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ONE CHILD POLICY IN CHINA AND ITS IMPLICATIONS FOR HOUSEHOLD CONSUMPTION

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Agricultural Economics and Management

Thesis title

One Child Policy in China and its Implications for Household Consumption

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Objectives of thesis

Aim of this thesis is to evaluate the One child policy in China, particularly its influence upon family consumption and hence the overall Chinese economy. Also, prediction is made for future consumption based on current demographic trends.

Methodology

Literature review is conducted using methods of abstraction, synthesis, deduction and induction. Analytical part is done using various methods of quantitative and qualitative data analysis such as time series analysis and consumption model of Chinese households.

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Short SE, Zhai FY. Looking locally at China's one-child policy. Stud Fam Plan 1998;29,4:373-87. [PubMed]

Winkler, Edwin A. 2002. "Chinese Reproductive Policy at the Turn of the Millennium: Dynamic Stability." Population and Development Review 28(3): 379–418

Feeney, Grif?th and Wang Feng. 1993. "Parity Progression and Birth Interval in China: The In?uence of Policy in Hastening Fertility Decline." Population and Development Review 19(1): 61–101.

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DECLARATION

I hereby declare that I have written this diploma thesis "An analysis of Impacts of the One Child Policy on Urban Household Consumption in China" by myself with help of the literatures listed in references.

Praha 6- Suchdol, 24 March 2014

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ABSTRACT

The purpose of this diploma thesis is to examine the influence of the One Child Policy on urban household consumption in China. With regard to the changes and features of household structure under the influence of the One Child Policy, an econometric model is built to test the impacts of household "miniaturization" and "aging" on urban family consumption. The results are estimated by OLS regression and Quantile regression based on CHIP 2007 data. The findings of the thesis are: the miniaturization of household has a significant impact on urban household consumption expenditures of food; clothing; health care; and educational, cultural, recreational services. For aging of household structure, it makes a larger contribution to health care consumption expenditure; transportation and communication consumption expenditure; educational, cultural and recreational services consumption expenditure; and housing consumption expenditure. In the long run, China's economy will be affected by these economic phenomenon, thus, loosen the One Child Policy is recommended.

Key word: The One Child Policy, Urban Household Consumption, Impacts, China

ABSTRAKT

Cílem této diplomové práce je prozkoumat vliv politiky jednoho dítěte na spotřebu domácností v Číně. S ohledem na změny ve struktuře domácností pod vlivem politiky jednoho dítě je sestaven ekonometrický model, který testuje dopady zmenšování a stárnutí domácností na spotřebu rodiny. Výsledky jsou odhadovány pomocí OLS regrese a kvantilu regrese založené na údajích CHIP za rok 2007. Závěry práce jsou následuj í cí Zmenšování domácnosti má významný dopad na výdaje domácnost í na potraviny , oblečení , zdravotní péči a vzdělávací , kulturní a rekreační služby . Stárnutí domácností nejvíce ovlivňuje výdaje na zdravotní péči, dopravu, komunikaci, vzdělávací, kulturní a rekreační služby a bydlení . V dlouhodobém horizontu , bude čínská ekonomika bude ovlivněna těmito ekonomický fenomény , a proto je doporučeno zvolnění politiky jednoho dítěte.

Klíčové slovo: politika jednoho dítěte , spotřeba domácností , dopady , Číně

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1. Introduction

According to the United Nations[1], world population has reached 7 billion on October 31, 2011, and the ever growing population had become one of the most serious global development problems. China, the world's most populous nation, is still confronted with a severe challenge on issues of population and development.

As a population control method, the "One Child Policy" has been implemented in China for over 3 decades. During this period, great changes have taken place both in the nation's population and the economy. According to national bureau of statistics of China, the total population has achieved to 1.347 billion at the end of 2011. As is shown in Chart 1, we can see the direct result of this population policy: even though the population size of China kept increasing during 1979 to 2011, the population growth rate has been gradually slowing down, and the curve has been getting flat since the early 1990s in comparison with early 1980s.

Chart 1: Year-end Total Population of China from 1979-2011
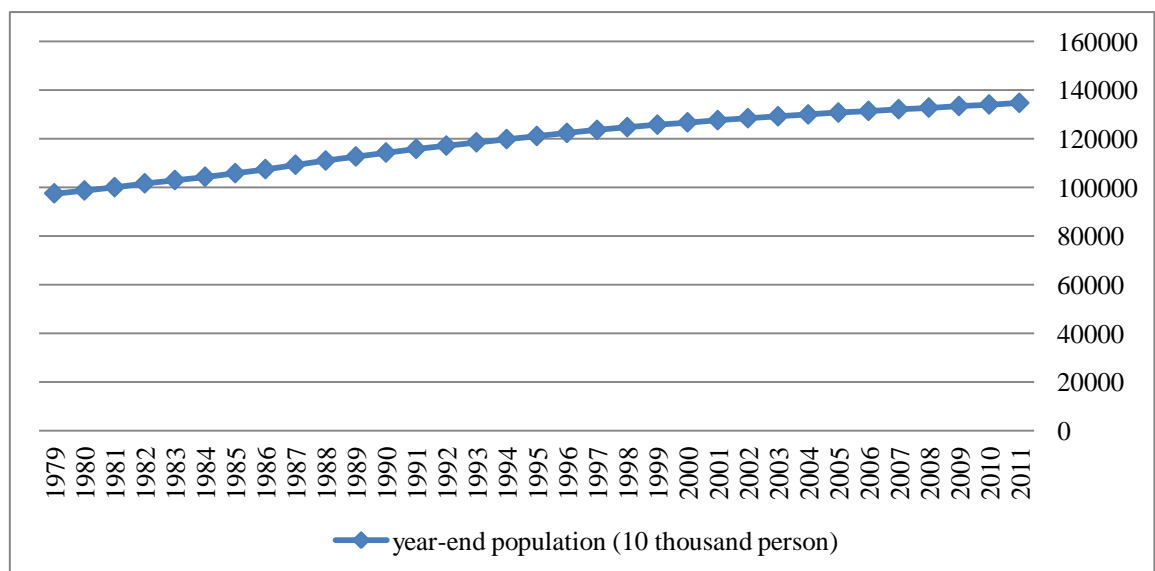
Source: National Bureau of Statistics of China

From the demographic perspective, 400 million births have been avoided with this policy according to the official data, which is said by some to be good for poverty reduction and raising the average living standards of residents; however, gender disproportion of newborn babies and aging emerged, which makes One Child Policy in China a highly controversial issue. From the economic point of view, the decreasing numbers of births and increasing aging population have changed the quantity and quality composition of the labor force, so has the structure of social consumption. For every family, the household structure of China presents the features of "miniaturization" and "aging". The number of family members has decreased to 3.1 per household where as the number in 1980s is 4.43 in average. The consequence is that, the "four-two-one" family structure (that is, for every four grandparents and two parents only one child per family) is increasingly common, which means that the young generation has been saddled with the heavy burden of supporting the elderly. This phenomenon has changed their life styles as many Chinese families have to save a high proportion of earnings rather than spending it on consumption goods, and their consumption pattern has to alter as well. This is because money is saved for the purpose of future families' health care, education and housing etc; and also various goods and services have been weighted differently in family consumption behavior, in other words, household consumption pattern was varied. In the long run, these changes in residents' consumption and saving behavior will definitely affect the Chinese economy. Therefore, it is vital to clarify the impact of this family planning policy upon household consumption.

Considering that as a crucial component of GDP, China's resident consumption is about 33.8% of the GDP in the year of 2010, in which 76.8% of resident consumption is made up by urban resident consumption. This matter of fact manifests the great importance and the very necessity to examine the influence of the One Child Policy on urban household consumption. What's more, it makes more sense to concentrate on urban household consumption only than without distinguishing urban and rural households since tremendous differences exist between the two areas of China. Thus, impacts of the One

Child Policy upon China's urban household consumption are supposed to be investigated in this thesis.

2. Objectives and Methodology

2.1 Objectives

This study aims to examine the impacts of the One Child Policy on household consumption of urban residents. By observing the census and sample survey data of National Bureau of Statistics of China, it tries to find out what the changes have been and the consequences of this family planning on household structure; then it aims to test how these features of family structure affected urban household consumption of China; finally, general explanation of the impact of China's the One Child Policy on household consumption of urban residents and recommendations are made.

The concrete objectives are as follows:

- To figure out what the influences of the One Child Policy are on China's urban household structure;

- To build an econometric model to examine how the changes of family structure produce an effect on household consumption;

- To explain why these changes or impacts happen.

2.2 Methodology

This research is an empirical study which mainly focuses on the household consumption of urban residents under the influence of the One Child Policy. The main methodological tools applied in the research include:

- Statistic analysis on the census and sample survey data of National Bureau of Statistics of China, it tries to summarize the features and trends of urban family structure;

- Econometric model. A general econometric model is built. By Ordinary Least Square

regression (OLS) and Quantile regression, it tries to estimate the parameters which manifest the changes of household consumption pattern under the influence of the One Child Policy.

The data input in this study comes from national Bureau of Statistics of China and Chinese Household Income Project series (1988-2007).

3. Over view of Issues Discussed

3.1 The One Child Policy

3.1.1 Birth control, family planning, birth planning

The concept of Birth Control, generated from early 20th century, represents the methods or devices used to prevent pregnancy. It means a nation's and society's quantitative restriction of children born. Different from planned adjustment of national population, birth control implies only decreasing in population but not increasing.

The relevant term Family Planning has its particular meaning regarding to Birth Control. According to the definition of World Health Organization, it "allows individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births"[2], therefore, family planning is essentially the fertility behavior which is based on family's own benefits and is controlled by each couples. As a main method of birth management, it is achieved through use of contraceptive methods and the treatment of involuntary infertility. However, in terms of result, family planning mainly reflects the behaviors of each family but not of whole national society, thus, there is a limitation of this term in the aspect of social adjustment (Sun, 1987)[3].

Birth Planning refers particular to planned regulating of population reproduction in the whole society[4], it is a series of actions that conducted by the state in order to acclimatize the development of population to social economic change. It is implemented not only by population birth plan which is provisioned by central and local government, but also by their policies and measures.

From the above points, population control can be obtained by two forms: social control and family adjustment. The former represents the actions for the good of a whole nation

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[2] World Health Organization.(2013) Health topic: Family Planning. Retrieved 16 March, 2013, from http://www.who.int/topics/family_planning/en/index.html
[3] Sun M.H. (1987). The history of Chinese birth control. North China Women and Children Press, Changchun, page 4.
[4] Yang F.X. (2003). Historical Research on Family Planning of Contemporary China. Zhejiang University. P16

and is enforced through legal and economic instruments; on the contrary, the latter is on behalf of each family, all the behaviors of children births are self-determination of each couple and individual. Considering the fact of China, when people discuss population control, it means birth planning. It is state action of which main content is making use of administrative constraints (Yang, 2003).

3.1.2 The One Child Policy: content, development and current situation

The One Child Policy, officially translated as "family planning policy"[5], is one of the most important demographic policies of the People's Republic of China. It restricts urban couples to have only one child while allowing additional children in several cases, including twins, ethnic minorities, rural couples whose first-born baby is a girl, and couples who both lack siblings themselves.

In the 1960s, China's population entered its second peak birth period. From 1962 to 1972, the yearly number of births in China averaged 26.69 million. In 1969, China's population exceeded 800 million, which almost a quarter of the world's people. Beginning from the 1960s, the contradiction between the population on one hand, and the economy, society, resources and environment on the other had become gradually apparent. In view of the situation, the Chinese government issued a call for family planning and advocated the use of contraceptives; in 1970, citizens were encouraged to marry at late ages and have only two children. Though the fertility rate began to decline significantly, a clear population policy had not worked out, family planning still stayed as a call and not effectively implemented throughout the country.

From the early 1970s, with increasingly deeply aware of over-rapid growth of population, the Chinese government decided to carry out birth planning in both urban and rural areas, and integrated the plan for population development into the plan of national

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[5] Information Office of the State Council of the People's Republic of China. (1995). Family Planning in China. Embassy of the People's Republic of China in Lithuania. Retrieved 16 March, 2013, from
http://www.fmprc.gov.cn/ce/celt/eng/zt/zfbps/t125241.htm

economic and social progress. Consequently, family planning work entered a new phase of development.

In 1979, together with the procedure of economic and social reform, the One Child Policy, as a tighter population control method, was initially implied both in urban and rural area. The Chinese government claimed that it was a short-term method which its goal was to move towards voluntary small-family culture. Now it becomes a generally strict policy. After several round adjustments, the current policy is as what can be viewed today.

According to over three decades' practice, the fertility limit has been strongly enforced in cities and urban towns, but the actual implementation varies from location to location[6]considering the differences in economic, demographic and social development. Generally, the executions of the One Child Policy are conducted by Municipal Commission of Population and Family Planning of each province and district, the work follows the regulations for population and family planning, which is created on the basis of national regulation and slightly adjusted by each province and district own.

There are many cases that allow the family a second child. For instance, in most rural areas, individuals and couples could have a second child if their first-born is a daughter[7]; and the same applies to people who suffer from physical disability, mental illness or mental retardation[8], etcetera. The second child is subject to birth spacing (usually 3 or 4 years). Additional children out of these conditions will result in large fines, which are charged in the name of social expenditure. It means families which violated the policy are required to pay monetary penalties, and also may possibly be denied bonuses even been fined at their workplace. The exceptions are: people in ethnic minority districts like Tibetans have no limit of child birth; children born in overseas countries are not counted under the policy if they do not obtain Chinese citizenship; Chinese citizens returning from abroad are allowed

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[6] United Nations Social Development in Asia and the Pacific (ESCAP). (2012). Status of Population and Family Planning Program in China by Province. ESCAP. Retrieved 16 June, 2013, from https://web.archive.org/web/20120330215041/http://www.unescap.org/esid/psis/population/database/chinadata/intro.htm
[7] The policy content in details can be seen in each province's Regulations for Population and Family Planning.
[8] The same as above

to have a second child and so on[9]. As of 2007, 35.9% of the population was subject to a strict one-child limit. 52.9% was permitted to have a second child if their first was a daughter; 9.6% of Chinese couples were permitted two children regardless of their sex; and 1.6% had no limit at all. In the latest round of adjustment in 2013, couples who lack of siblings of one spouse are allowed to have the second child.

3.2 Effects of the One Child Policy

3.2.1 Demographic effects of the One Child Policy

1). Population size and fertility rate

Since first applying of the One Child Policy, it became a controversial issue and was always the hot research point for both scholars and government. Population size and birth rate obviously are the primary concern.

When One Child Policy was launched, the Chinese government set a target population of 1.2 billion by the year 2000. The fifth census result of 2000 puts the total population (not included Hong Kong Special Administrative Region, Macao Special Administrative Region and Taiwan etc.) at 1.27 billion[10], the census of 2010 puts it at 1.34 billion[11]. Nowadays, low fertility level has been generally used by the Chinese demographic area to describe current childbirth situation, it means the birth rate is below replacement. According to the fifth census, China's total fertility rate (TFR) has gone down to 1.35 since late 1990s[12]. However, considering the births omitted, this figure almost does not been accepted by public, some demographers regard these figures are underestimated[13]. As the real birth rate is important for studying and decision making, there are many researches focus on fertility rate

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[9] The same as above
[10] National Bureau of Statistics of China. (2001). The Fifth National Census Data Bulletin. Retrieved 16 June, 2013, from http://www.stats.gov.cn/tjsj/ndsj/renkoupucha/2000pucha/html/append21.htm
[11] National Bureau of Statistics of China. (2011). Sixth National Census Major Data. Retrieved 16 June, 2013, from http://www.stats.gov.cn/zgrkpc/dlc/yw/t20110428_402722384.htm
[12] Guo Z.G. (2010) China's Low Fertility Level and Effect on Population Development // Chinese population and economic development under low fertility level. Beijing: Peking University Press, 2010:3-13
[13] Pan J.H.(2003) Analysis of outcomes of pregnancies and fertility level of married Chinese women. In: Theses collection of 2001 National Family Planning and Reproductive Health Survey. Beijing: China Population Publishing House, 2003:16-26.

estimation. By matching method, Guo (2004a)[14] estimates the average fertility rate at 1.47; in the work of the National Population and Family Planning Commission, TFR of 1.8 is adopted and used.

Excluding the demographic policy, the TFR is also influenced by social economic factors. By using population development equation of a population dynamic system, Wang (2006)'s study shows that for 28 years (from 1972 to 2000) implementation of birth control policy, accumulatively 2.64 to 3.20 hundreds million newly born population has been reduced in China, and the increase of the total population has thus reduced by 2.31 to 2.99 hundreds million. Meanwhile, the minimum contribution of the birth control policy in the reduction of population birth rate was 57.88% and that in reduction of the natural rate of population growth was 61.21%. It means that the influence of birth control policy on population growth is far more beyond that of social economic forces.

In order to keep the data consistent, this study will apply the latest data from the National Bureau of Statistics of China. From the sixth national population census of People's Republic of China in 2010, the total population of mainland China is 1,339,724,852 persons, an increase of 73,899,804 from the previous census conducted in 2000[15]. This represented a growth rate of 5.84 percent over the decades, and an average annual growth rate of 0.57 percent, where there is a 0.5 percent decline in comparison with the average growth rate 1.07 percent from the year 1990 to 2000. The population undercount rate of the census was estimated at 0.12 percent[16]. The figures are presented in Chart 2.

Chart 2: Fertility rate, mortality rate and natural population growth rate of China (1979-2011)

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[14] Guo Z.G estimated the fertility rate by match method according 1‰ census sample data of 2000.

[15] This figure excludes foreign nationals, residents of Hong Kong, Taiwan, and Macau temporarily staying in Mainland China, and Chinese citizens who have permanently settled abroad, but includes Chinese citizens who were temporarily abroad when the census was taken.

[16] National Bureau of Statistics of China. (2011)Communiqué of the National Bureau of Statistics of People's Republic of China on Major Figures of the 2010 Population Census[1] (No. 1). Retrieved 16 June, 2013, from http://www.stats.gov.cn/english/NewsEvents/201104/t20110428_26449.html
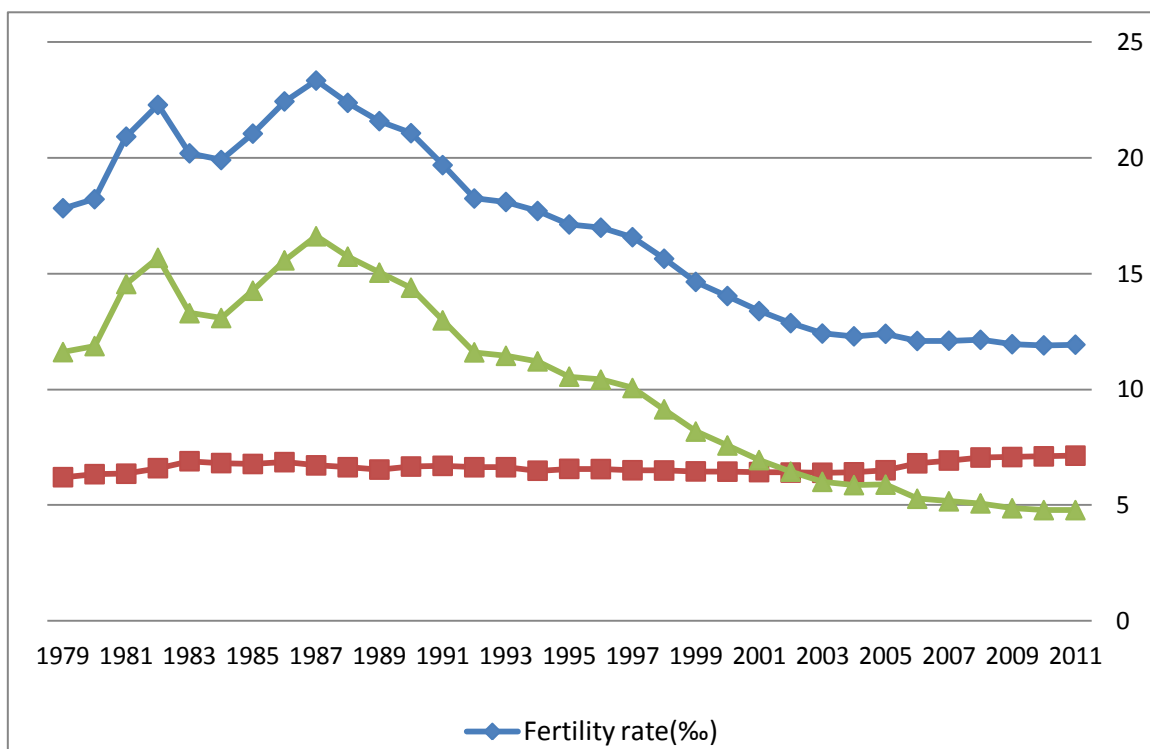
Note: calculated by the author according to data from National Bureau of Statistic of China.

2). Population structure

The secondary consequence that been noticed other than population size is the population properties. One of the properties can be distinguished is the change of newborns' sex ratio of the society. From the traditional perspective, male had higher social status than female in traditional Chinese patriarchal society since they are thought to be more powerful and skillful in physical work, especially in conventional agricultural production activities. Therefore, most Chinese families more expect newborn boys than girls since males were the main labor forces of family and they were supposed to take more responsibility in caring their family, which include family productive activities, raising children, supporting the elderly in family and so on. This is the foundation of the long existed gender preference in traditional Chinese society. Nowadays, these values somehow still work to a certain extent. The direct performance is selective birth-giving. Such an action is considered by Chen (2002) as one of the direct source that has finally brought forth the unbalanced ratio

of sex for the newly born population.

A number of continuous international demographic statistical findings show that the biological normal sex ratio at birth, which is the sex ratio without interference of human social behavior is about 106, that is to say every 106 baby boys are corresponding to 100 baby girls (Zeng Y, et. al. 1993). According to the State Family Planning Commission's 2‰ fertility survey in 1988, the sex ratio at birth of China in 1960s and 1970s is within the normal range (around 106), then it began to increase since 1980s. Sex ratio is 108.5 in the third national population census in 1981 and it is 110.94 in 1% sample population survey of 1986; 1988's 2‰ fertility survey indicates that sex ratio at birth of 1987 is 111.0 and the figure of 1989 is 113.8 according to the fourth census in 1990. In 2008, the ratio got to the peak which is about 120.6; the latest sex ratio at birth is 117.7 in the year of 2012[17].

Then the concentration should be placed on the age composition of the total population. With the reduction of new born babies, age structure of Chinese population changes. Aging population, as an important indicator of national population structure and social economic development, is one of the most serious problems across the world. This macro-demographic trend is further expanded in China and noticed by Chinese society. From the demographic perspective, the inevitable result of the One Child Policy is the increase in the proportion of the elderly among the population. Depending on the data from the National Bureau of Statistics of China, the aging population is keeping increasing since the second census in 1982. At the end of 2010, total population aged 65 years and above has reached to 118.9 million people, which are almost 2.38 times of it in 1982. (See in Table 1).

Table 1: Age composition of China's population in census

Indicator	1982	1990	2000	2010
Population aged 0-14 (thousand person)	341460	316590	290120	222590

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[17] National Bureau of Statistics of China. Retrieved 6 July, 2013, from http://www.stats.gov.cn/

| Population aged 15-64(thousand person) | 625170 | 763060 | 889100 | 999380 |
| Population aged 65 and above(thousand person) | 49910 | 63680 | 88210 | 118940 |

Source: National Bureau of Statistic of China

Wang (2006) insists Chinese society is basically transformed from adult population society to agedness population society, considering this is a symbol of population modernization. As a matter of fact, with the decreasing proportion of 0-14 aged population and increasing amount of 65 aged and above population, there is a straight consequence that cannot be ignored, that is general decreasing of dependency ratio in China. From macro level, that is the national economic development, the ever declining dependency ratio is a positive symbol for social economic development; on the other hand, for every family, the influence is complicated, especially given household consumption and saving decisions.

3.2.2 Economic effects of the One Child Policy

As one of the key production factors, population plays a great significant role in a country's economic growth. Chow (2005) suggests that the sustainable development of Chinese economy needs abundant human resources, which are dependent on the amount of population. Therefore, as the new born population is decreasing, the total quantity of human resource of China will gradually decrease in the control of the One Child Policy. In addition, as an essential factor which dominates production size, the variation of working-age population also generates certain economic results. Wang(2006)'s model shows that the periodic change of birth rate has generated severe stress to job market. For more than 3 decades' practice, the total quantity of labor force has been declining, of which rural labor force has reduced by 60 million people, accounts for 87.42% of the total labor force decrease. In this case, the One Child Policy will aggravate labor's work load in the future.

From the resource perspective, some researchers thought that the implementation of the One Child Policy somehow eased the pressure of population on natural and social resource

for development. Wang (2006) puts that the reduction of school-aged population is a positive signal to the scarcity of China's education resource, the supply of teaching staff and teaching place is supposed to be more sufficient. In other words, it means the decrease in quantity of school-aged population could be good for improving the quality of education, which is thought to be an essential aspect of human capital for future economic progress.

A number of scholars tried to find out the effects of the One Child Policy on national savings and economic growth. According to the econometric analysis on panel data of China from 1989 to 2007, Chinese GDP growth per capita can be most explained by the change of population factor, the saving rate can be described as well. The results demonstrate that the decline of fertility rate will lift national saving rate and GDP growth rate per capita (Wang W, 2010).

The transformation of the total population changes the age composition, and then alters the average labor force participation rate. What's more, social dependency ratio would be affected as well. In developing country which has abundant youth age population, The transformation of the total population changes the age composition, and then alters the average labor force participation rate. What's more, social dependency ratio would be affected as well. In part of developing countries which have abundant youth population, what has been slowing down with the declining of fertility rate is not only their population growth, but also social dependency ratio. Furthermore, labor participation rate rises so that average income goes up and a huge economic gain is yielded. This phenomenon is what is known as the "demographic dividend" (Bloom and Williamson, 1998). In developing countries, with the decrease of fertility, saving ratio tends to go up and the same as the demand for investment, so that the demographic dividend will be strengthened (Mason and Lee, 2006). That is why Wang(2006) insists that the implementation of birth control policy brought the "golden time" of population age structure in China during the intersection of centuries.

On the other hand, different view stands. Life cycle theory (Modigliani and Brumberg,

1954) holds that the rising aging population has a negative impact on economic progress since it aggravates burdens of family for supporting elderly and lowers households' savings as regards the dependency ratio. Nevertheless, critiques consider that rational individuals are capable to relocate economic resources and coordinate life cycle behavior. These are points of which has been neglected by the life cycle theory. If the change of household structure has been noticed by individuals, their saving and consuming behaviors would also vary, economic development may be impacted by soaring saving ratio (Zhang et al., 2001; Bloom et al., 2003).

To sum up, the economic influence of the One Child Policy is comprehensive. For the national economy, it results in a releasing of population resource stress; meanwhile, the shrinking labor force and growing saving ratio would lessen the engine force of future economy progress. Hence, both the positive and negative economic implications of the One Child Policy should be taken into consideration. For every family, household consumption and saving behavior has been changing, if one attempts to find out the impact of the policy on household consumption, a concrete thinking is required.

3.2.3 Social effects of the One Child Policy

Once the One Child Policy initially put into force in 1970s, it turns out to be a social concerned controversial issue. One of the contentions is human right. What is the purpose of the One Child Policy? This is an essential question for discussing the reasonability of this administrative action. Traditionally, the One Child Policy as a public policy represents the public interests, especially the national interests. What it wants to attain is the sustainable development of national economy, culture and politics. Consequently, the rights and freedom of individual and families are supposed to be partially sacrificed to maintain the balance between population and resources. Advocators and supporters of the One Child Policy develop their analysis on the basis of this political theory, that is to emphasize the necessity of the One Child Policy from the perspective of public good.

However, the foundation of modern public policy is to put the priority of individual

right. Neoliberalism thinks public rights should not violate the private one, neither proscribe individual rights by moral condemning. To manage public affair and to pursue public good, the government should stress the supremacy of individual rights in their activities of formulating and executing laws and norms. From this point of view, this demographic policy as a sort of public rights, becomes a restriction of individual's fertility right. That is why the policy has been controversial for years. Public good and individual rights are never the two opposite poles, what should be taken into consideration in this case is how to accomplish the balance between these two aspects[18].

What has been aroused by the One Child Policy is not only public's verbal debate or academic discussion on individual rights, but also actual social facts. The macro-demographic trends such as aging and shrinking of total population have greatly affected the micro household structure. Guo (2008) puts that this influence is essentially reflected in the relative variation of the population size of each generation inside households, therefore it causes the changes of generation structure of families[19]. From this point, the One Child Policy will definitely change the size and pattern of family households and turn to be an issue which we should seriously consider its long run effect.

3.3 Household consumption

3.3.1 Definition, content and studies of household consumption

According to the definition which is given by Organization for Economic Co-operation and Development (OECD,2009), "household final consumption expenditure covers all purchases made by resident households (home or abroad) to meet their everyday needs: food, clothing, housing services (rents), energy, transport, durable goods (notably cars), spending on health, on leisure and on miscellaneous services. It also includes a number of imputed expenditures"[20]. For statistic use, it is categorized to eight groups of consumption

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[18] Bao L.P. (2009) Assessment of Chinese Birth Control Policies and Their Future Orientations. Social Science. 2009:6
[19] Guo Z.G (2008) Study on Changes of Family Households in Recent Years. Chinese Journal of Population Science, 2008:3
[20] OECD (2009), National Accounts at a Glance 2009. Retrieved 8 July, 2013, from

by Chinese statistical department, that are: food consumption expenditure; clothing consumption expenditure; housing consumption expenditure; household appliance consumption expenditure; health care consumption expenditure; transportation and communication consumption expenditure; cultural, educational and recreational service consumption expenditure and miscellaneous expenditure.

Consumption structure is a long-standing theme in the international economic study field. It began from consumption analysis of the working class in the late 17th century, which is known as the "budget analysis "or "expenditure research ". During this period, the most prominent contribution to the field of consumption structure study is German statistician Ernst Engel. He took the lead in investigate this relationship between goods expenditure and income systematically in 1857. In Engel's statistical analysis of consumption expenditure structure of underclass, middle-class and the working class of Saxony, he initially proposed the conclusion that the poorer a family is, the larger the budget share it spends on nourishment. This statement is what is known as Engel's law[21].

While recognizing the universal applicability of Engel's law, modern western economists proposed two premises need to be noted: first, it assumes other conditions remain unchanged; second, there should be a unified meaning of food consumption expenditure, of which food consumption under a variety of income levels could be measured by. After made all these supplements to Engel's law, most economists believe that the law still has certain explanation power in modern economic society. Moreover, on the basis of empirical statistical data, economists obtained the variation of clothing consumption expenditures which is similar to the food expenditures. That is, with an increase in household income, the proportion of expenditures on survivability goods (including food and clothing) decreases while the proportion of daily necessities (beyond food and clothing) and non-necessities consumption expenditures rises. This is named

http://www.oecd-ilibrary.org/sites/9789264067981-en/03/01/index.html?itemId=/content/chapter/9789264075108-12-en

[21] M. Chakrabarty, W. Hildenbrand; Engel's Law Reconsidered. 2009. Retrieved 10th July, 2013. From http://www.econ2.uni-bonn.de/members-of-the-chair/hildenbrand/engelslaw.pdf

Engel's law extended[22].

Taking family as the basic unit of consumption decision, household consumption patterns can be divided in to various groups by researchers. The chief methods for studying residents' consumption pattern in current consumer economic theory are: analysis of the relationship between household consumption and investment, family life cycle analysis and functional analysis of household consumption expenditure.

In analysis of the relationship between household consumption and investment, consumption refers to the purchase of subsistence while investment refers to the purchase of labor and means of production. In 1950s, economist T. Schultz and G. Becker initially applied the concept of human capital for the research on consumer economy. They hold that family expenditures on education could be regarded as not only consumer spending also an investment in people. It has a more prolonged influence on family in comparison with spending on consumer durables (Zhou F.M., Yang J.,2009)

Family life cycle is a concept that generated by Glick, Paul C. in1947, attempting to describe the effect of time on a family through the phases of marriage (divorce), births and deaths. E ·M ·Duall indicates that there are several intermediate stages in family life cycle, the essential distinction among them is the age and education of children. Household consumption behavior and consumption expenditure structure alters in accordance with the development of family life cycle, various stages in family life result in different buying patterns. It takes into account the changes in family structure and behavior accompanying progression from birth to death. The family life cycle has long been an important method in the analysis of consumption behavior[23].

Functional analysis of household consumption expenditure is a new perspective of Western consumer economic study. Based on functional analysis of household consumption expenditure, the theory explains characteristics and changes of family consumption structure. In general, family is a vital component of social system with its

[22] Zhou F.M., Yang J. The Review of Studies on Consumption Structure. Hunan Agricultural University, 2009.
[23] Yin S.J. Consumer Economy. Changsha, Hunan People's Publishing House, 1999. 23-48

reproductive, economic and social features. Functions of household consumption expenditure could be concluded as that consumer spending is used to maintain family relations with other parts of the social system. Thereby, functions of families could be accomplished, then family system and social system could be sustained as well. Sociologist N.J. Smelser and T. Parsons believes that household consumption expenditure can be divided into three categories, the first category is life-essential items, that is the minimum expenditures on family clothing, food, housing and other expenses which a family lives on; the second sort is family operating expenses, such as children education, entertainment and recreation spending and so on; the third type is expenditures related to family "symbol stage" consumption. Among these expenditures, the first type presents a relatively stable status, whereas there are disparities and variations among families with regard to the second and third category of expenditures (Zhou F.M., Yang J.,2009).

3.3.2 Current situation of China's household consumption and its changes

Consumption structure is the proportions of various objects that were consumed in residents' life consumptions. This structure and its changes are critical measurements for evaluating residents' living standard, and also it reflects the features and trends of consumer behavior. As the average income rises, new characteristics of residents' consumption content and patterns demonstrate: 1). Firstly, total consumption expenditure keeps increasing with the growth of income. In the year 2002, the total household consumption expenditure of urban residents per capita in China is about 6029.9 Yuan where the average income of urban resident is 8177 Yuan; by the end of year 2011, annual income per capita of Chinese family has lifted to 23979.2 Yuan, meanwhile the household expenditure has rose to 15160.6 Yuan, which approaches to two and half times of it in comparison with ten years ago (without regard to consumption price index (CPI) of China which has increased by 30.4 percent[24] from 2002 to 2011). (See in Chart 3).

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[24] The CPI figure is calculated by the author, data comes from National Bureau of Statistics of China, from

Chart 3: Annual household consumption expenditure in cash of urban residents

Household consumption expenditure per capita (Yuan)

6029.9 6510.9 7182.1 7942.9 8696.6 9997.5 11242.9 12264.6 13471.5 15160.9

2002 2003 2004 2005 2006 2007 2008 2009 2010 2011
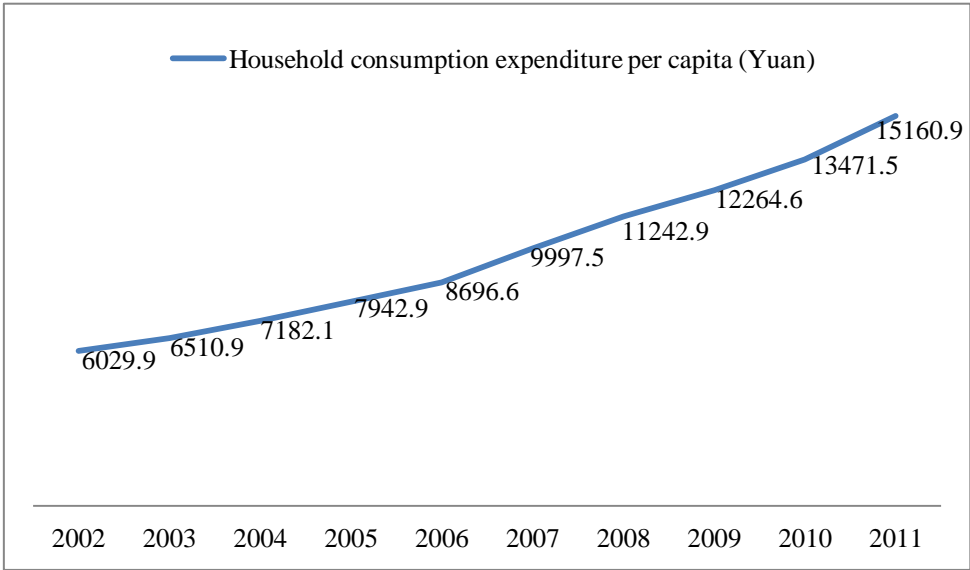
Source: National Bureau of Statistics of China

2). Secondly, what has changed is not only absolute amount of family consumption expenditures, also its structure. As the following Chart 4 shows, the first big group of expenditure is food which accounts for 38 per cent in total expenses; the second group of consumptions includes cultural, educational, recreational service expenditures (15%), transportation and communication expenditures (10%), housing expenditures (10%) and clothing expenditures (10%); other consumptions which include health care, household appliance and miscellaneous make up for the rest 17 per cent of total expenditures.

Chart 4: Household consumption expenditure of urban residents in China in 2002
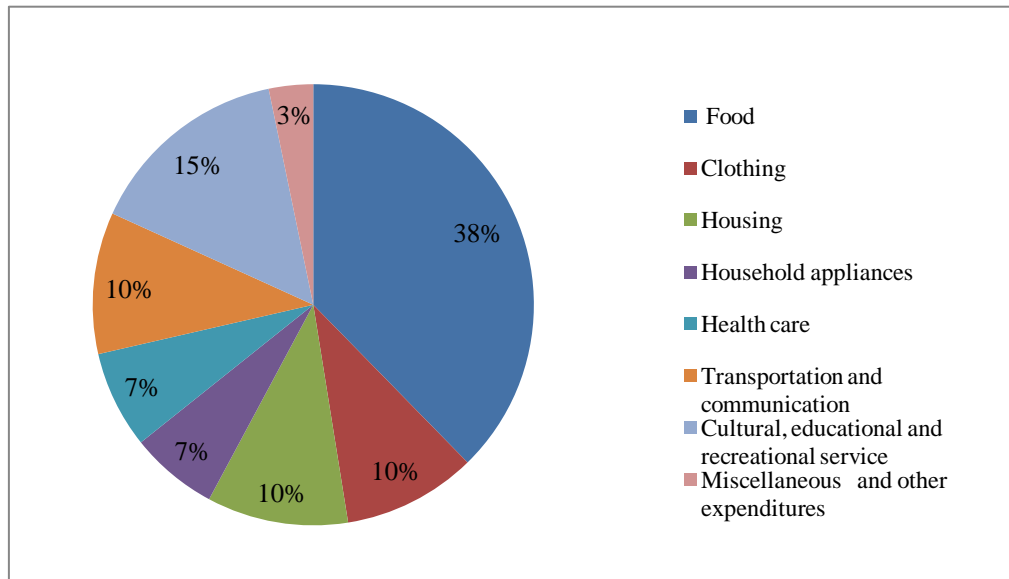
Source: National Bureau of Statistics of China

In comparison, the transformation in a decade is that while the proportion of expenditures on survival consumption (food, clothing, housing and household appliances etc.) virtually remains the same, the service consumption such as, transportation, recreation, education expenses has slightly altered. The annual consumption of transportation and communication per capita in 2011 is about 2150 Yuan, which is more than triple that of 2002 and has gained 4 per cent in the proportion of total family consumption since 2002; at the same time, the expenses on cultural, educational and recreational service has reduced by 2 per cent (See in Chart 5) . All these figures could be the evident which present the changes of Chinese household consumption composition.

Chart 5: Household consumption expenditure of urban residents in China in 2011
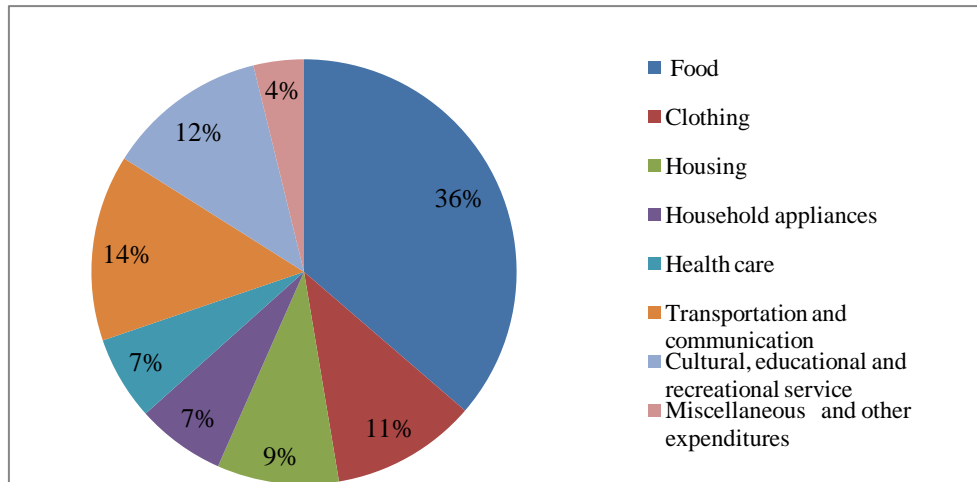
Source: National Bureau of Statistics of China

3.3.3 Studies of household consumption of China

By using cluster analysis of multivariate statistical methods, Hao (2004) thinks that China's urban residents' household consumption patterns can be divided into six types: Ultra-high consumption patterns district, high consumption patterns district, consumption patterns plateau district, moderate consumption pattern district, low consumption pattern district and ultra-low consumption patterns district; furthermore, she classifies nationwide urban households consumption pattern into nine types, that are: diet-oriented consumption pattern, survival consumption pattern, food & clothing & communication-oriented consumption pattern, food and clothing disproportion consumption pattern, standard consumption pattern, economical and practical consumption pattern, education and housing-emphasized consumption pattern, development and enjoyment mode consumption pattern, clothing preference consumption pattern. This taxonomic approach is believed by some more scientific and objective than classification purely by geographical location.

From 1981 to 2006,China's Engle's coefficient has been decreased from 56.7% to 35.8% (Hang, 2006); according to the proportion of consumption expenditure on each type of goods, the sequence of them from small to large proportion in 1981 is as follows: food,

clothing, household equipment, entertainment and education, housing, recreation, communication and transportation healthcare; in 2006, the order has became: food, entertainment and education, communication and transportation, housing, clothing, health care, household equipment, recreation. According to Liu (2002), the result of statistic analysis of China's residents' consumption structure shows the trend that with the increase of income, people's survival consumption will decrease while enjoyment consumption is going to continuous expand. Yuan, Xia and Fan's (2009) research also proves that the proportion of goods consumption like food, clothing and home appliances is significant declining while the proportion of expenditures on service consumption such as health care, transportation, recreation, education and so on rises sharply.

In order to explain the consumption and saving behavior of economic agent, Lei (2009) built a general theoretical framework. The result of his Euler equation suggests that income and household wealth are the decisive causes of family consumer behavior; additionally, habits and precautionary motives also play important roles in household consumption decisions.

What should be more clarified then is the relationship between demographic policy and household consumption: how the One Child Policy influences family consumption decisions and what changes have it brought to household consumption behavior. All these questions are essential.

3.4 Relationship between population and households economic activities

As one of the important units of social economy subsistence, household activities will definitely be influenced by social policies, especially for demographic strategy which is directly related to family population and its structure.

From the household structure perspective, nuclear family pattern which result from the One Child Policy became more common in Chinese society. Children's and adolescents'

status in family are promoted. As the direct consequence of this phenomenon, children's abilities of participating in family life and their influences on family consumption decision-making have been improved. To be specific, this promotion comprises the children's influences on family consumption level, consumption structure, and consumption patterns (Zhang, Dong, Xing; 2012).

Other opinions like Zou (2005) thought that the accelerating growth of aging population, which is derived from the One Child Policy, will aggravate the burden of each family for supporting the elderly, so that there will be a reduction in human capital investment of further generation.

As a matter of fact, it is sophisticated when take full account of mutual interaction of fertility, mortality, pension burden, human resource investment and saving rate. There are mainly two models be used in micro level to explain the effect of family structure changes on household consumption: One is life-cycle hypothesis (LCH) model raised by Modigliani and Brumberg (1954); another is household saving demand model (HSDM) suggested by Samuelson (1958) and Neher (1971).

Modigliani considered that consumers relocate their life-long expected total income in accordance to different ages of life to have the inter-temporal efficiency of income optimized. The use of working population's income can be divided into three parts: one is to meet their own consumption needs; another is used to bring up the young generation; the rest is saved to support the life after retirement. Working population corresponds to positive savings while children and retirees corresponds to negative savings, thus, the aggregate saving rate is supposed to increase when the proportion of laboring population goes up. On the contrary, if the proportion of children and aging population grows, saving ratio would decline. However, sorts of factors which influence residents' consumption and saving behavior have been ignored. For example, retirees might have part of assets bequeathed to their child/children; or having partial savings retained to cope with unexpected expenditures. Thus, bequest motives and precautionary motives could be the

offsetting factors in the reduction of overall saving rate which result from the increasing aging population (Hurd, 1990).

In household saving demand model (Samuelson, 1958; Neher, 1971), child is considered to be a substitute for household savings. Household savings as pension guarantee could be cut down if the household has more children; conversely, if there were a smaller number of kids in family, parents will increase household savings for its further utility as pension costs. Another view considers that the substitute relation also exists in the quantity and quality of child, to be precise, it means when numbers of child reduced, parents have a tendency to invest more in child's human capital (Becker, 1981). Consequently, as same as LCH, HSDM also predicts the change of family structure and age composition has a certain effect on family consumption behavior.

From the above, we can conclude that most of national and international researches put their concentration on national economy development and economic influences of the One Child Policy in macro level, that is the impacts of the One Child Policy on national consumption and saving rate; another focus is put on the changes of production factors such as labor size and its composition etc. Alternatively, in micro level, the changes of individual/family consumption behavior and consumption structure which results from the One Child Policy are emphasized. However, a great amount of researchers investigated household consumption patterns in fixed phase, lacking consideration for how the dynamic change of household structure and age composition affects household consumption. What are their impacts on household consumption? This is the question still need to be answered by research.

Therefore, to take changes of household structure as a pointcut, examining the deep policy implications on China's household structure and its influence on household consumption will make this study a supplementary research for the lack of dynamic micro-level economic analysis of the previous study.

4. Analytical Part

This study will firstly summarize the changes and features of urban household structure under the impact of the One Child Policy. Then follows econometric model, to explore how these changes influence household consumption patterns of urban families in China. Consumption patterns here indicate to the proportion of consumption expenditures on each type of goods and services to the total consumption expenditures.

4.1 Features of Chinese household structure and its changes

As fertility rate declined and the growth of total population size of China has been slowing according to the implementation of the One Child Policy, the changes of Chinese household structure present following features: 1). Firstly, the average size of household is significantly getting smaller. The average number of family members is about 4.3 depending on 1953's first national population census, it was supposed the peak around late 1970s to early 1980s, that is 4.43 members in each household on average. After then, it kept decreasing, till 2010 the average number of family members gets to 3.1 (See in Chart 6). Some scholars call this trend of household structure as "miniaturization"[25]

Table 2: Average size of household of China in population census

Year	Average size of household (person/household)
1953	4.3
1964	4.29
1982	4.43
1990	3.96
2000	3.44
2010	3.1

Source: National Bureau of Statistics of China

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[25] Zhou C. H., (2013), The Features of Family Structure Changes in China and its Contemplation, Journal of Nanjing College for Population Programme Management. 2013(4).

2). Secondly, the proportion of nuclear family substantially increased. In comparison with numbers of households in 2002 (See in Chart 7), there were totally 401,517,330 households in the year 2011 (See in Chart 8), 2 persons family has increased to 26 per cent of the whole household; meanwhile, 3 and 4 persons household has significantly reduced by, respectively, 5 and 6 per cent. The number of 2 to 3 persons households accounted for 54 per cent of the total, which is 4 per cent higher than it of a decade ago. A considerable proportion of these families are nuclear families.

Chart 6: Numbers of households of China in 2002
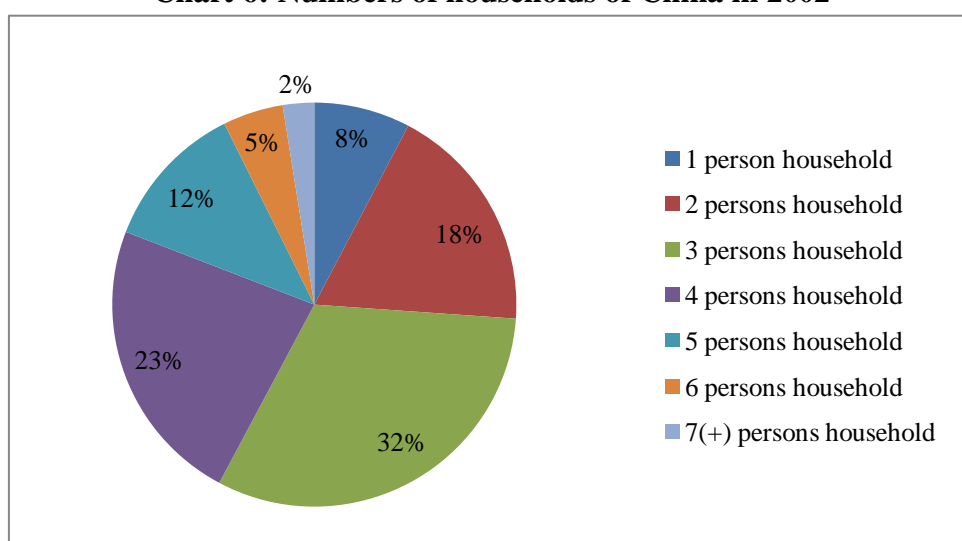
Source: National Bureau of Statistics of China

Chart 7:   Numbers of households of China in 2011
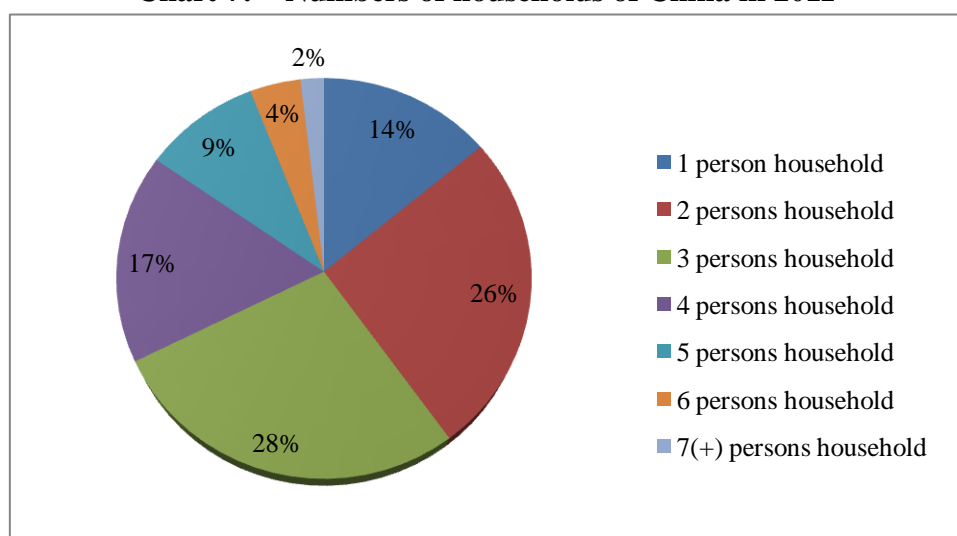
Source: National Bureau of Statistics of China

3). Furthermore, another key fact of household structure that cannot be overlooked is that three-generation-family is still one of the most common family types in Chinese society[26] even though the family size shrank. In this case, the ever decreasing proportion of young population in household also means that, there will be a trend of aging for every family when considering the development of the family life cycle.

According to the annual data of the National Bureau of Statistic of China, the dependency ratio has been calculated (as showed in Chart 9). One significant consequence of the One Child Policy is that the total dependency ratio has been decreased from 62.6% in 1982 to 34.4% in 2011. What follows this downtrend is the decline of child dependency ratio, it has been reduced by 32.5% from 1982 to 2011 which means more than half of it was dropped. On the contrary, the elderly dependency ratio was increasing in the general downward trend, it was 8% in 1982, and till the end of 2011, the ratio has grown to 12.3%. To put it more concretely, the One Child Policy's influence on household structure, that is a decreasing child dependency ratio and a growing elderly dependency, will definitely have a critical implication on household consumption decision and their actual consumption behavior.

Chart 8: Dependency ratio from 1982-2011
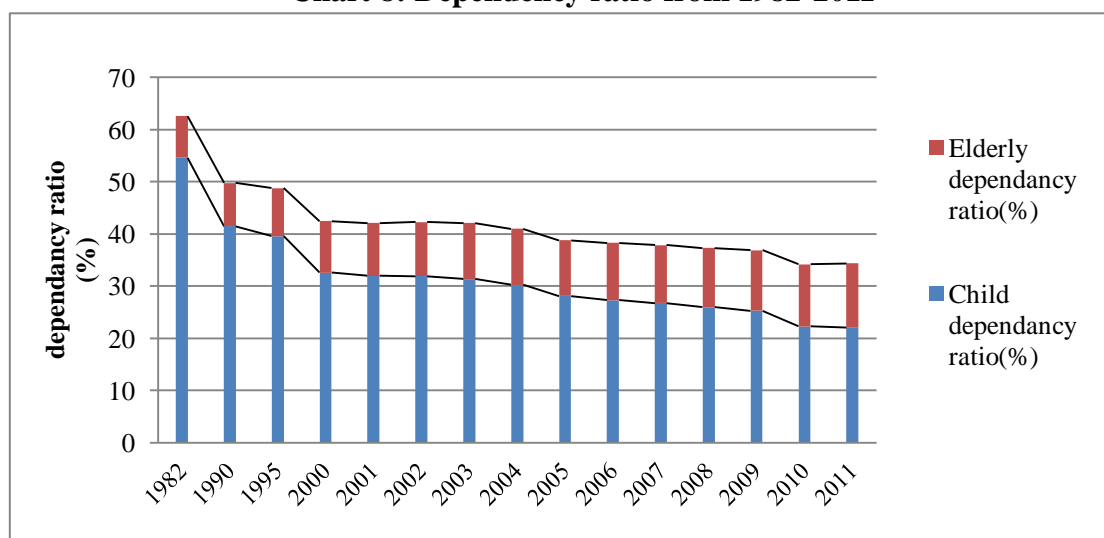
Note: calculated by the author according to data from National Bureau of Statistic of China.

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[26] Zeng Y. (1987). Population Analysis of China. Peking University Press. 2004(1), P101-119.

4.2 Main data

By applying CHIPs data, this study emphasis on the influence of changes in family size and household structure that caused by the One Child Policy on urban residents' household consumption.

CHIPs is short for China Household Income Project series, it is a series survey which mainly supported by Chinese Academy of Social Sciences and National Bureau of Statistic of China. The CHIPS database is formed on the basis of four times household survey, that is household income survey in 1988, 1995, 2002 and 2007. It was considered by both national and international researchers as the most authoritative data base in China's income distribution and labor market research field.

In this econometric model, all data be used for econometric estimation is from CHIPs 2007, and the input data are the urban survey data only. For more detail, there are totally 19 cities, 787 communities, 5,000 households and 40,000 persons have been studied in this research. The sample is obtained by stratified random sampling method, and the stratification is based on provinces and cities. Household sample within the town/urban comes from random cluster sampling method.

4.3 Econometric analysis of household consumption

4.3.1 Econometric model

To study what the influences of household structure change on household consumption of urban residents are, this research firstly defined the aspects of the family structure changes and its measures. The main changes that are considered in this study are the "miniaturization" of household and "aging".

Table 3: Proportions of average elderly and young population per household (1988 – 2007)

Year	1988	1995	2002	2007
Average elderly population per household (%)	18.5032	15.089	11.5388	10.7175
Average young population per household (%)	4.8292	6.1308	7.2757	9.6273

Note: the proportion is calculated according to CHIPs (1998, 1995, 2002, 2007).

According to CHIPs data, the proportions of young and elderly population in household are shown in Table 3. From 1988 – 2007, the proportion of household population aged 0 – 14 has totally reduced by 7.79 per cent while the proportion of household population aged 65 or above increases, by the end of 2007, elderly population has accounted for 9.63 per cent of total family population per household, almost twice of it in 1988 which is 4.83 per cent. Therefore, it makes sense to set these two factors as main variables.

Taking other studies as references, explanatory variables also include some other factors that may influence urban households' consumption, the econometric model is as follows:

$$Y_i = c + \beta_1 YOUNG_i + \beta_2 OLD_i + \beta_3 IND_i + \beta_4 AGE_i + \beta_5 EDU_i + \beta_6 INCOME_i * low + \beta_7 INCOME_i * middle + \beta_8 INCOME_i * high + u_i$$

Where Y_i is the total household consumption expenditure of year i;

c is the constant term.

With regard to household structure (miniaturization and aging), it will be presented as the proportion of age composition inside households. To be specific, miniaturization is measured by observing *the proportion of household population aged 0 – 14* (YOUNG) and aging is measured by *proportion of household population aged 65 or above* (OLD). Beyond family structure, there are also other elements which produce an effect on family

consumption. In this thesis, the control variables are selected as follows: *Age of householder* (AGE); *industrial structure transformation* (IND), which is expressed by the proportion of the service industry practitioner inside a family. In addition, according to gross household income, households have been divided into three groups, that are *low-income group* (annual income under 60,000[27] Yuan), *middle-income group* (annual income 60,000 – 180,000 Yuan) and *high-income group* (annual income above 180,000 Yuan). Here, dummy variables low, middle, high are used for describing the belongingness of household group regarding their overall income. EDU represents the *average years of schooling* of adult family member.

4.3.2 Data declaration

The data applied in this analysis include both urban household data and personal data. To calculate the proportion of the household population aged 0 – 14 (YOUNG) and household population aged 65 or above (OLD) inside family, the personal data and household data were matched. And also, the missing value has been removed. Ultimately, 4107 household data was applied in the analysis, the descriptive statistics for variables can be observed in Table 4. As we can see, the total consumption expenditure of urban household in 2007 is 36,752 Yuan, the largest expenditure among them is food consumption, the average spending is 15,090 Yuan; then follows educational cultural and recreational services consumption, clothing consumption and housing consumption, the average household expenditures are 4,361 Yuan, 3,739 Yuan and 3,6517 Yuan respectively. (See in Table 4)

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[27] The scope of income level is defined by Zheng, Li and Liu (2013). According to World Bank, the start point of GDP per capita for middle class across the world is 3,470 USD and it ends at 8,000 USD. They got above results (60,000 and 180,000 Yuan) after three conversion: conversion of per capita GDP and per capita income , conversion of exchange rate between US dollars and Chinese Yuan, standard conversion of purchasing power parity.

Table 4: Descriptive statistics for variables

Variables	Observations	Mean value	Std. deviation	Min Value	Max Value
Total consumption expenditure (10 thousand Yuan)	4107	3.67522	2.92109	0.39	74.5
1. food	4107	1.50900	1.07830	0.2	18
2. clothing	4107	0.37392	0.41060	2	6
3. housing	4107	0.36517	1.48310	0	70
4. household appliance	4107	0.24129	0.58924	0	16
5. health care	4107	0.23337	0.47244	0	11
6. transportation& communication	4107	0.36086	0.84748	0	23.8567
7. educational, cultural &recreational services	4107	0.43610	0.65283	0	15.6
8. miscellaneous& other expenditures	4107	0.15552	0.33333	0	6
Proportion of household population aged 0 – 14 (YOUNG)	4107	0.16003	0.16893	0	0.6667
Proportion of household population aged 65 or above (OLD)	4107	0.08505	0.18192	0	1

Proportion of service industry practitioner inside a family	4107	0.71914	0.39683	0	1
Age of householder (years old)	4107	45.53.31	11.09465	14	100
Average years of schooling of adult family member (year)	4107	11.56997	2.97711	2	30
Low-income group (10 thousand Yuan)	2478	3.55804	1.29611	0.24	5.9997
Middle-income group (10 thousand Yuan)	1529	9.25298	2.93745	6	18
High-income group (10 thousand Yuan)	100	25.60143	10.45639	18.03	82

4.4 Results and analysis

According to the model, the result of Ordinary Least Square (OLS) estimation is shown in Table 5. Both proportions of household population aged 0 - 14 (YOUNG) and aged 65 or above (OLD) have no significant influence on total household consumption expenditure. The proportion of household population aged 0 - 14 (YOUNG) have a positive impact on food expenditure but the OLD has not. It could be interpreted as that, Children who aged 0 – 14 usually have a high demand of food consumption, especially the spending on snacks would be increased. On the contrary, the proportion of young population of the household has a negative influence on clothing expenditures. Generally, a large proportion of young people in a family means there would be a comparatively high burden of family life, therefore, household consumption of clothing will be reduced, both for the quantity and

quality; what is more, in comparison with adults' clothing expenditure, children's cloth are ordinarily in a relatively low price, which would also cut down family expenditures of clothing. About housing expenditure and miscellaneous, both YOUNG and OLD have no significant influence on it; but with regards to health care, they both have positive effects. Considering the physical conditions, children and elderly are vulnerable groups in front of diseases and accidents, so that there will potentially be more health care expenses cost, such as medical bills, health insurances and so on. For transportation and communication expenses, the proportion of the elderly population has a significant negative influence, but the proportion of youth has not. This might be because the reduction of elderly population's social activity.

Table 5: OLS estimation results

Variables	Total consumption expenditure	Food	Clothing	Housing	Household Appliance
YOUNG	-0.0016	0.3675***	-0.1014**	-0.2445	0.0671
	(-0.0056)	(3.2976)	(-2.5510)	(-1.5518)	(1.1481)
OLD	0.2948	0.1793	-0.0633	0.0499	0.0402
	(0.8882)	(1.1769)	(-1.3100)	(0.3075)	(0.7182)
IND	0.2841***	0.0247	0.0069	0.1271**	-0.0093
	(3.7255)	(0.7219)	(0.5070)	(3.1705)	(-0.3943)
AGE	-0.0015	0.0066***	-0.0022***	-0.0058**	-0.0011
	(-0.2990)	(4.2926)	(-3.1426)	(-2.3761)	(-1.1963)
EDU	0.0022	-0.0272***	0.0118***	0.0014	0.0028
	(0.1899)	(-4.6196)	(5.5008)	(0.2219)	(0.8711)

INCOME*low	0.3877***	0.1510***	0.0292***	0.0527***	0.0228***
	(10.7206)	(10.8782)	(5.7494)	(3.6466)	(3.2759)
INCOME*middle	0.4256***	0.1478***	0.0422***	0.0491***	0.0330***
	(21.7529)	(19.4217)	(16.3439)	(5.0241)	(11.4422)
INCOME*high	0.2574***	0.0783***	0.0286***	0.0332***	0.0193***
	(7.5077)	(6.9561)	(6.1248)	(4.1352)	(5.0842)
Constant	1.0399***	0.5687***	0.1201***	0.2479*	0.0794
	(3.3951)	(5.3185)	(2.6979)	(1.7953)	(1.3331)
Observations	4107	4107	4107	4107	4107
R-Squared	0.3378	0.2552	0.2322	0.0202	0.0591

Note: The figures in the brackets are t- statistics value of regression coefficient; *, **, *** represents 10%, 5%, 1% significance level, respectively.

*Table 5(continue)

Variables	Health care	Transportation and communication	Educational, cultural and recreational services	Miscellaneous and other expenditures
YOUNG	0.0777*	0.0064	-0.1667***	-0.0077
	(1.8212)	(0.0536)	(-2.6151)	(-0.2229)
OLD	0.3732***	-0.1471*	-0.1692**	0.0320
	(4.4147)	(-1.8199)	(-2.0192)	(0.5632)
IND	0.0232	0.0547**	0.0388*	0.0180*

	(1.5181)	(2.4528)	(1.7923)	(1.6650)
AGE	0.0018**	0.0012	-0.0016	-0.0004
	(1.9914)	(0.5421)	(-1.3820)	-0.5928
EDU	-0.0027	0.0064*	0.0047	0.0050***
	(-1.3396)	(1.7468)	1.2330	(3.1190)
INCOME*low	0.0163***	0.0708***	0.0361***	0.0087**
	(3.1479)	(4.8943)	(4.0937)	2.0828
INCOME*middle	0.0190***	0.0715***	0.0444***	0.0186***
	(7.7722)	(7.2616)	(10.0498)	(8.1737)
INCOME*high	0.0101***	0.0415***	0.0316***	0.0147***
	(4.7156)	(4.7909)	(6.0763)	(4.5433)
Constant	0.0351	-0.2257	0.2054***	0.0090
	(0.6854)	(-1.4748)	(2.7852)	(0.2393)
Observations	4107	4107	4107	4107
R-Squared	0.0398	0.1091	0.0914	0.0841

Note: The figures in the brackets are t- statistics value of regression coefficient; *, **, *** represents 10%, 5%, 1% significance level, respectively.

Table 6: Statistics for significance of parameters

TYPE OF CONSUMPTION	INSIGNIFICANT	SIGNIFICANT	NUMBER OF PARAMETERS
Total consumption expenditure	4	4	8

1. Food	2	6	8
2. Clothing	2	6	8
3. Housing	3	5	8
4. Household Appliance	5	3	8
5. Health care	2	6	8
6. Transportation and communication	2	6	8
7. Educational, cultural and recreational services	2	6	8
8. Miscellaneous and other expenditures	3	5	8

Note: Statistics at 10%, 5%, 1% significance level.

Confusingly, both the proportion of young and elderly household population has negative impacts on educational, cultural and recreational expenditures. In general, education cost is one of the largest expenditures in China's household consumption to each family, behind only food consumption expenditures. But given that the definition of YOUNG here is population aged 0 – 14 year(s) old, family's educational expenses would be reduced because of the national compulsory education[28]; for elderly, the education costs are not high as well since they have accomplished the regular education cycle already. Meanwhile, according to the life cycle of China's family, this is a specific period which Chinese call it "Shangyoulao, xiayouxiao". It means there are both old and young at home like so called Sandwich Generation. In this family stage, members of the sandwich generation are usually on the rise of their career; at the same time most of these families are

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[28] The national compulsory education in China is a state-run system of public education run by the Ministry of Education. All citizens must attend school for at least nine years, known as the nine-year compulsory education, which the government funds. It includes six years of primary education, starting at age six or seven, and three years of junior secondary education (middle school) for ages 12 to 15. Some provinces may have five years of primary school but four years for middle school.

confronting a great burden of taking care of family, so that there will be a reduction of recreational activities in most Chinese families, thus, this brand of expenditures decrease. On the other hand, what is puzzling here in the model is that, the influence of the proportion of young and elderly household population on family housing expenditures is also insignificant. Theoretically, the lift of the proportion of the child in a family will increase the demand of housing area, families which are looking for a better living condition would spend more money on housing.   However, this phenomenon has not been found in the result of OLS. Considering the great economic stress of the sandwich generation, it might be reasonable for families to cut down the housing expenditures.

Next, the following shows the impacts of other variables on household consumption: the higher proportion of service industry practitioner inside a family, the higher the total household consumption is; meanwhile, it has a significant positive effect on housing; transportation and communication; educational, cultural and recreational services; and miscellaneous and other expenditures. The age of householders has a positive influence on food and health care consumption but a negative one on housing expenses. Average years of schooling of adult family member have a significant adverse effect on food while it has a positive impact on clothing, transportation and communication, miscellaneous and other expenditures. Additionally, all sorts of household consumption expenditures are significantly influenced by income.

Since CHIPs provides a large sample, Jarque-Bera statistics is applied to test the normal distribution of samples (see Table 7).

Table 7: Jarque -Bera test result

Variable	Jarque -Bera test	Chi (2)
Total consumption expenditure	2.40E+06	0
1. Food	2.70E+05	0

2. Clothing	2.00E+05	0
3. Housing	4.80E+08	0
4. Household Appliance	2.60E+07	0
5. Health care	3.90E+06	0
6. Transportation and communication	3.80E+07	0
7. Educational, cultural and recreational services	2.10E+06	0
8. Miscellaneous and other expenditures	1.20E+06	0

According to the Jarque-Bera test, none consumptions (including total consumption and 8 categorized consumption expenditures) is subject to the hypothesis of normal distribution. In this case, the OLS estimation is unbiased. A better estimation could be made by applying Quantile regression method since it is more robust against outliers in the response measurements[29]. Hence, this research will continue with quantile regression analysis. The chosen quantiles in the model are 0.15, 0.3, 0.5, 0.7 and 0.85. The result can be seen in Table 8 and Table 9.

Table 8: Influence of household miniaturization on household consumption

Variable	Q (0.15)	Q (0.3)	Q (0.5)	Q (0.7)	Q (0.85)
Total consumption expenditure	0.0140	0.0473	0.0940	-0.780	-0.1956
1. Food	0.0732	0.0940	0.2189***	0.2577***	0.3187***
2. Clothing	-0.0112	-0.0311*	-0.0451**	-0.0619**	-0.0870*

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[29] Chen, J.B., Ding, J.J., (2008). A Review of Technologies on Quantile Regression. Statistics and Information Forum, 2008:3.

	Q (0.15)	Q (0.3)	Q (0.5)	Q (0.7)	Q (0.85)
3. Housing	-0.0494**	-0.0220	-0.0293	0.0069	-0.0252
4. Household Appliance	-0.0000	0.0139	0.0582***	0.0582**	0.0544
5. Health care	0.0280***	0.0392***	0.0579***	0.1092***	0.1256*
6. Transportation and communication	-0.0428***	-0.0629***	-0.0926***	-0.0921***	-0.1166***
7. Educational, cultural and recreational services	0.1364***	0.1772***	0.1710***	-0.1799**	-0.7287***
8. Miscellaneous and other expenditures	0.0000	0.0033	0.0084	0.0080	-0.0310
Observations	4107	4107	4107	4107	4107

*Note: *, **, *** represents 10%, 5%, 1% significance level, respectively.*

As shown in Table 8, with the growing of quantiles, the proportion of household population aged 0 - 14 (YOUNG) generates a gradually increasing positive impact on food and health care expenditure, but a negative impact on clothing, transportation and communication expenditures; for household appliance and services, there are positive significance at Q(0.5) and Q(0.7); for housing expenditures, the positive significance is shown at Q(0.15); additionally, it shows a relative sophisticated result regarding educational, cultural and recreational service expenditures. To be specific, there are positive significance at Q(0.15), Q(0.3) and Q(0.5), whereas are negative significance at Q(0.7) and Q(0.8).

Table 9: Influence of aging on household consumption

Variable	Q (0.15)	Q (0.3)	Q (0.5)	Q (0.7)	Q (0.85)
Total consumption expenditure	0.1022	-0.0270	-0.0474	-0.1223	0.1199

1. Food	-0.0290	-0.0143	0.0402	0.1003	0.1521
2. Clothing	-0.0076	-0,0054	-0.0261	-0.0698**	-0.1058**
3. Housing	0.0250	0.0291**	0.0396**	0.0485*	0.1103*
4. Household Appliance	0.0000	0.0160	-0.0044	0.0237	0.1124*
5. Health care	0.0618***	0.1170***	0.2041***	0.2865***	0.5881***
6. Transportation and communication	-0.0013	-0.0096	-0.0333*	-0.0785***	-0.1164***
7. Educational, cultural and recreational services	-0.0027	-0.0087	-0.0735**	-0.2870***	-0.6109***
8. Miscellaneous and other expenditures	0.0000	-0.0078	0.0009	-0.0068	0.0059
Observations	4107	4107	4107	4107	4107

*Note: *, **, *** represents 10%, 5%, 1% significance level, respectively.*

According to Table 9, at the quantile where there is high clothing consumption expenditure, the proportion of household population aged 65 or above (OLD) shows a significant negative influence from Q(0.7); the positive significant influence on housing expenditure begins to grow from point Q(0.3); the positive effect on health care moves up gradually; for transportation and communication, the negative significant influence starts to increase from quantile Q(0.5), and for educational cultural and recreational service expenditures, negative significance grows from Q(0.5) as well.

What can be found here in the quantile regression is an interesting phenomenon that the proportion of household population aged 0 - 14 (YOUNG) has a positive influence on educational cultural and recreational service consumption expenditure at quantile Q(0.15), Q(0.3) and Q(0.5), whereas it shows negative significance at Q(0.7) and Q(0.85). Since consumption on education and culture are usually inelastic, great pressure of education

expenses will be produced at the quantile where there is high educational cultural and recreational service consumption expenditure; with the growth amount of child in family, there would be a tendency for parents to reduce the average education cost on each child. In addition, considering that recreational consumption is relatively elastic, the more children a family has, the less recreational consumption there is for each household since there are great demands of time and expenses for taking care of children.

By comparing the results of OLS regression and Quantile regression, the OLS results demonstrate the general view of the implications while the Quantile regression is considered more accurate and reasonable for testing the influence of household miniaturization and aging on consumption, and also better for interpreting the impact of the One Child Policy on urban household consumption.

4.5 Discussion

The research found that: the miniaturization of household has a great impact on urban household consumption expenditures of food; clothing; health care and educational, cultural, recreational services. For aging of household, it makes a larger contribution to health care consumption expenditure; transportation and communication consumption expenditure; educational, cultural &recreational services consumption expenditure; and housing consumption expenditure. Nevertheless, neither of miniaturization and aging has a significant influence on overall household expenditure of urban residents. It can be concluded that the proportion of young and elderly population in urban family has a certain effect on different types of household goods and services consumption: both of them have a significant positive influence on health care expenditure and a negative impact on clothing, transportation and communication.

According to above analyses, we suspect that the contribution of household consumption to the national economy of China would not be that optimistic if the policy does not loosen in the future. In addition, to observe the changes and features of urban household consumption under this demographic strategy, it can be confirmed that with the

household miniaturization and aging trend, there is a decreasing number of urban household expenditures spending on substantial material and goods while more money is charged for developmental consumption and enjoyment consumption. It can be reasonably predicted that manufacture production and consumption will draw back while service business will continue to expand. In the long run, these variations and trends of urban consumption pattern would make a difference in consumer demand which associated with industrial development. In this case, China's economic progress will be greatly affected by the One Child Policy.

5. Conclusion and recommendation

The One Child Policy, as the crucial demographic strategy of China, has produced enormous profound effects on Chinese society.   With the decrease in the fertility rate, the speed of population growth has been slowing down. The results are that, massive pressure of resource constrained was partially released on one hand; also there will be potential threat of reduction in the labor force on the other. Beyond these consequences which create certain economic results on national development, the change of household consumption which is one of the vital components of GDP, generate far-reaching consequences as well.

To clarify what the implications of the One Child Policy on household consumption are, a consumption model was built. By using the data from China Household Income Project series 1988-2007, the impacts of "miniaturization" and "aging" -two main factors which are considered the imperative features of the household structure variation under influence of this birth planning policy- on urban household consumption has been examined and analyzed.

The research found that: the miniaturization of household has a great impact on urban household consumption expenditures of food; clothing; health care and educational, cultural, recreational services. For aging of household, it makes a larger contribution to health care consumption expenditure; transportation and communication consumption expenditure; educational, cultural &recreational services consumption expenditure; and housing consumption expenditure. Nevertheless, neither of miniaturization and aging has a significant influence on overall household expenditure of urban residents.

Given the changes of household structure under the influence of the One Child Policy, that is household miniaturization and aging, and its influences on China's urban household consumption and future economic development, this thesis would like to give following recommendations: From national level, the One Child Policy should be eased and adjusted. If the low fertility maintained, which result in household miniaturization and aging, the national economy would be negatively impacted; and besides, once aging of China's

population advanced the modernization of its social economic development, the whole society will be saddled with a great burden of pension expenses, thus, the policy should be loosen to adapt to the new social economic situation of China. At the meantime, there is a necessity to improve the social security system, especially the social endowment insurance and social medical insurance. This is thought to be good for stabilizing household consumption expectation and strengthening consumer confidence. For every household and individual, since the physical condition of elderly population is getting better with the improvement of residents' living standard and medical conditions, it is possible for retired people returning to work to serve themselves and the society, to expand their social activity. Those actions are believed able to produce enormous not only economic but also social value to both families and national development.

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Appendix I

A Brief History of China's One-Child Policy

By *Laura Fitzpatrick*   *July 27, 2009*   *Source: TIME*

Is the world's most populous nation about to get more crowded? Reports surfaced in international media last week that in an effort to slow the rapid graying of the workforce, couples in Shanghai — the country's most populous city — would be encouraged to have two kids if the parents are themselves only children. Shanghai officials have since denied any policy shift, saying this caveat is nothing new, but the contradictory reports are another manifestation of ongoing rumors that Beijing is rethinking the controversial one-child policy that has for the past three decades helped spur economic growth — but exacted a heavy social cost along the way.

Soon after the founding of the People's Republic of China, improved sanitation and medicine prompted rapid population growth that — after a century of wars, epidemics and unrest — was initially seen as an economic boon. "Even if China's population multiplies many times, she is fully capable of finding a solution; the solution is production," Mao Zedong proclaimed in 1949. "Of all things in the world, people are the most precious." The communist government condemned birth control and banned imports of contraceptives.

Before long, however, population growth was taking a toll on the nation's food supply. In 1955 officials launched a campaign to promote birth control, only to have their efforts reversed in 1958 by the Great Leap Forward — Mao's disastrous attempt to rapidly convert China into a modern industrialized state. "A larger population means greater manpower," reasoned Hu Yaobang, secretary of the Communist Youth League, at a national conference of youth work representatives that April. "The force of 600 million liberated people is tens of thousands of times stronger than a nuclear explosion."

It also proved to be nearly as destructive: with many communities collectivized and converted from farming to steel production, food supply slipped behind population growth; by 1962 a massive famine had caused some 30 million deaths. In the aftermath, officials quietly resumed a propaganda campaign to limit population growth, only to be interrupted by the turmoil of the Cultural Revolution in 1966; it began it again in 1969. A push under the slogan "Late, Long and Few" was successful: China's population growth dropped by half from 1970 to 1976. But it soon leveled off, prompting officials to seek more drastic measures. In 1979 they introduced a policy requiring couples from China's ethnic Han majority to have only one child (the law has largely exempted ethnic minorities). It has remained virtually the same ever since.

The one-child policy relies on a mix of sticks and carrots. Depending on where they live, couples can be fined thousands of dollars for having a supernumerary child without a permit, and reports of forced abortions or sterilization are common. (Blind rural activist Chen Guangcheng made international headlines in 2005 for exposing just such a campaign by family-planning officials in Eastern China; he was later imprisoned on charges his supporters say were retaliatory.) The law also offers longer maternity leave and other benefits to couples that delay childbearing. Those who volunteer to have only one child are awarded a "Certificate of Honor for Single-Child Parents." Since 1979, the law has prevented some 250 million births, saving China from a population explosion the nation would have difficulty accommodating.

But critics of the policy note its negative social consequences, particularly sex discrimination. With boys being viewed as culturally preferable, the practice of female infanticide — which had been common before 1949 but was largely eradicated by the 1950s — was resumed in some areas shortly after the one-child policy went into effect. The resulting gender imbalance widened after 1986, when ultrasound tests and abortions became easier to come by. China banned prenatal sex screening in 1994. Nonetheless, an April study published in the *British Medical Journal* found China still has 32 million more boys than girls under the age of 20. The total number of young people is a problem

as well; factories have reported youth-labor shortages in recent years, a problem that will only get worse. In 2007 there were six adults of working age for every retiree, but by 2040 that ratio is expected to drop to 2 to 1. Analysts fear that with too few children to care for them, China's elderly people will suffer neglect.

Facing growing resistance to the law, some Chinese officials have turned to harsh enforcement tactics. In 2007, for instance, bureaucrats reportedly took sledgehammers to a half a dozen towns, threatening to whack holes in the homes of people who had failed to pay fines for having too many children. Elsewhere, officials were accused of forcing pregnant women without birthing permits to have abortions and jacking up the fines for families disobeying the law. As a result, riots broke out. As many as 3,000 people demonstrated in Guangxi province, some overturning cars and burning government buildings. Several people may have been killed.

Despite rumors in early 2008 that the one-child policy would be overturned, in May of that year China's top population official said it would not be eliminated for at least a decade, when a large demographic wave of childbearing-age citizens is expected to ebb. For some Shanghai couples, at least, a small measure of change has come sooner.

Source: Laura Fitzpatrick. (2009). A Brief History of China's One-Child Policy. Retrieved 24th March, 2013, from http://content.time.com/time/world/article/0,8599,1912861,00.html

Appendix II

China Loosens Its One-Child Policy: The shift may be too late to offset the damage already done to China's economy and society

By *Hannah Beech / Beijing*   *Nov. 15, 2013*   *Source: TIME*

The Chinese government announced on Nov. 15 that it would loosen its notorious family-planning scheme, commonly known as the one-child policy. The new regulations will allow couples in which at least one parent is an only child to have two offspring. Xinhua, China's official news agency, said the reform was designed to "steadily adjust and improve family-planning policies."

The reform is part of what the Chinese government earlier this week referred to as "fine-tuning" of its restrictive family-planning policy, which was unveiled in 1979. (Generally speaking, the scheme limited urban families to one child but allowed rural couples to have more than one child in certain cases.) The curtailing of reproductive freedom, its supporters contend, meant that 400 million fewer Chinese were born, allowing for an unprecedented economic boom over the past 30-plus years.

But critics have assailed the policy for both the human-rights abuses it gave rise to — forced abortions and sterilizations, to name just two — as well as its social costs, which are now multiplying. China today faces a dramatic increase in its elderly population, along with too few young people to take care of all these retirees. The nation must also contend with an alarming gender imbalance because some parents have terminated pregnancies of female fetuses in order to ensure a favored boy as their sole child. By some estimates, China will have an extra 25 million young males by 2020.

Many Chinese demographers, even those raised in a socialist system that glorifies social engineering, have been calling for major family-planning reform, arguing that China's youth population has declined so much in such a short time that the nation will

soon face a shortage of the kind of skilled, young workers it needs to power its economy. They argue that as China grew richer, the once high birthrate would have naturally fallen anyway, as has happened in developed nations like Japan or Italy.

Piecemeal reforms to the family-planning scheme have been introduced over the years, such as a provision to allow couples composed of two only children to procreate more fully. (The Nov. 15 announcement is widening the parameters to couples in which only one parent is an only child, not both.) Pilot projects have already been introduced across the nation, allowing for more reproductive liberties in certain localities.

But some demographers say such tweaks are not enough to counter the host of social problems caused by China's skewed demography. Others speak of the reluctance of the massive family-planning bureaucracy — which employs some 500,000 people and provides income in the form of fines for illegal babies to local governments — to hasten its own extinction. "We don't need adjustments to the family-planning policy," says Gu Baochang, a demographer at People's University in Beijing. "What we need is a phaseout of the whole system."

Source: Hannah Beech. (2013). China Loosens Its One-Child Policy: The shift may be too late to offset the damage already done to China's economy and society. Retrieved 20th January, 2014, from http://world.time.com/2013/12/28/china-eases-one-child-policy/