

# **Commercial Sex Market in Post One-child Policy Era**

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## **Abstract**

Based on marital status and age, Chinese male population between 18 to 61 years old are divided into four segments. One consumption model enables this paper to examine the difference in consumption of commercial sex among four segments. Whether marital status and age indeed influence their behavior and to what magnitude? Or, are there any other demographic variables have strong explanatory power to men's commercial sex consumption?

Key word:, commercial sex market, utility maximization

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## **Introduction**

One-child policy has its profound and long-lasting influence on China's society. When it intertwines with China's traditional gender preference for sons, one of the prominent after effects is that tens of millions of marriage-age 'surplus men' can not get married due to sheer shortage of women. Considering marriage is still largely regarded as the sign of individual's complete maturity in China, it is also seen ostensibly as the legitimate and moral channel to have sexual intercourse (although the real sexual practice is never as orthodoxy and continent), it is nature for those

deprived men to seek other alternatives to marital sex.

Why focus on the commercial sex rather than other alternatives to marital sex? There is a series of fruitful and comprehensive surveys conducted by the Institute of Sexology Study in Renmin university of China investigating Chinese people's sexuality (from 18 years old to 61 years old). It is the only resource interviewing sexuality on the national base. Their surveys asked more than two hundred questions about all-aspects of people's sexual life. (All questions are published the book < Contemporary Chinese Sexual Behavior and Sexual Relationship> (Suiming Pan, 2004) The questions remain unchanged throughout three surveys to ensure the consistency.) Specifically, many of their questions ask people's commercial sex consumption. How frequent you purchase commercial sex? How much do you generally spend on commercial sex per time? How long do you approximately spend during one visit of commercial sex? (I am very surprised that they ask this.) Only in these three questions, I already gotten relative frequency of certain good consumption, approximate expenditure per consumption, and time allocation to certain activity, together with many key demographic variable that the surveys provided, an idea of consumption utility maximization model with budget and time constraints came up.

The consumption model I will use in this paper, people gain utility from goods consumption and time allocation to certain activities. Commercial sex is also one commodity that people can consume and allocate time to gain utility. By doing so, commercial sex is put into a large picture of individual's consumption behavior. We can observe, given money constraints, how much an individual value certain goods over other goods consumption. Additionally, this model also puts time allocation into utility acquisition, since time itself is also a valuable asset. Given time constraints, the model also tells us how an individual values their time allocation on certain actions over others.

Through the observation of commercial sex consumption, I would like to see which

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demographic variables has strong explanatory power to affect individual's decision on commercial sex. Whether marital status and age have such strong explanatory power? Age is the demographic variable that directly related to the implementation of one-child policy. Born beforehand means the gender imbalance had not yet showed up, neither did the marriage squeeze. They have better opportunities to get married and enjoy marital sex. While born afterwards, the gender imbalance gradually emerged, so did the marriage squeeze. Tens of million of forced bachelors can not get married and have stable marital sex, therefore they turn to look for other alternatives. To keep in mind, the above two scenarios are based under the general assumption that marriage will curb people's intention to look for alternatives since they have already had stable ones. What if this basic assumption does not firmly stand? Then everybody, no matter married or unmarried, can seek non-marital sex as they wish. Then maybe we could change our view slightly when we look at these tens of millions of forced bachelor and their related social problems. Apparently, commercial sex is only one of many alternatives of non-marital sex, it can not explain the complete picture, but it is a good start to work with.

I attempted to require the raw data from both the current and former directors of the Institute of Sexology Study in Renmin university of China who were in charge of all surveys. Their replies were polite but unfortunately negative. I do understand the sensitivity of their research in China's society for ideological or whatever concerns. Positively thinking, since I do not actually have the raw data to process detailed data analysis, I feel freer to expand my discussion to some spheres that I consider necessary to add and missing from current studies.

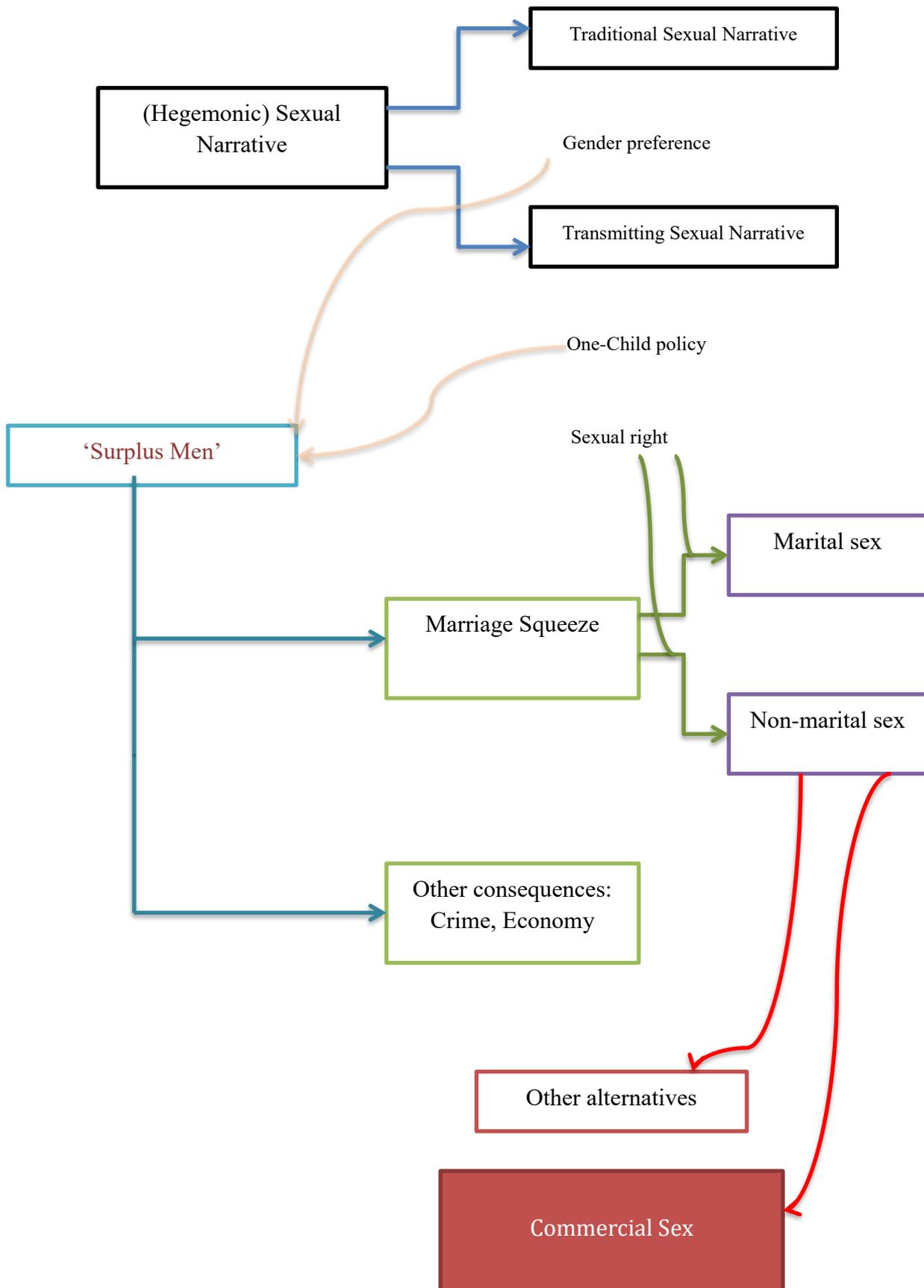
As to answer why I did not change my research framework due to lack of real data, I could only say that the rejection to my request came at a 'right' time and caught me by surprise. Besides, the original plan of this paper is inspiring to work for, therefore, I decided to continue.

## Literature Review

The part of literature review will be expanded like a serial story illuminated as the following mind map in Figure 1.

One-child policy seems to be the direct cause of a series of population crises in current Chinese society, where did it come from? After its implementation, what are the consequences it produces directly or indirectly? Since it is the hinge between its historical origins and its aftermath, therefore I will start the literature review from a historical perspective of how the hegemonic sexual narrative formed in China and how it gradually resulted to the one-child policy. After the policy was implemented, what harms does it cause? The skewed gender imbalance, marriage squeeze, anomie of sexual behavior and marriage system. After some overview of the commercial sex industry, given it is a highly controversy occupation, the discussion will go the arguments of pro-and-anti prostitution discourse.

Figure 1



### **3.1 The Grand environment**

It is generally believed that the sexuality have the following three purposes: the first one is procreation; the second is to create and maintain certain kinds of interpersonal bonding relationship, and the best example is marital relationship; the third is for pleasure. (Abramson & Pinkerton, 2002; Felicia De La Garza, 2007) Should sexuality stay private and independent on its own, or should it lay dependent on certain ‘bigger purpose’ and serve for the greater social order? If we examine how the public discussions about sexuality circulate around the above three purposes, we shall see how power control and individual freedom on sexuality confront and integrate with each other in a complex manner.

Throughout China’s history, on one hand, people harshly criticize the repression by authority on the most intimate and private sexual life of individuals. On the other hand, individuals remain inevitably dependent on the complex social system. In China’s society, where collectivism has prevailed over individualism for more than two millennium, the coherence and controversy between collectivism and individualism culture on sexuality is the ubiquitous social environment when we talk about the consequence of state-imposed one-child policy and its far-fetching connection with prostitution market.

### **3.2 What do we mean by sexuality?**

Sexuality consists of two parallel and inalienable parts. The former part contains more biological attributes about one’s sexual organic structures and their functions, and one’s psychological and subjective cognition of their biological existence. The latter part contains more social-cultural traits about how to express one’s biological existence and physiological feeling in a particular social environment. For the biological attributes of sexuality, it sets potentials and limits of each individual, within

which culture and environment can impose their influence. (Milton Diamond, 1976) Culture and environment impose their influence by constructing different sexuality narratives in forms of norms and standards.

### 3.2.1 The determinism aspect of sexuality

The biological determinism tends to regard sexuality essentially as a natural instinct planted in individuals, so that it is supposed to be universal to all male and female, and remains consistent and unchangeable. One of its extreme expressions is the scientism thought that claims all human sexual phenomena and sexual activities should be explained by the medicalization and objectivism of them. Scientists believe it is the human biological mechanisms, especially brain, that responsible for people's sexual behaviors and feelings. (Gerda Siann, 2013; LeVay Simon, 1993)

At the peak of this scientism wave was a study of human sexual response circle through the scientific observations of anatomical and physiological reactions of experiment subjects. They repeatedly measured various physiological indicators of test subjects under strict conditions controlled in a laboratory environment. They concluded the four-stage reaction cycle of human sexual activity called 'the human sexual response cycle' (Masters, William H., Virginia E. Johnson, 1966) However, the problem of such extremely strict scientism's view is that the test subjects do not practice ordinary sexual behaviors in such a controlled environment on the daily base. Another drawback of the scientism study on sexuality is that individual subjectivity is missing during the examination procedure. Instead of generalizing how the majorities react, individual's feeling should also be considered.

### 3.2.2 The constructivism aspect of sexuality narrative

French philosopher Foucault provided us a good tool to examine the constructivism

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view's of social-cultural aspect of sexuality narrative. We now see sexuality as self-evident factual existence. However, from Foucault's perspective: Before the construction of certain sexuality narratives, human being only had animal-like instincts and primitive fleshly desires. (Yinhe Li, 2009) Sexuality is not born naturally, instead, it is socially expressed in the form of sexuality narratives constructed by the set of sophisticated amalgamation of sexual culture, regulations and laws, scientific studies, philosophical studies, moral codes, religious belief and other miscellaneous social norms. All of them together construct the power mechanism imposed on people in the name of sexuality. The power here should not be confined to government agency, or an authoritarian ruling party, it is the collection of all these elements. Each perspective is like one plane of the prism, your perspective determines what you see.

What Foucault focused is how society constructs our sex, and what concerned him was not the sexuality itself, but the power discourse behind it. In most societies, the restrictive suppression on sexuality makes it a good testing field to examine the operation of the power mechanism. (Feng Yan, 1997; Yinhe Li, 2009) They instruct people's thoughts and regulate people's behaviors on sexuality. (Kenneth Thompson, 1998; Weeks Jeffrey, 1985) They tell us what we are allowed to do, what we are not allowed. Additionally, what we are allowed to say, what are not allowed to say, even what to think about sex. (Steven Seidman, 2004)

### **3.2.3 The combination of both**

We should realize the interaction of biological and social-culture discussions of our discussion on sexuality. Combining the social constructionism and biological determinism has the advantages of the following: the biological determinism draws the boundaries of sexual abilities. Regardless the social construction, there are certain limits that human being can not surpass. The social constructionism is the force to

push people to bounce back and forward between the boundaries.

The next section is how the tradition and the transmitting sexuality narratives develop in China's society, we could see how single pieces of power mechanism mix together to impose its influence on people's sexuality.

### **3.3 The development of hegemonic sexuality narrative in China**

#### **3.3.1 Traditional narrative**

##### **3.3.1.1 First dimension: the sacred trinity of sex-procreation-marriage**

The basic motivation of procreation-orientation is to ensure the proliferation of population and maintain the stability of social relations. (Jeffrey A. Simpson, Douglas Kenrick, 1997) To put this more specifically in China's society, it emphasizes the role of sexuality in social network and order. From Confucianism's point of view, first and foremost, sexuality should serve for procreation so that sons can inherit the familial property and bloodline. Descendants carry on the heritage of ancestors. The idea of a successor, referring to sons only, resulted to gender preference and foreshadowed the serious gender ratio imbalance that we see today. Secondly, procreation serves to maintain the stability of marriage and family relationship. (Yutong Zhou, 1983; Suiming Pan, Yingying Huang, 2013) Chinese people see the country as their 'bigger family', the far-fetching expansion of their small family through consanguineous clan and layers of centralized governance. Once every core family is bonded and stabilized by consanguinity, the 'bigger family' will get stability and prosperity as well. Therefore, non-procreation sex, such as homosexuality, fetishism, and masturbation were depreciated and rejected by mainstream sexual culture.

### **3.3.1.2 Second dimension: Sexual asceticism**

Sexual asceticism in western context comes from Christian spiritual background. It views sex is a sin, or at best, a necessary evil, necessary to the survival of the human race. ( Vincent L. Wimbush, Richard Valantasis, 2002 ) Likewise, except its procreation purpose, sex was traditionally thought as an obstructor to one's cultivation towards perfection ( a ideal personality) in China.

Although the Confucianism acknowledges the existence of desire, they put forward a recommended 'ideal personality' with the virtues of modesty, solemnity and introspection. (Hong Zeng, 2012) Such an 'ideal person' should reduce irrational or passionate ideas and actions, while sexual activity, one of the most passionate and inflammatory human behaviors, was certainly not encouraged and should only happen unless necessary. Furthermore, Neo-Confucianism bonded such 'ideal personality' to individual's social responsibility, so that the sexual act of passion became a detracting deterioration to the social order. (Qun Gong, 2006; Lee Dian Rainey, 2010)

Meanwhile, the Buddhism also advocated for asceticism since it promotes the maintenance of self-possession towards a state of perfection where people can fully blow their potentials by rejecting desires from outside world. The effort of reaching incomparable mental plenitude is much more important than the fleshly and sensorial pleasures. Therefore it should be eliminated as much as one can achieve. (Bernard Faure, 1998). If procreation is crucial for the continuation of the family and the country, the ascetic view about sexuality directly contradict Confucianism's ideas of lineage and descendants. This is also exactly why Chinese Buddhists were criticized by official ideology of Confucianism.

### **3.3.2 Sexual naturalism and Antisexualism**

The abovementioned sexuality narrative is indeed not 'sexual' at all, it cares about

descendants, family, and social order. Fundamentally, such a sexual narrative binds sexuality to specific ‘bigger purposes’, and refuses to treat sexuality itself as self-evident and self-reliable existence with its own goals and value. While sexual naturalism encourages a permissive and people-oriented sexual ethics to enlarge the realm of morally acceptable sexual behaviors. It should be the individuals’ sexual freedom to decide their own behavioral guidelines about sexuality. (Alexander McKay, 1998) Any attempt to force exterior purposes or conditions on sexuality, or compel such standard to the public, is against its natural existence and flow. It is unnecessary to either reprimand or praise it, since everyone should have the equal right to choose their own sexual activities to fulfill whatever their goals are, that is, to normalize the diversification and subjectivity of sexuality. Once it is accomplished, although seemingly implausible, people will no longer debate the right and wrong of sex, and everyone has the full autonomy to make choice and take responsibility accordingly.

In a broader scene, the traditional sexuality narrative distracts people’s attention and devalues the essence of sexuality to its ‘by-products’. Such a repressive attitude restricts people’s sexual freedom from fully develop all kinds of potentials. As mentioned above, sexuality is a handy tool to conduct social control, and usually it is done under certain righteous covers. Moral panic and nosophobia (mostly sexually transmitted disease or HIV) are the most used ones.

### **3.3.2.1 Moral panic**

Moralist perceives sexual practices with the capability to generate social change. Prostitution, adultery and other disordered sexual activities, in their eyes, can lead to moral and social degeneration. Some unusual (the ‘unusual’ hereby referred to less frequency of certain sexual activities than others. It does not contain any judgment on their normality) sexual activities practiced by some fraction of population do not mean the rest everybody will follow, and those unusual activities are not the sole and

direct causes of social decay. This kind of ‘unrestricted reasoning’ violates the basic logic principle. In this case, moral panic about sexuality is not totally a matter of moral judgment, instead, it is about the capacity of critical thinking.

The sociologist Stanley Cohen has a theory on moral panic that can explain sex moral panic properly. Something first seemingly emerges as a threat to society. The dissemination agencies, for example newspaper and social media, pack the topic in an oversimplified and stereotypical way to arouse appalling and intense public attention. In particular, the unprecedented far reaching of Internet has made the spread much faster and it can reach much wider audience. The audience may easily personalize such stories in their own lives. At this time, moralists come out with reprimand and provide some moral cleansing solutions. When the threat is defeated, the panic recedes, so does the attempt of progressive changes. (Stanley Cohen, 1972) Current anxiety about moral panics is no longer simply a copycat of the previous pattern, and it has changed significantly. Firstly, the Internet fuels the spread of panic at an unprecedented speed and sensational magnitude. Another rumor already started even before the previous one barely finishes. (Kenneth Thompson, 1998) Secondly, unlike some moral panics targeting certain groups of people, sexual moral panics almost envelope more everybody in the society, they expose the social division of people’s ideas about sexuality.

Moral panic is widely used by western religions to intimidate believers with moral sin, and Chinese Confucianism also uses it to rectify social stability. The panic, as Cohen says, is highly political to carry out social control to spread fear, disgust and social division. (Stanley Cohen, 1972)

### **3.3.2.2 From STDs to HIV**

In addition to moral panic, modern scientific studies, especially medical researches on

STDs and HIV, play their important roles in the spread of antisexualism, although it might not be their original intentions. In 1980s, the discovery of a rare pulmonary infection, later known as HIV, started another wave of antisexualism. Unfortunately, the outbreak of the disease not only discredited sexology study in Western society, and it also eradicated the possibility of China's society to start a more open-minded and individual-based sexuality ideas from the catastrophic revolution ruins. Since sexual transmission is one of the three ways to spread HIV, the role of sexual transmission in the spread of AIDS was purposefully exaggerated. Morality protectionist claimed that only abstinence can prevent disease.

Ironically, the most abstinence era in modern Chinese history saw the fastest growth of China's population. From 1949 to 1974, it took only twenty-five years for China's population to proliferate by 400 million. (Zhiqiang Mei, 2008) The strict asceticism did not practically decrease actual sex activities, at least the number of population growth told the opposite story.

### **3.3.3 Transmitting sexual narrative - from 1980s and onwards**

1980s witnessed the dramatic change of China's society, and the sexuality narrative was no exception. First of all, after the Cultural Revolution, most ideas of sexology were also revolutionized thoroughly. Old traditions shaped by trinity of Confucian, Buddhism and Daoism were overthrown and degraded as evil of feudal society.

(Xiaotong Fei, 2003) Secondly, the introduction of one-child policy caused by population explosion has substantially broken the firm bond of sex-procreation-marriage, which may by accident bring certain 'sexual liberation' to modern Chinese sex culture. (Suiming Pan, Rongting Hou, 2013) The sexual liberation part will be expanded in the following section. The transmitting sexuality narrative seems to heading to an open-minded direction, but it does not mean the traditional sexual narrative has totally vanished; Chinese people still need to bear the

consequences it caused.

### **3.4 Consequences of one-child policy**

#### **3.4.1 Unexpected sexual liberation**

One-child policy was first recommended in late 1970s and finally became a constitutional policy in 1979. This is no doubt the biggest and boldest birth control field experiment in human history. Regardless those extreme infringements of human rights, for example infanticide, forced abortion, the one-child policy curbed the population growth highly effectively. It objectively helped to reduce China's population by 400 million, and it helped to postpone the global population to reach 6 billion by 4 years. (Zhiqiang Mei, 2008) Since 1980s, the total fertility rate in China fall well below the level of most developing countries. (Leiping Bao, 2009) Apart from it effectiveness of population control, it may by accident contribute to make preparations for certain degree of sexual liberation as well. Under the national policy of family planning, contraception and abortion are completely legal, and the growing maturity of abortion and contraception technologies also made both actions more safe and operatable. With the legitimacy of these two acts, what are left for the purpose of sexual activities if it is not for happiness? In the book <The transformation of intimacy>, (Anthony Giddens, 1992) the author argues that the modern contraceptive technologies help to further understand intimacy. Before the invention of condoms, women's sex was always associated with potential pregnancy, and sex itself was blended with fear and even death. Condom and other contraceptives separate sex from giving birth, and also from agony, fear and potential death. In traditional culture, women's sex are praised for their maternal and reproductive traits when giving birth and raising offspring, but their sexual needs are more or less ignored. Now, women are paying more and more attention to the value of the sexual activities to themselves, not only to their marriage and family.

Everything seems to head to a more open direction, but the legacy of the orthodoxy sexual tradition still haunt around. The heritage of bloodline is one of the deep-rooted mindset of Confucian-influenced countries, such as Japan and South Korea. There has not been sexual revolution occurred in these two countries, can China be the exception to break the pattern?

### 3.4.2 Foreseeable Skewed gender ratio and Surplus men

If the sexual liberation is the unpredictable byproduct of the one-child policy, then the skewed gender ratio and surplus men were definitely foreseeable. As mentioned early in this paper, familial tradition of gender preference for boys amplifies the negativity of one-child policy. The most direct consequence is the severely skewed gender ratio. According to the 2010 Statistical yearbook of population and employment in China, sample statistics showed that the sex ratio between male and female Chinese citizens under 19 years old is 118:100 for the whole population; the same ratio for urban population is 115: 100. Both are severely skewed from normal standard of 103-107:100<sup>1</sup>. When taking the marriage age into account, the skewness becomes even worse. The ratio of single male to single female between the age 25 to 29 on the national scale is 192:100, the ratio is 152:100 for urban population; between the age 30 to 24, it is 327:100 on the national scale, and 206:100 for urban population. (Cai Xing et al, 2012) In tradition, sons take the responsibility of inheriting family bloodline, and sonlessness means the end of a family branch. In addition, the invention and mature of fetal sex identification techniques makes it technically plausible for gender selection at the early stage of conception. Although it is illegal to practice such identification medical examination and the abortion surgery afterwards, the lucrateness of the business still lures many profit-seeking medical personnel to 'help' those determined child-bearing women and/or (more often) their families to abort female babies. (Monica Das Gupta, Li Shuzhuo, 1999) The monetary and

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<sup>1</sup> In the human life cycle, the gender ratio of the newborn population is generally 103 -107:100(female). This gender ratio reaches an equilibrium point around the age of 20. (Xin Yuan, 2007)

administrative punishments by one-child policy also encourage male-gender preferring people to carry out identification examinations to avoid punitive outcomes of having more than one child.

From 1980 to 2010, the total growth of male population is 292.04 million, while it is only 251.15 million for female. Among the gap of 36 millions, 20.13 million women should have been born naturally but they were ‘missing’. This number accounted for 7.34% of female population if they were born as they should be. (Shuzhuo Li, Zhen Guo, Zijuan Shang, 2014)

When the gender imbalance began to attract public attention, the once rigorously implemented one-child policy got loose. The conditional two-child policy was piloted in 2011, it allows a couple to have 2 children if both parents are themselves one child. Eventually, the full-blown two-child policy was carried out in 2015. This 35-year old one-child policy finally came to an end.

### **3.4.2.1 The outcomes of skewed gender ratio**

The skewed sex ratio has effects on various human behaviors, in this article, the most direct ones are growing fiercer competition in marriage market in a monogamous society, and people’s decision making of sexual behaviors. The Sexual Strategies Theory (SST) tells us: Female has stronger intention to build up long-term and stable relationship because of the share of labor to raise offspring. In the marriage market, the less-populated sex usually has bigger market power than outnumbered one. (Buss, David M., Schmitt, David P, 1993; South, Scott J., and Kim M. Lloyd, 1992). Given the skewed gender ratio in current China, female should be in the advantageous position in the marriage market to improve their overall wellbeing by elevating their standard of mating selection.

Many academic researches have predicted that, from the year of 2010, overabundance

of adult males started to cause serious marriage squeeze. Around 10% of marriage-age males can not get married due to the shortage of marriage-age females: (Shuzhuo Li et al, 2006; Youhua Chen, Müller Ulrich, 2001; Dudley L. Poston, Jr., Karen S. Glover, 2005) And the same situation will deteriorate if the skewness in gender ratio of newborn is not set back to normal in the future.

Many males who are squeezed out of marriage market in China share certain characteristics: they are older than 28 years of age; they live in remote rural areas; their income level is low; their education level is low. When they grow older than 35, they almost lose the chance to get married. (Xueyan Yang et al, 2013) Therefore, generally speaking, men with lower socioeconomic status are less competitive in marriage market.

The skewed gender ratio squeezed tens of million of men out of marriage market, what can we expect to happen?

### **Unconventional sex**

The forced bachelors, due to marriage squeeze, may seek alternatives among 'unconventional' sex to make up for 'conventional' marital sexual activities. (it is assumed that marital sex is a stable source to satisfy sexual desires, although its stability is also arguable.) If we believe that sexual rights are basic human rights that each individual should have, then there is no solid ground to criticize their attempts to search for alternatives, even at the cost of anomie of marriage, procreation and sexual behavior. Sexual Rights Initiative (SRI)<sup>2</sup> is a global human rights organization working for gender and sexuality at the United Nation Human Right Council. They promote that each individual should have full right to make decisions related to their sexuality. All the governments should respect, protect and meet such basic human sexual rights. It is the functional flaw of this society, sheer shortage of women, caused

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<sup>2</sup> <http://www.sexualrightsinitiative.com/>

their problems. Unless ‘unconventional’ sex is doable, there is no other solution to deal with them. Although the conventionalist will not be happy with the growth of ‘unconventional’ sex, what can they do to weigh the sexual rights of these forced bachelors on one hand, and the ‘conventional’ sexual norms on the other hand?

### **Crime**

Studies have showed that compared to those male with bonding and stable relationship, forced bachelors are have strong inclination more likely to achieve their own alternative content through force and violence, for example, young, single and low social-economic men are responsible for many violent crimes. (Valerie M. Hudson, Andrea Den Boer, 2002) Such hostile and abusive violence greatly endanger social order and safety. In Chinese context, (Quanbao Jiang, Bo Li, 2011) they studied the influence of gender imbalance on crime rate. Their research was based on panel data in 1990, 1995, 2000 and 2005 in 30 provinces, and they found that the skewed gender ratio does have strong explanatory power on crime. Every 0.01 increase in gender ratio of Chinese population leads to 3.03% increase in the crime rate accordingly. In this research, unfortunately, they do not differentiate crimes of different categories, such as economic crime, property violation, or other crimes. Thus, it is impossible to tell how much influence does the skewed gender imbalance have on sexual-related crime and violent crime specifically. Apart from skewed gender ratio, their study also implied that age, urbanization, education level and the mobility of the population also have significant influence on increase of the crime rate.

### **Consumption**

Beside criminal behaviors, many researches have shown that gender imbalance does have an effect on individual’s consumption behavior. In summary, forced bachelors caused by the intensified competition in marriage market increases their impulsive consumption and loss aversion tendency. For example, they will be more inclined to make high-risk investment decisions. Researches have studied the relationship between how many credit cards one person has and how much debt one person has

with the gender ratio of 134 cities in USA. Their outcomes indicate that more surplus single men are positively correlated with more credit card numbers and higher debts. In addition, they also looked for time discounting of these single men. When the test is set intentionally with much more male participants and relatively scarce female participants, male participants are more likely to favor instant rewards over future rewards, and accordingly they are less willing to save for the future. (Griskevicius et al, 2012; Kruger, Daniel J; Schlemmer, Erin, 2009)

As we can see, the skewed gender imbalance has brought a series of risks. Female deficiency brings out the marriage squeeze, and potential anomie of sexual behavior and marriage system. Forced bachelors are indeed the victims of gender imbalance, however, they also aggravates the vulnerability of other groups of people and a generally impaired society.

### **3.5 Alternatives to marital sex**

The fact that tens of millions of forced bachelors can not get regular marital sex, and if we do agree the right to sex is a fundamental human right, what can be done to compensated? The key to this problem is that marriage creates certain monopoly on one's sexual behavior. If the tight bond among sex, procreation and marriage is totally disconnected, which means then marriage no longer has the exclusive right to a person's sex life, this situation may be alleviated. However, it also means the fundamentally upend of the marriage system in China's society. Although such disconnection has long been exercised in real life, and marriage has become less and less restrictive to individual sexual life. However in the current Chinese society, its property and social affirmative rights in law are still very important. For example, derailment can be used as the basis for the compensation from the fault party in a broken marriage. <sup>3</sup> Once the evidence is conclusive, the other side can claim

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<sup>3</sup>Divorce damage compensation is an amendment to the marriage law in 2001. It is in article 46 of the

compensation for the damage and even get advantage during the division of common property in divorce cases. Such monetary penalty might serve as certain deterrent to quit extramarital affairs or do so with more caution, which will definitely increase the cost of cheating.

The loosening connection of marriage, sex and procreation in real life puts more alternatives to marital sex on the table, such as adultery and prostitution. Prostitution is only one of many options.

### **3.5.1 The popularity of commercial sex**

Why is the option of prostitution so popular? Although it is still unknown how popular it is compared to other alternatives, since there is no relevant research on it, it is still helpful to know the reasons of its popularity. First of all, the transactional attributes of commercial sex trade make it welcomed. Commercial sex has the fundamental nature of economic activities: exchange-the exchange of sexual activities and monetary returns. Homans's social exchange theory tells us: Exchange is not only about money, but also involves symbolic value such as approval, respect, compliance, love, emotion, and other material and non-material products. (George C. Homans, 1958). In terms of exchange in sexual relationships, the commercial sex probably requires the least degree of exchange - money and sexual activities only. While in other non-marital sexual relationship, sexual activity is only one of many components during the exchange. For example in adultery, it usually also involves certain emotional exchange as well as potential money exchange. To extend the social exchange theory further, people will calculate the cost and benefit during the exchange, and hope to get a 'win' or at least an 'even' in the exchange. This is the principle of 'fair distribution' in social exchanges. (Russell Cropanzano; Marie S. Mitchell, 2005) In commercial sex, fairness only refers to monetary exchange and the

quality of service. While in other non-marital sexual relationship, the fairness is supposed to encompass more dimensions, such as emotional investment and physical attractiveness. Besides, professional skills of sex workers also attract customers. Many sex skills used by prostitutes are more 'exciting', and not very practiced in marital sexes.

### **3.5.2 The commodification and professionalization of sex**

Although the commercial sex is welcomed by its customers, it is also severally criticized by others. Among the disagreements of prostitution, the core argument of it is the confluence of sex and money. The most controversial dispute about prostitution is whether sex is tradable in monetary offer and return. (Jessica Spector, 2006; Sheila Jeffreys, 2008) People harshly condemn that the simple free-market economic logic and rational choice theory can appropriately address the problem of prostitution. Direct intimacy should not open its door to market mechanism since it is tied so closely to one's personality and integrity.(Margaret Jane Radin, 1996) However, economic analysis of prostitution seems less concern about the morality side of it. In their eyes, what will happen after the commercialization of sex? On the sex workers' side, they separate their bodily sexual behavior from overall sexuality. And the buyers purchase this part of physical sex. Such separation in commercial sex trade is heavily criticized by body-mind integrity statement that bodily contact is inseparable from mind and soul. However, in many field interviews around the global, many sex workers self-report their isolation of commercial sex experience from other aspects of sexual experience. From their subjective perspective, sex in trade is different from sex in more private and emotionally intimate life. (Melissa Hope Ditmore et al, 2010; Suiming Pan, 2000)What's more, the more professionalized and commercialized minded of the practitioners, the better they can conduct the separation and isolation of themselves from stigmatized prejudices against this industry. They will more accept prostitution as their job and their resources of income. We need to realize not all

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prostitutes belong to a homogenous group. Some of them are less-paid, more stigmatized and marginalized, while other groups, for example high-level escorts providing service to richer clients, they have more financial security, social network and autonomy, and they can better cope with psychological or physical harm in the business. Although self-reports from these sex workers may never be objectively verified, who else can speak better than themselves?

### **3.5.3 Commercial sex industry**

#### **3.5.3.1 Overview**

Commercial sex (or prostitution if anyone prefers) is only one breach in the massive sex industry. Sex industry also includes all kinds of erotic services other than direct intercourse, for example stripping dance and nudity dance.. It also includes the producing and marketing of all kinds of pornographic goods. (Weitzer, Ronald, 2009)The commodities in prostitution and erotic services are sold in form of labor, while the pornographic goods are sold in the form of concrete and tangible goods. Additionally, the sex industry also has many other integrated industries, such as hotels and entertainment industry. Together with sex industry, they have become a series of connected industries with considerable scale. In this study, only the prostitution will be involved in the analysis.

In most countries, prostitution is banned. Only a few countries recognize its legitimate status, such as Germany and Holland. Prostitution in most public discussion is focused only on female prostitutes' selling to male customers, and this section does account for the vast majority of prostitution. Other types, for example male sex worker to male customer, unarguably exist, but they are more invisible.

### 3.5.3.2 Who are the practitioner?

According to the 4<sup>th</sup> Global Report of <Prostitution- Exploitation, Persecution, Repression > by Foundation (Foundation SCHELLES, 2016), about 30 million people around the world work in prostitution industry, most of them are women and children. The business generates about 325 billion US\$ per year. The estimated number of practitioners in China varies with different sources of information. The Organisation Mondiale de la Santé (OMS) estimates the number to be between 4 to 6 million. Asia Catalyst estimated the number to be around 2.68 million in late 2013.

With so many practitioners in the industry, how do we define prostitute or sex worker? Simon and Witte gave the description of them as those who have non-marital sex with many unspecified objects based on mutual consent to make their living fully or partly. (Simon, C.P, and A.D. Witte, 1982; Sieberg, Katri K., 2001) According to this definition, there must be exchanges involved, whatever it is money payment, gifts or other exchanges. Furthermore, prostitution is only 'acceptable' among consenting adults in the form of a mercantile agreement. In terms of mutual consent, any coercive sexual subjugation, fraudulent hoax or other law-breaking cases can, by no means, be justified. In addition, underage prostitution should also be totally prohibited, as minors do not have the full capacity of civil conduct, even if consents are proposed. As we can see, an alarming situation of underage children are exposed to the risk of prostitution due to human trafficking and other crimes. (Ronald Weitzer, 2009; MacKinnon, Catharine A, 2011) Another worrisome situation for underage prostitution is that they use transactional sex voluntarily to fulfill their material needs.(UENO Chizuko, 2003)

### 3.5.3.3 The reasons of entering prostitution industry

Since commercial sex is severely stigmatized and marginalized in almost societies, what pushes those practitioners into this business? Different from stereotypical public

discussion that sex workers are either forced into this industry or they are morally promiscuous and degenerated human beings, many sex workers acknowledge that monetary motivation is one reason to enter the industry. Sometimes the monetary incentive means that (female) prostitutes can earn multiple times than the median wages of legally employed women.(Sieberg, Katri K., 2001) Sometimes, it is not the lucrateness, but the immediate access of money and tax-free money that motivate them. When someone is in dire need of shelter, food and other necessities, prostitution is one way to get quick and tax-free money. They can apply for a position, work at the night, and get paid at the same day. (Sieberg, Katri K., 2001; Melissa Hope Ditmore et al, 2010 )There are not so many substitutes like this in our society. The more these prostitutes acknowledge the importance of monetary incentive to choose this job, the more professionalized they may grow to sophisticatedly isolate their professional life from personal life. Making a fortune in other career is worthy of praise, why sex workers can not openly acknowledge the monetary motivation?

Some of prostitutes are motivated by monetary incentives, while many others are forced into this industry by exploitation, persecution or repression. Estimations from the International Labor Organization (ILO) revealed that at least 2,4 million people are suffering from human trafficking around the world. Among them, two thirds are women; around 79% of them are forced to work for sex exploitation (UNODC, 2010).

#### **3.5.3.4 The wax and wane of anti-prostitution movement**

##### **Moral panic and nosophobia**

Prostitution is one of the oldest professions, and it exists all across the global. Meanwhile, restrictions or bans are always imposed on it. Before the emergence of sexually transmitted diseases, prostitution was solely regarded as a moral decay. In medieval Christian Church, they even invented the 'safety valve' theory for prostitutes. Prostitution is a safeguard to protect 'good' women from 'bad' women. Thomas

Aquinas once said, if the prostitutes are all eliminated, that would only leave a world filled with sodomy. In the 12<sup>th</sup> century, the church even supported and funded brothels, seeking to integrate prostitution into the service of greater religious purposes. There was moral condemnation, but no severe substantial punishment for these people. (Dalin Liu, 2005; Raymond, Janice G, 2004). Traditionally, Chinese people see prostitution through the lens of tool theory of sexual activity. As long as it did not destroy the stability of marriage and family, and heritage of bloodline, it would not be strictly forbidden. Even male prostitutes were tolerated in ancient China, since they can not damage the stability of marriage and family due to infertile ability. (Hinsch, Bret, 1992; Dalin Liu, 2003) Follow this logic, a married man can buy prostitute service as long as his familial relationship is well maintained. However, adultery with a married woman is suspected of undermining the family life and it was forbidden.

However, the emergence of venereal disease became the opening to seriously ban on prostitution. When the prostitutes were growing wild, gonorrhea, syphilis and other STDs also outbreaked in Europe and North America. Medical diagnosis at that time was not able to distinguish different STDs symptoms, nor did they know the incubation period of venereal diseases. Medical staff can only tell that they were sexually transmitted. (Peter Baldwin, 1999; Mary Spongberg, 1997) The large scale official anti-prostitution movement began from 1860s onwards, the British parliament passed the first act to repress prostitution in the name of venereal diseases (CDA Contagious Disease Acts). After the outbreak of HIV in 1980s, the scientific researches also have given some worrisome number of prostitutes' injection rate of HIV. The UNAIDS reports indicate that this damaging disease has a profound effect on sex workers. For example, female sex workers are 13.5 times more dangerous to get infected of HIV than those women who do not work in this industry. The infection rate of female prostitutes in 8 South and East African is 22%; 17% for those work in 17 Central and Western African countries; less than 5% at elsewhere around the global. (Foundation SELLES, 2016; UNAIDS, 2013). Prostitutes are criticized to be the dangerous vectors

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to transmit disease due to their high risk of HIV/AIDS infection. They are thought to bridge the infection between sex workers and the rest ‘innocent’ mass.(Victor Minichiello et al, 2014)

Although the numbers of disease infection look appalling, it is indeed the unprotected sexes that expose sex workers at higher risk of infection, not the sexual activities themselves. In fact, the Department of Health in United States reported that only 3-5% of STDs in the country is actually related to prostitution. Furthermore, compared to consumers of commercial sex, sex workers themselves have a lower risk of carrying HIV.(Sieberg, Katri K., 2001)

Being professional, prostitutes usually have certain level of STD education to protect their own health and also their sustainability in this business. Even not educated, it is widely known that the use of condom can effectively prevent the infection of many STDs. Evidence shows that the safe use of condom can lower the possibilities of getting HIV by around 69% among heterosexually transmission. (Weller, Susan C, 1993) Although it is not a 100-percentage assurance, it can still largely protect HIV and other STDs. In most cases, it is the clients who propose not to use condom and perform highly risky sexual actions, with the promise of higher payment. More economically dependent prostitutions are also more willing to engage in unsafe sex in exchange for higher pay.(Sieberg, Katri K., 2001; Melissa Hope Ditmore et al, 2010; Stef Adriaenssens, Jef Hendrickx, 2012) If the customer firstly proposes unsafe sex, then who is the perpetrator and who is the victim when the disease is unfortunately contacted? Later on, those infected customers can be the agency of further disease transmission to their other sexual partners and legally wedded spouse.

### **Marxist’s anti-prostitution**

Apart from the moral concern and nosophobia, there are also other theories to support anti-prostitution movement. Marxist theory of anti-prostitution treats prostitutes as the exploited class in dire need of liberation. The liberation of all proletariats around the

global should include these comrades as well. This theory is highly amoral, as it did not see prostitution as a moral deterioration to society; instead it opposed moral discrimination and persecution against, and there is no rational foundation for moralizing distinctions with regard to commercial sex behavior. (Lori Gruen, George E. Panichas, 1997) Marxist's anti-prostitution theory offered the theoretical base of prostitution ban in China not long after the founding of PRC. Prostitution once grew rampantly in this country. Take Shanghai as an example, since the opening in 1843, the number of prostitute grew with the commercialization process in this city. In 1917, a British sociologist named S.D. Gamble conducted a survey about the ratio of prostitutes to the urban population in eight metropolitan areas. Shanghai ranked top on that chart. There were between 60,000 and 100,000 registered and unregistered prostitutes with the total municipal female population of 1.5 million in 1945. One out of 20 women lived in Shanghai was a prostitute during that time. (Yi Hu, 2013) When the community China was founded, the nature of its regime determined its necessity to eradicate prostitution, as it was seen as the evil and class exploitation from the corrupted capitalism and lifestyle. Only after a decade of the anti-prostitution movement, the cleansing campaign showed preliminary success. Many current moral conservatives repeatedly have brought up the story and wish to copy the campaign. However, such thorough eradication can only occur under certain social and historic conditions. The commercialized market was replaced by total planned economy, and almost everything was distributed by rationing. The total loss of monetary rewards discouraged the continuing operation of the business. Besides the loss of lucrateness, prostitutes were indeed treated as the exploited class in desperate need of liberation and intense care. They were sheltered, treated, educated and introduced to work. It sounds like what the Swedish government does to treat current prostitutes, although they are based on totally different grounds. (Gunilla Ekberg, 2004) Such conditions no longer exist and will no reappear in current China's society.

### **Feminists' division in pro-prostitution and anti-prostitution**

Same feminists also desperately criticize the existence of prostitution industry.

Prostitution is fundamentally viewed the prostitution as the repression against female in a patriarchic hierarchy. They strongly oppose the free-choice claim of some pro-prostitution claims that any woman, if under free will, will choose such an occupation. Many of them are under great pressure of poverty, addictions or other plights, so that they have no options but to do it although there is no explicit coercion. (Raymond, Janice G, 2004; Jessica Spector, 2006) The best illumination could be the Swedish regulations on prostitution. It victimizes sex workers, and seeks to lift these women from their job and provide them with social welfare, for example shelter, vocational education and physical examination. Oppositely, the buying of prostitution is criminalized.(Gunilla Ekberg, 2004) They believe that women's liberation can only be realized by the gender equality. During that time, prostitution would be totally eradicated.

However, there is other side of feminists who support pro-prostitution discourse. They advocate for the legalization and normalization of this industry, seeking to treat prostitution as a normal labor. A woman with total autonomy should have all rights to make decision about her body and her choice of occupation. For example, Germany passed the progressive law on prostitution in 2002 to treat sex worker as business operator with legal responsibility and benefit. While enjoying the benefits, they have to pay taxes and fulfill all liabilities accordingly.( Melissa Hope Ditmore et al, 2010)

## **Methodology**

If we want to study the nature of commercial sex, what perspective do we use? Most researches on commercial sex are in gender study, feminist study, ethics study, healthcare study especially epidemic studies about STDs and HIV. Economic studies share only a small piece on this topic. Most of economic studies focus on the justifications of free-market mechanism and cost-and-benefit analysis on intimate

relationship, including marriage, childbearing and alternative sex. (Gary S. Becker, 1991; Richard A. Posner, 1992)

#### **4.1 Justification of the model and research questions**

While in this paper, the biggest incentive to conduct the analysis from the economic perspective is the existing resourceful database closely related to research questions I am interested. Under the charge of Suiming Pan and Yingying Huang, the Institute of Sexual Sociology at Renmin University of China conducted a series of random sampling survey about the ‘Chinese sexuality’ in the year 2000, 2006, and 2010. (Suiming Pan, Yingying Huang, 2013; Suiming Pan, 2004) In their surveys, they asked sample subjects questions about good consumptions and time allocations to commercial sex activities. At the same time, there is also an existing utility maximization consumption model to work with. In this model, people gain utility from goods consumption and time allocation to certain activities. Pan’s surveys can exactly provide the necessary data to fit in the model. In addition, in Pan’s surveys, they included various demographic variables that can enter the model to achieve utility maximization. These variables enter the model in two ways: 1). act as grouping variable to divide the survey sample into several segments to examine the difference across segments; 2). act as explanatory variables in utility function, and their magnitude of influence can be tested, respectively. More specifically, this paper aims to give a theoretical analysis of: 1). the difference of commercial sex consumption behavior among married/unmarried men prior/post to the implementation of one-child policy. Marital status and age are used as grouping variables to divide the whole male population into four segments. 2). which demographic variables enter the utility acquisition and how much they affect the consumption, respectively. Income level, level of education and household location are treated as explanatory variables in the utility function.

Other minor incentive to use the consumption model is due to the prevalent of consumerism culture in contemporary China's society. Even human interactions and emotions are commoditized. The consumerism ideology in China has been widely applied in governmental public choice and it also immerses into people's daily life. Indeed, the vast majority of Chinese citizens do benefit from the state-driven market economy for the past forty years. Consumerism encourages people to pursue personal happiness. In a getting consumerized society, all people can use consumption to redefine their social status. Consumers are divided into different social groups based on their spending power and consumption habits. (Mike Featherstone, 2007; Steven H. Miles, 1998) People with similar spending power and spending habits form one small group, which objectively provides individuals with new group space. If we treat prostitution as a form of labor (rather than the exploitation upon women), it fits into this category of human interaction commodity. (Van Der Veen, Marjolein, 2001; Melissa Hope Ditmore et al, 2010). They not only provide direct intercourse service, but also certain emotional exchanges service, such as causal conversation (usually also get paid) with clients, listen to their stories. Who are the consumers purchasing commercial sex, and what kind of consumer groups can they establish? And what kind of traits do they share? If certain patterns do emerge, how do the explanatory variables in the model account for such phenomenon?

## 4.2 Overview of the model

Utility maximization is frequently used to explain individual's rational choices during decision-making to maximize their benefits with scarce resources in hand. The model used here is called 'A Latent Class Multiple Constraint Multiple Discrete-Continuous Extreme Value Model of Time Use and Goods Consumption'. (Chandra R. Bhat, 2008; Mariso Castroa, 2012; Chandra R. Bhat, 2016) The model in this paper is the simplified version of original one in (Chandra R. Bhat, 2016), the other two articles enrich my understanding of the model I use.

### **4.2.1 Latent Class**

The ‘Latent Class’ means the different segments of the population are considered separately to capture demographic heterogeneity based on observable demographic variables. To answer the first research question, the key is to examine the commercial sex consumption behavior in two dimensions: the first dimension is one’s marital status, either married or unmarried. It is assumed that married men usually have marital sex to stably fulfill their sexual desires, so they have fewer incentives to spend extra money and time consuming commercial sex. While unmarried men, especially forced bachelor, may have stronger needs to do so. The observation can tell how strong does this assumption stay. If married men consume more commercial sex than their unmarried counterparts, the more they consume, the weaker this assumption stays. It is likely that marriage, or marital sex more directly, does not play an important role in consumption of commercial sex. Or more generally, marriage does not prevent the ‘unconventional’ sex.

The second dimension is age - the generations before one-child policy and the generations afterwards. One-child policy, with the deep-rooted gender preference, is the direct cause of ‘surplus men’, which leads to ‘forced bachelor’ phenomenon. These two dimensions are applied to divide all China’s male population into four segments: married men before the policy, married men after the policy, unmarried men before the policy, and unmarried men after the policy. If any prominent differences in the consumption of commercial sex do reveal, then it will be very necessary to further ask why.

### **4.2.2 Multiple Discrete–Continuous Choice**

The model here is a multi-choice model rather than a single-choice model. In this model, it is not the choice of only one single option from a set of mutually exclusive options. For products within the same category, the more similar they are, the more

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properties that a customer may consider. In the multiple-choice model, the customer will consider multiple properties of any product. Multiple-choice model is more widely used than the single-choice model. Likewise, if someone is considering purchasing commercial sex, they certainly have various alternatives from high-level escort service at five-star hotel to cheap street prostitution at the corner of a park. The diversity within prostitution industry can certainly differentiate one another in terms of price, service content, service quality and other factors. Although alternatives are discrete, people can choose continuously in the amount of consumption of each discrete alternative.

#### **4.2.3 Multiple Constraints**

Without any real life limits, more consumption usually makes more utility, so that an individual should consume as much as they can to increase their utility infinitely. However, constraints must exist in real situation. The most considered constraint is budget constraint. For most people, one's disposable income is limited and certain compulsory purchases are needed for everybody, such as food, clean water and shelter, to sustain basic living requirements. One's disposable income comes from work-generated income and other channels to get money, such as tax refund, insurance money.

In addition, another time constraint will be added. In terms of time constraint, the total time available time for an individual is limited: it can not exceed the nature law of 24 hours per day, and meanwhile, one's disposable time is even shorter. It is 24 hours minus the sum of compulsory hour spending, such as working time, minimum amount of sleeping time and commute time to and from some places. Moreover, commercial sex is definitely a time-consuming activity; it is mutually exclusive with other purchases. One can't go to watch a movie while having sex. Although people can have intercourse in a cinema, we hereby consider gaining utility through the essence

of an activity. The essence of film watching is the aesthetic appreciation of works of arts. Likewise, the essence of intercourse is the mental and physical content from it.

#### **4.2.4 Other traits**

In addition, there are some other advantages that this model has. This model allows zero assumption of goods and zero allocation to certain activities. Traditional consumer behavior models usually assume all products are consumed. In those analyses, the assumption of zero-consumption was not necessary. However, zero consumption of certain goods or zero time allocation to certain activities is indeed very practical in this study. Since commercial sex is not a must to do that everybody needs like bread and water. It is not compulsory goods to sustain one's life, and it is neither necessary for married men since they usually have stable marital sex, so they do not always need such an alternative. Even for unmarried men, it is neither a necessity since there must someone whose sexual desire is low and they can live without it. In addition, commercial sex is just one of many alternatives to seek sexual activities. Therefore, zero consumption and zero time allocation to commercial sex is practically necessary in this study.

This model also assumes there is a needed minimum amount of goods consumption if it is actually consumed, and also minimum amount of time to carry out any activity if it is indeed conducted. For example, if someone usually spends 30 minutes commuting from home to workplace, and 30 minutes can be treated roughly as the minimum time necessary to commute. In case of commercial sex, it will definitely take some minimum amount of time, although it varies case-by-case, person-to-person.

#### 4.2.5 To sum up, the attributes of this model

In this model, 1). the utility is gained by consumption of goods and time spending to some activities. These two parts enter the utility function separately. Time allocation activities are divided into ‘work’ activities and ‘non-work’ activities (commercial sex certainly belongs to the ‘non-work’ activities.) Individual gains utility from consumption and time allocation to non-work activities, while individual does not gain utility from time allocation to work. Rather than generating utility, the work activity bridges the two constraints, monetary budget and available time, to represent the trade-off effects between money and time. More work activities can generate more income to spend at the cost of less available time to carry out non-work activities. On the contrary, an individual can do less work, earn less money, with more time to do something else; 2). both budget constraint and time constraint are imposed on utility function; 3). zero goods consumption and zero time allocation to certain activity is allowed; 4). minimum amount of consumption and minimum time allocation is introduced.

From now on, I will continue with my analysis ‘as if’ I have their empirical data to find the answers to my research questions. But the unfortunate fact is my request for data was rejected, therefore only descriptive analyses on model for individual consumer will be present, while cumulative distribution will not.

### 4.3 Model for individual consumer

For any given individual  $q$  ( $q=1,2,3,\dots,Q$ ), who belongs to a segment  $g$  ( $g=1,2,3,\dots,G$ ), aims to gain and maximize their utility by consuming different goods  $k$  ( $k=1,2,3,\dots,K$ ) and allocating certain amount of time to all kinds of non-work activities  $n$  ( $n=1,2,3,\dots,N$ ). Besides, there is time allocated to work activity  $w$ . The utility function is subject to two linear binding constraints, budget constraint and time constraint.

$$\text{Max}[U_q(x_q, t_q) | (q \in g)] = \sum_{k=1}^K u_{gk}(x_{qk}) + \sum_{n=1}^N \tilde{u}_{gn}(t_{qn}) \quad (1)$$

is subject to

$$\sum_{k=1}^K P_{qk} \cdot x_{qk} = E_q + \omega_q \cdot t_{qw} \quad (2)$$

$$\sum_{n=1}^N t_{qn} + t_{qw} = T_q \quad (3)$$

$$(x_{qk} = x_{q1}, x_{q2}, x_{q3} \dots \dots x_{qK}; x_{qk} \geq 0)$$

$$(t_{qn} = t_{q1}, t_{q2}, t_{q3} \dots \dots t_{qN}; t_{qn} \geq 0)$$

In the above utility equations, the utility function is a quasi-concave, increasing and continuously differentiable function with respect to consumption of goods and time allocation. ‘g’ is the segment to which an individual ‘q’ belongs.  $x_q$  is the vector of an individual’s consumption of all kinds of goods.  $t_q$  is the vector of one’s time allocation to all kinds of non-work activities.

In this analysis, I will assume only four categories of actions<sup>4</sup>: 1). work (an individual can work for someone else or self-employed); 2). sleeping and relaxing (including sleeping, resting, thinking, and other relaxations) + personal care (including washing, dressing, eating, hair cut, and doctor appointment and other personal care) + household chores (includes cleaning, shopping, cooking and other household chores). This large group is treated as someone’s ‘Mandatory’ action; 3). entertainment. Commercial sexual is within this category; 4). other activities. Both the goods

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<sup>4</sup> In the study of Bhat’s where this model originally came from, he set 11 categories of actions, since he has the detailed panel data to make more specific divisions. (He had the 2012 Dutch panel data with detailed information of people’s weekly time use and goods consumption.) In addition, if I indeed have the real data, I will divide all actions into only two categories: commercial sex and others to dichotomize one’s money spending and time allocation. Although the dichotomization will largely lower the precision of the model, however, without other data on people’s time use and goods consumption to cross-reference, it is the appropriate way to do. Although the number of categories is reduced, the analysis logic remains the same.

consumption (K) and the time allocation (to work activity and to non-work activities N) come from these four categories of actions.

For goods consumption sub-utility  $u_{gk}(x_{qk})$ , Income is categorized into work income and non-work income: 1). work income is gained by working for an employer or self-employment, and 2). non-work income is the money coming from all other resources such as financial investments, social welfare, tax refund and others sources. Among the above four categories of actions, the first category ‘work’ is excluded in the goods consumption sub-utility since it produces work income rather than spending money. Therefore, only the other three categories of actions enter the goods consumption sub-utility,  $K=3$ . The second category, sleeping and relaxing + personal care + household chores, is treated as an essential alternative since it is the major expenditure to sustain one’s basic life. The zero consumption is not allowed for this category.

For time allocation sub-utility, all the above categories of actions except ‘work’ enter the utility functions.  $N=3$ . Time frame of this analysis is a month, then the total monthly time available for any individual is 720 hours (24 hours per day, 30 days on average for a month). The total monthly time for all individuals  $T_q$  is therefore 720 hours/month. The second category enters the time allocation sub-utility as the essential alternatives also because it is necessary to sustain one’s life. Likewise, zero time allocation is not allowed for the corresponding utility functions.

### 4.3.1 Details in two sub-utility function

The utility maximization equation is a separably additive function, which means the total utility comes from two parts of sub-utilities, one from the goods consumption of  $u_{gk}(x_{qk})$ ; and the other from time allocation to non-work activities  $\tilde{u}_{gn}(t_{qn})$ .

$$\begin{aligned}
u_{qk}(x_{qk}) &= \psi_{qgk} \cdot x_{qk} && \text{if } x_{qk} \leq x_{qk}^0 \\
&= \psi_{qgk} \cdot x_{qk}^0 + \gamma_{qgk} \cdot \psi_{qgk} \cdot \ln\left(\frac{x_{qk} - x_{qk}^0}{\gamma_{qgk}} + 1\right) && \text{if } x_{qk} > x_{qk}^0
\end{aligned}
\tag{4}$$

$$\begin{aligned}
\tilde{u}_{qn}(t_{qn}) &= \tilde{\psi}_{qgn} \cdot t_{qn} && \text{if } t_{qn} \leq t_{qn}^0 \\
&= \tilde{\psi}_{qgn} \cdot t_{qn}^0 + \tilde{\gamma}_{qgn} \cdot \tilde{\psi}_{qgn} \cdot \ln\left(\frac{t_{qn} - t_{qn}^0}{\tilde{\gamma}_{qgn}} + 1\right) && \text{if } t_{qn} > t_{qn}^0
\end{aligned}
\tag{5}$$

If any good  $k$  is consumed by an individual  $q$ ,  $x_{qk}^0$  is the required minimum amount of consumption. The sub-utility of good consumption grows linearly until the reach of  $x_{qk}^0$ <sup>5</sup>, meaning the required minimum amount is satisfied. After that, the utility grows non-linearly to satisfy the diminishing marginal utility requirement. That is also to say, if a good is actually consumed, it has to be larger than the required minimum amount. Similarly,  $t_{qn}^0$  is the required minimum time of any activity if it is conducted. The sub-utility of time allocation to non-work activities grows linearly until the reach of  $t_{qn}^0$ <sup>6</sup>. After that, the utility also grows non-linearly. The presence of +1 in two sub-utilities allows zero solution of non-essential good consumption and/or time allocation.

$\psi_{qgk}$  is the parameter representing the baseline utility if an individual  $q$  who belongs to segment  $g$  consumes any good  $k$ . Similarly,  $\tilde{\psi}_{qgn}$  is the parameter representing the baseline utility if an individual allocates time to a non-work activity. The value of  $\psi_{qgk}/\tilde{\psi}_{qgn}$  is independent from the values of satiation parameter  $\gamma_{qgk}/\tilde{\gamma}_{qgn}$ , and its value should always be greater than 0. For example, with two goods  $i$  and  $j$ , at zero

<sup>5</sup>  $x_{qk}^0$ , in the data set, is the minimum observed amount of consumption of a good  $k$ .

<sup>6</sup> Likewise,  $t_{qn}^0$  is the minimum observed amount of time allocation to a non-work activity.

consumption of both goods and if their unit prices are the same, a higher  $\psi_{qgk}$  of good  $i$  than good  $j$  indicates that a customer can raise more utility from consuming good  $i$  rather than  $j$ . For a series of distinguishable goods, the higher  $\psi_k$  value that one good has, it is more likely that, with constraints meet, one would prefer consumption of this good, and it is less likely that zero-consumption will occur for it.

$\gamma_{qgk}$  and  $\tilde{\gamma}_{qgn}$  are satiation parameters for good  $k$  and non-work activity  $n$ , respectively. A larger value of the satiation parameter implies a larger amount of consumption or longer time allocation to that alternative.

### 4.3.2 Details in constraints equations

In the two constraints equations, the first one is the monetary budget constraints.  $P_{qk}$  is the unit price of any good  $k$  consumed by an individual  $q$ .  $E_q$  is the non-work income of an individual  $q$ .  $(\omega_q \cdot t_{qw})$  is one's income from working, and  $\omega_q$  is one's wage rate. The second equation is about time constraint,  $T_q$  means total available time for individual  $q$ .  $t_{qw}$  is the time allocated to work.

### 4.3.3 LaGrange function

This utility maximization of goods consumption and time allocation to non-work activities with money and time constraints can be calculated by the following LaGrangian function:

$$l_q|q \in g = U_q(x_q, t_q) + \lambda_{qg}(E_q + \omega_q \cdot t_{qw} - \sum_{k=1}^K P_{qk} \cdot x_{qk}) + \mu_{qg}(T_q - \sum_{n=1}^N t_{qn} - t_{qw})$$

$\lambda_{qg}$  and  $\mu_{qg}$  are the LaGrangian multipliers for money and time constraints,

respectively. They suggest the marginal utilities of money spending and time allocation, respectively.

The Karush-Kuhn-Tucker (KKT) conditions of optimality give the optimal good consumption and time allocation to non-work activities as follows:

$$\begin{aligned}
 u'_{gk}(x_{qk}^*) - \lambda_{qg} \cdot P_{qk} &= 0 && \text{if } x_{gk}^* > 0 \\
 u'_{gk}(x_{qk}^*) - \lambda_{qg} \cdot P_{qk} &< 0 && \text{if } x_{gk}^* = 0
 \end{aligned}
 \tag{6}$$

$$\begin{aligned}
 \tilde{u}'_{gn}(t_{qn}^*) - \mu_{qg} &= 0 && \text{if } t_{qn}^* > 0 \\
 \tilde{u}'_{gn}(t_{qn}^*) - \mu_{qg} &< 0 && \text{if } t_{qn}^* = 0
 \end{aligned}
 \tag{7}$$

$u'_{gk}(x_{qk}^*)$  and  $\tilde{u}'_{gn}(t_{qn}^*)$  are the marginal utility functions, where

$$\begin{aligned}
 u'_{gk}(x_{qk}^*) &= \frac{\partial U_q(x_q, t_q)}{\partial x_{qk}} = \psi_{qgk} && \text{if } x_{qk}^* \leq x_{qk}^0 \\
 &= \psi_{qgk} \left( \frac{x_{qk}^* - x_{qk}^0}{\gamma_{qgk}} + 1 \right)^{-1} && \text{if } x_{qk}^* \geq x_{qk}^0
 \end{aligned}
 \tag{8}$$

$$\begin{aligned}
 \tilde{u}'_{gn}(t_{qn}^*) &= \frac{\partial U_q(x_q, t_q)}{\partial t_{qn}} = \tilde{\psi}_{qgn} && \text{if } t_{qn}^* \leq t_{qn}^0 \\
 &= \tilde{\psi}_{qgn} \cdot \left( \frac{t_{qn}^* - t_{qn}^0}{\tilde{\gamma}_{qgn}} + 1 \right)^{-1} && \text{if } t_{qn}^* \geq t_{qn}^0
 \end{aligned}
 \tag{9}$$

### Getting $\lambda_{qg}$ and $\mu_{qg}$

One individual has to consume at least one good out of K (K=3) alternatives, for

example mandatory goods to survive. We denote this must consumed good, ‘Good 1’, as the essential good, which means it must have non-zero solution to this alternative.

The corresponding KKT condition is:  $\Psi_{qg1} \left( \frac{x_{q1}^* - x_{q1}^0}{1} + 1 \right)^{-1} - \lambda_{qg} \cdot P_{q1} = 0$ .

Therefore,  $\lambda_{qg}$  can be expressed as:  $\lambda_{qg} = \frac{\Psi_{qg1}}{P_{q1}} \cdot \left( \frac{x_{q1}^* - x_{q1}^0}{1} + 1 \right)^{-1} = \frac{u'_{g1}(x_{q1}^*)}{P_{q1}}$ .

Likewise, one individual also has to conduct at least one activity out of N (N=3) alternatives. This activity, ‘Activity 1’, is the essential activity. The corresponding

KKT condition is:  $\tilde{\Psi}_{qg1} \cdot \left( \frac{t_{q1}^* - t_{q1}^0}{\tilde{\gamma}_{qg1}} + 1 \right)^{-1} - \mu_{qg} = 0$ . Therefore,  $\mu_{qg}$  can be expressed as  $\mu_{qg} = \tilde{\Psi}_{qg1} \cdot \left( \frac{t_{q1}^* - t_{q1}^0}{\tilde{\gamma}_{qg1}} + 1 \right)^{-1} = \tilde{u}'_{g1}(t_{q1}^*)$

Placing  $\lambda_{qg}$  into equation (6), and  $\mu_{qg}$  into equation (7), the KKT conditions are rewritten as:

$$\begin{aligned} \frac{u'_{gk}(x_{qk}^*)}{P_{qk}} &= \frac{u'_{g1}(x_{q1}^*)}{P_{q1}} && \text{if } x_{gk}^* > 0 \\ \frac{u'_{gk}(x_{qk}^*)}{P_{qk}} &< \frac{u'_{g1}(x_{q1}^*)}{P_{q1}} && \text{if } x_{gk}^* = 0 \end{aligned} \quad (10)$$

$$\begin{aligned} \tilde{u}'_{gn}(t_{qn}^*) &= \tilde{u}'_{g1}(t_{q1}^*) && \text{if } t_{qn}^* > 0 \\ \tilde{u}'_{gn}(t_{qn}^*) &< \tilde{u}'_{g1}(t_{q1}^*) && \text{if } t_{qn}^* = 0 \end{aligned} \quad (11)$$

The interpretation of (10) and (11) is intuitive. For goods consumption of good k, the optimal consumption is positive if the price-normalized marginal utility at optimal point is equal to the price-normalized marginal utility of ‘Good 1’ at its optimal point; the optimal consumption is zero if the price-normalized marginal utility at zero consumption is smaller than price-normalized marginal utility of ‘Good 1’. For time allocation of activity n, the optimal time is positive if the marginal utility at optimal point is equal to the marginal utility of ‘Activity 1’ at its optimal point; the optimal

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time is zero if the marginal utility at zero time allocation is smaller than marginal utility of 'Activity 1'.

#### **4.4 Descriptive statistic**

To sum up the above detailed introduction of the model, in terms of goods consumption and time allocation to commercial sex consumption, this is the simulated descriptive statistic table that I would present if I have the real data. As I mentioned, survey questions in all three surveys are available in a published book. Based on them, here is Table 1 and Table 2.

Unless specifically pointed out, in later discussion part, the survey questions, where I get the demographic variables, come from this book: <Contemporary Chinese Sexual Behavior and Sexual Relationship>. (Suiming Pan, 2004). The discussion parts come from this book: <Change of Sex: The 21st Century Chinese Sex Life>. (Suiming Pan, Yingying Huang, 2013) The survey questions were first published in the 2004 book, and they stay unchanged to keep the consistency of all three surveys. The later book compiles the outcomes of data analyses of all three surveys in 2000, 2006, 2010.

Table 1: Relevant Demographic Variables<sup>7</sup> (%)

Variable	Category	2000	2005	2010
Sex	Male			
Marriage Status	Married			
	Unmarried			
Age	Before 1980			
	After 1980			
Income	High			
	Middle			
	Low			
Education level	Middle school or below			
	High School			
	College or above			
Household location	Rural Area			
	Urban Area			

<sup>7</sup> The number of sub-categories in each demographic variable is larger than in Table 1. This Table 1 is what I will present after the consolidation of certain sub-categories if I have real data. Some sub-categories are too trivial to apply on a national base and also too complicated at current study level. In addition, there are more demographic variables in the survey question. In actual model analysis, the selection of explanatory variables should also be tested to check their fitness. These five are the ones that I think the most relevant to my study and less likely to have correlation with each other.

Table 2: Cumulative Descriptive Statistics

Category	Participation (%)	Duration (hours/week)				Expenditure (RMB/week)			
		Mean	St.Dev.	Min.	Max.	Mean	St.Dev.	Min.	Max.
Work	100.0					--	--	--	--
Mandatory	100.0								
Entertainment									
Other									
Num. of observation									

Δ Durations and expenditures are computed for individuals who participate in the corresponding categories.

'--' means not applicable. For example, since 'work' only generates income and not costs any money, therefore, the expenditure for 'work' is not applicable.

## Discussion

The discussion part is supposed to cover the outcomes of my data analyses and tell the readers what I find from these outcomes. Without actual data analysis, what I will do in the chapter is to expand the individual utility model into more details and put my speculations on each part based on related researches.

The baseline parameters  $\psi_{qgk}$  and  $\tilde{\psi}_{qgn}$  observe the heterogeneity across individuals within segment  $g$  and stochasticity as following:

$$\psi_{qgk} = \exp(\beta_{qg} \cdot z_{qk} + \varepsilon_{qgk}) \quad (12)$$

$$\tilde{\psi}_{qgn} = \exp(\tilde{\beta}_{qg} \cdot \tilde{z}_{qn} + \tilde{\varepsilon}_{qgn}) \quad (13)$$

In (12),  $z_{qk}$  is a vector of observed attributes of good  $k$  consumed by individual  $q$ ;  $\beta_{qg}$  is the corresponding vector of coefficients to capture the intrinsic preferences for goods.  $\varepsilon_{qgk}$  is the stochastic features of good  $k$  that can not be observed.  $\tilde{z}_{qn}$  is the vector of observed attributes of an activity conducted by individual  $q$ , and  $\tilde{\beta}_{qg}$  is the corresponding vector of coefficients to capture the intrinsic preferences for activities.  $\tilde{\varepsilon}_{qgn}$  is the stochastic features of activity  $n$  that can not be observed.

In our case of examining commercial sexual transactions, what are the factors that consumers will consider to determine their baseline parameter? In <The Social Organization of Sexuality>, (Edward Laumann et al, 1994) co-authors pointed out: People tend to change their sexual behavior when having sex with different targets, to achieve various aspects of sexual fulfillment. Or conversely, people tend to look for different sex targets based on their preference for sex. How to know one's initial preference during the consumption of commercial sex? Is there any fixed standard, for

example price, physical attractiveness, professional skills, marketing, gender, or more implicit standard of sexual activity preference and sexual psychological stimulation? Commercial sex is a result of interpersonal interaction keeping changeable with the situations, some attributes we could observe while others are not so easy.

## 5.1 Variables Specification

Each demographic variable in Pan's researches can enter the model, either as group variable being used to determine latent segments, or as explanatory variables for charactering baseline utilities. What are the key demographic variables in this model? Among them, I picked six of them: participants' gender, age, income level, marital status, education level, and household location. Participants' gender is unanimously male. As to other five variables, in order to solve two of my research questions, the segment variables are hereby participants' age and their marital status. Except these two variables, other three variables are considered in the baseline utility function.

### 5.1.1 Latent Segmentation Variables

Marriage status and age are two key demographic variables to classify the segments. The marriage status variable is divided into two categories - married or unmarried, whether someone is willingly to keep single life or he is forced to do so it beyond the discussion of this paper. The age variable is also split into two categories - born before 1985 or born after 1985, and the year 1985 belongs to the later group. Why the year 1985 is specifically pointed out to divide the age variable, given the one-child policy was made mandatory in 1979? The following chart is the Estimated population size and birth gender ratio from 1980 to 2006. (Xin Yuan, 2007) It is worth to notice that the birth gender ratio in the year 1984 was still comparatively normal. (As a reminder, the normal birth gender ratio is 103-107:100. See Footnote 1). However, from 1985 onwards, the skewness began to seriously emerge. This is the

reason why the year 1985 is chosen to divide the age variable.

Figure 2 Estimated population size and birth gender ratio at birth from 1980 to 2006

**表 1 1980-2006 年出生人口规模和出生性别比推算**

年份	总人口 (万人)	出生率 (‰)	出生人口 (万人)	出生性别比 (女=100)	年份	总人口 (万人)	出生率 (‰)	出生人口 (万人)	出生性别比 (女=100)
1980	98705	18.21	1787	107.0*	1994	119850	17.70	2110	115.4*
1981	100072	20.91	2078	107.1*	1995	121121	17.12	2063	116.6
1982	101590	22.28	2247	107.2	1996	122389	16.98	2067	113.0
1983	102764	20.19	2063	107.7	1997	123626	16.57	2038	116.8
1984	103876	19.90	2056	108.3	1998	124810	15.64	1943	113.0
1985	105044	21.04	2198	111.2	1999	126210	14.64	1837	115.8
1986	106529	22.43	2373	112.1	2000	126743	14.03	1774	116.9
1987	108073	23.33	2503	110.8	2001	127627	13.38	1702	117.2*
1988	109614	22.37	2435	111.1*	2002	128453	12.86	1647	117.6*
1989	111191	21.58	2382	111.3	2003	129227	12.41	1599	117.9*
1990	114333	21.06	2375	111.7	2004	129988	12.29	1593	118.3*
1991	115823	19.68	2265	112.4*	2005	130756	12.40	1612	118.6
1992	117171	18.24	2125	113.0	2006	131448	12.09	1585	119.3
1993	118517	18.09	2132	114.2*					

If an individual male was born before 1985, the gender imbalance they encounter is less severe, which means they are more likely to get married as they wish to do so. Born after 1985, when they draw closer to marriage age, they have to face more serious gender imbalance that began around 2010. It leads to more likelihood that they stay single unwillingly. Before 1985, if an individual male stay single, he is either willingly to choose doing so, or out of more common reasons to lose one's competitiveness in marriage market, such as poverty, poor health condition. Afterwards, the reason to forced bachelor is the aggregated effect of both common reasons and serious gender imbalance. By dividing the whole male population into four segments, the first group is 'married and before 1985' (M&B), the second group is 'unmarried and before 1985' (U&B), the third group is 'married and after 1985' (M&A), and the fourth group is 'unmarried and after 1985' (U&A). The first segment is treated as base group, since it is the unaffected and 'convention' group.

The point of combining both age and marriage status is to examine the difference among different segments, among which segment do they consume the most and the least commercial sex? Presumably, the U&A (Unmarried and After One-child policy) segment may consume the most. As discussed above the proportional of unmarried men after one-child policy is significantly higher than prior to policy generations, and if marital sex is indeed the major channel of one's sexual fulfillment, then this segment should consume the most as predicted for both good consumption sub-utility and time allocation sub-utility on commercial sex.

Table 3 Percentage of Chinese male population in each segment (%)

Segment Variable	Before one-child policy	After one-child policy
Married	First segment (M&B) --%	Third segment (M&A) --%
Unmarried	Second segment (U&B) --%	Fourth segment (U&A) --%

It is not plausible to know the exact additive effect of two demographic variables without real data, however, the researchers explicate the effect of individual demographic variable, which can help us better understand the comprehensive situation.

#### 5.1.1.1 Marriage status

How does marital status influence one's consumption of commercial? People

generally presume married men have less incentive to purchase commercial sex, however, according to Pan's research: marriage does not constrain married men from commercial sex, instead, it conversely increased their purchase by 62 percent in their model. Similarly, having extramarital long-term sexual partner does not reduce their buying of commercial sex as well. Instead, it doubles the consumption in their model. These outcomes tell us that maybe the relatively bonding and persistent relationship with women does not prevent men from buying sex, on the contrary, the relationship may even promote their consumption.

Such phenomenon seems to overturn the basic consumption that marital sex is the 'orthodoxy and moral' and more importantly the substantially major part of men's sexual activities. This phenomenon may outrage conservatives and moralists; however, such disconnection of the 'sex-precreation-marriage' has prevailed globally. China is no exceptional. As mentioned previously, commercial sex is just one out of many alternatives to marital sex, the rampant increase of commercial sex with married men may also imply the increase of other 'unconventional' sexual behaviors. Supposedly, married men should spend more money and time allocation to family issues as their bonding responsibilities to the marriage, while unmarried men do not have such constraints, but the number tells us the opposite story.

In short, the sacred status of marriage has fallen from being dominant in one's sexual life, more 'unconventional' sex may become 'conventional' in the near future. When the overall environment gets more liberal towards sexuality, everybody will have more options, and more unmarried men may even bypass marital sex to fulfill their desires.

#### **5.1.1.2 Age**

In terms of age, in Pan's studies, they do not conclude any pattern of consuming

commercial sex among different age groups. In addition, analyzing the physical and mental effect of age on one's sexual activities seems to more belong to biological study of sexuality. I am not able to touch too deep into the biological aspects of sexuality. The following researches only serve to support my idea: Although age does have influence on one's sexual ability and sexual desire, as the later researches show, people are still largely sexually functional even in their later years. Besides, the age range of survey participants is from 18 to 61 years old. The upper end, 61 years old, is not very old given the life expectancy nowadays. Nevertheless, if men in this age range are largely sexually functional, it is their preference that decides whether they will consume and spend time on commercial sex or on something else.

How is age related to people's overall sexual function involving one's sexual ability and sexual desire? Does age affect men's consumption of commercial sex through their sexual function? In 1948, study by Kinsey, Pomeroy, and Martin (Alfred C. Kinsey, 1948) tells us that age is the most significant element among dozen of elements to comprehend human sexuality. From 50 years old and onwards, many aspects of one's sexual function decline dramatically. (Constance G. Bacon et al, 2003) At the same time, age is strongly associated with men's impotence, it triples from 5% to 15% between 40 and 70 years of age. (Henry A. Feldman et al, 1994) These are natural byproducts of growing old. Nowadays, the researches are conducted in a more complex manner to encompass biological influences, psychological influences and social influences on people's sexuality. Among all these influences, age is not the only factor to affect men's overall sexual function. Age is a strong predictor for one's sexual ability but not of sexual desire, given other factors being controlled. Besides age, other impacts, such as the importance of sex to an individual and the education level are also the principal impacts on men's sexual desires. In addition, attitude is as significant on sexual desire as biomedical factors. (John D. DeLamater, Morgan Sill, 2005; Osmo Kontula, Elina Haavio-Mannila, 2009).

Many researches tell us physiological changes in age do not imply that sexual

dysfunction is inevitably connected. Furthermore, even dysfunctions do happen, many of them are modifiable with the help of modern technologies and methods. (Mary Ni Lochlainn, Rose Anne Kenny, 2013)

### **5.1.2 Variable in the Utility Functions**

As mentioned above, among all demographic variables I picked, age and marital status are used to divide segments, while the remaining three-income, education level, and household location-are put into baseline utility function. I will put my speculations on how each of them has an effect to answer my research question.

#### **5.1.2.1 Income**

The first important demographic variable should be income. As discussed in literature review, one's socioeconomic status is one of key determinants to one's competitiveness in marriage market. Unmarried men with low income suffer from the aggregated effect of 'surplus men' effect and poverty. Their likelihood of becoming a forced bachelor is potentially high. With lower income, they supposedly may spend more money on mandatory consumption and spend more time to generate more income to sustain their lives.

#### **5.1.2.2 Household location**

The second demographic variable is household location. Generally, in a getting consumerism society, it is cheaper for good consumption and less time-consuming to conduct many activities in urban areas. More specifically for commercial sex, the market is much more diverse and bigger in urban areas. While in rural area, it is rare to find such service. In addition, household location has more specific meaning in China's society. In China, the household registration system is a binary system to

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divide citizens into urban household and rural household to which one's social welfare is attached. The registration is based on property right. The inconsistency exists if you are a rural resident living in cities, so that your household registration location is still back in village while the living location is in cities. If someone has such inconsistency, it usually implies they do not have property in cities, (otherwise they can change their household registration to cities. Since the urban overall benefits are generally better than in rural areas, it is quite rare that an urban citizens change their registration in the other direction.) Therefore they supposedly have to spend more money on mandatory spending, such as housing and transportation.

### **5.1.2.3 Level of education**

The third variable is year of education. In Pan's survey, one extra year of education increases the likelihood of buying sex increases by 10%. But this is not a straightforward case, since the trend stops by high school. That is to say, this increase occurs mainly among men who have high school or below education level. For those who get to college or even higher education, their purchases are generally declining. Does this trend mean that more school-educated men are more 'civilized and decent' not to consume commercial sex? Probably not. Maybe longer years in schooling have taught them more resources to seek other 'unconventional' sex rather than commercial sex.

To put all together the latent segmentation variables and variables in utility functions, we are supposedly able to have the following segments model estimation.

Table 4 Four Segments Model Estimation

Baseline utilities	First segment (M&B)	Second segment (M&A)	Third segment (U&B)	Fourth segment (U&A)
<b>Income specific to</b>				
Expenditure of Work	--	--	--	--
Time of Work				
Expenditure of Mandatory				
Time of Mandatory				
Expenditure of Entertainment				
Time of Entertainment				
Expenditure of Others				
Time of Others				
<b>Education level specific to</b>				
Expenditure of Work	--	--	--	--
Time of Work				
Expenditure of Mandatory				
Time of Mandatory				
Expenditure of Entertainment				
Time of Entertainment				
Expenditure of Others				
Time of Others				
<b>Household location specific to</b>				
Expenditure of Work	--	--	--	--
Time of Work				
Expenditure of Mandatory				
Time of Mandatory				
Expenditure of Entertainment				
Time of Entertainment				
Expenditure of Others				
Time of Others				

Δ Again, 'Expenditure for work' is not applicable

The rows in Table 4 are the parameter estimates to the baseline utility function specifications of the MDCEV model in each segment. Within each segment, the baseline utility parameters corresponding to time and/or good consumptions utility

components are presented for each demographic variable. Each demographic variable enters the utility functions into both time allocation sub-utilities and consumption sub-utilities into each category of activities.

## **5.2 Other potential influences**

Positively thinking, without raw data to process detailed data analysis, I am not bounded by the contents in previous studies. It is freer to expand my discussion to some spheres that I consider necessary to add. What are the other possible influences, both observable and unobservable, affect individual men's decision of commercial sex consumption?

The trouble is that it is difficult to find observed attributes of commercial sex due to its banned illegal status in Mainland China. If legalized, such as in Germany, it is convenient to know in advance what kinds of service they provide, the price tag, who are the service providers you can make appointment to, and marketing is also permitted within certain boundary. While illegalized, marketing is totally banned. Although it is still possible to have some information, it happens in private negotiation and its reliability depends largely on contract spirit of both sides. Nevertheless, whether the prostitution is legalized or criminalized, there are certain factors that consumers will always think about.

### **5.2.1 Price in budget constraint equation**

The size and diversity of a market is the crucial determinant to the price of commercial sex service, in terms of both search cost and cost of service. The larger and more diverse in the prostitution market, the easier for a potential customer to search, the lower of the searching cost and service cost.

At the macro-level of supply-and-demand determinant, one-child policy and gender

preference produces tens of millions of bachelors in Mainland China. The demands for prostitution should also increase accordingly. On the contrary, women now gain more competitiveness in marriage market and potentially in other aspects of life, which will discourage the supply side of the market.

In terms of different kinds of service in commercial sex market, the size and diversity also exist. Streetwalkers, the largest in number and usually provide comparatively low quality service, receive the lowest income per service. While call girls can charge much higher price. Nowadays, new technologies can help to shift prostitution to the online cyber world, where anonymity can be better secured and its interactive nature facilitates prescreen between customer and prostitutes. They can ‘interview’ each other and make the deal ahead of time, which can filter unwanted customers/prostitutes and potentially other risky consequences.(Chris Ashford, 2008) Although the reliability is also challengeable, it definitely can filter some unwanted outcomes and the search cost must be lower.

The size and diversity of prostitution market also varies in urban and rural areas. In urban and more populated areas, the prostitution market is larger and more diverse enough to divide market segments to fulfill different needs, and the cost will usually decline. While in rural areas, people know each other and people have less anonymity in looking for a stigmatized commercial sexual transaction, therefore it may increase the cost of potential punishment. Generally, cities can host more minor sexual preferences and thus more practitioners will go to cities. Smaller places are more conservative and homogeneous to tolerate various sexual preference groups Many villages in rural China consist of people belonging to the same clan, everybody is watching each other. It is usually disgraceful to conduct unconventional sexual activities like prostitution. Due to the gigantic scale of urbanization, more than 100 million rural citizens have moved to urban areas, (Chengrong Duan, et al, 2008) they flee the control and discipline of clan and be freer to join the prostitution market either as a customer or a servicer.

Besides rice, physical attractiveness of prostitutes is also an observable trait of commercial sex. The buy and seller can meet in person or via Internet, then they will know. However, other seemingly observable attributes are rarely observed. For example, how to know their professional skills in advance? Unless someone is a regular customer of certain brother or certain prostitute, it is impossible to assess their skills beforehand the actual experience. We barely know why some customers keep going to the same prostitute or same brothel again and again. Usually, the relationship between sex worker and regular customer is deeper than sole physical attractiveness, and they might invest something other than money and physical sex during their interaction. (Suiming Pan, 2000) This violates the minimum exchange acquisition of commercial sex. Their relationship may escalate into more personal and intimate level.

If one day, the prostitution is legalized, then the abovementioned attributes can actually be observable. The price is determined by market supply and demand; the marketing also makes more attributes seeable and selectable. The legitimate status of sex workers may reduce the mobility of them, since the signed working contract and entitled social welfare may encourage them to stay for a longer time.

### **5.2.2 Sexual orientation**

There are some other attributes remains very little discussed; one of them is what I find extremely intriguing- sexual orientation.

To start with, in Pan's research, the researchers asked male clients who have had purchased sexual services from professional prostitutes: Among all sex workers you have ever received sexual services, are they men, women, or transgender, bisexual, transvestite and others? 87.7% of the respondents give the answer 'female

prostitutes’, however, there are also 11.0% respondents give the answer of ‘male prostitutes’ and the rest 1.3% answer ‘transgender, bisexual, transvestite and others’. (it does not mean that 11% of respondents exclusively look for male sex workers, instead it means 11% of them at least once have looked for.) These simple figures do give a straightforward view that, on the contrary to mass’s stereotype that only women can be prostitutes (although the vast majority of prostitute are is indeed female.), male prostitutes also service in China commercial sex market.

It is unclear how many male sex workers work in the China’s domestic market. As mentioned earlier, some international organizations have estimated that there are around four to six million of sex workers in Mainland China. Taking 11% as a rough approximation, then there are around 400,000 to 600,000 male sex workers in China. Maybe the actual number is much smaller, since this 11% of male customers do not exclusively receive service only from male sex workers; the actual number number may be much bigger, since it is not very common to acknowledge such action. The overall image of male sex worker contradicts the hegemonic masculinity. They are more stigmatized and marginalized since it does not fit in conventional ideas of men’s sexuality and position in our society, therefore they are less in number and much more invisible.

Unlike female prostitutes who have feminist theory to support their ground, male sex worker, however, has long been dealt within the regulation and legal framework of homosexual orientation. (Jeffrey Weeks, 2012). In many filed interviews, most male prostitutes do not self-reported as homosexual. Many customers of male sex worker also self-reported non-homosexuality. (Victor Minichiello, 2014) People may ask how can a heterosexual male ever have sex with another guy? If someone is not heterosexual, then they must be homosexual. But in fact, sexual orientation is not fixed once and for all.

Research by Kinsey team showed that people’s sexual orientation is not always

unchanged over time. Instead of assigning people to either the heterosexual box or the homosexual box, their research modified a seven-scale system to indicate the fluidity and changeability of one's sexual orientation. The following is a simple illustration of Kinsey Scale.

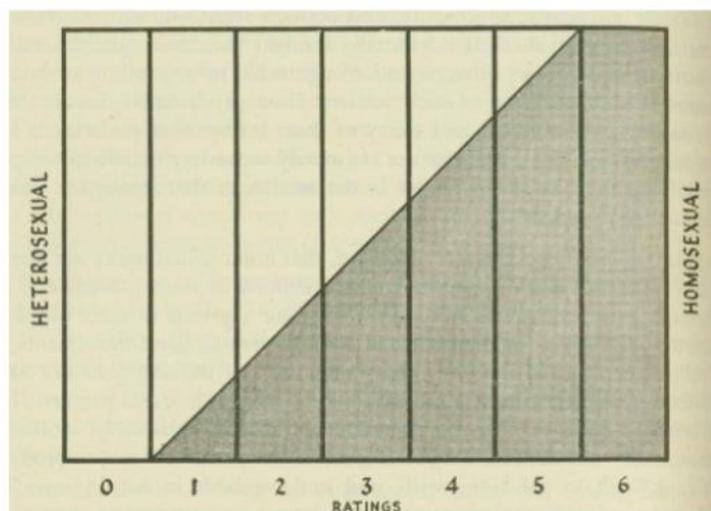


Figure 3<sup>8</sup>

The following is rough explanation of Kinsey's scale:<sup>9</sup>

Score 0: Exclusively heterosexual.

Score 1: Predominantly heterosexual, but occasionally homosexual

Score 2: Predominantly heterosexual, but more than occasionally homosexual

Score 3: Equally heterosexual and homosexual

Score 4: Predominantly homosexual, but more than occasionally heterosexual

Score 5: Predominantly homosexual, only occasionally heterosexual

Score 6: Exclusively homosexual

The scale indicates the degree of connection between one's sexual behavior and sexual psychology. For individuals rating 0 and 6, their psychological components are so determined that their sexual behaviors are highly predictable. For exclusively homosexual people, it is horrified at the idea of sexual contact with the opposite sex,

<sup>8</sup> <https://www.kinseyinstitute.org/research/publications/kinsey-scale.php>

<sup>9</sup> <http://www.lgbtdata.com/kinsey-scale.html>

it is the same scenario for exclusively heterosexual people at the idea of homosexual intercourse. While individuals with the scores from 1 to 5 whose preferences are more or less flexible, their psychological components and final sexual behaviors are less strictly connected. From essentialist perspective, one's sexual orientation must lie in heterosexuality, bisexuality or heterosexuality, with no other options. They treat it as constant. On the contrary, some constructivists argue that sexual orientation has a profound cultural and historical property, therefore it is not consistent and has the potential to change. In my perspective, the Kinsey's scale bridges the essentialists' view and constructivists' view to integrate both biological traits and socio-cultural self-identity. It acknowledges the absoluteness of biological foundation for exclusive heterosexual or homosexual people. Meanwhile, it also encompasses the relative fluidity in sexual orientation for other five groups of people on Kinsey's scale.

In case of commercial sex market, respondents' individual self-report of their position on Kinsey's scale could at least give some ideas of their relative preference of service from male prostitutes compared to female prostitutes. As introduced earlier, many customers of male sex workers do not self-reported themselves as homosexual, however, as we can see, there is a lot of space between homosexual and heterosexual. Since the study of male commercial sex is still little explored, we do not have as many fruitful qualitative researches about why male customers purchase service from male sex work as we know about from female sex worker. In the future, it will be interesting to conduct the cross reference between how frequent those male customers consume service from male sex worker and their score in Kinsey Scale test.

What is the brief landscape of non-heterogeneous males in China between 18 and 61 years old? The 'non-heterogeneous male' means an individual man at least has sex with another men once. In Pan's research, this group accounts for 5.9% of the whole male population in China. Their research estimated that in 2010, the total number of non-heterogeneous males between 18 to 61 years of would be 26.72 million. Taking into account a total of 5% of the sampling error, the estimation spans from 26.05

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million to 27.39 million people. That is to say, these 26.72 million of Chinese male population may be the potential customers of male sex worker. Who are these people? It is pitiful I do not have the data, otherwise, it will be really inspiring to have a closer look at them.

## **Ethical Value Statement**

In this paper, I am committed to the ethical standards in whole research procedures with full integrity, accountability and respect, as the University of Tampere required.

## **Conclusion**

Without detailed data analysis to answer my own research questions, what should I conclude in the conclusion part? Our perspectives determine what we see.

Through Foucault's all-aspects prism of power mechanism imposed on all of us through sexuality. We observe each different plane of the prism, and better know how different sexuality narratives influence us. It is tightly bonded to greater social good, its natural essence is largely degraded and individual subjectivity is missing. Are people introspecting when the whole society have to deal with the aftermath of one-child policy? Through the study of how ordinary Chinese people conceive and consume unconventional sex, maybe we can tell how people's sexual attitude and behavior are changing.

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