2004 etc). But, running the ARCH test (Autoregressive Conditional Heteroskedasticity), the results show the presence of heteroskedasticity, which justifies the use of Quantile Regression for the analysis of this study, instead the OLS Regression.

Following Jin, Li, & Wu (2011), in order to identify the effect of the dependent variables over the consumption behavior, we will estimate an empirical model, as follow:

$$APC = \alpha + \beta E + \gamma H + \delta D + \omega PTI + \pi \Delta Y + \varepsilon \quad (1)$$

Where APC is the Average Propensity to Consume, E the Indicator for the variable Education; H, for health; D, for Dependence; PTI, for Housing; and ΔY , for the variation on the income. The coefficients β , γ , δ , ω and π are their respective coefficients. α is the intercept coefficient, ε is the coefficient for standard error – values considered as zero, for simplification.

In Eq. (1), each of the coefficients shows the impact their respective variables over the APC. Which means that the coefficient β and γ measure the impact over the APC for each variation on Consumption Expenditure per Household on Recreation, Educational & Cultural Service, and on Consumption Exp. per Household on Medicine & Medical Service over Household Total Income, respectively. For the variable D, δ expresses the relationship between APC and the dependency rate for each household. And for PTI, ω represents the impact of the burden on a family of purchasing a house on the APC. The value of π , in turn, shows the impact of variation of income on the APC.

Following this method, it is expected to better understand: (1) the relationship of all these variables for each level of income, based on the findings of previous studies; and, (2) which variables really have influence over the APC of each level of income. Besides, it is also expected to understand why different authors could get different results even if studied the same variables. The answer for this puzzle might be in an analysis of the Chinese households from the perspective of each income level.

In addition, the use of quantile regression opens a new perspective on understanding the relationship between the variables according to the variations in the APC along the past 20 years in the Chinese economy by income and national

level. In other words, how do the variables behave and what are their interactions with the propensity to consume according to its own variations?

In the presence of heteroskedasticity, the simple OLS regression is unable to capture a better view of the real relationship between the dependent and the independent variables. To cover this gap, the Quantile Regressions (QR) is an excellent tool since it focuses not only on the conditional mean, but also on the whole conditional distribution of the variables, along different locations; which means that the QR works better with variables that are not evenly distributed. This is why the QR offers a better overview of the relationship between the dependent and independent variables (Davino, Furno & Vistocco, 2014). Therefore, Quantile Regression makes it possible to understand the role of each independent variable over the dependent variable, for each quantile.

In that sense, this research will divide the analysis into five quantiles, for each income level and for the national level. Which means that, each quantile possesses 20 percent of the Average Propensity to Consume. Therefore, it is expected to understand the role of these variables over the APC according to its scale of values.

3.1.2 Analysis of the Turning Points: 1995-1996 and 2000-2002

In order to give a more comprehensive analysis of the results found through the previous steps, a qualitative analysis is made aiming to track down the possible reasons for the main variations (main upside-downs) of the APC during the studied period. This analysis consists of associated politic-economical events that might have a high impact over the APC. The starting point of this analysis begins is with the dependent variables, i.e., investigate relevant politic-economical facts on education,

health, housing price, dependence ratio and variation of income; and if no possible relationship is found between the working variables, then the scope of the investigation is widened and other facts are analyzed, such as economic crisis and general political milestones.

As observed on the Graph 1 – National APC, the most abrupt variations in the National APC happened in 1995-1996 and on the years 2000, 2001 and 2002. Therefore, this qualitative phase of the analysis for the national level remains just over these years.

The sources for this qualitative analysis are considered secondary sources and vary from official statements/laws issued by Chinese government to academic and journalistic articles.

3.2 Data Information

All the data used in this research are secondary data from the National Bureau of Statistics of China through the National Household Survey and compiled/obtained from the CEIC Data Base by Euromoney Institutional Investor Company. The intertemporal analysis goes from 1992 to 2012, due to limitations in the data available.

The Table 3 – “Data Description” shows the name of each data used in this work, as well as the used abbreviation code and the length time of each data.

In order to expand the horizon of the analysis, the data “Commodity Bldg. Selling Price: Residential” had to be projected for the years 1992, 1993 and 1994. A linear progression was used to do this projection taking as base for the calculation the first eight years of the data range (from 1995 to 2002). Since for

these years, the data didn't have any significant variance, the projections made maintained its significance.

Table 3 - Data Description

Data**	Abbreviation	Time Period
National Level		
Household Income per capita	Ypc	Dec./1952 - Dec/2013
Household Consumption Expenditure per Capita	Cpc	Dec./1952 - Dec/2015
Consumption Exp. per Capita: Recreation, Educational & Cultural Service	Epc	Dec./1992 - Dec/2014
Consumption Exp. per Capita: Medicine & Medical Service	Mpc	Dec./1992 - Dec/2015
No of Employee per Household	EpH	Dec./1985 - Dec/2012
No of Person Per Household	PpH	Dec./1985 - Dec/2012
Commodity Bldg. Selling Price: Residential	RP	Dec./1995 - Dec/2014
by Income Level*		
Household Income per capita	Ypc*	Dec./1985 - Dec/2012
Household Consumption Expenditure per Capita	Cpc*	Dec./1985 - Dec/2012
Consumption Exp. per Capita: Recreation, Educational & Cultural Service ⁺	Epc*	Dec./1985 - Dec/2012
Consumption Exp. per Capita: Medicine & Medical Service ⁺	Mpc*	Dec./1985 - Dec/2012
No of Employee per Household	EpH*	Dec./1985 - Dec/2012
No of Person Per Household	PpH*	Dec./1985 - Dec/2012

*All the abbreviations by Income level will have a *, and after that, the specification to which level of income that code belongs.

**The yearly data had to be converted to quartiles.

⁺Although it is specified that these data runs from 1985 to 2012, but the data for the years 1986-1989 are not available.

Another important observation is that in order to increase the number of samples, the software EViews was used to convert the yearly data to quarterly data. For that, the frequency of conversion was the average of observations (as high to low frequency method) and constant-match average (as low to high frequency method). In addition, Eviews is also the software used to run the regressions used in this study.

About the definition of the main variables, the National Bureau Statistics of China (National Bureau Statistics of China, 2002), the Total Income of Urban Household can be defined as:

“[...] the total actual income of the sample households, including regular or fixed income and occasional income. The income of a circulating nature such as withdrawal from bank deposits, loans borrowed from relatives or friends, repayment of loans received and various temporary collection of money is excluded.” (National Bureau Statistics of China, 2002)

Another important concept defined by the same institution is the so-called Expenditure for Consumption of Urban Households:

“[...] refers to total expenditure of the sample households for consumption in daily life, including expenditure for various commodities and expenses for non-commodity items such as culture and service, etc., but excluding fines and confiscation, loss, tax payments (such as income tax, license tax, real estate tax, etc.) and various expenses by individual laborers for business purposes.” (National Bureau Statistics of China, 2002)

And finally, as defined by the China Statistical Yearbook of 2012 (National Bureau Statistics, 2012), Urban Households by Income Group is understood as¹¹:

“All households in the sample are grouped, by per capita disposable income of the household, into groups of lowest income, low income, lower middle income, middle income, upper middle income, high income and highest income, each group consisting of 10%, 10%, 20%, 20%, 20%, 10% and 10% of all households respectively” (National Bureau Statistics, 2012).

11 For more the definition of the others variables and for more details about the National Household Survey, see APPENDEX I.

4. Results & Discussions

This Chapter is divided into three sections. The first section “Empirical Results” reports the results and the findings obtained from the empirical model used. This section firstly analyzes the results at the National Level and, then, the results by Income Level. The second section, called “Overall Interpretation of the Results” brings the main points and their respective interpretation besides those already presented in the previous section. The third section is “Analysis of the Turning Points: 1995-1996 and 2000-2002” and, it shows an economic and political analysis of the possible reasons for the main variations the APC during the studied period.

4.1 Empirical Results

In this section the results are presented first at the national level, and then, by Income Level.

4.1.1 National Level

The starting-point of the analysis begins with a comparison of the results of the Quantile Regression at the National Level and the Graph 1, presented in the first chapter. As shown on the Table 4, the simple OLS regression reveals that the variables Health, Housing Price and the Variation of Total Income has a negative impact over the Average Propensity to Consume (APC) of the urban Chinese households. Their respective coefficients are approximately (-11.1), (-0.5) and (-0.2), which means that during the period analyzed (1992-2012), the relative increase of the household expenses on health-care per total household income had the strongest impact over the National APC. These results are followed by the relative increase of the housing price over the household total income; and the variation of the income.

In addition, as observed, the impact of PTI has a little gap between the results computed by the OLS model and those from the QR model, which means a value of (-0.72), in average – obtained from all the significant values of this variable. Therefore, it is important to notice that, considering the presence of heteroskedasticity, the values that should be observed are those obtained from the QR model – this highlight the importance of the use of QR model, since the results obtained from the OLS model would not frame the most precise scenario.

On the other hand, the variable Education and Dependence have a positive relationship with the APC, which shows that the greater the increase of the expenses of a household on education (relative to the total income), the greater is the propensity to consume of this family. The variable with the highest positive impact is education, with the coefficient value of (6.4); followed by the variable Dependence, with the coefficient value of (0.7). For this regression, the Adjusted R-squared value is 0.96, which means that the model can explain in great part the variation of the APC at the national level.

With the results of the Quantile Regression and with the help of Graph1, it is possible to conclude that for the years in which the APC is bigger (quantile 0.8, for example), the negative impact of the variable health is smaller than the negative impact caused by this variable for the years in which the APC is smaller (quantile 0.2, for example). This means that, considering that the years with smaller APC are coincidentally the more recent ones, then it is possible to affirm that the negative impact caused by the expenditure with health-care over the APC are having a stronger effect in recent years if compared to the beginning of the time period. In other words, the burden of a family with health-care has a heavier weight for the years with smaller APC.

Table 4 - Results of the OLS and Quantile Regression at the National Level

OLS Regression					
Variables		Coefficient	Std. Error	t-Statistic	Prob.
E		6.399234	0.220714	28.993330	0.0000
H		-11.083800	0.406933	-27.237390	0.0000
PTI		-0.493703	0.105879	-4.662918	0.0000
D		0.703351	0.017325	40.597590	0.0000
ΔY		-0.228674	0.030222	-7.566451	0.0000
R-squared		0.964683			
Adjusted R-squared		0.962721			
Quantile Regression					
Variables	Quantile	Coefficient	Std. Error	t-Statistic	Prob.
E	0.200	6.838834	0.409314	16.708050	0.0000
	0.400	6.334534	0.271588	23.324060	0.0000
	0.500	6.370054	0.299960	21.236360	0.0000
	0.600	6.396478	0.315640	20.265130	0.0000
	0.800	6.466688	0.437929	14.766530	0.0000
H	0.200	-12.077520	0.643559	-18.766760	0.0000
	0.400	-12.223200	0.357839	-34.158340	0.0000
	0.500	-12.016400	0.353234	-34.018280	0.0000
	0.600	-11.913090	0.335582	-35.499780	0.0000
	0.800	-11.273760	0.335738	-33.579080	0.0000
PTI	0.200	-0.619100	0.113971	-5.432103	0.0000
	0.400	-0.776100	0.079457	-9.767494	0.0000
	0.500	-0.768756	0.081053	-9.484576	0.0000
	0.600	-0.760946	0.077945	-9.762551	0.0000
	0.800	-0.681834	0.085303	-7.993119	0.0000
D	0.200	0.721133	0.022905	31.484350	0.0000
	0.400	0.760770	0.017909	42.479060	0.0000
	0.500	0.755173	0.020122	37.530630	0.0000
	0.600	0.751456	0.020285	37.044170	0.0000
	0.800	0.728061	0.025145	28.954920	0.0000
ΔY	0.200	-0.239092	0.027954	-8.553094	0.0000
	0.400	-0.256857	0.022656	-1.133730	0.0000
	0.500	-0.251811	0.027748	-9.075062	0.0000
	0.600	-0.248358	0.028280	-8.782112	0.0000
	0.800	-0.232729	0.032895	-7.074792	0.0000

Source: Calculated by the author

Therefore, findings related to the variables H, PTI and ΔY confirm the raised hypotheses 1, 3 and 5, considering the results at the national level. However, it is not possible to confirm the Hypothesis 2 since the variable “E” has a positive impact on APC.

As cited, a positive impact was found between “D” and APC, which means that the greater the number of dependents in a household, the greater is the APC. This is possible simply because independently of the income of a household, the number of people has a positive relationship on its consumption – it would be impossible for a household to save if the number of dependents increased since each individual has a minimum required level of consumption.

Therefore, the results at the national level denies the Hypothesis 4 stated as: “the more the increase of the number of dependents in a household, the more this household would have incentives to save, and thus, decrease its consumption”.

4.1.2 Level of Income

The analysis by income level is presented in ascendant order of income, starting, thus, from the lowest household income level until the highest one.

Therefore, the Table 5 shows the results of the empirical model using the OLS and Quantile Regression for the Lowest Income of the households in urban China. Of course in the presence of heteroskedasticity, the results that have to be considered are those from the Quantile Regression, but the results from the OLS regression are presented because it gives us an idea of the behavior of each variable throughout the studied period as a whole; and again, in case of incompatibility of the results from both models, the one that should be considered are those from the

Quantile Regression, even if the results from the OLS regression have a high p-Value.

So, considering the results for the lowest income of the Chinese society in the urban area, the variables H and PTI presented a negative relation with the APC. The values of this impact are (-3.62) and (-3.50), respectively. The value registered for ΔY shows no significance using the OLS regression, but looking at the quintile 0.200 and 0.400 in the Table 5, it is possible to see a positive relationship with values of 0.25 and 0.22, respectively. This means that the increase of the variation of income for this segment of the population increases the APC for those years that presented smaller APC. This result presents a different scenario from the results at the National Level, but it is still according the Life-Cycle Hypothesis, which is commented on the next section after the results of all income levels have been reported.

The variables E and D presents a positive relationship to the APC achieving values of 3.69 and 0.50 for the OLS model, respectively. These results follow the results achieved at the national level, but on a smaller scale. And finally, the coefficients of the variable D demonstrate that the positive impact of the number of dependents in a household over the APC decrease its intensity for the years with lower APC. This possibly might be related to the decrease of the family size, as commented on the next section.

Table 5 - Results of the OLS and Quantile Regression at the Lowest Income Level

OLS Regression					
Variables		Coefficient	Std. Error	t-Statistic	Prob.
E		3.685646	0.383466	9.611395	0.0000
H		-3.615949	0.342493	-10.557740	0.0000
PTI		-3.497933	0.513586	-6.810798	0.0000
D		0.501107	0.022335	22.436270	0.0000
ΔY		0.011593	0.072105	0.160781	0.8727
R-squared		0.5532			
Adjusted R-squared		0.5297			
Quantile Regression					
Variables	Quantile	Coefficient	Std. Error	t-Statistic	Prob.
E	0.200	4.599985	1.0238	4.4929	0.0000
	0.400	3.533334	0.3769	9.3759	0.0000
	0.500	3.038688	0.9715	3.1279	0.0025
	0.600	2.985034	0.5052	5.9084	0.0000
	0.800	3.059125	0.6444	4.7475	0.0000
H	0.200	-3.492545	0.8162	-4.2791	0.0001
	0.400	-2.410469	0.3527	-6.8336	0.0000
	0.500	-3.319795	2.4576	-1.3508	0.1808
	0.600	-3.941803	1.2333	-3.1961	0.0020
	0.800	-3.774296	1.7602	-2.1442	0.0352
PTI	0.200	-3.437375	0.6551	-5.2469	0.0000
	0.400	-3.465639	0.4640	-7.4692	0.0000
	0.500	-2.836099	1.8906	-1.5001	0.1377
	0.600	-2.811590	1.5500	-1.8139	0.0736
	0.800	-3.947926	2.6379	-1.4966	0.1386
D	0.200	0.425104	0.0348	12.2240	0.0000
	0.400	0.459595	0.0236	19.4920	0.0000
	0.500	0.504301	0.0843	5.9854	0.0000
	0.600	0.536891	0.0247	21.7314	0.0000
	0.800	0.577255	0.0242	23.8521	0.0000
ΔY	0.200	0.246963	0.0911	2.7122	0.0083
	0.400	0.217640	0.0571	3.8097	0.0003
	0.500	-0.008860	0.5061	-0.0175	0.9861
	0.600	-0.164042	0.1616	-1.0149	0.3134
	0.800	-0.209226	0.1561	-1.3401	0.1842

Source: Calculated by the author

The R-squared is 0.55, meaning that the adopted model explains just some of the reasons that leads this extract of the population to save as their situation is different from the others income level. Therefore, more studies of this share of the population are necessary to better understand which other factors, besides those studied in here, affects its APC.

For the Low Income Level extract (Table 6), the results show a negative impact of H and PTI on the APC, which follows the results of the Lowest Income Level. The numbers achieved are (-6.12), considering the OLS regression for H; and (-2.76) for the variable PTI (considering the QR model¹²) – the p-value is significant only for the quintile 0.500.

The variables for education (E) and for dependence (D), in turn, obtained positive results reaching 4.35 and 0.47, respectively for the OLS regression. The P-value for the variable ΔY is too high if considering the OLS model, but it does have significance at the quantiles 0.200 and 0.4000 of the QR model. For these quintiles the results are 0.30 and 0.31, respectively. Therefore, it is possible to affirm that the variation of income for this level of income just had a positive relationship for the years with lower APC. For the years with high APC, it is not possible to make the same affirmation, since the P-value for those years are above 0.1. The value of the R-squared is 0.70 for this level of income, which means that the model used already can explain reasonably the behavior of the APC.

¹² Since the difference between the OLS and Quantile regression is considerable.

Table 6 - Results of the OLS and Quantile Regression at the Low Income Level

OLS Regression					
Variables		Coefficient	Std. Error	t-Statistic	Prob.
E		4.3476	0.4446	9.7779	0.0000
H		-6.1267	0.4245	-14.4338	0.0000
PTI		-1.5302	0.7068	-2.1650	0.0335
D		0.4751	0.0317	14.9856	0.0000
ΔY		0.0207	0.0859	0.2410	0.8102
R-squared		0.7076			
Adjusted R-squared		0.6922			
Quantile Regression					
Variables	Quantile	Coefficient	Std. Error	t-Statistic	Prob.
E	0.200	4.7572	0.5895	8.0694	0.0000
	0.400	4.2593	0.5315	8.0135	0.0000
	0.500	4.7637	0.6860	6.9443	0.0000
	0.600	3.9937	0.8985	4.4448	0.0000
	0.800	3.8356	0.9344	4.1050	0.0001
H	0.200	-4.3818	0.7215	-6.0731	0.0000
	0.400	-3.9972	0.7594	-5.2637	0.0000
	0.500	-5.2920	0.8402	-6.2988	0.0000
	0.600	-6.5305	0.5889	-11.0902	0.0000
	0.800	-6.0996	1.2126	-5.0303	0.0000
PTI	0.200	0.4510	0.8315	0.5423	0.5892
	0.400	-0.3093	1.1502	-0.2689	0.7887
	0.500	-2.7632	1.4060	-1.9653	0.0530
	0.600	-3.1359	2.5857	-1.2128	0.2290
	0.800	-2.1456	5.2852	-0.4060	0.6859
D	0.200	0.3075	0.0424	7.2538	0.0000
	0.400	0.3539	0.0591	5.9869	0.0000
	0.500	0.4593	0.0806	5.7005	0.0000
	0.600	0.5774	0.0515	11.2105	0.0000
	0.800	0.5488	0.0947	5.7929	0.0000
ΔY	0.200	0.2966	0.1078	2.7523	0.0074
	0.400	0.3083	0.1263	2.4417	0.0169
	0.500	0.1722	0.1725	0.9982	0.3214
	0.600	-0.1379	0.1520	-0.9073	0.3671
	0.800	-0.0981	0.1516	-0.6471	0.5195

Source: Calculated by the author

As shown on the Table 7, the results do not present great difference for the Low-Middle Level, except by the increase of intensity of the influence of most

of the variables over the APC. This means that each of the variables started to have a stronger impact on the dependent variable.

Taking a look at the independent variables, H and PTI present a negative impact on the APC of (-8.99) and (-3.51), for the OLS model – this impact is almost doubled in compared to the previous two income level. It is also possible to see that the intensity of H increases according to the decrease of the APC; and that the PTI follows the decrease of the APC, using the Quantile Regression.

For the variables E and D, the results show, in turn, a positive impact of 5.02 and 0.59, respectively. The variable ΔY once again just presents a positive relationship at the quantile 0.200, with the value of 0.25; and 0.400, with 0.1733. The variable E also presents a tendency to increase its weight according to the years with lower APC. In addition, the power of explanation (R-squared) of the model increased to 0.90, which means that most of the APC's behavior for the Low-Middle Income can be explained by the present model.

Table 7 - Results of the OLS and Quantile Regression at the Low-Middle Income Level

OLS Regression					
Variables		Coefficient	Std. Error	t-Statistic	Prob.
E		5.0208	0.3342	15.0245	0.0000
H		-8.9882	0.3825	-23.4981	0.0000
PTI		-3.5102	0.5310	-6.6107	0.0000
D		0.5936	0.0242	24.5011	0.0000
ΔY		0.0948	0.0565	1.6772	0.0976
R-squared		0.9001			
Adjusted R-squared		0.8949			
Quantile Regression					
Variables	Quantile	Coefficient	Std. Error	t-Statistic	Prob.
E	0.200	5.8427	0.4069	14.3588	0.0000
	0.400	5.9615	0.4909	12.1445	0.0000
	0.500	4.9212	1.0443	4.7123	0.0000
	0.600	4.4990	0.6594	6.8225	0.0000
	0.800	3.4913	0.7676	4.5482	0.0000
H	0.200	-9.0281	0.8852	-10.1989	0.0000
	0.400	-9.5685	0.6111	-15.6585	0.0000
	0.500	-8.9364	0.7758	-11.5194	0.0000
	0.600	-8.4191	0.5013	-16.7944	0.0000
	0.800	-8.2234	0.4309	-19.0822	0.0000
PTI	0.200	-3.4126	0.8012	-4.2593	0.0001
	0.400	-3.8894	0.5411	-7.1872	0.0000
	0.500	-4.1979	0.5375	-7.8098	0.0000
	0.600	-4.2539	0.5066	-8.3976	0.0000
	0.800	-2.2045	3.2503	-0.6782	0.4997
D	0.200	0.5202	0.0457	11.3924	0.0000
	0.400	0.5568	0.0320	17.3816	0.0000
	0.500	0.6171	0.0587	10.5046	0.0000
	0.600	0.6339	0.0434	14.6129	0.0000
	0.800	0.6499	0.0624	10.4212	0.0000
ΔY	0.200	0.2512	0.0776	3.2363	0.0018
	0.400	0.1733	0.0569	3.0433	0.0032
	0.500	0.1117	0.0717	1.5586	0.1233
	0.600	0.0882	0.0579	1.5233	0.1318
	0.800	-0.0937	0.1382	-0.6778	0.4999

Source: Calculated by the author

The Middle Income Level follows the same trend as the Low-Middle Income, but the intensity of the impact of the variables decreases (see Table 8). For this level, the variable H presents a negative relation of (-8.41) according to the OLS model; besides, the coefficient decreased its intensity from (-8.88), at the quintile 0.800, passing through (-7.72), at the quintile 0.500 until its intensity increases again to (-8.03) at the quintile 0.200. This illustrates the variation of intensity of H over the APC, and once more highlight the importance of the Quantile Regression in the present analysis.

PTI is the other variable that presents a negative relation with APC, but for this level of income, the only significant results appear at the quantiles 0.800 and 0.400. The results for these two quantiles are (-2.50) and (-1.29), respectively. This translates the decreasing intensity of the influence of this variable to the APC. The most probable explanation is that for this level of income, the total income grew faster than the housing price.

On the other hand, E and D presented a positive relationship with the APC reaching 4.64 and 0.55, respectively (OLS model). And the positive impact of ΔY , could only be observed at the quantile 0.800 (value of 0.16). The R-squared remained 0.90, compared with the Low-Middle Income.

In addition, the variables E and H presented a trend of increasing impact on the APC according to the years with lower APC. In contrary, the variables PTI and D, presented an opposite trend to those from the results of E and H.

Table 8 - Results of the OLS and Quantile Regression at the Middle Income Level

OLS Regression					
Variables		Coefficient	Std. Error	t-Statistic	Prob.
E		4.6417	0.3211	14.4562	0.0000
H		-8.4130	0.4217	-19.9518	0.0000
PTI		-1.2208	0.5936	-2.0565	0.0432
D		0.5517	0.0303	18.1783	0.0000
ΔY		0.0893	0.0602	1.4828	0.1423
R-squared		0.8994			
Adjusted R-squared		0.8941			
Quantile Regression					
Variables	Quantile	Coefficient	Std. Error	t-Statistic	Prob.
E	0.200	5.1134	0.4981	10.2653	0.0000
	0.400	4.1105	0.3718	11.0554	0.0000
	0.500	4.0142	0.3887	10.3275	0.0000
	0.600	3.9663	0.9271	4.2783	0.0001
	0.800	4.6111	0.6156	7.4900	0.0000
H	0.200	-8.0308	1.0450	-7.6847	0.0000
	0.400	-7.6637	0.4900	-15.6415	0.0000
	0.500	-7.7235	0.4369	-17.6788	0.0000
	0.600	-8.4433	1.1662	-7.2403	0.0000
	0.800	-8.8786	0.3396	-26.1418	0.0000
PTI	0.200	-0.5900	0.8492	-0.6948	0.4893
	0.400	-1.2898	0.6987	-1.8460	0.0688
	0.500	-0.8643	0.6287	-1.3748	0.1732
	0.600	-1.8799	1.7687	-1.0629	0.2912
	0.800	-2.4982	0.6382	-3.9145	0.0002
D	0.200	0.4800	0.0549	8.7434	0.0000
	0.400	0.5705	0.0426	13.3856	0.0000
	0.500	0.5713	0.0399	14.3014	0.0000
	0.600	0.6279	0.0497	12.6298	0.0000
	0.800	0.6120	0.0458	13.3770	0.0000
ΔY	0.200	0.0880	0.0952	0.9245	0.3582
	0.400	0.0069	0.0658	0.1048	0.9168
	0.500	-0.0283	0.0627	-0.4518	0.6527
	0.600	0.0199	0.3028	0.0657	0.9478
	0.800	0.1552	0.0593	2.6166	0.0107

Source: Calculated by the author

The results for the Upper-Middle Income Level shows that H and PTI still impacts negatively on the APC (see Table 9). For H, the negative intensity of

the impact increased, in comparison to the Middle Income. It is also possible to see that this impact is much more intense for the quintiles 0.800, and it progressively decreases for the remaining quantiles. A possible explanation for this phenomenon is that the household expenditure on health-care increased on a slower path than the total income. The results from the OLS model shows the negative impact of (-9.17) of H over the APC.

The variable PTI, in turn, just presented significant results (with negative impact over the APC) for the quantiles 0.800 (-1.34), 0.600 (-1.07) and 0.500 (-1.100) – with very different results from the traditional OLS model.

Education (E) and dependence (D) presented again a positive impact of 5.90 and 0.47 on the APC, according to the OLS model. But no increasing or decreasing pattern of the intensity of the impact could be observed for these two variables, even though the coefficient of E decreased between the quantiles 0.800 and 0.400. And finally, for this level of income, the variation of income did not present any significance for both of the regressions; the R-squared is 0.82.

Table 9 - Results of the OLS and Quantile Regression at the Upper-Middle Income Level

OLS Regression					
Variables		Coefficient	Std. Error	t-Statistic	Prob.
E		5.8905	0.4644	12.6848	0.0000
H		-9.1738	0.5806	-15.8005	0.0000
PTI		0.4111	0.6419	0.6405	0.5238
D		0.4709	0.0337	13.9652	0.0000
ΔY		-0.0027	0.0596	-0.0459	0.9635
R-squared		0.8701			
Adjusted R-squared		0.8632			
Quantile Regression					
Variables	Quantile	Coefficient	Std. Error	t-Statistic	Prob.
E	0.200	6.4525	1.1665	5.5314	0.0000
	0.400	4.8888	0.5212	9.3791	0.0000
	0.500	5.1045	0.5496	9.2877	0.0000
	0.600	5.1861	0.5772	8.9856	0.0000
	0.800	6.0247	0.7310	8.2419	0.0000
H	0.200	-8.8618	2.2864	-3.8758	0.0002
	0.400	-9.4784	0.6962	-13.6144	0.0000
	0.500	-9.7640	0.5587	-17.4748	0.0000
	0.600	-9.8456	0.5113	-19.2574	0.0000
	0.800	-10.2117	0.5611	-18.2005	0.0000
PTI	0.200	1.5422	1.7964	0.8585	0.3933
	0.400	-0.7877	0.7407	-1.0634	0.2910
	0.500	-1.1000	0.6061	-1.8148	0.0735
	0.600	-1.0654	0.6003	-1.7747	0.0800
	0.800	-1.3427	0.5500	-2.4413	0.0170
D	0.200	0.3783	0.0580	6.5237	0.0000
	0.400	0.5899	0.0596	9.9038	0.0000
	0.500	0.5935	0.0528	11.2307	0.0000
	0.600	0.5928	0.0514	11.5293	0.0000
	0.800	0.5654	0.0492	11.4833	0.0000
ΔY	0.200	-0.0882	0.2191	-0.4025	0.6885
	0.400	-0.0574	0.0595	-0.9641	0.3380
	0.500	-0.0358	0.0550	-0.6517	0.5166
	0.600	-0.0306	0.0548	-0.5582	0.5784
	0.800	-0.0470	0.0567	-0.8298	0.4093

Source: Calculated by the author

Analyzing then the results obtained for the High Income Level (see Table 10), the figures show a different behavior of some of the variables. Looking at each of them, the variable E presented a positive impact over the APC with a coefficient of 3.10 in average, using the QR model. For the variable H, the intensity of the negative impact decreased if compared to the upper-middle class; besides, the coefficient increased its intensity from (-5.83), for the quantile 0.800, to (-8.87), for the quantile 0.400. This means that, for this segment of the population, the negative impact of expenditure on health-care relative to total income has an increasingly negative impact on the APC.

Looking to the other variables, PTI presented a positive impact of 3.93 at the quantile 0.200. Of course, one of the limitations of this result is that the used data is just an average for the whole country, as previously explained in the section 2.3; still, these results also highlight another very important point: because this can be interpreted as being, for the high income households, the average housing price is too cheap relative to their total income, or the total income grew faster than the average housing price. So, with these results, it is also possible to affirm that the high and highest income levels of the Chinese household are capable of smoothing their consumption due to the “low” price of the houses for the years with lower APC.

The variables E and D, in turn, still present a positive impact on the APC, compared to the upper-middle income level, although with smaller intensity for education; and bigger intensity, for the dependence. The average positive impact of the variable D on the APC according to the QR model is 0.57.

Table 10 - Results of the OLS and Quantile Regression at the High Income Level

OLS Regression					
Variables		Coefficient	Std. Error	t-Statistic	Prob.
E		4.8895	0.6818	7.1711	0.0000
H		-8.3884	0.8458	-9.9181	0.0000
PTI		2.2560	0.8070	2.7956	0.0066
D		0.4985	0.0459	10.8596	0.0000
ΔY		-0.0946	0.0630	-1.5026	0.1371
R-squared		0.8192			
Adjusted R-squared		0.8096			
Quantile Regression					
Variables	Quantile	Coefficient	Std. Error	t-Statistic	Prob.
E	0.200	2.4161	1.1254	2.1468	0.0350
	0.400	3.7099	0.6912	5.3670	0.0000
	0.500	3.3931	0.7152	4.7443	0.0000
	0.600	3.0110	0.7945	3.7899	0.0003
	0.800	2.9873	0.7658	3.9009	0.0002
H	0.200	-2.6439	2.0706	-1.2768	0.2055
	0.400	-8.8664	1.3894	-6.3816	0.0000
	0.500	-8.6774	1.7184	-5.0498	0.0000
	0.600	-7.7848	2.7688	-2.8116	0.0063
	0.800	-5.8296	3.3415	-1.7446	0.0851
PTI	0.200	3.9258	1.3037	3.0113	0.0035
	0.400	1.5682	2.6438	0.5932	0.5548
	0.500	2.0576	3.5472	0.5801	0.5636
	0.600	3.5568	6.3028	0.5643	0.5742
	0.800	7.0497	8.1291	0.8672	0.3886
D	0.200	0.3792	0.0541	7.0143	0.0000
	0.400	0.6300	0.0941	6.6929	0.0000
	0.500	0.6447	0.1232	5.2321	0.0000
	0.600	0.6158	0.2230	2.7616	0.0072
	0.800	0.4706	0.3162	1.4881	0.1409
ΔY	0.200	0.2029	0.2411	0.8416	0.4026
	0.400	-0.1584	0.0969	-1.6358	0.1060
	0.500	-0.1830	0.0752	-2.4344	0.0173
	0.600	-0.2045	0.0708	-2.8897	0.0050
	0.800	-0.1774	0.0637	-2.7860	0.0067

Source: Calculated by the author

For the variable ΔY , it presents a negative relationship to the APC, which follows the LCH proposed by Modigliani and which is also commented on the next section, since its impact is different from those achieved in the others income levels. The results show, on average, a negative impact of the ΔY on the APC of (-0.19) for the quantiles 0.800, 0.600 and 0.500. The R-squared obtained from the OLS model for this income level is 0.82.

And finally, the Table 11 shows the results for the Highest Income Level, which follow the trend of the results achieved by the High Income Level. Here it is possible to see that the variable H remains negatively related to the APC with the average value of (-1.20) according to the QR model. The only significant results are those for the 0.800 and 0.600 quantiles. The variable ΔY also presents a negative impact (like the results from the high income level analysis) of (-0.11) considering the OLS regression. This negative relation could just be observed for the 0.600, 0.500 and 0.400 quantiles.

On the other hand, the variables E, PTI and D presented again a positive impact on the APC. For E, the variable just impacted positively for the 0.800, 0.600 and 0.500 with an average value of 2.22, considering the QR model. For the variable PTI, the results show an increase in the intensity of the positive impact of this variable over the APC – this effect just reinforces the arguments already presented on the analysis for the High Income Level. And finally, the variable D presented an average value of 0.33 as a positive impact over the APC, according to the QR model. The presented R-squared value for the OLS model is 0.83.

Table 11 - Results of the OLS and Quantile Regression at the Highest Income Level

OLS Regression					
Variables		Coefficient	Std. Error	t-Statistic	Prob.
E		-0.4551	0.9122	-0.4989	0.6193
H		-1.5410	0.8574	-1.7973	0.0763
PTI		6.5901	0.5501	11.9805	0.0000
D		0.6189	0.0677	9.1454	0.0000
ΔY		-0.1119	0.0414	-2.7051	0.0084
R-squared		0.8249			
Adjusted R-squared		0.8157			
Quantile Regression					
Variables	Quantile	Coefficient	Std. Error	t-Statistic	Prob.
E	0.200	-0.7026	1.7713	-0.3967	0.6927
	0.400	1.5304	1.1451	1.3365	0.1854
	0.500	2.3313	0.6264	3.7220	0.0004
	0.600	2.4390	0.4167	5.8529	0.0000
	0.800	1.9052	0.8770	2.1723	0.0329
H	0.200	1.2012	0.9190	1.3071	0.1951
	0.400	-0.1116	0.7708	-0.1448	0.8852
	0.500	-0.4497	0.4250	-1.0582	0.2933
	0.600	-0.7851	0.3090	-2.5404	0.0131
	0.800	-1.6269	0.5131	-3.1710	0.0022
PTI	0.200	6.5463	1.0060	6.5071	0.0000
	0.400	9.7691	1.4716	6.6385	0.0000
	0.500	10.8577	0.8954	12.1260	0.0000
	0.600	11.3971	0.7409	15.3835	0.0000
	0.800	11.8038	1.2143	9.7205	0.0000
D	0.200	0.5046	0.1400	3.6028	0.0006
	0.400	0.3361	0.0969	3.4701	0.0009
	0.500	0.2622	0.0569	4.6105	0.0000
	0.600	0.2529	0.0400	6.3311	0.0000
	0.800	0.3250	0.1103	2.9455	0.0043
ΔY	0.200	-0.0068	0.1281	-0.0530	0.9578
	0.400	-0.1368	0.0573	-2.3866	0.0195
	0.500	-0.1237	0.0288	-4.2982	0.0001
	0.600	-0.0874	0.0179	-4.8722	0.0000
	0.800	-0.0571	0.0437	-1.3069	0.1952

Source: Calculated by the author

4.2 Overall Interpretation of the results

This section contains the main findings and the interpretation of the results achieved on the Section 4.1. It is conducted by discussing each of the variables.

The trend of the results is according to what is expected based on the literature review, but some points are worth examining more closely. As it can be seen, education expenditure has a positive impact over the APC, which apparently is divergent to what was expected from the findings of Baldacci, et al., (2010). But this might be explained by the following:

1. Baldacci, et al., (2010) did not consider the household expenditures on education, but only the governmental expending on education; thus both findings not necessarily are divergent. Besides, their results just could be observed when the “individual social spending” is considered separately. In addition, the results obtained by Barnett & Brooks (2010) are statistically insignificant, and any relationship only could be found between the household expenditures on education and consumption.
2. Observing throughout the analyzed period as a whole, the share of expenditure on education out of total income (national level) increased from 3% in 1992, to 6%, in 2000; and then decreased again to 3%, in 2012. Meaning that, as a whole, the total income per household had a faster growth than the growth of the expenditure on education by household. This, in turn, implies that for the Chinese households, the expenditure on education was compensated by the

growth of the total income, which might explain the positive impact on the APC.

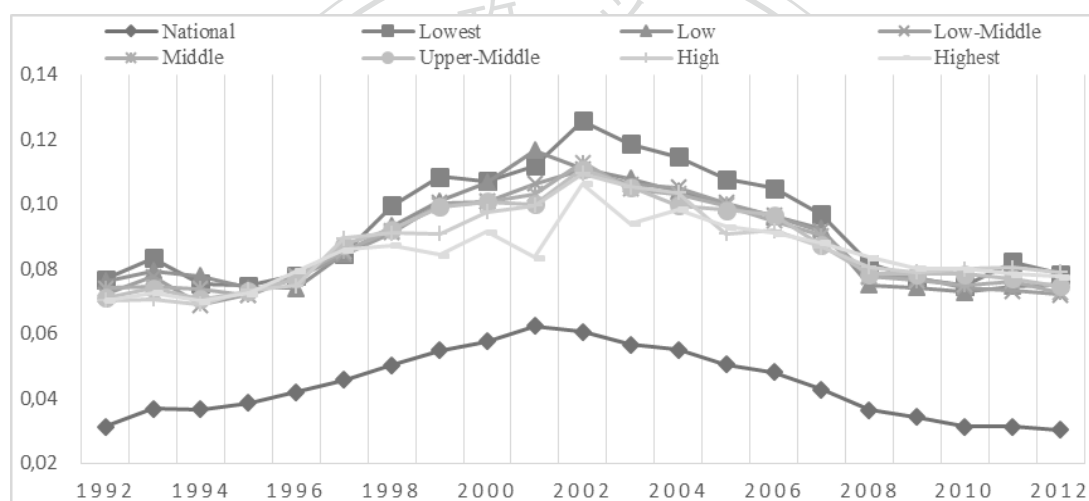
3. Besides, understanding that expenditure on education is seen by some authors (Jin, Li, & Wu, 2011) as an investment in the future or even an social-status seeking motivation; and, in addition to the previous affirmation (item 2) that the growth of the household total income grew faster than the growth on expenditure on education, it is reasonable to affirm that for the Chinese Households during the analyzed period, the expenditure on education could be absorbed by the families and didn't have a negative impact on the APC. So, despite the growth of the expenditure on education, the families didn't reduce their APC.
4. According to the aging of the Chinese population, the One-Child Policy and the decrease of the size of the Chinese household, the number of children in education per family is smaller than it was at the beginning of the studied period – this also helps to explain why the total income per household increased faster than their expenditures in education.

That said, some other conclusions can be taken from the results. The first one is that in general, the variable E has a positive relation with the APC for all of the income levels of the Chinese society, including the analysis at the national level; and that the expenditure per household on education does not impact negatively on the APC because the families could absorb this spending. In addition, the intensity of its impact on the APC decreased for those years with higher APC –

of course, this is mainly due to the growth of the household total income that, during the period, which was stronger than the growth of the spending of the families on education.

Another possible conclusion is that the rate of household expenditure on education as a proportion of total income, rose from a value of less than 8% in 1992 (if considered just the income levels), to a peak of 11% in 2002, on average. But, this value decreased again to 8%, in 2012. This is better visualized on the Graph 3.

Graph 3 – Variable E (1992 – 2012):



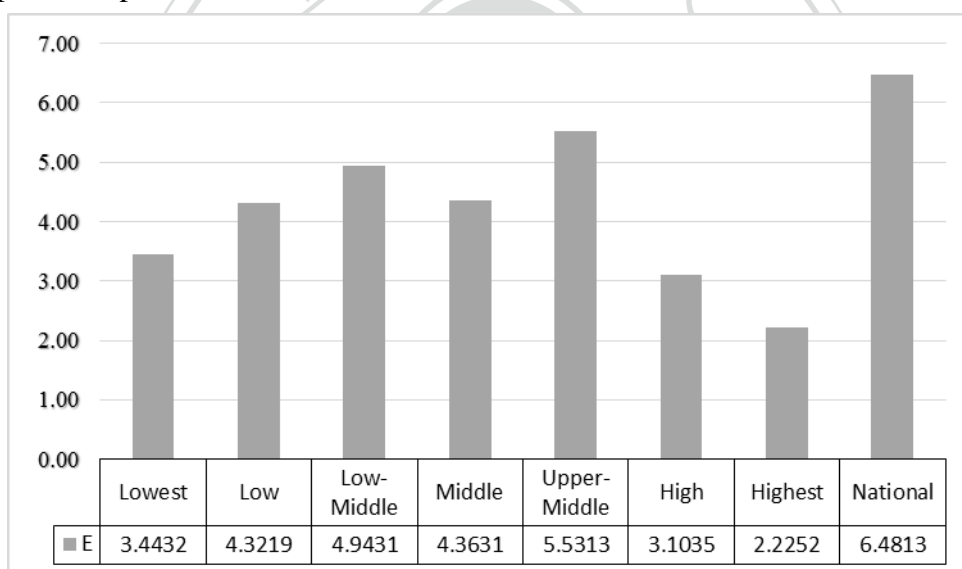
Source: Calculated by the author using the compiled data from the European Institutional Investor Company (CEIC) Data Base.

Looking at the Graph 3, it is also possible to affirm that the poorest families tend to spend a larger portion of their income on education than the wealthier families.

The Graph 4 shows the average impact of E over the APC calculated from the results obtained from the QR model. There, it is possible to see that the biggest impact of E over APC is observed from the Low and Upper-Middle Income Level. The value however obtained for the national level shows that this impact is

much stronger than if analyzed together with the other income levels – and, a smaller rate of the expenditure on education as a proportion of total income than the results by income level (as can be observed on the Graph 3). This might be explained by two reasons: (1) as commented before, the data used to calculate the national level was “Consumption Exp. per Capita: Education”. In contrast, the data used to make the calculus by Level of Income was “Consumption Exp. per Capita: Recreation, Educational & Cultural Service”; and, (2) different methodologies might be used to calculate the consumption expenditure per capita for the different levels, which could lead to different results.

Graph 4 – Impact of Education on APC



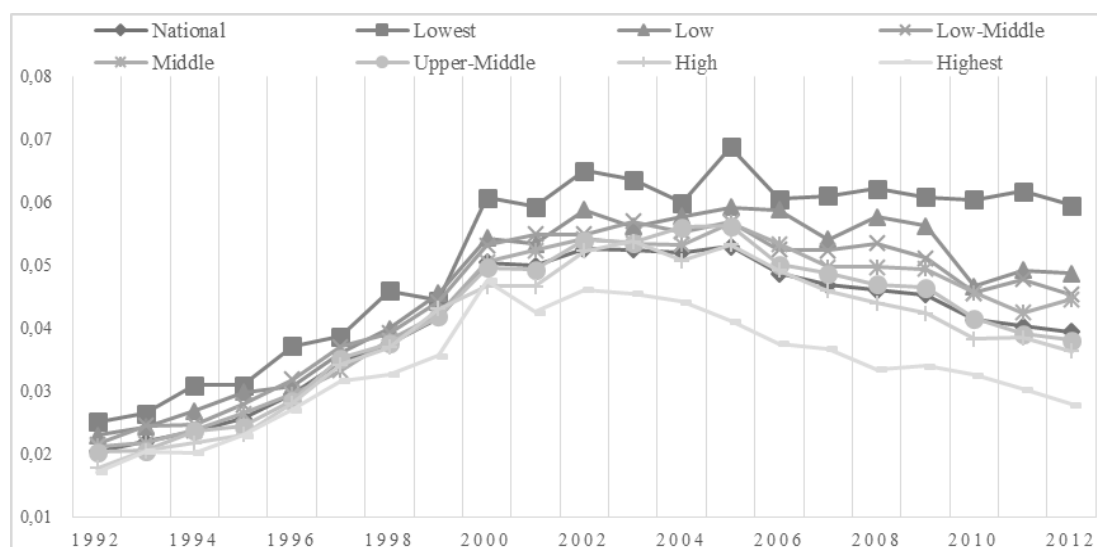
Source: Calculated by the author using the compiled data from the European Institutional Investor Company (CEIC) Data Base.

With that, it is possible to conclude that the presented results for the income level analysis ratifies that the hypothesis 2 cannot be confirmed.

The results obtained from the variable H follows all the theories and empirical results presented on the literature review, which means that it presents a negative impact on the APC. As can be seen on the Graph 4, the spending on

health-care in comparison to the total incomes of a household is higher for the less wealthy families. With the help of the graph 5, it is possible to see that the households considered Lowest Income, Low Income, Low-Middle Income and Middle Income spend a higher percentage of their total budget on health-care than the national average.

Graph 5 – Variable H (1992 – 2012):

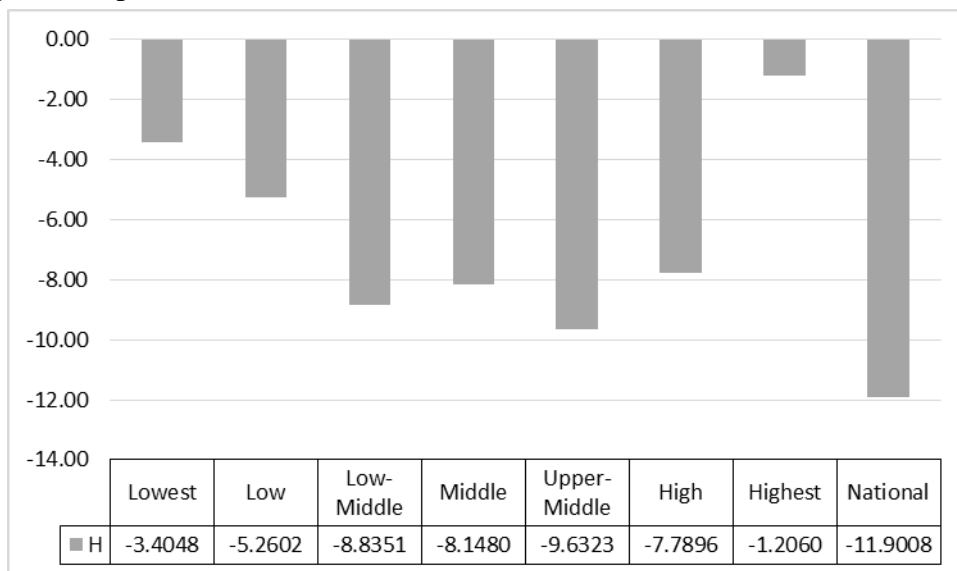


Source: Calculated by the author using the compiled data from the European Institutional Investor Company (CEIC) Data Base.

After the year 2000, the trend shows that H decreased, meaning that the growth of income was higher than the growth in health-care expenditure.

In addition, as reported, the Upper-Middle income level decrease consistently its coefficient for those years with lower APC; and the High Income Level and the National Level shows a contrary trend in which the negative impact on these levels increases for the years with lower APC. Furthermore, the variable H is the variable that presented the strongest negative impact on the APC compared to all the others, which ratifies the importance of this variable, as discussed previously.

Graph 6 – Impact of Health on APC



Source: Calculated by the author using the compiled data from the European Institutional Investor Company (CEIC) Data Base.

The average impact of H over the APC calculated from the results obtained from the QR model shows that the negative impact was stronger for the upper-middle class, low-middle class and middle class, respectively (see Graph 6). And finally, observing through the national perspective, this negative impact was much stronger than those achieved by the income level analysis.

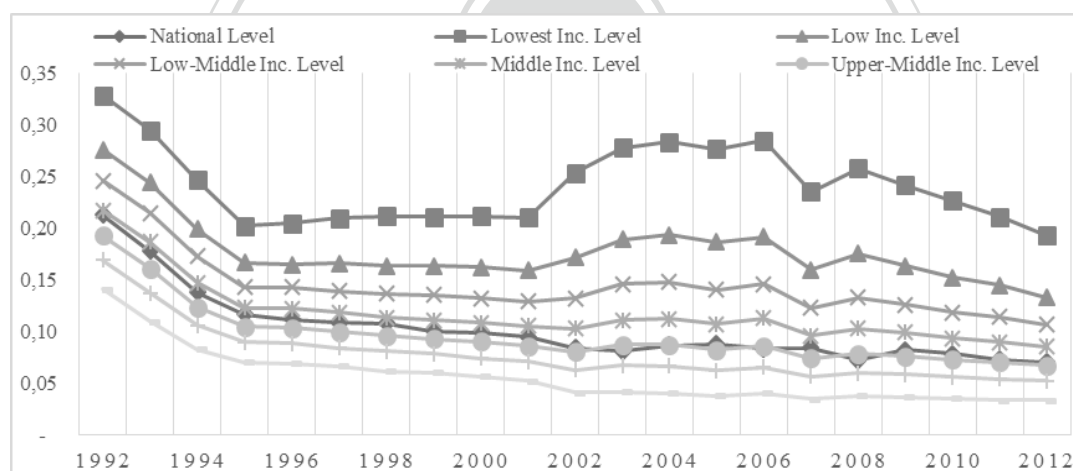
Therefore, it is possible to confirm the Hypothesis 1, not just for the national level, but also for all of the other income levels, despite the internal variations of the negative impact of this variable over the APC.

Looking then to the number presented by the variable PTI, the results show some very interesting conclusions. Firstly, as plotted on the Graph 7, the families between the Lowest and the Middle Income Level are the households that expend most of its budget on housing. From these levels, the lowest extract presents

the biggest discrepancy from the others. After 2002, the PTI presented a divergent expansion of this burden, but in the later years, the PTI started to converge again – these movements might be related to the amendment of the article 11 on the Chinese constitution in 2002, and to the introduction of the property law in 2007.

With the help of the Graph 8, plotted from the average presented by the results of the QR model, it is possible to conclude that for the extracts of the population between the Lowest and the Upper-Middle Income, the PTI presents a negative impact on the APC. And the High and Higher Level of income presents a positive impact.

Graph 7 – Variable PTI (1992 – 2012):



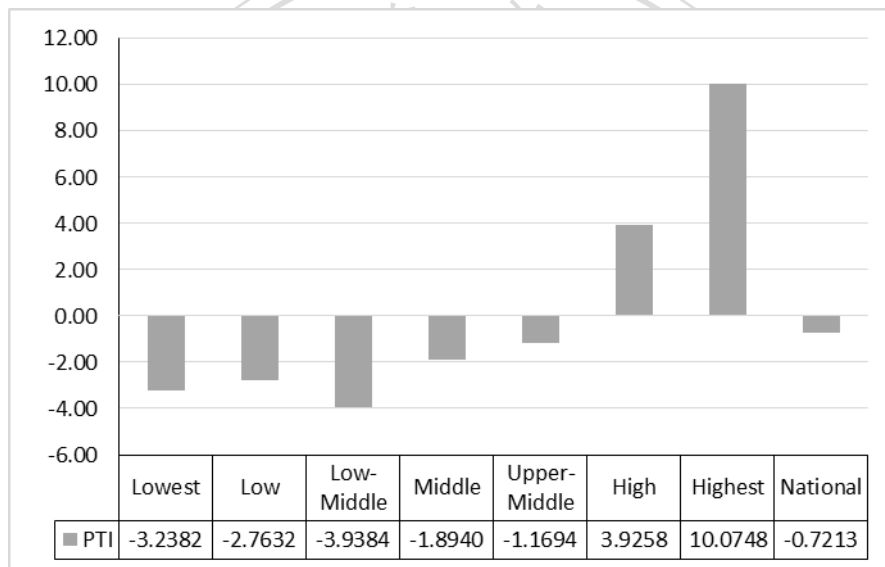
Source: Calculated by the author using the compiled data from the European Institutional Investor Company (CEIC) Data Base.

This means that for approximately 20% of the richest Chinese urban households, the relative “cheap” price of housing works as a factor that impacts positively on the consumption. On the other hand, the PTI does have the strongest negative impact for the Low-Middle Income, Lowest Income and Low Income families, respectively. At the National level, the coefficient shows a milder negative

impact than those presented by the “poorer” income levels – the coefficient is (-0.72).

Therefore, considering the overall results, it is possible to accept the hypothesis 3 just if the national and the poorest income levels are considered. However, it cannot be generalized for all the income levels, since a positive impact of the PTI over the APC was found for the two wealthier income levels of the urban Chinese society.

Graph 8 – Impact of Housing on APC



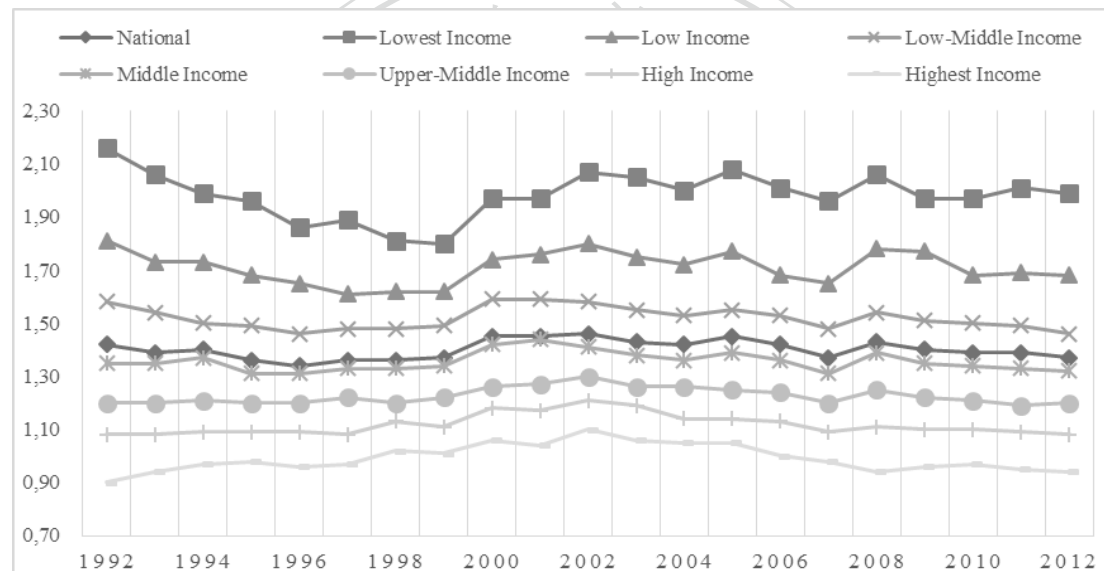
Source: Calculated by the author using the compiled data from the European Institutional Investor Company (CEIC) Data Base.

Of course, as extensively discussed on the section 2.3 and 4.1.2, the analysis has its limitations, especially for the extreme income levels of this research scope, in which the coefficients might be under/overestimated due to the housing price used which may be an average for all the Chinese population, without consideration of their income level and location. Obviously a deeper and more detailed research into the relationship between the housing price and APC is needed,

however the presented reports still provides very important results in this study field.

Interesting conclusions also can be taken from the results for the variable D. The Graph 9 reveals that the households which present the greatest number of dependents are the less wealthy ones. Beside this, the number of dependents didn't have a significant variation, despite the convergent trend between 1992 and 1999.

Graph 9 – Variable D (1992 – 2012):



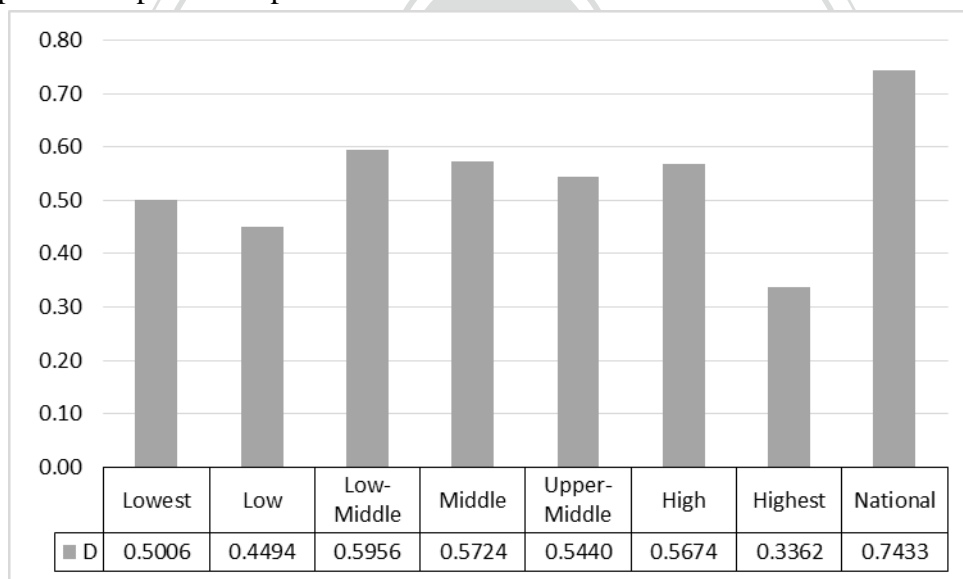
Source: Calculated by the author using the compiled data from the European Institutional Investor Company (CEIC) Data Base.

It is also possible to observe from the results presented in the previous section that the variable impacts positively on the APC. In addition, this positive impact of the number of dependents in a household on the APC decreases its intensity for the years with lower APC, except for the Higher Income Level. For the National Level, even though the trend for the quartiles from 0.800 to 0.400 was tending to increase the intensity of the positive impact, the last quartile (0.200) the coefficient returned to the same level as the quintile 0.800.

One possible explanation for this decrease of intensity might be because the number of members per household decreased during the studied period, which also means a decrease on the spending on basic necessities for each family member.¹³

The Graph 10 brings the average impact of the variable D for each of the income levels. The Income level with the lowest impact is the Highest Income Level; and the highest one is the Low-Middle Income. The national level presented an impact over the APC above of those observed by income level, which might be made possible by a difference of methodology between the macro and micro data.

Graph 10 – Impact of Dependence on APC:



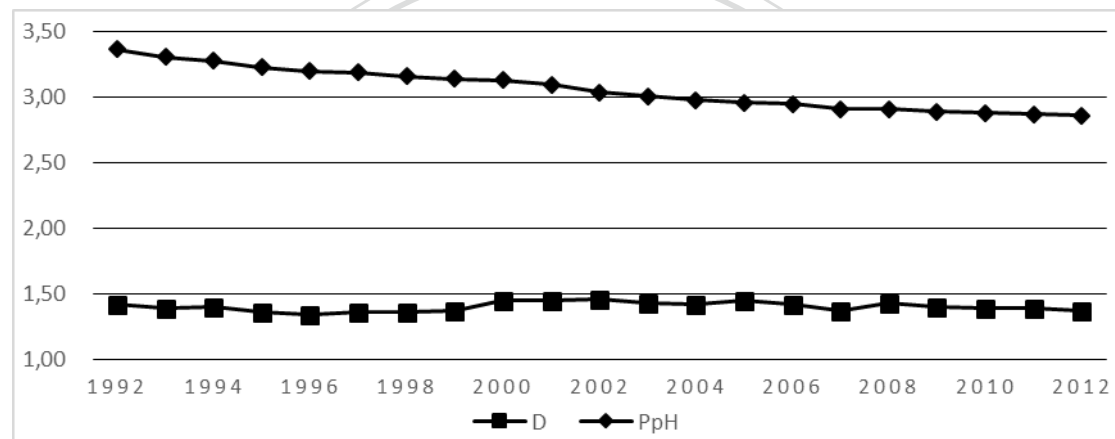
Source: Calculated by the author using the compiled data from the European Institutional Investor Company (CEIC) Data Base.

Therefore, since the results for the income level are positive, like those achieved for the national level, it is also possible to disprove the Hypothesis 4, since a positive relationship between D and APC was observed.

¹³ The decrease of the number of member per household (PpH) can be seen at the Graph 11 – Absolute Values of D and PpH.

Nevertheless, the results are not necessarily divergent from those found by Modigliani & Cao (2004), and can be argued to be complementary in some points. Two in particular are the reasons that might explain the results: (1) the number of dependents is calculated considering not just the youth and elderly in a family, but also those members that are unemployed; and, (2) elders also can be considered the heads of the household, and not necessarily the dependent ones, as already mentioned.

Graph 11 – Absolute Values of D and PpH:



Source: Calculated by the author using the compiled data from the European Institutional Investor Company (CEIC) Data Base.

In addition to this and complementing Modigliani's findings, although the variable "D" increased throughout the analyzed period, the increase was very mild¹⁴. On the other hand, the number of persons per household decreased at a much faster rate. With this, it is possible to conclude, with the help of the Graph 11, that in the Chinese case, (1) despite the positive effect of "D" on APC, the number of dependents per household did not show a large variation, and thus couldn't heavily contribute for the increase of the APC; and that, (2) the decrease of the PpH

¹⁴ And looking for the income levels, the biggest variation are for the number of dependents, which increased 0.14% for the Lowest Income Level; and, (-0.11%) for the Low-Middle Income Level.

suggests a positive relationship with and a more significant impact on the APC – which ratifies one of the Modigliani’s justifications for the decrease of the consumption in China, which stated that the size of the family does have influence over the APC¹⁵.

And finally, the variation of income, as expected, presented a negative impact at the national level, but analyzing each income level separately, it is possible to notice that this behavior varied for each of those levels. After analyzing the development of this variation, it was found that the wealthiest families presented a bigger variation between the years 1992 and 2005; and starting from 2006, the less wealthy families began to have a faster growth of the total income.

Graph 12 – Variable ΔY (1992 – 2012):



Source: Calculated by the author using the compiled data from the European Institutional Investor Company (CEIC) Data Base.

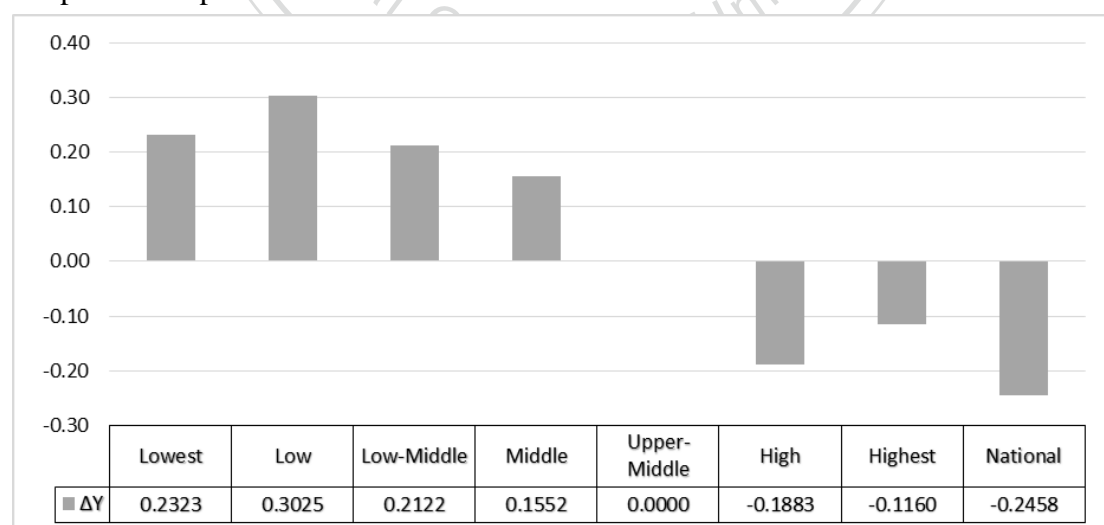
The variation of income achieved a peak in 1994, time in which the inflation was high; and presented a very peculiar growth in 2002. In that year, the

¹⁵ This was confirmed by running the Quantile Regression using as independent variables E, H, ΔY and PpH; the positive impact of PpH over the APC was 0.24 and P-value, zero. In this model, the variable PTI and PpH has high correlation.

lowest and low income level experienced a negative growth; and the upper-middle, high class and highest income level had a very strong growth. But this peculiar behavior might be explained by the change of methodology adopted by the National Bureau of Statistics of China at the year of 2002. And finally, by excluding 2002, the lowest value for the variation of income was during the years of 1997 and 1998, time of the Asian Economic Crisis.

Another interesting result comes from the impact of the variation in income, which just started to present a negative relationship to the APC for the High and Highest Income Level (and for the national level), which follows the LCH proposed by Modigliani. Therefore, it is possible to understand that, for the Chinese society, the variation of income just presents a negative relation to the APC for the High and Highest Income Level of the population. This is also a sign of concentration of wealth as debated in the introduction – even the middle class presented a positive relation of this variable to the APC at the quantile 0.800. This can be better understood observing the Graph 13.

Graph 13 – Impact of Variation of Income on APC



Source: Calculated by the author using the compiled data from the European Institutional Investor Company (CEIC) Data Base.

This result presents a different scenario from the results at the National Level, but it is still according the Life-Cycle Hypothesis. This is explained because the ratio of savings to income for wealthier families tends to be bigger than for the less wealthy households, or even negative among the lowest income level (Deaton, 2005). Better explaining, the margin for the poorer families to save is smaller since the entire income has to be spent on basic necessities, unlike from the other extracts of the population. This also means that the redistribution of the wealth, or *ceteris paribus*, the increase of ΔY for the Lowest, Low, Low-Middle and Middle income level of the Chinese households would tend to increase the Chinese APC.

As said previously, the variation of income at the national level has a negative impact of the APC, and thus it is possible to confirm the hypothesis 5 of this research if looking through the macro perspective. However, looking at the income levels, the same generalization is not possible since any factor that increases the ΔY of the less wealthy urban Chinese families, would tend to increase their APC.

4.3 Analysis of the Turning Points: 1995-1996 and 2000-2002

Looking again to the Graph 1, the APC curve presents two main important variations for the years 1995-1996 and 2000-2002; and in order to understand what the possible reasons for these big variations were, it is very important to better comprehend the behavior of the Chinese APC. So, what could be the possible reasons for these up-side downs?

The answer to this question regarding the 1995-1996 period might rely on the behavior of the inflation and the growth income, as well as the change of trend of the variable PTI. In the first half of 1990`s, the fast growth of the total

income of the families was followed by sky-high inflation, reaching 24.1%, in 1994; and 17.1%, in 1995 (data obtained from CEIC Database). And, at the same time, the variation of income of the household at the National Level was 34.35% (1994) and 20.57% (1995). Therefore, the high-inflation associated with the massive layoffs from State-Owned Enterprises (SOEs) and the liquidity shortage for loans from the biggest Chinese banks (full of bad loans) (Naughton, 2007); altogether contributed to an increase in the APC in 1995. The increase of the APC becomes even more comprehensible if the Ratchet Effect (Duesenberry, 1966) is considered, since it states that the pattern of consumption of a household falls to a slower path in face of the decrease of incomes. In other words, in financially hard times or sudden decrease of its income, the families tend to first “dis-save”, before decrease its consumption (seen as a level of quality of life).

To curb the inflation, the Chinese authorities then raised the interest rates, tightened monetary policy, straighten the control of the food prices and reevaluated investment projects. All these measures seemed to be effective since the inflation dropped to 8.3% in 1996, while the GDP continued to grow at the pace of 9.9%, approximately; and the variation of income, 11.93%. If discounting the inflation from the variation of income as the real variation of income (RVI), then in 1995, the RVI had a significant decrease from 10.25% (1994) to 3.47% (1995) – for the households it represents a worsen scenario.

Besides this, the 1994 Chinese Tax Reform might also have developed an important role in controlling the housing price. Considering that after this reform, great part of the local municipalities’ revenues originated from the land financing. It in turn could have contributed to booting the housing price relative to the total

income, which would have a negative relation to the APC, according to the findings of the present study.

For the period between 2000 and 2002, the behavior of the APC presented a similar growth as the one showed on the year 1995, but the economic-political scenario was a bit different. In 1999, economically China was presenting a deflation of minus 1.40%, and the income of the households increased 7.20%, which in real terms means a real increase of the income of 8.60% – the biggest since 1994. But then, in 2000, the Consumer Price Index (CPI) increase 2% in comparison to the previous year, and the variation of income decrease to 6.57%. In that sense, the real variation of income had the same biggest decrease since 1995, which in part explains the growth of the APC in that year.

In addition to that, variable Dependence had the biggest increase in the whole analyzed period – the number of dependents per household increased 5.8% – which had a positive impact over the APC. In order to provide assistance for the increasing unplaced workers, the Chinese government created in 1998 the new Ministry of Labor and Social Security, which in turn created the Reemployment Centers (RECs). The unemployed workers listed in the RECs used to receive a monthly stipend, retraining and job-search assistance. However, the workers listened in the RECs could receive those benefits for a maximum period of three years, and after that, they would be counted as Registered Unemployed. Therefore, although the unemployment rate was stable (3.1%) between 1998 and 2000, but the real number of laid-off workers were much higher – this explains why after the year 2003, the registered unemployment rate increase drastically, since the worker registered in the RECs wasn't considered officially unemployed. For those years,

the laid-off workers saw its income and life quality standard decrease significantly (Naughton, 2007).

With the increase of the variable D, the spending with health-care per total income in a household (variable H) also presented the biggest growth throughout the whole analyzed period, which might be a consequence of the increase of the laid-off workers, which used to receive health-care assistance from their previous employers. This is in accordance to the “two-tier system” introduced by Meng (2003) and commented in Chapter 2.

So, after the increase of the APC on the year 2000, this variable returned to its previous decreasing trend, the variable D maintained a stable growth; and ΔY , restarted to grow. This, until the next year (2002), in which the real variation of income reached another pick; and the PCI, presented deflation. Besides, the variable PTI also presented a significant growth starting from 2002 for the less wealthy families – this might be due to the amendment on the article 11 of Constitution which affirms that the State needs to protect “the lawful rights and interests of the non-public sectors of the economy such as the individual and private sectors of the economy” (The National People’s Congress of the People’s Republic of china, 2004). These, altogether resulted in a stronger downfall of the APC.

After the pick in 2002, the real variation of income in 2003 was weaker. This effect alone could lead to another increase on the APC, but it was compensated by a considerable decrease of the variable D at the same year, which is a reasonable explanation for the APC’s behavior. But of course, further researches using different methodologies are necessary to confirm the given explanation presented in this section.

5. Conclusion

The conclusion is divided into three sections, in which the first one is called “Policy Implications”, projecting the possible implications of the present research for policy formulations. The second section “Contributions and Limitations” lists the contributions and limitations of this study; and it is followed by the last section, “Final Words”.

5.1 Policy Implications

Taking advantage of the results achieved by this work, policies driven to decrease the household expending on health and housing would impact positively the Chinese household propensity to consume.

According to the results, the household expenditure on health-care is one of the main factors responsible for the decrease of the APC. Although most of the population have access to the public health insurance in China, the coverage is too shallow – the premium is too small and the patients usually have to pay heavy fees, especially for those with severe diseases (Wu & Jacobson, 2015). For Low-Income families in turn the government provide the subsidies – which explains why the negative impact of H is heavier for Low-Middle, Middle, Upper-Middle and High Income Level households.

Therefore, policies that decrease the out-of-pocket health-care expenses of the families, might have a very strong effect on increasing their consumption. Besides, the establishment of health insurance with bigger coverage or an increase in the incentives for the use of private health-care insurance might be also a good alternative.

Although after the establishment of the Basic Medical Insurance for Urban Employees (1998) and Basic Medical Insurance for Urban Residents (2007) the expenditure of the families on health-care indeed diminished, but the intensity of the negative impact of the variable H over the APC still remained very high, which means that other new reforms might be necessary beyond those already implemented by the 12th Five-Years Plan.

Since the housing price also presented a negative relationship to the APC, then policies that support/subsidize housing finance mainly for Lowest, Low and Low-Middle income households, would in consequence decrease the burden on these families of this expense, and thus, tend to increase their household consumption. On the other hand, although it is sometimes necessary, governmental support to burst the housing market has to be carefully evaluated; otherwise it would result in a catastrophic blow to the housing prices like that at the end of 2015 (Global Property Guide, 2015) and, consequently, the diminishment of the APC.

After 35 years, the end of the One-Child Policy, to counteract the aging population, will most probably increase not just the number of members per household, but also the variable D. Both, as discussed, present a positive effect over the APC. Therefore, the effects of the end of this policy over the economy might be felt, however, just in the middle run over the Chinese household consumption. On the other hand, the end of this policy does not necessarily mean a big demographic change in the long run – it is not necessarily the case that families will be willing to have more than one child owing to the high costs of raising children. In that case, if the fertility rate of 1.2-1.5 child per woman doesn't increase, then policies to incentivize the young couples to have more than one child should be adopted, vide example of Taiwan and Korea (Lin, 2015).

And finally, since the variation of income, more specifically of the Lowest, Low, and Low-Middle Income Level has a positive relation with the APC, then policies of redistribution of wealth and increasing the minimal wage should be adopted in order to increase the Chinese consumption, and decrease income inequality. Even though the effectiveness of these policies showed huge gaps/failures after the 2008 crisis, after which the global inequality has just increased, progressive redistribution of wealth policies are still the most used tool of most of countries to attack the existing problems of inequality. Besides, a progressive increase of the minimum wage above the national wages adjustments might bring real benefits to the lower income levels of the population, as in the example of Brazil, and increase the consumption (Dabla-Norris, Kochhar, & Rick, 2015). But as seen, the adopted policies should avoid huge variations of Income Growth along the years, otherwise it would tend to impact negatively the Average Propensity to Consume.

5.2 Contributions & Limitations

As in every scientific study, this paper presents its main contributions for the state of the art, in which its limitations have to be observed before forward generalization or application of its main findings.

As the main contributions, this research could achieve all the three objectives proposed in the Table 2. For the first objective, this paper measured the impacts of Education, Health, Housing, Dependence and Income Growth over the APC of the Chinese Urban Households by Income Level and at the National Level. Besides, it also showed through graphics, the evolution and behavior of each of those variables, as it is possible to see on the section 4.1.

In addition, after the analysis in the section 4.3, the second objective could be also accomplished showing that the possible reasons of the main downturns of the National APC during the studied period was mainly due to (1) the increasing number of laid-off workers starting significantly from 1995; and, by (2) the real variation of income, which presented a big negative variation for the years in which the APC grew.

And finally, after comparing the results of this paper with previous literature on consumption, this research could throughout the whole paper, review and add to the state of art another perspective of Consumption Theory – in especial, its applicability in the Chinese case through the APC angle. In addition, it was observed that the APC is liable to variation according to some specific good and bad scenarios. Better explaining, the decrease of uncertainties, stable growth and increase of the size of the family (seen as a good) are responsible for the increase of the APC in a **long run**. In contrary, drastic decrease of ΔY^{16} or the power of purchase of the families, also lead to the increase of the APC, but in a **short term** due to the Duesenberry Effect – trend that afterward tend to decrease in a long run. Through other perspective, unpredictability of future (such health-care spending of the families etc), huge income growth, increase of the PTI and decreasing size of the family are also responsible for the decrease of the APC. So, all these factors could lead to a higher (or lower) APC, but all the difference lies on the quality (the leading drivers) of how the APC varies.

Through another perspective, some limitations have to be observed. Understanding that this research is mainly quantitative, it had to narrow down not

¹⁶ Or any intervening factor on this variable

just the used variables and time-frame, but also make some assumptions in order to make possible the proposed analysis.

Due to the data available and based on literature review, this study had to limit the scope of the research for the year of 1992-2012; and for only those five independent variables. It is certain that for the Chinese APC, it is not just driven by these variables, but according to most of the experts in the field, those five variables are the most significant ones.

Therefore, other variables such interest rate, demographic changes (such aging, migration etc), governmental spending on social security/benefits or even money liquidity¹⁷ might also be other intervening variables that due to the complexity, data availability and time constraint could not be used at the present work. Nevertheless, it would be important for future research a deeper research over the interaction of those variable with the APC.

In 2002, the National Bureau of Statistics changed its methodology, which could ultimately impact on the final results. Chamon & Prasad (2010) highlighted that in 2002, the “survey instrument was also refined to obtain more detailed responses to some questions”, which “suggests the spike in the data that year could merely represent a break in the methodology” (Barnett & Brooks, 2010). Notwithstanding, most of the empirical studies, whether or not they considered the change of methodology, reached close results in their own works.

Besides the limitations already mentioned for the variables education and PTI, it is also necessary to point out that the spending of a household which has these two expenses, it is not just limited to what is considered/calculated in the used

¹⁷ As in Wen (2006)

indicators. To explain further, although the National Bureau of Statistics of China consider the given data as the average spending per capita on education of a family, it does not for example include the expenses of those families that decide to send their children to study abroad, as it has been increasingly happening.

Nine out of ten of the Chinese super-rich (with assets more than 100 million yuan) plan to send their children abroad, a number that is increasing drastically (IBT Staff Report, 2012). And this is not just for the rich families, but also for upper-middle classes, which spends in average 250 thousand dollars per year on overseas education for their children (Waldmeir, 2013). Other example of extra spending on education, which is not computed in the values of the used indicator for the variable E are the donations, many times forcedly induced, made by the families to the schools in order to guarantee their children's enrollment (Wu X. , 2014).

For the variable PTI in turn, besides the limitations previously mentioned, the numbers don't capture the burden share assumed by the previous generations in order to help the next one to purchase a new residence. As in many other societies, but specifically in China's case, the older generation by tradition use savings to help their children to purchase their first home (Somasundaram, 2016). It thus represents a burden not just for those households that are going to purchase the real estate, but also for their parents – it has an indirect impact over other families, which is impossible to capture by the present quantitative analysis. Therefore, further studies are necessary in order to understand and measure the impact of this purchase assistance.

And finally, although the variable Dependence wasn't intended to measure just the unemployment rate, but the reader may confuse its relationship to the unemployment rate, since the variable D not necessarily capture the (un)employment situation in the Chinese market. This is because the variable D is not just dependable on the variation of the size of the family but also includes all those people that are dependent of its family member, despite whether they are looking or not for a job, which includes kids, elders and those laid-off employees listed as REC members. On the other hand, consider only the official unemployment rate means to underestimate the real number of displaced workers (Naughton, 2007). So, despite of these considerations, the variable D were still used because it is believed to be the best indicator to capture the situation not just of the size of the family, but also to better understand the real situation of the dependence of a family over those indeed in a working status. Therefore, further studies are necessary to capture a more precise situation of this relationship and the real impact of unemployment over the Chinese APC.

5.3 – Final Words

Despite of the considerations and limitations, the present work brings a different perspective of the household consumption analysis, not just for the used empirical model through the APC perspective, but also for its analysis over the urban Chinese households by income level between 1992 and 2012.

Taking advantage of the Precautionary Saving Theory, the Life-Cycle Hypothesis and the empirical results found by similar consumption studies, the used independent variables Education (E), Health (H), Housing (PTI), Dependence (D) and Income Growth (ΔY) presented some insightful results on its relation to the

APC. In all the analysis, H reported a negative impact over the Chinese APC; and E and D, a positive relation. The most plausible explanation for this negative E-APC relation is due to the smaller growth of the household expenditures on education in comparison to the Household Total Income. On the other hand, the variable D impacts positively on the APC because, independently the level of income – an addition on the number of members in a household increases the basic consumption of this family.

For the variables ΔY and PTI, in turn, despite of the negative impact over the APC at the national level, the same relation is different in an analysis by income level – for the wealthier people, the PTI has a positive relation to the APC; and for the less wealthy households, the ΔY is positively related. This highlight two main points: (1) the wealthier households perceives that the housing price is too cheap compared to its income; and, (2) even for the Middle Income Level – as well as all the others less wealthy households – an increase of the total income would increase their consumption level, which put in evidence not just the inequality in China, but also the smaller margin to save of these households in comparison to the High and Highest Income Level.

Besides, after a short qualitative analysis of the main turning points of the APC (section 4.3) and comparing it to the quantitative findings of the applied empirical model, then it becomes evident that (1) macro- and micro-policies undoubtedly has a direct impact over the Chinese APC; and that, (2) it is liable to variation according to good and bad scenarios, as explained. In other words, the decrease of uncertainties, stable growth and increase of the size of the family are as responsible for the increase of the APC as the instability of income growth and unpredictability in a short run – thus, all the difference lies on how the APC varies.

Besides those indicated throughout the previous analysis, further studies from different perspectives and in other countries/regions are also necessary to better understand qualitatively the relationship of all these variables, especially the variation of the APC, and considering it as the dependent variable. All these complementary studies are interesting not just to enrich the state of the art but also to complement and reinforce the findings of the present work.



APPENDIX I

Bellow, follow original definition of the variables used at the present thesis made by National Bureau Statistics (2012) at the China Statistical Yearbook of 2012, and also available in CEIC Database:

Table APPENDIX A1 - Original Definitions of the Variables:

Population of Urban Households: refer to members of households living and sharing economically together in the urban areas. All the income and expenditure of all the members of such households are included in the income and expenditure of the household.

Proportion of Urban Employment: refers to the proportion of employed population to the population of urban households.

Total Income of Urban Households: refers to the sum of wage income; net business income; income from properties; and income from transfers of members of the households. Income from selling of properties and income from borrowing are not included.

Total Expenditure of Urban Households refers to all actual expenditure of households except expenditure on lending. It includes cash expenditure; property expenditure, transfer expenditure, social insurance expenditure and expenditure on house purchasing or house building.

Consumption Expenditure of Urban Households on Services refers to non-commodity service expenditure of households on various kinds of cultural and living activities provided by society.

Table APPENDIX A2 – Information about the National Household Survey

Source of Data:

Data on the living condition of urban residents come from the data collected through a sample survey on the urban households conducted by the Department of Urban Social and Economic Survey of the National Bureau of Statistics.

Data on the living conditions of rural residents come from data collected through the sample survey on rural households, which is organized by the Department of Rural Social and Economic Survey, National Bureau Statistics.

Scope and Coverage of Statistics – Urban Household:

The main contents of the sample survey on the urban households include persons in the household and the household composition; cash income and expenditure of the household; quantity of major commodities purchased and expenditure; the employment of household members; the housing condition; and the possession of durable consumer goods.

Urban household survey is organized by the Department of Urban Social and Economic Survey, National Bureau Statistics. The National Bureau Statistics survey offices in the provinces, autonomous regions and municipalities directly under the Central Government as well as the survey offices in selected cities and counties are responsible for collecting data in accordance with the survey scheme stipulated by the National Bureau Statistics and submitting the data to the offices at higher levels.

The survey had covered only non-farm households until 2001. Starting from 2002, the survey covers the households in district areas of all city and county towns.

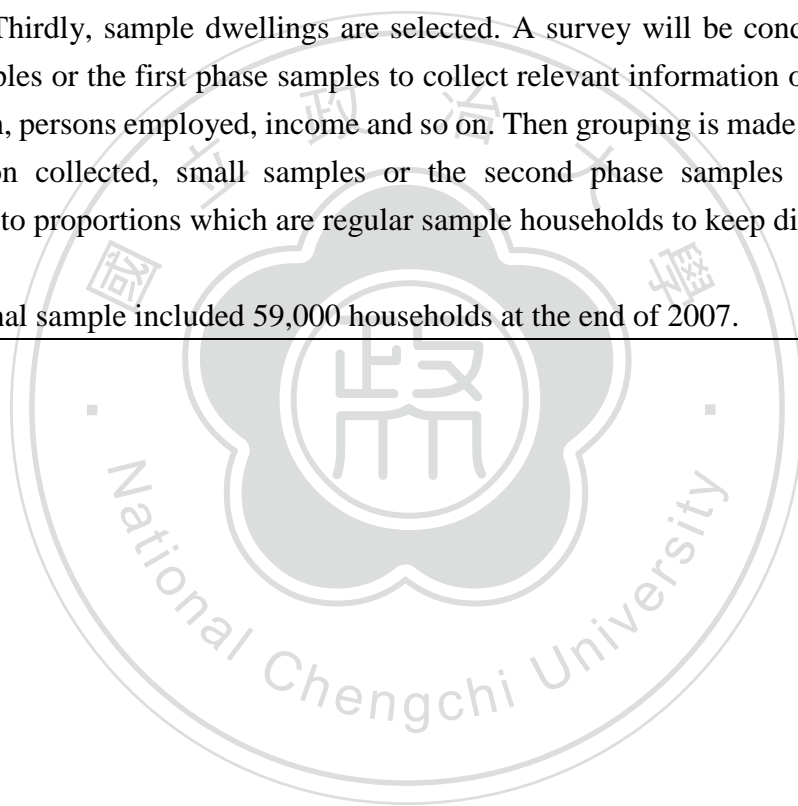
Sample cities and towns in urban areas are selected by using stratified random sampling method. Firstly, all the urban areas and towns of all provinces (autonomous regions and municipalities directly under the Central Government) are stratified into three strata according to population size: large and medium-sized cities (at and above prefecture level), county cities and county towns; secondly, the sample size is decided by proportion of population in selected stratus to the provincial total; thirdly, cities and towns are arranged in ranking the annual average wages of the employed persons, then with the accumulative population in each city and town sample cities and towns are selected by systematic sampling scheme according to the size of the samples.

The selection of sample households in urban areas is done by two steps: the first step is to have a one-off large sample survey; the second step is to select a small sample from

the large sample to be used as regular sample households for diaries.

The large sample survey is conducted for every three years; the objective is to provide sample frame for regular surveys and basic information for data evaluation of regular surveys. In the large sample survey, samples in sample cities and towns are selected by systematic sampling method schemes, such as two-phase sampling and stratifying method, two-stage (multi) method and probability proportional to size (PPS) method. Namely, stratification is done at district level, and then PPS systematic sampling method is used to select sample communities/resident's committees, finally the same method is used to select dwellings from the selected districts/resident's committees. In some large cities, three-stage sampling method is used. First, the communities/resident's committees are selected. Secondly, sample districts are selected. Thirdly, sample dwellings are selected. A survey will be conducted to the large samples or the first phase samples to collect relevant information on household population, persons employed, income and so on. Then grouping is made based on the information collected, small samples or the second phase samples are selected according to proportions which are regular sample households to keep diary.

The national sample included 59,000 households at the end of 2007.



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