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Urban-Rural Disparities in Guangdong Province of China during The Urbanization Process after Reform and Opening Up

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ABSTRACT

Since 1978, Reform and Opening Up, China has acquired relatively remarkable achievements in urbanization, especially in coastal provinces like Guangdong Province. Under the special contexts of China after 1978, while Guangdong Province has been achieving more and further in the urbanization process, the rural-urban disparities has also been enlarging in many aspects. This empirical study shows and discusses briefly that there has been disparities in rural development in the urbanization process in Guangdong Province after Reform and Opening Up in six aspects, including the relationship between urbanization and industrialization, the relationship between employment structure and production structure, agricultural land resources, conditions of agricultural production, income level and consumption level.

Key words: Rural development, Rural residents, Urbanization, Guangdong Province, Disparities, Urban-rural disparities

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GLOSSARY OF TERMS

Area of Regularly Cultivated Land (“常用耕地面积”)

Area of Regularly Cultivated Land refers to farmland among the total land resources and which is exclusively used for farming and is under regular cultivation with harvest in normal years. Regularly cultivated land is classified into basic farmland and odd pieces of land used for cultivation.

Hukou System (“户口”)

Hukou system is a procedure required by law for household registration of mainland China. A record for this household registration legally and officially identifies a person as a resident of an area (urban or rural) and includes other identifying information. It normally plays a decisive role in the distribution of farming lands, whether one can benefit from certain welfare policies and so on.

Reform and Opening Up (“改革开放”)

Reform and Opening Up is a strategic decision which was made during the Third Plenary Session of the 11th CPC Central Committee in 1978. It is the first basic state policy that had introduced capitalist market principles since the foundation of the People’s Republic of China.

Three Rural Issues (“三农问题”)

Three Rural Issues is a terminology which refers to the three problems in terms of rural areas, agriculture, and farmers in mainland China. It was originally a conception put forward by an economist and was introduced as a formal terminology by the authorities in 2001. The “farmers” problem is the core problem including low income of farmers, enlarging urban-rural income gap and unsecured legal rights of farmers. The “rural areas” problem is manifested in the less-developed economy and inadequate infrastructure in rural areas. The “agriculture” problem mainly refers to the situation where farmers cannot support themselves through agricultural activities and degree of industrialization is low.

Total Agricultural Machinery Power

Total Agricultural Machinery Power refers to total mechanical power of machinery used in farming, forestry, animal husbandry, and fisheries, including ploughing, irrigation and drainage, harvesting, processing, transport, plant

protection, stock breeding, forestry and fisheries. The power of internal combustion engines is calculated in horsepower, whereas the power of electric motors is converted into horsepower.

1. Introduction

Two indispensable components and stages of development are industrialization and urbanization. Industrialization is just like the “engine” of urbanization while urbanization is the “thruster” of industrialization – they inter-depend on one another (Li, 2009a). However, in modern China, long-term economic growth has only been stimulated by industrialization. Due to a series of policies restraining normal urban development, urbanization lagged behind industrialization. Several inner links between industrialization and urbanization were summarily cut off. Nevertheless, since 1998 (or 1990 for Guangdong Province), economic growth in China has developed to the point where industrialization and urbanization are coefficient in promoting economic growth (Fu, 2008).

The 21st century is deemed as a significant period “to build China into a moderately prosperous society in a well-rounded way” according to a 2007 edition of the *People’s Daily* (People, 2007) which is an organ newspaper of Chinese Communist Party (CCP). Urbanization will prove the primary impetus for China’s economic development.

In recent years, however, a new trend of urbanization has been spreading in China. Guangdong Province is an outstanding example (Li, 2009a). Many local governments tended to expand the urban scale of cities during this trend. An occasional phenomenon of occupying and dispossessing lands began, primarily to build development zones or industrial parks.

Wukan Protests, an event which happened in the city of Shanwei in Guangdong Province in 2011, was a typical example of how social conflict towards land dispossession problems between farmers and the local government arise (People, 2012). Farmers were unhappy when local officials sold land to developers. They were not properly compensated for the lands so they protested, and the officials forcibly removed from the city before order was restored. The incident eventually came to a peaceful conclusion, but it underscores the problems that China faces with rapid urbanization when there is no thought given to rural development. With the further expansion of occupied lands and the replacement of infrastructure, a large portion of agricultural lands have become industrialized or commercialized and large quantities of farmers have lost their lands, becoming marginalized vagrants with “no lands to farm, no positions to work, no allowance to get” (“种田无地, 上班无岗, 低保无份”) (Fu, 2008). Further protests like those in Wukan are bound to happen again if officials do not come to some sensible conclusions about how urbanization and industrialization are affecting both urban and rural development and residents.

Urbanization is the inevitable outcome of economic and social development, and Chinese farmers cannot always avoid losing lands. However, the present

problem is that, owing to the abuse of eminent domain and lack of effective legal regulation (Du, 2012), the interests of many farmers cannot be compensated reasonably, giving rise to severe unemployment and social conflicts.

There are three main areas that get the most attention within the field of both development studies and human geography: urbanization processes, marginalized groups, and neglected sectors during the process. It is for that reason why farmers as a marginalized group and rural areas in the urbanization process in Guangdong Province have been chosen as the main research targets in this empirical study.

Urbanization does not necessarily mean that rural areas are eradicated. Instead it can be seen as a process that advances productivity while modern civilization expands and is gradually distributed to rural areas (Fu, 2009). So in the end, urbanization affects both rural and urban residents.

There are many aspects in which fairly severe urban-rural disparities can be found from the urbanization process in Guangdong Province. Wang et al (2002), a research group, discovered that urban-biased social systems are preventing the urbanization of rural areas at the same time that rural land is being consumed by the urbanization process. And what infrastructure systems are being built do not take rural residents into consideration. A lagging behind has been developing between the urban and rural development in the urbanization process in Guangdong Province, and it hurt the farmers heavily. Several aspects of this are aimed to be analyzed and discussed in this study.

There are many problems facing those living in Guangdong province. Those that are not well off, often counted as floating population, have been coming to the urban areas to work, of whom many just for short period of time. Still others have been working such low-paid jobs for years and will continue to do so, often without any of the benefits that go along with being a permanent and official resident of a city. Those who are well off seem to have not faced such problems. But the rates of urbanization and industrialization are beginning to show gaps. Industrialization in particular cannot prove as sustainable as it has been, as several factors such as environmental factors, economic concerns, and social acceptance could slow such growth down. Urbanization, however, only continues to increase, often through people who are not that well-educated, do not have a lot of skills, and often rely on benefits they are not entitled to and do not wholly invest in. These people are left behind and urban-rural disparities continue to enlarge.

Wang et al (2002), a research group sponsored by the provincial government, concluded that there were three main problems in Guangdong Province in regard to the urbanization process: 1) The household registration system, social welfare system, insurance system, and other policy-related or institutional systems had prevented the urbanization of rural residents. 2) The rapid expansion of urban areas had accelerated the already growing demands for land which was at odds with the need for agricultural land protections. 3) Most of the planning and

construction level of infrastructure projects were relatively low.

Urbanization and its effects on rural inequalities will be discussed in detail. Feng (1995) discussed the “incomplete” and “extensiveness” of urbanization in Guangdong Province. He maintained that secondary and tertiary industry still had not separated completely from agricultural production. Some people were still living in the rural areas with a traditional rural living style. He thought such phenomena came about because industrialization had not been promoted through urbanization in Guangdong Province, and as a consequence these rural residents had a relatively low educational level. Yuan & Wu (2013) examined the regional inequalities and social deprivation in Guangdong Province through their quantitative research. They found that rural areas in Guangdong Province are relatively underdeveloped and recent economic development is uneven among different regions and diverse cities. In addition, some of the inequalities owe to policies that discriminated against rural areas.

In terms of urbanization and industrialization, clearly there is not a perfect balance between urbanization and industrialization. In layman’s terms, the forces behind industrialization need people to come and build and then run and work in their factories, buildings, and eventually, cities. What they do not necessarily need, however, is for those same people to be living there. A kind of permanent “you can visit, but just cannot move here” mentality seems to exist among the authorities. The often uneducated, poor, and generally unwanted migrants from rural areas are allowed to come to the urban centers for a short time to work, and then they are encouraged to go on their way. Those with the education and skills that are deemed favorable are allowed to live in the cities fulltime with the benefits of being registered as a resident. So a correlation between development of urbanization and industrialization should be expected. Urbanization will not take place unless there are strong industrializing forces at work building up the infrastructure needed for cities. And industrialization cannot occur unless there are workers ready to carry out the tasks, workers who will have to live somewhere, which is nearly always the site the city is being built upon.

It is quite obvious that urban-rural disparities and related problems exist during the urbanization process in Guangdong Province, they have been pointed out in the previous literature, and there are possible and manageable ways to go about fixing them. But first of all, before to figure out how to appropriately put those policies into place, to have a brief look at and understand how the situations have been evolving is needed.

In summary, the study aims at showing and analyzing the evolution and problems of urban-rural disparities facing Guangdong Province in urbanization process after Reform and Opening Up from different aspects. They include the negative effects experienced by the rural populations from industrialization and urbanization.

Outline of This Study

In Part 2, the background of the basic situations of urbanization process and issues related to urban-rural disparities as well as problems facing both China and Guangdong Province after Reform and Opening Up are introduced. These include the achievements that have been obtained during the process, driving forces and the mechanism behind the process, and features that are noticeable. Basic locational information of Guangdong Province will also be introduced.

In part 3, a brief review on the previous literature related to this study is presented from different perspectives, including the definition of urbanization from China's history, urban expansion and rural-to-urban migration, urbanization and industrialization, and land-lost farmers in Guangdong Province. Together these form the basic starting point for the urban-rural disparities in rural development that is focused upon in this study.

In Part 4, the research strategy of this study is illustrated. This will show how the empirical study is carried out while the source of data, data collection, and possible limitations of the research are discussed.

In Part 5, the empirical findings, as well as discussions on the related validity, generality, and limitations of the findings are presented in six parts.

In Part 6, a conclusion is made and some policy implications are also presented. The problems that are discussed in the introduction will be addressed once again, and concrete solutions offered to solve them.

2. Background

As Joseph E. Stiglitz has pointed out, two key components deeply influencing human development in the 21st century are urbanization in China and the high-tech development of the United States (Bloomberg News, 2012). Guangdong Province, one of the richest and most urbanized provinces in China, has had remarkable ups and downs over the past three decades in terms of the urbanization process. During this time the process has seen a series of problems have arisen and become much more obvious, especially when it concerns farmers and rural areas. It is these farmers that have the most to lose from urbanization and the least to gain as their farmland is eaten up by the forces of urbanization and they are given no permanent place in the cities.

2.1 Urbanization in China

Since Reform and Opening Up China has obtained dramatic achievements. The urbanization rate was 13% in 1980, increased to 30% in 2000, and went up to and over 50% by the end of 2011 (Blue Book of China's Society, 2012). To sum up, urbanization in China during this period has roughly been going through three stages:

- 1978 - 1984 was a period when the urbanization process motivated by rural economic reforms. This period was characterized by the phrase “enter the city first, build the city afterwards” (“先进城后建城”) (Caijing, 2009). A considerable amount of farmers moved into towns due to the rapid development of urban-rural fair trading. At the same time many of the youths sent down to the country began to return following the Cultural Revolution. The urbanization rate increased from 17% in 1978 to 23% in 1984 with an average annual growth of nearly 1% (China Statistical Yearbook, 2012).
- 1985 - 1991 was a period when township enterprises and urban reforms together acted as the primary promoters of the urbanization process. Many small towns and cities arose in coastal areas during this time.
- After 2000, a series of new changes and characteristics in the urbanization process of China began to appear, which can better be understood through the following points:
 1. The public economy, private economy, and foreign investments together became the motivating structure for urbanization in China, which provided the conditions for a faster urbanization rate.
 2. The urbanization process evolved into a pattern including planning, market leading, and foreign investment leading (Huang, 2009). In short,

this pattern is beneficial in advancing urbanization in China.

3. Progress in urbanization has come about at a faster pace. After 2000, urban de jure populations increased by approximately 20 million annually on average compared to the 15 million seen in the 1990s and the 10 million in the 1980s (China Statistical Yearbook, 2012). Meanwhile, in the 1990s, urban-built areas expanded on average around 938 square kilometers annually, and this increased to 1,861 square kilometers during the years 2000 to 2007 (Blue Book of China's Society, 2012).
4. The quality of urbanization has to some degree ameliorated (Appendix A). Almost all the statistics concerning construction of city public utilities were in an upward trend, especially in the coverage of gas and interest rates.
5. It appears that megacities and big cities have achieved more advantages in the urbanization process (Huang, 2009), which has already given rise to regional disparity in urbanization.
6. A phenomenon of rural-urban fringe zones has become more obvious (Blue Book of China's Society, 2012).

According to Northam's S-curve of urbanization (1975), urbanization in China had already entered the speeding up stage by the end of 1990s. The S-curve typically measures growth of one variable in terms of another variable. In this case one variable would be the rate of urbanization, the other the rate of industrialization. The S-curve shows a rapid increase for urbanization and then a leveling off as the industrialization rate gets to the point where further urbanization just is not possible with the existing infrastructures in place.

2.2 Guangdong Province and urbanization in Guangdong

Province

Guangdong Province is situated in the very southern part of mainland China, bordering directly on Hong Kong and Macau (Appendix B). It covers an area of 177,900 square kilometers (almost the same size as both Götaland and Svealand of Sweden). The de facto population of Guangdong Province by 2011 was 105 million, with 86 million having residence registration (Guangdong Statistical Yearbook, 2012). Guangdong Province is one of the richest provinces in China, with the highest GDP among all the provinces. In 2011, the GDP of the province was approximately 5.32 trillion CNY (1 CNY equals approximately to 1.08 SEK or 0.16 USD) (Guangdong Statistical Yearbook, 2012). Moreover, the GDP per capita of Guangdong Province in 2011 was 50,807 CNY, compared to 35,198

CNY of the whole country (Guangdong Statistical Yearbook, 2012).

Several megacities are also located in Guangdong Province, including Guangzhou (Canton), the 3rd largest city in China, and Shenzhen, one of the first Special Economic Zones (SEZ) with GDP per capita reaching 110,421 CNY in 2011 (Guangdong Statistical Yearbook, 2012).

Urbanization rates in Guangdong Province have been growing at a dramatic rate since Reform and Opening Up. Urbanization rates in Guangdong Province increased from just 19% in 1982 to 66% (Guangdong Statistical Yearbook, 2012) in 2011, which was the highest among all the provinces, excluding three municipalities: Beijing, Shanghai and Tianjin.

It can be concluded that the motivating structure of rural urbanization in Guangdong Province (especially the Pearl River Delta area) was (Xu et al, 1988, pp. 85-86):

- Agricultural development as the basis;
- Development of township enterprises as a necessary condition;
- Opening-door policies that brought in abundant foreign capitals and investments as accelerator being the key.

During this period, Guangdong Province took the lead among the whole nation owing to benefits from preferential policies and locational advantages (close to Hong Kong, Macau, and Taiwan). In the industrialization process, foreign investment played a vital role in local economic structural transformation; therefore the export-oriented economy's grouping effect was formed in the coastal area. Guangdong Province has always had the largest share of total value of exports and imports. The total value of exports and imports of Guangdong Province in 2011 was 913.3 billion CNY, which made up 25% of the national export value (China Statistical Yearbook, 2012).

In the 1990s, Xu et al (1998) maintained that reforms of industrial policies became the key to the stimulation of urbanization in Guangdong Province. During this period, owing to the increasing demands of foreign markets and the expansion of the domestic market, a mass of township and village enterprises became more professionalized and specialized. As a result, a series of specialized industrial towns arose spontaneously, for example, Humen Town for the fashion industry, Chang'an Town for the hardware processing industry, and Beijiao Town for the household appliance industry. Together these promoted the agglomeration effect and further advanced the speed of urbanization in Guangdong Province.

Besides these changes, the immigration to Guangdong Province of migrant labors from other provinces has also been an integral factor towards the urbanization process. According to the 5th National Population Census, floating populations who migrated to Guangdong Province and had been living there for over half a year had reached over 11.6 million. Floating populations can be defined as any migrants who consistently stay in one area for at least six months

(Wang et al, 2003). The difference between these floating migrants is largely one of registration. There are plenty of migrants that are now considered residents of the cities in which they live, mainly through the hukou system which gives them more social and economic benefits. Floating populations do not have this and perhaps never could; individuals are required to stay in a place for several years before their eligible for hukou, and even then many do not qualify to receive it.

By 2011, Guangdong Province had a floating population of around 18 million (Guangdong Statistical Yearbook, 2012). A considerable share of this population has bought houses and attempted to settle (Chen & Shen, 2004). And this settling has only encouraged further urbanization and growth. From 1996 to 1999 the immigration population in Guangdong Province only continued to rise: 1996 saw increases of 1.13 million; 1.3 million in 1997; 1.17 million in 1998; and 1.07 million in 1999 (Guangdong Statistical Yearbook, 2012). The migrant labor population that has not been officially registered is even more numerous. These immigrant laborers have played a crucial role in accelerating urbanization in Guangdong Province.

Administrative power has played a noticeable part in urbanization in Guangdong Province as well. The Special Economic Zones in Guangdong Province, particularly in Shenzhen, Zhuhai, and Shantou have also directly influenced the rise and expansion of administrative areas. Moreover, the transformation of city levels has also affected a lot in the urbanization process. A mass of counties (县) were changed to cities (市) and some county-level cities were upgraded to prefecture-level cities (Chen & Shen, 2004). Since 2000, Guangzhou, Zhuhai, Jiangmen, Foshan, Huizhou, and Shantou have carried out district annexation many times, forming several megacities and making Foshan the third largest city in Guangdong Province. In this way, the standard of setting up a “city” and expanding administrative areas contributed substantially in urbanizing Guangdong Province.

3. Literature Review

There is a plentiful amount of researches focusing on understanding and interpreting urbanization related to rural areas and urban-rural disparities both in Chinese academic circles and academia abroad. This research highlights the relationship between urbanization and industrialization in Guangdong Province and different aspects it affects farmers and rural areas in the urbanization process after Reform and Opening Up.

3.1 Understanding and interpreting of urbanization related to rural areas

Kuznets (1989) defined the urbanization process as the transformation of population distribution between urban and rural areas. In terms of the effects of urbanization on rural areas, there have been two basic viewpoints in the western academic circles: optimistic and pessimistic. In the 1950s and 1960s, Lewis (1954) and other development economists held the opinion that surplus labors transfers from low productivity agricultural sectors to high productivity secondary industrial sectors, enabled modern conceptions and systems to expand to traditional rural areas. This not only contributed to the accumulation of capital and economic growth but also made it more attractive to introduce more modern and capital-intensive agricultural technologies,

However, in the 1970s and 1980s, with more developing countries facing severe “urban disease” and “city crisis”, some scholars, including development economists in the World Bank and other international organizations, began exhibiting a pessimistic attitude towards urbanization in less developed areas (rural areas). They put forth many reasons for this, including that urban bias was the main cause of persistent poverty in developing countries (Lipton, 1977). Urban biased policies in developing countries may have given rise to the existence of unequal exchanging systems between rural and urban areas. Rural areas provided vast quantities of cheap food, raw materials, and labor for urban areas while governments invested the limited resources in the form of living allowances to urban residents. Far from helping rural residents, this actually distributed resources in a deleterious way, expanding the gap between urban and rural areas.

3.2 Urbanization, urban expansion, and migration

The process of advancing urbanization is through the expansion of urban areas. There are three primary origins of urban expansion:

1. Net migration between rural and urban populations;
2. Net growth of urban populations;
3. Redivision of administrative organizational systems.

The results of research on total population growth in 16 large cities of third world countries between the 1950s and the 1970s showed that migration plays a key role in urban total population growth, which makes up on average 58% of the urban population growth (Williamson, 1988a).

However, Mazumdar (1987) holds an opposite viewpoint in his empirical study on twenty-nine developing countries, stating that natural population growth occupies a share of approximately 60% of urban total population growth, while migration population growth only covers 20% to 30%. It may be explained that different countries and different scales of cities give rise to the contrary conclusions of Williamson (1988a) and Mazumadar (1987).

Williamson (1988b), through other research, comes to the opinion that there is a negative correlation between devotion to migration of urban total population growth and devotion of natural growth to urban total population growth. He pointed out that migration devotes relatively more in the beginning of the urbanization process, but in the later stages when the urbanization process reaches some certain level, natural population growth devotes more, which coincides with Northam's S-curve of urbanization (1975).

So here have Williamson (1988a) saying that migration plays nearly twice as much of a role in urban population growth than Mazumdar (1987) does. It would be fair to say that Williamson is relying too heavily on migration and not accounting for the fact that it tends to have higher numbers at first, but then much lower numbers as natural growth takes precedence. And for rural areas to come into a balance with urban areas in such matters as industrialization and urbanization, it is imperative that much of their growth occurs naturally and as soon as possible. After all, the fewer people heading into the cities from the rural areas will ensure that those rural areas are not drained of the exact type of people they need to stay competitive against the highly urbanized coastal areas of Guangdong Province

Todaro (1981) discussed the relationship between migration and urban unemployment and pointed out the existence of the urban binary economy: the formal sector and informal sector. Owing to the fact that migrant laborers often find it hard to find work directly in the urban formal sector, they usually choose to work in the informal sector first. Moreover, the informal sector has the characteristics of low salary, instability, and provisionality, which often gives the employed the status of relative poverty. And that is why some countries take measures to limit urban migration populations in order to reduce poverty. China

has chosen to do this with the household registration system which limits migrants coming to cities permanently. This policy has also helped give rise to the large floating population of migrants.

3.3 Urbanization and industrialization in China

Urbanization theories from western academia are often built up on the basis of a sufficient market economy. But China carried out a planned economy over a long period. Even during the 30-year period following Reform and Opening Up, traces and sequelae of a planned economy have still been obvious. Industrialization processes in China did not resemble those of developed countries that promoted urbanization to a great degree, but instead urbanization began lagging behind industrialization. Chinese scholars focus their research mainly on stages of the urbanization process in China, the negative impacts of urbanization lagging behind and its reasons, as well as the relationship between urbanization and industrial structures.

3.3.1 Stages of urbanization process in China

Most of the Chinese scholars maintain that urbanization in China has been lagging behind. Gu (1991) made use of the ratio of the industrialization rate to the urbanization rate and the ratio of non-agriculturalized rate to the urbanization rate. His studies proved that urbanization levels in China by 1988 had been lagging behind for over 10% of the time. Yu (1994) used Chenery's patterns of development and econometric models; Zhou (1999) compared the index of per capita GDP in China and other developing countries; Sun (2001) compared the Chinese urbanization process and that of the world over the same period, and all came to a similar conclusion as Gu (1991).

Nevertheless, there have still been a few Chinese researchers holding an opposite perspective. Deng (1999) calculated urban-rural floating populations into urban population, reaching a conclusion that the actual urbanization rate including the invisible urbanization rate had already exceeded 60% in China by 1997. Others considered another perspective, namely that it is meaningless to focus too much on whether urbanization in China has been lagging behind or not; on the contrary, more attention should be paid to how to promote urbanization processes in China (Zhong & Li, 2002).

So it remains a question whether one should be concerned about this lagging behind in urbanization. Although there is not absolutely real way to gauge or measure how many people make up that floating population, it is known that it is a sizable amount, largely through the studies by Deng (1999). Even if estimates of a 60% level of urbanization are off, there is still a large portion of the rural

population that is moving to cities within this floating population. The official government urbanization rate statistics are artificially low because the household registration system will not allow this floating population to be counted.

3.3.2 The negative impacts and reasons of lagging behind of urbanization in China

Xia & Wang (2000) concluded four main negative influences that lagging behind with urbanization can bring about in China, including preventing the development of tertiary industry which may result in the imbalance of the employment structure, a great number of surplus laborers being held up in rural areas which may give rise to tension in the of man-earth relationship, as well as preventing the consistent development of rural secondary industry. Li (2001b) developed a similar analysis from a contrary perspective, maintaining that accelerating urbanization has many positive meanings in the context of China after Reform and Opening Up, including stimulating domestic demand and solving the Three Rural Issues.

In terms of the reasons behind it, most of the Chinese researchers come to a conclusion that it is the household registration system that results in the lagging behind of urbanization in China. While Sun (2003) holds the opinion that long term systems of planned economic administration in China are the key reason, his opinion is actually similar to most other scholars. The reason for this is that the system of planned economic administration is internal while the household registration system is an outward and specific expression. Li (2001b) was another who pointed out a different reason why industrialization in China had been led by capital- or resource-intensive heavy industry which had a relatively low elasticity of employment, and came to the same conclusions.

So because of this government policy of household registration the country is not urbanizing as fast or as well as it could be. This has a detrimental effect on nearly all; the businesses and industries wanting to urbanize, the floating population that cannot get hukou registration, the rural areas that are losing people but not gaining nearly as many benefits as they could if their relatives in the floating population were registered, and the country as a whole. Levels of growth and income in China will be likely to stall if urbanization lags behind.

3.3.3 Relationship between urbanization and industrial structure in China

Chen & Zhou (2001) hold the opinion that there is a positive correlation between urbanization levels and the percentages of both secondary and tertiary industries. With the proportion covered in total output values increasing, urbanization rates will increase in the meantime. Such perspectives have been discussed in many other literatures too (Xiao, 2003; Zhong & Li, 2002). Chen & Zhou (2001) also asserted that the correlation between urbanization and industrial structure is not

mono-directional but bidirectional. Urbanization accelerates more specifically on the optimization and promotion of tertiary industry. This theory would lend support to the idea that China needs to look out for its secondary and tertiary populations, those that are rural, while still focusing on aspects of industrialization and urbanization that drive the country forth.

3.4 Viewpoints from empirical studies on living standard of

land-lost farmers in China

An empirical study concerning the living standards of land-lost farmers in China shows that the percentage of annual income of rural households under 5,000 CNY was 52% before land acquisition in 2002; And that after land acquisition it increased to 71% (Wen, 2003). Yang (2006) discovered through his survey of land-lost farmers in Wuhan that 67% of them had experienced a decrease in their income level. Before land acquisition, farmers could basically support themselves in terms of food expenditures, but after land acquisition this compelling need often became hard to meet.

China is trying to stimulate economic growth in secondary industry, but at the same time the country is trying to restrict population growth in the cities through the hukou system. The government is also engaging in eminent domain policies, through their land acquisition policies. These policies are hurting the farmers, as it is mentioned above by the number of households now making less than 5,000 CNY per year. Additionally, the hukou system ensures those farmers will not be able to get above that 5,000 CNY per year earnings level. After all, if they cannot move to the city, cannot farm land that was once theirs, and cannot find any additional work in their hometowns, they will not be able to move upward with society and will continue to fall behind.

From the results of empirical studies above, it is obvious to find that the compensation standard and system had been too inadequate and inefficient for land-lost farmers in China to support themselves.

3.5 Related viewpoints in terms of Guangdong Province

Wang et al (2002), an officially sponsored research group, concluded that there were three main problems in Guangdong Province in regard to the urbanization process:

1. The household registration system, social welfare system, insurance system,

and other policy-related or institutional systems had prevented the urbanization of rural residents;

2. The rapid expansion of urban areas had accelerated the already growing demands for land which was at odds with the need for agricultural land protections;
3. Most of the planning and construction level of infrastructure projects were relatively low.

These problems come about largely due to a spatial overlap of different kinds of deprivations. These “multiple deprivation” allow for different groups to experience both spatial and economic deprivation within the same area.

Feng (1995) discussed the “incomplete” and “extensiveness” of urbanization in Guangdong Province. He maintained that those who carried out activities of secondary and tertiary industry still had not separated completely from agricultural production. Some of them were still living in the rural areas with a traditional rural living style. He thought such phenomena came about because industrialization had not been promoted through urbanization in Guangdong Province, and as a consequence these rural residents had a relatively low educational level.

Though not specifically about disequilibrium between urban and rural development in Guangdong Province, Yuan & Wu (2013) examined the regional inequalities and social deprivation in Guangdong Province through their quantitative research. They found that rural areas in Guangdong Province are relatively underdeveloped and recent economic development is uneven among different regions and diverse cities. In addition, some of the inequalities owe to policies that discriminated against rural areas.

4. Research Strategy

4.1 Approach

The research is designed to be a quantitative descriptive empirical study which aims to describe and draw conclusions from the data and its characteristics to better illuminate what is being studied. However, some discussions on why the indicators are chosen may also be presented in order to examine the validity, generality, and possible connotative problems of the data and findings.

In total, six sub questions are selected for showing and illustrating the urban-rural disparities under the contexts of urbanization process of Guangdong Province after Reform and Opening Up. This phenomenon of disparities in rural development between rural and urban development has hurt farmers substantially in China's rush toward urbanization. These six sub questions range from industrialization, employment structure, land resources, conditions of agricultural production to income gap, and gap of consumption level between urban and rural residents.

For each sub question, several indicators are selected for evaluation. The six sub questions are:

1. How has the relationship between urbanization and industrialization been evolving during the urbanization process;
2. How has the relationship between transformation of the employment structure and the transformation of production structure been evolving during the urbanization process;
3. In terms of land, How has the situation of agricultural land resources been changing;
4. How have the conditions of agricultural production been changing;
5. How has the income gap between urban and rural residents been evolving;
6. How has the gap of consumption level between urban and rural residents been evolving?

4.2 Data Collection and Analysis Methods

This study will mainly use secondary quantitative data so most of the quantitative data will be achieved from government departments or formal institutions. The majority of the statistics are obtained from statistics bureaus of both national and provincial level.

Sometimes Guangdong Province will be compared with other provinces that share similar characteristics and when their data comes to similar conclusions as the data in Guangdong Province.

A mass of tables and figures are applied in this study. Descriptive analysis is the basic analysis method with the help of SPSS tools, including analysis of gross, mean, maximum value, minimum value, relative number, correlation and so on.

For Sub question 1, industrialization rate and urbanization rate are regarded as the main indicators to examine the evolution of relationship between industrialization and urbanization. Industrialization rate will be applied and is calculated using the formula “Industrialization Rate = (Value-Added of Industry) / (Gross Domestic Product)”.

For Sub question 2, to illustrate the evolution of relationship between the transformation of employment structure and the transformation of production structure, correlation coefficients between composition of GDP and composition of employment in three industries are to be calculated through Pearson’s r model using SPSS tools. Furthermore, a relative comparison of the composition of GDP and the composition of employment of primary industries with those of the other two provinces, Zhejiang Province and Jiangsu Province, is carried out after.

For Sub question 3, it can be illustrated through an equation: targeted indicator Per Rural Capita Area of Cultivated Land under Management (mu) is calculated through the formula “Per Rural Capita Area of Cultivated Land under Management (mu) = (Total Area of Cultivated Land) / (Average Number of Permanent Residents per Rural Household)”.

Sub question 4 aims to examine the changing of the conditions of agricultural production. Various indicators involving factors of land, labor and capital are compared horizontally with the other two provinces, Zhejiang Province and Jiangsu Province, and some with the whole nation, and are also compared vertically through times when the average growth or decrease is concentrated upon.

Sub question 5 asks how the income gap between urban and rural residents has been evolving. A curve graph is made using the statistics of per capita disposable income of both urban and rural households in Guangdong Province in order to observe the evolution through time and relative gap. Per capita amount of deposit is calculated through the formula “Per Capita Amount of Deposit = (Total Amount of Deposit) / (Total De Jure Population)”. Other statistics are compared and focused upon vertically through time and relative growth and decrease, as well as maximum and minimum numbers. Besides, Gini coefficients are applied to examine the inequality. Gini coefficient is a measure of statistical dispersion named after and put forward by the Italian statistician Corrado Gini. The Gini coefficient measures the inequality through values of a frequency distribution (usually income levels) (Gini, 1936). A Gini coefficient of 0 represents perfect

equality while a Gini coefficient of 1 represents absolute inequality.

Sub question 6 asks how the gap of consumption level between urban and rural residents has been evolving. Numbers of per capita consumption expenditure and Engel coefficients in rural and urban areas are compared both vertically and horizontally to examine the absolute and relative evolvement. Engel coefficient is the proportion that total food expenditure spent in total household income. It was named after and developed by the German statistician Ernst Engel. According to his statistical data, the poorer a family is, the larger the budget will be spent on nourishment (Chai & Moneta, 2010).

4.3 Limitations and problems

In terms of the reliability of official data from China, Koch-Weser (2013) asserted that China's national figures are not as reliable as those of the United States and Europe and manipulation is in fact occurring from his own calculated outcomes. However, Xu (2010) and Fernald et al (2013) hold a different opinion which will be discussed below.

It is needed to point out that Statistics bureaus in China collect and calculate some statistics on their own but more importantly, they are in charge of gathering data from other bureaus, e.g. Agricultural Bureaus and Bureaus of Land and Resources. Moreover, in recent years, it is not merely one official institution that releases data. A lot of other institutions also have their own statistics departments which are directly responsible to their own institutions and not just the statistics bureaus. That is to say, if data manipulation is occurring, it is easy to discover the inconsistency of data from diverse institutions.

Therefore, most of the official data achieved in this study is to a great extent reliable and valid. Nevertheless, some old data may have defects in accuracy and validity for the sake that some statistics collected in different years have been used by different statistical methods, giving rise to the possible relative inaccuracy of data.

It is because of that old data that Koch-Weser (2013) is saying that Chinese figures just are not that reliable. Xu (2010) and Fernald et al (2013) hold that because of the various institutions now involved with collecting and reporting figures and statistics, there is less chance for error than when just one government bureau was doing all the work. Because there are more bureaus working independently there is a greater level of transparency and more accuracy in the reporting. Furthermore, Koch-Weser (2013) did not use a wide sampling for the study, so results cannot be certain.

5. Empirical Research Findings

5.1 The relationship between urbanization and industrialization

The primary manifestation of inadequate urbanization in China is the fact that urbanization has been lagging behind, put forth in 3.3 and from Chinese academic circles and related administrative departments (Zhao & Zhou, 2002, p. 48). Generally speaking, this lagging behind of urbanization refers to urbanization levels lagging behind industrialization levels. When urbanization is lagging behind, it could result in a rupture of the internal relationship between industrialization and urbanization, and prevention of the structural transformation between urban and rural dual structures (Fu, 2008). Similar to the situation of the whole nation, urbanization development in Guangdong Province had for a long period also lagged behind the development of industrialization numerically from 1978 to 1995 (Table 1).

As can be seen from Table 1, in 1978, the eve of Reform and Opening Up, the industrialization rate was 41% and the urbanization rate was merely 16% in Guangdong Province; urbanization rate lagged behind industrialization rate about 24%. Until 1990, owing to the dramatic development of tertiary industry, the industrialization rate decreased to 39% while the urbanization was 36%. But since 2000, the urbanization rate in Guangdong Province has been exceeding the industrialization rate.

Table 1 Industrialization Rate and Urbanization Rate in Guangdong Province from 1978 to 2011

Year	Value-Added of Industry (Billion CNY)	Gross Domestic Product (Billion CNY)	Industrialization Rate	Urbanization Rate
1978	7.6	18.5	41.08%	16.30%
1990	61.5	155.9	39.44%	36.70%
1995	244.8	593.3	41.26%	39.30%
2000	446.3	1074.1	41.55%	55.00%
2005	1048.2	2255.7	46.47%	60.70%
2010	2146.2	4601.3	46.64%	66.20%
2011	2464.9	5321	46.32%	66.50%

* Source: Calculated from Guangdong Statistical Yearbook (2006 & 2012)

** $Industrialization\ Rate = (Value-Added\ of\ Industry) / (Gross\ Domestic\ Product)$

Nevertheless, as seen in Table 1, though the urbanization rate after 2000 seemed to have increased it still remains arguable whether it is true or fake.

Mainly this is because the urbanization rate shown in Table 1 is regarded as the proportion of total urban population which includes the floating population. Some other reports or statistics will not include the floating population as most of the floating population is not officially registered as urban residents or people living in urban areas in the statistical bureau's figures. After all, the floating population has not been able to register their households, so they do not count as far as the government is concerned, and that is why one may feel they should not be included. To get an accurate picture of urbanization in Guangdong Province, however, they ought to be included. If the urbanization rate is calculated by proportion of registered non-agricultural population, the outcome will be much lower than the urbanization rate shown in Table 1. Besides, some researchers maintained that the reasonable and sustainable range between the ratios of the urbanization rate to the industrialization rate in China should be 1.4-2.5 : 1 (Zhang & Shi, 2003, p. 21). That is to say, at least until 2005, the urbanization rates had not fulfilled the minimum reasonable numbers. Even after 2005, the numbers of urbanization rate just fulfilled the requirement of the minimum ratio of 1.4. And it is also necessary to point out that the numerical relationship between the urbanization rate and industrialization rate may not merely be compared by their absolute values but by their coordinating growth rate pace.

So, to some degree, whether urbanization has been lagging behind industrialization in Guangdong Province between 1978 and 2011 or not? The answer is yes and no. It is yes since the ratios of the urbanization rate to the industrialization rate in China should be 1.4-2.5 : 1 (Zhang & Shi, 2003, p. 21). Urbanization has not been lagging behind after 2000 if the official statistics of total urban population from the statistical bureaus are used, which normally include the floating population. If the floating population is not included, however, then the urbanization rate may have been lagging behind the industrialization rate throughout the period as well.

5.2 The relationship between transformation of employment structure and transformation of production structure

In both the processes of urbanization and industrialization, one of the regular patterns of economic structural transformation is the synchronous transformation of both the employment structure and the production value structure (Fu, 2008), i.e. a positive correlative relationship between the employment structure and the production value structure.

Through analysis of Pearson's correlation in SPSS using the statistics from Table 2, it can be found out that the Pearson correlation coefficients between composition of GDP and composition of employment for each sector are 0.976 for primary industry, 0.852 for secondary industry and 0.982 for tertiary industry respectively. As far as the correlation coefficients are concerned, there is basically a synchronous transformation of both the employment structure and the production value structure in the primary industry and the tertiary industry. But for the secondary industry, the transformation seems to have been lagging behind to a certain degree.

Table 2 Compositions of GDP and employment covered in three industries of Guangdong Province from 1980 to 2011

Year	Primary Industry		Secondary Industry		Tertiary Industry	
	Composition of GDP	Composition of employment	Composition of GDP	Composition of employment	Composition of GDP	Composition of employment
1980	33.2%	70.7%	41.1%	17.2%	25.7%	12.1%
1990	24.7%	52.9%	39.5%	27.2%	35.8%	19.8%
1995	14.6%	41.6%	48.9%	33.7%	36.5%	24.7%
2000	9.2%	39.9%	46.5%	27.9%	46.3%	32.2%
2005	6.3%	32.1%	50.4%	38.1%	43.3%	29.8%
2009	5.1%	26.5%	49.2%	40.3%	45.7%	33.2%
2010	5.0%	24.3%	50.0%	42.2%	45.0%	33.5%
2011	5.0%	23.8%	49.7%	42.2%	45.3%	34.0%

* Source: Guangdong Statistical Yearbook (2006 & 2012)

Nevertheless, in 2011, primary industry in Zhejiang Province, one of the other richest provinces in China, maintained a composition of GDP around 4% but with a composition of employment occupying just 14% (Zhejiang Statistical Yearbook, 2012). Primary industry in Jiangsu Province, one of the richest provinces which has a relatively similar economic structure to Guangdong Province, also just had a composition of employment of 21% (Jiangsu Statistical Yearbook, 2012). The same situations can be found when looking at the statistics for other years. Without even comparing related statistics of other developed countries in Asia, such as South Korea or Japan, it can be seen that the transformation of the employment structure in Guangdong Province still needs a great deal of progress.

The results and comparisons show that the employment structural transformation has been lagging behind the structural transformation of output values, which reflects the difficulties in transferring rural surplus labor forces. Labor market of primary industry still is the major labor market of rural labor

forces.

Still, one should not expect a perfect correlation between the composition of GDP and the composition of employment. After all, not all sectors of the economy contribute to GDP at the same levels and across industries, especially considering their labor intensity.

5.3 Agricultural land resources

There are three basic factors of production including land, labor and capital (Samuelson & Nordhaus, 2004). Land as one of the basic factors is even more essential in the case of Guangdong Province because of the relatively scarce land. As a result, the scale of operation in agriculture for Guangdong Province is relatively small. During both the processes of industrialization and urbanization, a great mass of agricultural land has become non-agriculturalized. Land resources in rural area have run off severely according to the statistics (Guangdong Statistical Yearbook, 2012). This has made it hard to ameliorate the scale of operation in agriculture.

Table 3 Sampling Survey Results of Scale of operation in agriculture in Guangdong Province from 1990 to 2011

Year	1990	1995	2000	2005	2010	2011
Number of Rural Households Surveyed	2560	2480	2560	2560	2560	3100
Average Number of Permanent Residents per Rural Household (person)	5.65	5.36	5.15	5.00	4.95	4.84
Average Number of Full/Semi Labor Force per Household (person)	3.25	3.11	3.11	3.23	3.37	3.23
Per Rural Capita Area of Cultivated Land under Management (mu)	1.04	0.90	0.85	0.66	0.65	0.53

* Source: Calculated from Guangdong Statistical Yearbook (1991 & 2012)

** Per Rural Capita Area of Cultivated Land under Management (mu) = (Total Area of Cultivated Land) / (Average Number of Permanent Residents per Rural Household)

Although the number of per rural capita area of cultivated land under management is calculated using a sampling number and the database is not fairly

large, the numbers can still substantiate that a relatively severe loss of agricultural land resource has occurred.

According to Guangdong Statistical Yearbook (1990 & 2006), the total amount of cultivated land in the whole Guangdong Province changed substantially. The Yearbook uses the Chinese traditional measurement ‘mu’ (“亩”) where 1 mu equals approximately to 614.4 square meters. Here square kilometers will be used in place of the mu. The total amount of cultivated land went from 25 billion square kilometers in 1978 to 19 billion square kilometers in 2005, with an average annual decrease of 239 million square kilometers; the per capita area of cultivated land of the whole province reduced from 504 square kilometers in 1978 to 264 square kilometers in 2005; the per agricultural capita area of cultivated land reduced from 602 square kilometers in 1978 to 510 square kilometers in 2005.

However, it is not accurate to merely regard the total amount of cultivated land since, with the total amount of land declining; the rural residents may also decline at the same time. Therefore, as the sampling survey results in Table 3 show, the average number of the full-to-semi labor force from 1990 to 2011 remained basically stable, although per rural capita area of cultivated land under management decreased year by year, going from 639 square kilometers in 1990 to merely 326 square kilometers in 2011.

5.4 Conditions of agricultural production

Agricultural production is crucial for both economic development in rural areas and the livelihood of rural residents. The following discussion includes three main aspects of production conditions including agricultural infrastructures, means of production, and quality of agricultural labor force, which involves all the basic elements of production, i.e. land, labor and capital.

5.4.1 Agricultural infrastructures

There are a few indicators for agricultural infrastructures chosen here from 1980 to 2005, including effective irrigated area in Guangdong Province, as well as areas unaffected by drought or floods, and their compositions in area of regularly cultivated land. This is due to the vital role irrigation plays in agricultural production, especially in farming and forestry.

After 2005, statistical methods and statistical standards used by the Statistics Bureau of Guangdong Province changed so there have not been statistics of area of regularly cultivated land at the year-end any more. However, in 2010, effective irrigated area in Guangdong Province was recorded as approximately 191.03 million mu (Guangdong Statistical Yearbook, 2011). Moreover, areas unaffected

by drought or floods in Guangdong Province were recorded as 134.5 million mu and 139.2 million mu for 2010 and 2011 respectively (Guangdong Statistical Yearbook, 2012). These all illustrates the deteriorating situation of agricultural infrastructure in Guangdong Province.

According to the Statistics Bureau of Guangdong Province (2012), farming is still the mainstay agricultural department in Guangdong Province. Besides, agricultural infrastructures also consist of a wide range of other aspects, including building road networks, construction of water conservancy, setting up circulation service institutions of agricultural products, and foundation of natural disaster prevention facilities (People, 2008). However, water conservancy and disaster prevention facilities are emphasized here since these aspects basically and essentially have the greatest affect in agriculture and the measuring efficiency of agricultural infrastructures.

As showed in Table 4, the effective irrigated area decreased consistently from 1980 to 2005 with the decline in area of regularly cultivated land in Guangdong Province.

Table 4 Effective Irrigated Area, Areas Unaffected by Drought or Floods and Their Composition in Regularly Cultivated Land at the Year-end in Guangdong Province from 1980 to 2005

Year	1980	1985	1990	1995	2000	2005
Area of Regularly Cultivated Land at the Year-end (million mu)	412.6	389.7	379.3	347.5	338.0	315.2
Effective Irrigated Area (million mu)	292.0	269.9	269.2	223.2	221.7	197.6
Composition of Area in Regularly Cultivated Land at the Year-end	70.8%	69.3%	67.1%	64.2%	65.6%	62.7%
Areas Unaffected by Drought or Floods (million mu)	219.5	195.6	200.4	164.5	162.6	140.3
Composition of Area in Regularly Cultivated Land at the Year-end	53.6%	50.2%	52.9%	47.3%	48.1%	44.5%

* Source: Guangdong Statistical Yearbook (1991, 1996, 2001 & 2006)

** After 2005, statistics of area of regularly cultivated land at the year-end have not been recorded anymore owing to the change of definition.

Nevertheless, and more noticeable is that although both the effective irrigated area and the area of regularly cultivated land at the year-end in Guangdong Province had been reducing synchronously; the composition of effective irrigated

area occupied in regularly cultivated land at the year-end had also been decreasing as well, with an average annual decrease of 0.54% during the 15 years period, which suggests that related water conservancy infrastructures had been working less and less efficiently and effectively. In terms of areas unaffected by drought or floods, similar situations can be found where areas unaffected by drought or floods had also been decreasing consistently with the decline of area of regularly cultivated land at the year-end in Guangdong Province from 1980 to 2005. The composition of areas unaffected by drought or floods occupied in regularly cultivated land at the year-end had been fluctuating during the 15 years period, with 53% in 1980 and declining to 44% in 2005, which indirectly shows that there had been worse and worse situations for facilities set up for natural disaster prevention

5.4.2 Agricultural means of production

For means of production the following indicators will be used to evaluate the situation: development of mechanization in rural areas, purchase items of rural household for means of agricultural production, and original value of productive fixed assets owned per rural household at the year-end. The reason these are chosen as indicators is explained respectively in the following discussion.

Targeted compared items of purchase of means of agricultural production per rural household in Guangdong Province includes chemical fertilizer, cake fertilizer, farming plastic pellicle, seeds, and forage for production use, which has roughly covered all the basic necessary means of agricultural production for farming, forestry, and animal husbandry. As illustrated in Table 5, all items listed have been fluctuating during the 16-year period. For chemical fertilizer, it has been consistently decreasing since 2000, with a purchase of 553 kg per household in 2000 declining to 373 kg per household in 2011. Similar cases can also be found in purchases for seed for production use and forage for production use. These all can basically illustrate the situation that purchase of agricultural means of production per household in Guangdong Province has been in a downward trend. This can possibly be explained by the gradual reduction of agricultural land and scale of agricultural operation in Guangdong Province.

Whereas, in terms of the original value of productive fixed assets owned per rural household at the year-end and related statistics for development of mechanization in agriculture, here the statistics are compared with two of the other richest provinces in China, Zhejiang Province and Jiangsu Province. These two provinces are chosen for the sake that Jiangsu Province, Zhejiang Province and Guangdong Province are all coastal provinces and have a relatively similar economic structure (with light industry serving as the mainstay industry and tertiary industries going up rapidly) and administrative level (with one or two

sub-provincial level cities and similar numbers of prefecture level cities). Besides, the urbanization rate in Jiangsu Province was 61% (Jiangsu Statistical Yearbook, 2012) and in Zhejiang Province 68% in 2011 (Zhejiang Statistical Yearbook, 2012), which shared almost the same urbanization level as Guangdong Province.

Table 5 Purchase of Means of Agricultural Production per Rural Household in Guangdong Province from 1995 to 2011

Item	1995	2000	2005	2010	2011
Chemical Fertilizer (kg)	487.58	553.22	503.24	381.44	373.33
Cake Fertilizer (kg)	5.09	9.78	17.18	9.83	20.19
Farming Plastic Pellicle (kg)	0.57	0.63	0.78	0.99	1.37
Seeds for Production Use (kg)	/	9.85	6.74	6.64	6.87
Forage for Production Use (kg)	/	721.69	1332.29	1098.64	1023.90

* Source: *Guangdong Statistical Yearbook (1996 & 2012)*

For value of productive fixed assets owned per rural household at the year-end (Table 6), it is noticeable that the value in Guangdong Province has fallen behind both Zhejiang Province and Jiangsu Province to a great extent since 2005. Within 16 years, value of productive fixed assets owned per rural household at the year-end in Guangdong Province increased from 2,745 CNY in 1995 to 7,628 CNY in 2011, with an average annual increase of 305 CNY. At the same time that the annual increase of Jiangsu Province increased from 1,845 CNY in 1995 to 13,686 in 2011, with an average annual increase of about 740 CNY, more than two times of the average annual increase in Guangdong Province. For value of productive fixed assets owned per rural household at the year-end exclusively in the field of farming, forestry, animal husbandry, and fishery, similar situations can be found. During the six year period from 2005 to 2011, Zhejiang Province and Jiangsu Province have experienced an average annual growth of around 252 CNY and around 173 CNY respectively in value of productive fixed assets owned per rural household at the year-end for farming, forestry, animal husbandry and fisheries. However, the number for Guangdong Province was merely 140 CNY.

Lastly, development of mechanization in rural areas can be measured in many ways. These include small-scale hydropower stations in rural areas and their total generating capacity, electricity consumed in rural areas, and total agricultural machinery power. These serve as indicators to compare with Zhejiang Province and Jiangsu Province. Although there are not statistics recording the electricity consumed and the generating capacity of small-scale hydropower stations in rural areas specifically in agriculture, it is still worth comparing since the main economic activities in rural areas of these three provinces are still carried out

within the field of primary industry (Guangdong Statistical Yearbook, 2012; Zhejiang Statistical Yearbook, 2012; Jiangsu Statistical Yearbook, 2012).

Table 6 Original Value of Productive Fixed Assets Owned per Household at the Year-end and its Number in Farming, Forestry, Animal Husbandry and Fishery of Guangdong Province, Zhejiang Province and Jiangsu Province from 1995 to 2011

Year	1995	2000	2005	2010	2011
Guangdong Province					
Original Value of Productive Fixed Assets Owned per Rural Household at the Year-end (CNY)	2745	4504	3842	5133	7628
- in Farming, Forestry, Animal Husbandry and Fishery	/	1243	1378	1950	2220
Zhejiang Province					
Original Value of Productive Fixed Assets Owned per Rural Household at the Year-end (CNY)	/	/	12005	16770	20114
- in Farming, Forestry, Animal Husbandry and Fishery	/	/	1964	3074	3477
Jiangsu Province					
Original Value of Productive Fixed Assets Owned per Rural Household at the Year-end (CNY)	1845	4293	7134	11782	13686
- in Farming, Forestry, Animal Husbandry and Fishery	822	1518	1509	2258	2543

* Source: Guangdong Statistical Yearbook (2012); Zhejiang Statistical Yearbook (2012); Jiangsu Statistical Yearbook (2012).

As is shown in Table 7, although the number of small-scale hydropower stations in rural areas in Guangdong Province has been greater than that of Zhejiang Province from 1995 to 2011, the number in Guangdong Province has consistently been decreasing since 2005, with a slight upward trend after that but still far less than the 7,988 it saw in 1995.

It is more interesting and remarkable to see that Zhejiang Province, always with fewer units of small-scale hydropower stations in rural areas, has had an even better generating capacity than that of Guangdong Province. To take the data of 2011 for example, the average generating capacity of each unit of small-scale hydropower stations in rural areas in Guangdong Province was about 399 kw, while for Zhejiang Province, the number turned out to be around 1181 kw, which

proves the relatively low efficiency of hydropower stations in Guangdong Province.

Table 7 Statistics on Total Agricultural Machinery Power, Irrigation Conservancy, Consumption of Pesticides and Electricity in Rural Areas in Guangdong, Zhejiang and Jiangsu Province from 1995 to 2011

Year	1995	2000	2005	2010	2011
Guangdong Province					
Consumption of Pesticides (10000 tons)	8.04	8.47	8.70	10.44	11.41
Small-scale Hydropower Stations in Rural Areas (unit)	7988	5478	5121	5666	5916
Generating Capacity (10000 kw)	130.14	142.57	184.57	223.96	236.51
Electricity Consumed in Rural Areas (10000 kwh)	1862658	4054461	7664302	10442606	11349220
Total Agricultural Machinery Power (100 million w)	166.96	176.39	178.21	225.34	235.05
Zhejiang Province					
Consumption of Pesticides (10000 tons)	/	/	6.56	6.51	6.39
Small-scale Hydropower Stations in Rural Areas (unit)	/	/	2273	2205	3189
Generating Capacity (10000 kw)	/	/	192.00	202.60	376.80
Electricity Consumed in Rural Areas (10000 kw/h)	/	/	5205700	7651500	8480000
Total Agricultural Machinery Power (100 million w)	/	/	211.12	249.99	254.20
Jiangsu Province					
Consumption of Pesticides (10000 tons)	8.87	9.15	10.33	9.01	8.65
Electricity Consumed in Rural Areas (10000 kwh)	2381600	3146000	8251000	14728900	16068300
Total Agricultural Machinery Power (100 million w)	222.69	292.52	313.53	393.73	410.61

* *Guangdong Statistical Yearbook (1996 & 2012); Zhejiang Statistical Yearbook (2012); Jiangsu Statistical Yearbook (1996, 2006 & 2012).*

As far as the electricity consumed in rural areas is concerned, it is easy to

find that rural areas in Jiangsu Province had been consuming much more electricity than rural areas in Guangdong Province but Guangdong Province has always had an agricultural population of around 11 million more than Jiangsu Province (Guangdong Statistical Yearbook, 2012; Jiangsu Statistical Yearbook, 2012).

For total agricultural machinery power, which is the key indicator of measuring the mechanization level of agriculture, it can be found that both Jiangsu Province and Zhejiang Province have always had much more agricultural machinery power than Guangdong Province throughout the 16-year period. Jiangsu Province had nearly doubled the total agricultural machinery power within 16 years while Guangdong Province managed to raise it by less than 50%.

From the three indicative aspects, a conclusion can be reached that during the urbanization process within the period; the situation of agricultural means of production has been advancing and ameliorating at a very slow pace. By the end of 2005, the level of tractor ploughing had reached 69% and the mechanization level of using a rice trans-planter in 50 commodity grain production bases among the Guangdong Province approached close to 40% (Yang, 2006). But the comprehensive mechanization level of farming in the whole Guangdong Province was merely 24% in 2005 (Department of Agriculture of Guangdong Province, 2006). According to Fu et al (2006), from 1999 to 2005, total agricultural machinery power per labor force had in rural areas increased from 1.13 kw in 1999 to 1.16 kw in 2005. This covered between 28% to 29% of the standard of modernization (4 kw), which had just grown approximately 0.8% within six years.

5.4.3 Quality of the rural labor force

For measurements of the quality of the rural labor force, the degree of education of the agricultural labor force is used as the main indicator. This is done to see whether the percentages of educational background of illiterate/semiliterate and primary school are decreasing and that of junior secondary school, senior or specialized secondary school, tertiary education or above are increasing by year.

As it is illustrated in Table 8, the education level of rural labor forces in Guangdong Province as a whole has been remaining at a relatively low level.

The educational levels of most of the rural labor forces are primary education, or junior secondary education, with a total percentage of 80% in 1995 and still 78% in 2011. The only obvious difference is that percentage of rural labor force with a primary education level had declined from 40% in 1995 to 20% in 2010, while the percentage of the rural labor forces who have junior secondary education had increased from 40% in 1995 to 55% in 2011. And it is also noticeable that percentage of rural labor forces who have senior or specialized secondary education had nearly remained at the same level throughout the 16-year

period. Moreover, according to Guangdong Statistical Yearbook (2006), rural labor forces in Guangdong Province who had not accepted professional training made up a percentage of 97% among all the rural labor forces in 2000, with the percentage decreasing to 95% in 2005. Within 5 years, only 1% more rural labor forces have accepted professional training statistically.

Table 8 Educational Background of Rural Full/Semi Labor Forces in Guangdong Province from 1995 to 2011 from Sampling Survey

	1995	2000	2005	2010	2011
Number of Households Surveyed	2480	2560	2560	2560	3100
Number of Permanent Residents in the Households Surveyed (person)	13289	13190	12795	12670	14990
Average Number of Permanent Residents per Household	5.36	5.15	5.00	4.95	4.84
Average Number of Full/Semi Labor Force per Household	3.11	3.11	3.23	3.37	3.23
Average Number of Dependents per Labor Force	1.72	1.65	1.55	1.47	1.50
Average Education Level per 100 Labor Force					
Illiterate and Semi-illiterate	7.4%	4.3%	3.8%	2.9%	2.9%
Primary Education	40.0%	33.2%	25.5%	20.7%	22.9%
Junior Secondary Education	40.7%	48.9%	53.9%	54.5%	55.6%
Senior Secondary Education	10.0%	10.0%	11.8%	14.0%	11.7%
Specialized Secondary Education	1.7%	3.1%	3.5%	4.7%	3.6%
Tertiary Education or Over	0.3%	0.6%	1.5%	3.1%	3.3%

* Source: Guangdong Statistical Yearbook (2012)

5.5 The income gap between urban and rural residents

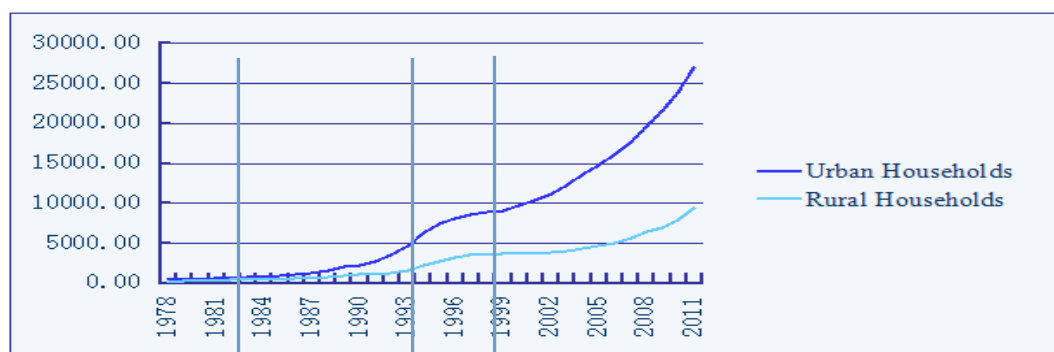
Since Reform and Opening Up, there is no denying the fact that the incomes of both urban and rural residents have been experiencing a relatively substantial growth. As it is shown in Table 9, disposable income of urban residents and rural residents increased from 412 CNY and 193 CNY in 1978 to 26,897 CNY and 9371 CNY in 2011, or approximately 65 times and 48 times respectively.

However, while the incomes of both urban and rural residents have been

growing, the income gap between urban and rural residents has also been changing dramatically. Since 1978, the income gap between urban and rural

Table 9 Per Capita Disposable Income of both Urban and Rural Households in Guangdong Province by Year from 1978 to 2011

Year	Per Capita Disposable Income of Urban Households (CNY)	Per Capita Disposable Income of Rural Households (CNY)	Year	Per Capita Disposable Income of Urban Households (CNY)	Per Capita Disposable Income of Rural Households (CNY)
1978	412	193	1995	7438	2699
1979	416	222	1996	8157	3183
1980	472	274	1997	8561	3467
1981	560	325	1998	8839	3527
1982	631	381	1999	9125	3628
1983	714	395	2000	9761	3654
1984	818	425	2001	10415	3769
1985	954	495	2002	11137	3911
1986	1102	546	2003	12380	4054
1987	1320	662	2004	13627	4365
1988	1583	808	2005	14769	4690
1989	2086	955	2006	16015	5079
1990	2303	1043	2007	17699	5624
1991	2752	1143	2008	19732	6399
1992	3476	1307	2009	21574	6906
1993	4632	1674	2010	23897	7890
1994	6367	2181	2011	26897	9371



* Source: Guangdong Statistical Yearbook (2012)

** Disposable Income = (Total Income of Households) - (Income Tax Payable) - (Personal Expenditure on Social Security) - (Sample Household Subsidy for Keeping Dairies)

residents has been enlarging gradually and its transformation can be divided into four stages (line graph of Table 9):

1) From 1978 to 1982 incomes of both urban and rural residents began to increase slowly and the income gap between urban and rural residents declined slowly;

2) From 1983 to 1994 the incomes of both urban and rural residents went up rapidly while the income gap between urban and rural residents began to enlarge rapidly;

3) From 1995 to 1999 incomes of both urban and rural residents increased slowly and the income gap between urban and rural residents experienced a roughly stable status;

4) Since 2000, incomes of both urban and rural residents have been experiencing a rapid increase once again while at the same time the income gap between urban and rural residents has also once again been enlarging. This can clearly be seen through the 2009 ratio of income of urban residents to income of rural residents which was 3.12, the largest income gap between urban and rural residents ever recorded from 1978 to 2011 (Statistics Bureau of Guangdong Province, 2010).

The income gap among different industries also had been enlarging. In recent years, with the economy developing and transformation of economic structures in Guangdong Province, average incomes of employees in diverse industries have experienced an increase to varying degrees. The differences among the development of different industries had made the income gap among employees of diverse industries larger. As is shown in Appendix C, the average income of agriculture-related industries like farming, forestry, animal husbandry, and fisheries, as industries with relatively small elasticity of demand (Zhu, 2009), were the lowest among all the industries from 2004 to 2009. And what is more noticeable is that the gap between those agriculture-related industries and industries with the highest average income, like the computer service industry and the financial industry, had been enlarging.

In 2004, the ratio between average incomes of farming, forestry, animal husbandry, and fisheries, and the computer service industry was 4.56, while the ratio between average incomes of farming, forestry, animal husbandry, and fisheries, and the financial industry rose to 5.85 in 2009.

In terms of the internal income gap within the rural area, it is easy to take the Gini coefficient as the indicator. The Gini coefficient is commonly used to measure the inequality of income or wealth. In this case the Gini coefficient would measure the income inequality among the entire population of China. The higher the number is, the higher the income that is being acquired by a small group. If the number is low, the income of a small group will be low as well, and the higher the income of the majority of the population will be.

As is shown on Table 10, the Gini coefficient of rural residents was quite low from 2000 to 2008, ranging from 0.28 to 0.34, which had always been in the internationally recognized reasonable range of 0.3 to 0.4. Actually, the Gini coefficient of urban residents had been slightly higher than that of rural residents. However, when it comes to the Gini coefficient, all the residents in Guangdong Province, were well over 0.40 after 2001.

Table 10 Gini Coefficient of All the Residents, Urban Residents and Rural Residents in Guangdong Province from 2000 to 2008

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
All the Residents	0.38	0.40	0.41	0.43	0.43	0.43	0.42	0.42	0.42
Urban Residents	0.33	0.34	0.35	0.37	0.36	0.36	0.36	0.36	0.36
Rural Residents	0.28	0.30	0.33	0.34	0.34	0.33	0.33	0.33	0.32

* Source: Statistics Bureau of Guangdong Province (2010)

Although the Gini coefficient shows that the inequality within the rural area did not seem that large, actually other statistics do not show that. First, by 2011, rural residents in Guangdong Province who had a net income under the average income level of the whole province covered a percentage of 60% of the whole rural population (Fu, 2008). Secondly, the income gap of rural residents among different regions has been relative large. As shown in Appendix D, the per capita amount of deposit of rural residents in the Pearl River Delta area had been approximately 4 to 5 times that of the western region and the northern mountainous area from 2005 to 2008. Moreover, it also needs to be pointed out that the income gap calculated by annual per capita disposable incomes of urban and rural residents do not reflect the welfare benefits for urban residents in daily consumption. Therefore, the measurement process may to an extent possess an artificial and spurious sense of precision and accuracy (Brymans, 2012, p. 178). The actual income gap between urban and rural residents in Guangdong Province may even be much larger.

5.6 The gap of consumption level between urban and rural residents

As Low (2011) quotes, income is what determines consumption. The enlargement

of the income gap between urban and rural residents reflects necessarily on the consumption level between urban and rural residents. Since Reform and Opening Up the consumption levels of both urban and rural residents in Guangdong Province have experienced an obvious increase, although the gap of consumption levels between urban and rural residents has been expanding.

As showed in Table 11 in the following page, the per capita consumption expenditure of urban residents increased from 485 CNY in 1980 to 20,251 CNY in 2011. Meanwhile, the per capita consumption expenditure of rural residents increased from 184 CNY in 1980 to 6,725 CNY in 2011. The ratio of consumption expenditure of urban residents to that of rural residents also increased from 2.18 to 3.19 in 2005 and 301 in 2011.

In terms of the Engel coefficient, urban residents in Guangdong Province had almost always been in a downward trend throughout the 31-year period while the Engel coefficient of rural residents in Guangdong Province had been fluctuating, especially in the periods of 1980 to 1985, 1989 to 1995, and 2002 to 2011. In 1990, the Engel coefficients of both urban and rural residents were 57.2 and 57.7 respectively with a fairly small gap. However, since that time, and during the 21 years period, the Engel coefficient of urban residents in Guangdong Province has managed to go down by 20 while that of rural residents decreased by just 8, which directly shows that the gap of consumption levels between urban and rural residents has been enlarging.

Table 11 Per Capita Consumption Expenditure and Engel Coefficient of both Urban and Rural Residents in Guangdong Province from 1980 to 2011

Year	Per Capita Consumption Expenditure of Urban Residents (CNY)	Engel Coefficient of Urban Residents	Per Capita Consumption Expenditure of Urban Residents (CNY)	Engel Coefficient of Rural Residents
1980	485	65.5	222	60.4
1981	517	65.8	266	59.3
1982	592	64.2	312	58.4
1983	660	64.5	328	60.3
1984	744	63.6	346	59.3
1985	889	58.3	388	60.4
1986	998	58.6	454	58.8
1987	1215	56.7	545	57.3
1988	1506	56.7	684	55.2
1989	1921	56.5	870	53.7
1990	1983	57.2	932	57.7
1991	2388	53.1	942	57.4
1992	2830	51.5	1060	54.0
1993	3777	48.9	1391	52.8
1994	5181	46.4	1882	55.6
1995	6253	48.0	2255	54.5
1996	6736	47.3	2584	51.6
1997	6853	46.0	2617	52.3
1998	7054	44.1	2683	51.1
1999	7517	40.6	2645	50.7
2000	8016	38.6	2646	49.8
2001	8099	38.1	2703	49.9
2002	8988	38.5	2825	47.6
2003	9636	37.2	2927	47.9
2004	10694	37.0	3240	48.8
2005	11809	36.1	3707	48.3
2006	12432	36.2	3885	48.6
2007	14336	35.3	4202	49.7
2008	15527	37.8	4872	49.0
2009	16857	36.9	5019	48.3
2010	18489	36.5	5515	47.7
2011	20251	36.9	6725	49.1

* Source: Guangdong Statistical Yearbook (2012)

6. Conclusion

Through the empirical analysis and findings, it is not hard to observe the urban-rural disparities in rural development in the urbanization process in Guangdong Province after Reform and Opening Up in six diverse aspects: the industrialization rate, industrial structure and employment structure, land resources, means of production, income level and consumption level. Some interpretations of my own from the findings are concluded below.

Since Reform and Opening Up, although Guangdong Province has obtained remarkable achievements in terms of urbanization, it is still obvious that there has been a deviation in the process of cognition for urbanization.

The local governments and policymakers in Guangdong Province seem to have regarded the development of agriculture and development of rural areas as a necessary process so as to “serve” the urbanization (Fu, 2008). In such situations, the development of agriculture and rural areas has been endowed more interpretation of the value as a tool. Some may even think that the ultimate aim of so called urbanization is to “digest” agriculture and rural areas, even “eliminate” agriculture and rural areas (Zhang & Shi, 2003). And this kind of thinking has given rise to the situation where industrialization and urbanization have been developed unitarily and biasedly, having ignored the transformation of traditional agriculture and the development of rural areas.

The phenomena of promoting industrialization and urbanization by sacrificing agriculture and rural areas, results in the excessive loss of agricultural resources, the increase of relative poverty of rural residents, and the enlarging gap between rural and urban areas. During the three decades after Reform and Opening Up, urbanization seems to have become “patents” of urban residents to a great extent. Farmers and rural areas have dedicated a great amount in the process, yet it is hard for them to share the achievements of urbanization. The imbalance that developed between urban and rural areas, the lagging behind of the binary structural transformation of urban and rural areas, and the fact that farmers, agriculture, and rural areas have become loopholes of modernization, become the essence of Three Rural Issues.

As far as the interpretations above are concerned, some points of policy implications are suggested as following. To begin with, it is suggested that urbanization strategies could be implemented in the frame of emphasizing the overall development of both urban and rural areas. Systems of household registration could be reformed from the original system involving segmentation of urban and rural residents.

A fairer labor force market, which can integrate both urban and rural labor forces and an employment system based on fairer competition, could be set up in

order to transfer agricultural surplus labor forces and turn “farmers” into “citizens.” This will essentially ameliorate the situation where agricultural scale of operations is too small and the growth of income level of rural residents is slow and unstable.

Moreover, it is also suggested to set up a long term system in which secondary industry puts primary industry in motion, it is critical that urban areas promote rural areas. The resources could be distributed and allocated more evenly and expand the range of public finance covering rural areas.

Besides, the agricultural infrastructures and construction of social undertaking could be strengthened so as to accelerate further the constructions of rural road networks, power grids, water conservancy, communication, as well as rural educational and cultural infrastructures. Also, a social security system which involves equally both rural and urban areas could be created as well.

Vitally, the land resources could be treated in the frame of the market economy. Endowment insurance systems that specifically ensure the social insurance of immigrant workers, and uniform subsistence allowances could be set up gradually.

Last but not least, the compulsory education and professional education in rural areas could be enhanced and promoted more in order to raise the quality of rural labor forces.

The empirical findings call for more attention to the implementation of a development strategy which treats rural and urban areas more fairly and values the significance of transformation of urban-rural dual systems in both Guangdong Province and China. Prospective research could concentrate more on the analysis of the mechanism behind the problems of rural areas and rural residents in Guangdong Province.

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Appendix A

Basic Statistics on City Public Utilities in China

Item	1990	1995	2000	2010	2011
Urban Area (sq.km)	1165970	1171698	878015	178691	183618
Area of Land Used for Urban Construction (sq.km)	11608	22064	22114	39758	41861
Coverage Rate of Urban Population with Access to Tap (%)	48.0	58.7	63.9	96.7	97.0
Coverage Rate of Urban Population with Access to Gas (%)	19.1	34.3	45.4	92.0	92.4
Per Capita Area of Parks and Green Land (sq.m)	1.8	2.5	3.7	11.2	11.8

* Source: China Statistical Yearbook (2012), 11-5.

Appendix B

Map and Locational Information of Guangdong Province



Appendix C

Average annual income of employees in different industries in Guangdong Province from 2004 to 2009 (CNY)

Industry	2004	2005	2006	2007	2008	2009
Farming, forestry, animal husbandry, and fishery	9894	10120	11113	11857	12905	14469
Mining industry	17642	24010	26705	31631	36224	41176
Manufacturing industry	17356	18518	20349	22547	25249	27578
Energy production and supply industry	31477	34029	37480	44382	48868	54496
Construction industry	15524	17322	19491	20867	22917	25509
Transport and logistics industry	29039	32369	34656	37774	42613	45631
Computer service industry	45150	48535	52641	57805	61210	61118
Wholesale and retail industry	21280	24172	26655	28013	32093	34418
Hotel and catering industry	16423	17659	18693	19369	20944	22542
Financial industry	37024	42644	53079	66906	78781	84721
Real estate	24049	25173	26380	28959	32450	34240
Business service industry	26947	24745	27023	30373	34755	38192
Scientific research and technological service industry	38121	40834	46668	52330	58143	61896
Environment and public facilities management industry	17649	19192	20299	23316	26081	28360
Other service industries	19635	19916	22512	24172	26982	27343
Education	22302	24228	26359	31396	34306	38205
Health and social welfare	28038	30507	33188	37788	42314	46609
Cultural, sports and entertainment industry	29918	32829	35485	38155	40962	44252
Public administration and NGO	29109	32898	34975	39796	44661	49837

* Source: Statistics Bureau of Guangdong Province (2010)

Appendix D

Total Amount of Deposit and Per Capita Amount of Deposit of Rural Residents in Different Regions of Guangdong Province from 2005 to 2008

Year		Nine Cities of Pearl River Delta	Four Cities of Eastern Region	Three Cities of Western Region	Five Cities of Mountainous Area	The Whole Province
2005	Total Amount of Deposit (100 million CNY)	16389.71	1515.65	1120.91	1241.49	20267.76
	Per capita Amount (CNY)	36044.00	9556.31	7547.55	7878.97	22044.57
2006	Total Amount of Deposit (100 million CNY)	18306.14	1706.61	1256.00	1408.42	22677.17
	Per capita Amount (CNY)	39117.19	10701.63	8396.28	8917.95	24254.31
2007	Total Amount of Deposit (100 million CNY)	18485.09	1723.71	1317.52	1486.98	23013.30
	Per capita Amount (CNY)	39122.21	10693.26	8661.06	9346.90	24355.28
2008	Total Amount of Deposit (100 million CNY)	22711.25	2124.88	1559.69	1785.38	28181.20
	Per capita Amount (CNY)	47595.02	13066.46	10131.74	11112.72	29527.66

* Calculated from Statistics Bureau of Guangdong Province (2010) and Guangdong Statistical Yearbook (2006 & 2011)

** Per Capita Amount of Deposit = (Total Amount of Deposit) / (Total Number of De Jure Population)