The Challenges of China’s Rapid Growth
-implications for future

Bachelor Thesis Finance
May 2011

Yi Zhang
S339850
Table of Contents

Executive Summary .......................................................... 5

1. Introduction ................................................................. 6

2. Literature Review ............................................................ 7

3. China’s contribution to the world ........................................... 9
   3.1 Facts ......................................................................... 9
   3.2 Enhanced worldwide economic growth .............................. 10
   3.3 Reduced worldwide poverty rate ...................................... 12

4. Cost of the Rapid Growth ..................................................... 13
   4.1 Air Pollution ............................................................. 14
   4.2 Water Shortage .......................................................... 15
   4.3 Water Pollution .......................................................... 16

5 China’ Future ................................................................. 16
   5.1 The Population Aging .................................................... 17
      5.1.1. Impact on the labor market ..................................... 18
      5.1.2. Impact on the government ..................................... 18
      5.1.3. Possible measures ............................................... 19
   5.2 Inflation ................................................................. 19
      5.2.1. Impact on economic development ............................ 20
      5.2.2. Possible measures to reduce level of inflation ............. 20
   5.3 Urban-Rural Differences .............................................. 21
      5.3.1. Possible measure to narrow the gap .......................... 22
5.4 Lack of resources.................................................................23

5.4.1 Possible measures..........................................................24

6. Conclusions and Implications.................................................24

7. Reference..............................................................................26
List of Figures and Tables

Figure 1 Environmental Kuznets Curve ........................................... 9
Figure 2 GDP growth in percentage .............................................. 10
Figure 3 Chinese imports of selected primary products ................... 11
Figure 4 World poverty level with and without China...................... 13
Figure 5 Seriousness of Air pollutions in China............................... 14
Figure 6 Share of worldwide water .............................................. 15
Figure 7 Seriousness of Water pollutions in China........................... 16
Figure 8 Consumer Price Inflation of China.................................. 20
Figure 9 Urban-Rural income gap.............................................. 21
Figure 10 Spending power in rural and urban area in China............ 22
Table 1 Population of over 60 Vs Total population in China.......... 17
Executive Summary

In order to assess the challenges of China’s rapid growth, this paper identifies the impacts of the rapid growth to the world as well as to China itself in terms of positive and negative influences. The amazingly high growth rate which has been fueling China’s rapid economic growth enhanced the worldwide economic growth, reduced the global poverty rate. On the other hand, the costs of the rapid growth are high, which are most reflected in the environmental problems. Whether the positive influences outweigh the negative influences, or the negative influences surpass the positive influences, it has already occurred in the past. People are not able to offsets those losses. What is much more important for China is that the implications of the rapid growth to its future social and economic development. Some policies used during the opening-up might not work at present, because the population is growing very fast, natural resources are exhausting along with other various changes have create limitations of the effectiveness of the old developmental strategies. China needs to overcome those difficulties and finds new strategies to maintain a sustainable growth.

This paper is going to assess the gains and losses from the China’s rapid growth since 1978, especially the analysis of the losses, in another word, the negative impacts that rapid growth has caused is quite useful for studying the possible future strategies, because of the theory “learn from the mistake”, Chinese government could get lessons from those losses and find a way to mitigate those bottlenecks of China’s future economic development and provide possible measures to control and improve the situation.

China has the largest population in the world; it is still in the progress of constantly changing. China’s role in the world economy becomes more and more important, the main purpose of this paper is to analyze those constrains and how to conquer and mitigate their impact, in the end come up with some suggestions for China’s future, In my point of view, this might also be vital for the world economic development.

**Key words:** Rapid growth, air pollution, water pollution, aging population, and resources
1. Introduction

Since the initiation of the economic reform and opening up to the outside world in 1978, China has entered into a rapid growth and the rate of growth has captured much attention of the entire world and continued as a miracle. Apart from the benefits for Chinese citizens, such as increased living standard and welfare, as a large country, China’s growth has also inevitably influenced the world economy in a positive way through, for instance, international trade. There are many literatures that have considered the sources of this rapid growth. For example, Chow(1993) and Siebert (2007) point that the gains were mainly from capital accumulation and export promotion policy. Rodrik(1995) suggests that the big gain was mainly in response to investment. Krugman(1994) claims China’s growth was based on the efficiency and productivity rather than the fast and intensive input growth. The first contribution of this paper is to filling this gap that imports is also a key factor to generate positive impact on the world economy, which little empirical evidence has shown. As we know that every coin has two sides, this may imply that the rapid growth in China also has negative impacts, for instance, uncontrolled waste of resources, environmental damage and shortage of various natural resources, etc. In order to provide a complete picture of China’s rapid growth, one should analyze the positive influences as well as the negative sides, which could be seen in various environmental problems in China. Lastly, opinions in literatures are various on China’s future, from optimism to pessimism. For instance, Murray (1998) points out China’s strong position and it is to be the next world leading nation. On the other hand, Gordon Chang (2001) proposes the future collapse of China. In this paper I would like to point out some remainders of the rapid growth which might be a big bottleneck for China’s future, such as waste, pollution and exhaustion of resources, aging problems, inflation and urban-rural differences etc. All these serious problems force China to adapt new strategic policies, since the present situation is so divergent to the 70’s and 80’s, therefore the old strategies used during the opening-up need to be replaced.

In the following sections, in order to lay out a clear picture and flow, I would like to include the positive and negative impacts of the rapid growth and its implication for China’s future into a same frame, which few researchers have done before. Section 2 provides the literature review on the rapid growth. Section 3 discusses the contributions of the growth. Section 4 exams the costs of the growth. More

---

5 Krugman,P.(1994). The myth of Asia’s miracle. Foreign Affairs,73(6),61-78
6 National Environmental Protection Agency (NEPA) 1996 Report on the State of the Environment (NEPA, Beijing, 1997)
importantly, Section 5 deals with the research question “How do the remaining problems left over from the rapid growth affect China’s future, what are the possible corresponding measures to weaken and control those challenges? Finally, Section 6 concludes.

2. Literature Review:
In the Heckscher-Ohlin trade model, only the biased development towards one sector could affect other economies, otherwise the growth in one country has no influence on the rest of the world, no matter how large the country is and how fast the growth rate. This theory points out the importance of biased growth as source of terms of trade gains to others which could be seen from the China’s rapid growth. Chris Bramall (2009) outlines and analyzed the economic development of China in the past 60 years. His book (Chinese Economic Development) addresses many broad aspect of the development, such as environment, literacy and mortality. He believes that the economic growth cannot be separated from the politics, education and culture. Bramall claims that the China’s Cultural Revolution (1960s) and late Maoism (1964-1978) are seen as a plan for growth. He also argues that the over three decades of rapid economic growth has come at a cost. In another words, China’s growth will not be sustainable.

According to Amiti and Freund (2008), China’s growth has been very biased, especially its international trade growth. In particular, China’s foreign trade patterns have risen by about 5 times since 1992, their composition has changed dramatically. According to the standpoint of Marx, the expansion of production promotes the growing market; in return, the growing market will stimulate the expansion of production simultaneously. Therefore, production and market affect each other continuously. This provides a foundation for economists to analyze China’s rapid growth, since China’s rapid growth could be seen as the expansion of production which contributes to the world market, and the growing world market provide further opportunity for China to grow.

Aghion&Howitt (2004)’s research shows that on the one hand, the liberalization of trade could enlarge the scope of labor market as well as the knowledge spillovers, which are conducive to economic growth, on the other hand, it intensified the market competition and thus has a negative impact on economic growth. Due to this existence of contradiction, many researchers have focused on studying the contribution of technology spillover to the economic growth. Among them, Frankel

---

10 Chris Bramall, 2009, Chinese Economic Growth, Page 23-28
12 Aghion,P., and Howitt,P., Theory of Domestic Growth. Published in Beijing,Translated by Tao Ran etc.2004.Page 320-359
Romer (1999) and Coe & Helpman (1995) have done a significant number of researches regarding the relationship between trade liberalization and economic growth, the result of the major data analysis shows a positive correlation. Furthermore, they approved the fact that trade could stimulate the technology innovation and improvement, the import of intermediate goods is one example. However, there are lots of accusations. Critics claim that the measurement indicators for trade barriers are highly related to the factors that cause negative impacts on the economy; in addition the extent of opening-up is difficult to measure across countries, because of the lack of uniform measure standard, which might cause a large error in the analysis.

Edwards (1992) found the positive relationship between the trade open-up and the economic growth. Later on Harrison (1996) used the ratio of foreign trade to test this relationship, he got the same conclusion as Edward.

During the 90s, the emission of Carbon dioxide, nitrogen oxides, sulfur dioxide, methane and others hazardous substances has caused serious environmental problems. This raises again the discussion of environmental sustainability concerns and its impact on economy. EKC (Environmental Kuznets curve) - at the low income level, the growth of income per capita will eventually aggravate the pollution. Oppositely, at high income level, the growth of income will decrease the level of pollution. EKC was found by US economists Gene Grossman and Alan Krueger in 1991. They have studied the change patterns of 14 kinds of air and water pollution substances in 66 different countries over the time of 12 years. They found that there is an inverted U relationship between the change pattern of pollutants and the change of national income per capita, which means the degree of pollution increases along with the rise in income, then decreases. (figure 1)

15 Aghion, P., and Howitt, P., Theory of Domestic Growth. Published in Beijing, Translated by Tao Ran etc.2004.Page 320-359
17 Harrison, A., Openness and growth,a time-series,cross-country analysis for developing countries, Journal of Development Economics, 1996,415-448
Theodore Panayotou(2000) at Harvard University studied the relationship between economic growth and environment. He used the index of pollutants emission per capita instead of the intensity of pollutants, and further takes the population factors into account. Through the observations of per capita emission of sulfur dioxide, nitrogen oxides from 54 countries, he confirmed the inverted U relationship by Crossman and Krueger.  

3. China’s contribution to the world

3.1 Facts

Economic growth is the increase gross domestic product (GDP) per capita, or other measures of aggregate income, for example, annual rate of change in real GDP. According to official data, over the past 25 years since the beginning of the economic reform, significant changes have taken place and China has explored substantial progress in developing its national economy, with an average gross domestic product (GDP) growth rate of 9.37 percent per year. Many investigators are speculating that China continues to sustain growth and it is expected to exceed the GDP of the United State in the next few years. Although some researchers claim that the official date may overestimate China’s real rate of growth, there is also evidence that the true rate might be underestimated. However, what is undeniable is that China’s economy has been transformed from a very poor and economically weak country to the world’s second largest economy and the fastest growing economy.

---

21 Panayotou, T Economic Growth and the environment Working Paper Center for International Development at Harvard University,2000
24 Calculated from NBSC, assuming China’s growth rate continues to exceed US growth rate by 8%
25 IMF,2010 and The World Factbook 2011
National Bureau of Statistics showed that by 2006, the contribution rate (ratio of national GDP growth with the world's GDP growth) of China's economy to the world economy has risen to 14.5%, followed by the United States (22.8%), 1.4 percentage points higher than the euro zone, and 6.7 percentage points higher than Japan. Compare to the rate in 1978, when the United States with a rate of 35%, Japan and euro zone with 15.9% and 13.6% respectively. China had only 2.3%.  

![Figure 2: GDP growth in percentage](image)

Source: IMF, World Economic Outlook Database, April 2005

China's growth achievements, on the one hand benefits from the gradual reform and opening-up, the other hand, from the rapid development of economic globalization in the 90s. China’s growth is a continuous progress of integrating into the global economic system. Because of this integration, China obtained an hard-won opportunity to grow, in turn, with China’s increasing significance, the world economic system is broadly influenced by the largest developing country.

### 3.2 Enhanced the worldwide economic growth

First of all, China’s rapid economic growth provides a large market for the entire world. Recently, due to the steady economic growth, Chinese domestic demand is vigorous. Annual Chinese imports account for 1/20 of the total global imports. From January to October of 2010, China’s import was US$1122.82 billion, with a year-on-year growth of 40.5%.

---

27 IMF, World Economic Outlook Database, April 2005, continues  
28 Tian Guoqiang, China’s reform of public enterprises and the transformation of economic system, Economic Research, 1994, pp.2-11  
29 China's Economic Data, published on 12-11-2010
China’s huge amount of import has created a significant number of employment opportunities. In 2002, China’s import from the United State was US $272 trillion; this has directly created 500,000 and 1,500,000 jobs indirectly in the United State. With the substantial increase in the size of China’s economy, its domestic purchasing power continued to rise which provides tremendous demand for the commodities all over the world. China’s annual imports are in an increasing scale and its proportion in the total world imports is also rising. It is estimated by researchers that by 2020, China’s share of total world import will increase to 9.19%.  

Secondly, China’s inexpensive commodity and high quality services foster the overall supply and demand, which has benefited the global consumers. Since the 90s of the 20th century, economic globalization and the technological revolution have stimulated the shift of international industries into China, with its rapid economic growth, rich and cheap labor resources and the fast growing consumer market has become the ideal place for many industries, especially those developed countries to transfer their industries. This further led to a new international industrial layout: by moving their industries into China, the traditional industries in developed countries disappear gradually. China is now as the representative of the Asian developing countries accounted for the major share of the production and export.

---

30 BP and Chinese Ministry of Commerce
Thirdly, the transfer of industry to China led to the reallocation of international industries, created a new pattern of production and exchange. As different from the past, this transfer of industries was mainly through the transfer of factors. Specifically, under the condition of economic globalization, the free flow of factors contributed to the congestion of factors in a certain country and this could lead to a formation of manufacturing countries and consuming countries. Manufacturing countries hold the production factors, they produce and export, oppositely, consuming countries provide those production factors to manufacturing countries, they consume and import. As a result, the fact that producing all goods by using their own factors is replaced by producing goods by using factors which they are abundant in, and transfer other productions with scared factors to other nations where the factors are relatively concentrated.\textsuperscript{33}

Lastly, the world economic growth needs consumption and investment. China's growth created a huge space for factor investment and goods consumption. More importantly, China's large population, relatively low level of development, and the large number spare production factor framed a world’s investment opportunity. Its sustainable growth attracted more investments of external production factors. Developed countries hold great amount of capital, technology, managerial skills and marketing channel, but cheap land and labor are their scare resources. China is exactly the ideal base of stable production process and investment environment for high return. China has provided a significant number of investments opportunity to the world, simultaneously, it has thus become the most important driving force for the world economic growth. It is worth mentioning that China’s growth in economic scale and efficiency, in domestic purchasing power have attracted foreign investment, in return, the more foreign inputs encourage China to further expand their economic scale and purchasing power. This positive circulation mutually drives the world economic growth.\textsuperscript{34}

\subsection*{3.3 Reduced the worldwide poverty rate}

Since the more than 20 years of reform, China has made a great contribution on reducing the poverty and furthermore reverse the global trend of continue rising poverty rate. During the reform period, poverty population in rural areas decreased from 0.25 billion in the year 1978 to 29 million in the year 2003, its proportion to overall rural population decreased from 31.6\% to 3.1\%.\textsuperscript{35} This indicates that China, which has the world’s largest population as well as the largest poor population, has been made unprecedented achievements on poverty reduction. According to World Bank estimates, during 1980-1990, China has reduced 0.167 billion of poor people, during the same period, the total global poverty reduction (exclude China) was 983 million. China’s contribution to the poverty reduction was almost 167\%. During 1990-1999, China’s contribution is 122.8\% (poverty reduced by 0.115 billion). The

\begin{thebibliography}{99}
\bibitem{34} Zhao lihong, Tan Shizhong, published on People’s Daily 28.03.2003
\end{thebibliography}
37 World Bank Development Indicators 2008
}

**Figure 4**  
World poverty level overtime  
with China  
without China

Source: World Bank Development Indicators 2008\footnote{http://economicdiscipleship.wordpress.com/2010/10/07/a-bit-of-encouraging-news/}

The figure above shows the poverty level in the world across time. The clear comparison shows that the poverty reduction in the last few decades almost exclusively comes from China.\footnote{Pan Yue, “Thinking over China’s Environmental Matters”, Speech on the First Working Meeting of National Environmental Policy and Law, Dec.12, 2006.}

4. Costs of the rapid growth

Over the past two decades, China has experienced average annual growth rate of GDP which is 2-3 times that of developed countries. To a large extent, it has contributed to the worldwide economy as well as the living standard of millions of China’s citizens. But the consequences left behind the rapid economic growth have also come at the expense of various acute environmental problems: the unit energy consumption is 8-10 times that of developed countries, pollution is 30 times that of developed countries.\footnote{Wang Yuqing, “Environment Situation and Countermeasures in China”, report on seminar in Heilongjiang.} Many environmental experts have claimed that China's economic miracle will end soon because the environment cannot keep up the pace of development. Due to the tension of rapid growth, one-third of the land in China has suffered an attack of acid rain, half the water in seven major rivers is completely useless, a quarter of the residents have no clean drinking water, one third of the urban population have to breathe polluted air.\footnote{http://economicdiscipleship.wordpress.com/2010/10/07/a-bit-of-encouraging-news/} Those losses could threaten China’s public heath and long-term
prosperity. It could be concluded that China’s local environmental problems are proportional to the economic growth.

**4.1 Air pollution, urbanization**

Due to the rapid growth, China has suffered serious environmental and ecological destruction, the damage is significant. The negative impact of environmental issues on China’s economy is predicted to cause eight percent drain on the GDP. Air pollution has become one of the most visible environmental problems and also a vital issue for health, according to World Bank, the ambient and indoor air pollution is the major cause of premature deaths, the health damage accounted for 7.1 percent of the national income.\(^{41}\) China host 20 of the world’s 30 most polluted cities.\(^{42}\) According to Chinese government sources, about a fifth of urban Chinese breath heavily polluted air. Only a third of the 340 Chinese cities that are monitored meet China’s minimum pollution standards.\(^{43}\)

![Figure 5: Seriousness of Air pollutions in China](http://www.gallup.com/poll/15034/environment-pays-price-chinas-economic-boom.aspx)

The causes of those environmental problems in China can be directly and indirectly related to the boost in international trade and urbanization. The majority of the air pollution in China is generated by the burning of coal to generate electric power. Together with the high volume production of chemicals, rubber and leather tanneries, and the quantity of burned coal is more than Europe, Japan and the United States combined.\(^{45}\) Due to the fact that the massive reliance on coal combustion without adequate and proper control, the number of cities suffer from SO2 concentrations and acid rain has been steadily increasing.\(^{46}\)

Following the reform and opening up policy, urbanization in China is continually

---

\(^{41}\) The Great Wall of Waste’, The Economist, 19 August 2004, 2

\(^{42}\) The World Bank, China Quick Facts, 2007

\(^{43}\) Gallup Poll China, Raksha Arora 2005

\(^{44}\) Energy Information Administration, Coal, 2006 http://www.eia.doe.gov/emeu/cabs/China/Coal.html

rising. By the end of 2009, China’s total population was 1.334 billion, with 622 million residing in the urban areas, which is 46.6 percent of the total population. One of the reasons driving for the large urban population is that urban area provides much more employment possibilities. Large numbers of villagers migrate to the cities to search for jobs and higher standard of living.

4.2 Water shortage

Water is one of the most important natural resources; it is the most basic need to maintain out lives as well as very valuable national asset. Water shortage in China has been seriously limited the development of agriculture and people's living standard. Since the 80’s, the areas of farmland that suffer from drought have increased substantially. It is reported that the drought in 1998-1999 was the largest during the 90’s. In addition, the arable area in the north is count for 40% of the total, but there is only 6.5% of the water resources available for those land.

Water consumption in China has been increasing steadily along with its increasing population and demand for higher standard of living, water availability per capita thus is on decrease. According to the World Bank forecast, China has only a per-capita share of 2700 cubic meters per annum which is equivalent to one quarter of the world's average and among the lowest for a major country; there are 666 cities in 600 cities lack water supply. With one fifth of the world population, China only shares 7 percent of its water. Such a serious water shortage problem is mainly caused by the over-use of massive urbanization and industrialization, increasing construction and infrastructure development along with the rapid growth and large population.

Figure 6:  Share of worldwide water

Source: Patash Corp, FAO

---

47 The World Factbook 2011
49 www.ied.edu.hk/esdweb/aids/water.ppt
50 Patash Corp, FAO
4.3 Water pollution

China is now facing acute environmental problems after the rapid growth; water pollution is one of them. Although China has implemented many policy measures to control water pollution, it has not yet been contained effectively on the whole. The main sources of water pollution are: industrial (chemical, organic, and thermal wastes), municipal (largely sewage consisting of human wastes, other organic wastes, and detergents), and agricultural (animal wastes, pesticides, and fertilizers). Use the year 2004 as an example, the green national accounting study led by SEPA reported that, the total cost of environmental pollution was 511 billion RMB (US $ 62 billion), this is equivalent to 3.05% of the total China’s GDP. Currently, 90% of the rivers flowing through cities are polluted. More than 20,000 natural lakes of which 75% are subject to different levels of pollution.

Figure 7: Seriousness of Water pollutions in China

Source: Gallup Poll China, Raksha Arora 2005

5. China’s future

In the world’s history, a nation with the leading economic driving force would always appear in a certain time period. For instance, the United Kingdom in the 18th and 19th century, the United State in the 20th century, and Germany and Japan in the 50s of 20th century. After entering the 21st century, those mentioned countries have already become a mature economic system, their growth rate have slowed down relatively. Whether China is able to play the role of the global economic leading force is highly dependent on China’s future economic development. According to economic experts, China has maintained economic growth of 9.7% for 28 years. China is very likely to continue to maintain an annual growth rate of 9%, for 20 years. Because in order to forecast the economic growth of a certain country, we need to assess the country’s
production input factors which mainly include land, capital and labor. If those factors could increase simultaneously, that makes the further growth more likely to occur. First of all, the land in China is relatively fixed; therefore to increase the area of land is not possible. Secondly, the increase of labor force is restricted by the increase in population. Because there is no big difference in growth of population among nations, thus the rise in labor will not play a significant role. In sum, to determine China’s future economic development, the increase in nationwide capital is the key factor. But only increasing the capital is not sufficient, if there is no improvement in the technology, the benefits which are generated by accumulated capital will diminish.

**Limitations on the long term sustainable development:**

Since 30 years of reform and opening up, China has maintained a trend of rapid growth in overall comprehensive national strength and people's living standards. But as the world's largest developing country, China is now in a crucial period of economic structure change, which requires a more harmonious relationship between growth rate and effectiveness. Based on this, a question has been raised: Is the rapid growth sustainable? To answer this question, we need to understand the overall situation in China, thus come out with the limitations and corresponding measures.

**5.1 The Population Aging**

The so-called population aging is defined as if the population of over 60 and 65 exceed 10% and 7% of the total population respectively. In 2009, China's elderly population aged 60 and above has reached 1.6714 million, which is 12.5% of the total population. China has already become one of the nations with aging population, and this proportion increases every year. Clearly, it will have a series of impacts on China’s future social and economic development, the aging population is now a big challenge. The following table shows China’s expected aging population in the next few decades.

**Table 1: Population of over 60 Vs. Total population in China**

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Population (in billion)</th>
<th>Population of over 60(in billion)</th>
<th>Percentage of over 60 in total population (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>1.373</td>
<td>0.652</td>
<td>12.03</td>
</tr>
<tr>
<td>2015</td>
<td>1.414</td>
<td>0.202</td>
<td>14.29</td>
</tr>
<tr>
<td>2020</td>
<td>1.447</td>
<td>0.231</td>
<td>15.98</td>
</tr>
<tr>
<td>2025</td>
<td>1.474</td>
<td>0.236</td>
<td>18.51</td>
</tr>
<tr>
<td>2030</td>
<td>1.492</td>
<td>0.325</td>
<td>21.78</td>
</tr>
<tr>
<td>2035</td>
<td>1.500</td>
<td>0.372</td>
<td>24.13</td>
</tr>
<tr>
<td>2040</td>
<td>1.497</td>
<td>0.371</td>
<td>24.78</td>
</tr>
<tr>
<td>2045</td>
<td>1.485</td>
<td>0.374</td>
<td>25.16</td>
</tr>
<tr>
<td>2050</td>
<td>1.542</td>
<td>0.405</td>
<td>26.24</td>
</tr>
</tbody>
</table>

Source: “Study of population aging in China” Yu Xuejun, 1995

---

56 “Study of population aging in China” Yu Xuejun,1995
Aging of population is not a temporary or accidental phenomenon; it is along with the development of society and economy, raise in the level of education, improvement of technological progress and the medical care conditions. The emergence of the aging population is mainly due to the decline in mortality rate and fertility rate. These two trends are inevitable from the social and economic growth. It is because, firstly, when a nation develops, its social productivity improves, material supplies and nutrition are enriched, the standard of Medicare rises, as a consequence, the mortality rate falls and people’s average life expectancy extends, thus, aging population increases. Secondly, with the rise in educational level, people’s changes in lifestyle result in a fall of birth rate. China, together with the “one child policy”, the birth rate has dropped sharply. In general, the faster decline in the birth rate, the faster increase in the aging of population.

Population Aging and the economic development are interactive. Economic development affects population aging through birth rate, mortality rate and the degree of rural-urban migration and other population related factors. Population aging is the change in proportion of different age groups, therefore, it has a holistic impact on the economic growth.

5.1.1. Impact on the labor market

First of all, population aging will lead to a lower labor force participation rate, thus high labor shortage. The most direct impact of aging on economy is the level of labor supply. According to human beings’ life cycle, as people enter senior stage, their intelligence and physical strength will decline, the labor force participation will drop accordingly. Secondly, population aging will make the labor force relative elder, their mobility is weak, cost of retraining is high, capability to adapt innovation, new technology and knowledge is slow. All those factors exacerbate the labor shortage eventually. Furthermore; it might lead to an uneven allocation of labor resource, thus reduces labor productivity and affect the pace of growth.

5.1.2. Impact on Government

Aging of population has increased the demand for pension and social security, which is a heavy financial burden on China’s national income, the possible decrease in saving rate and investment rate will slow down the economic development. With the change in age structure, the amount of retirees is expanding, which led to a sharp rise in need of pensions, social insurance, social services and so on. From 1979 to 2004, the total cost of social insurance, pension and other type of welfares for retired workers raised from 3.25 billion RMB (1 RMB ≈ 0.12 USD) to 350.2 billion RMB. According to statistics, in 2020, the expected national spending on retirees’ welfare will reach 1064.3 billion RMB, which is approximately 327 times higher than

57 http://qnlb.gzrenkou.gov.cn/Info.aspx?ModelId=1&Id=8405
58 http://lib.bgu.edu.cn/websql/getbook.asp?bkid=2000286
China’s GDP of 1979 and expected GDP of 2020 are approximately 407.4 billion RMB and 47369 billion RMB respectively.\(^59\) Obviously, this growth rate is significantly lower than the growth rate of retirees’ welfare over the same period.

### 5.1.3. Possible measures

Improve the utilization of labor resources. Whether a nation’s labor resource could be maximized is depending on the level of employment. In pace with the increased products quality standards of both foreign and China’s domestic market, manufactures adopt advanced technology and skills, meanwhile they also raise the standard of labor skills. Therefore, the investment in labor skills, accumulation of human capital and the emphasis on product quality could prevent shortage of labor.

Create environment and policies that in favor of development of aging population. For example, lifelong education system and exploring management of education network or senior people. Aiming at improving their ability to update their knowledge and adapt new technology quickly, creating favorable conditions for participating in the labor market.

### 5.2 Inflation

In terms of price stability, China is facing the rising commodity prices which cause inflation. After reform and opening up, China's price level has experienced cyclical fluctuations. The imbalance in international payments has lead to the ever-expanding foreign exchange reserves. China’s foreign exchange reserves have been ranked the first position in the world with 2.8 trillion US dollars by the end of 2010.\(^60\) China's inflation in 2010 is mainly due to its economic policy in 2009, in order to ease the international economic crisis and its impact to the Chinese economy, China has implemented extended economic policy. The extremely loose monetary policy and the investment plan of expanding domestic demand led to a increase of broad money supply by 27.7%, this number far exceeds what monetary authorities’ target, namely 17%.\(^61\) The growth in money supply on the market will not only cause inflation, but also various economic bubbles.

The following figure of Consumer Price Inflation shows that China is suffering from a big pressure of increase in price.

---

\(^{59}\) [http://www.huanghun.com/laonianrenxinwen/201102228889.html](http://www.huanghun.com/laonianrenxinwen/201102228889.html)


5.2.1 Impact on economic development

Firstly, as we know, the most obvious characteristic of inflation is the substantial increase in price. This increase is not triggered by the real increase in demand, it is because producers’ speculative action or consumers’ fear of further increase in price. Since nobody could have the complete information of the market, this uncertainty is likely to boost more investment and blind consumption. As a consequence, the whole industry chain and the corresponding industrial structure will be negatively affected, eventually lose the economic balance and even vicious spiral.

Secondly, in the labor market, wages are often determined by the contract that is signed in advance, which means that the rise in wages always tends to be slower than the rise in price. Therefore, when inflation occurs, without the increase in wages, workers’ real purchasing power has declined, thus, resulting in a decline in their living standards.

Lastly, the inflation makes China’s exports more expensive. Exports is China’s main force that support the economic growth, if exports become less competitive, this will definitely restrict future development.

5.2.2 Possible measures to reduce level of inflation

Controlling inflation should be considered from both macro and micro aspects. On the macro aspect, the combination of fiscal and monetary is required, for instance, through the price control of energy, real estate, agricultural products as well as other fields. On the micro aspect, the market competitions and the development of private

enterprises are important to make the price relatively stable. Enterprise reform might also useful to cut down the business costs.

Monetary policy is not only one of the most important and basic macroeconomic policies, but also an important means of controlling inflation. There are mainly two approaches to achieve the control of inflation: firstly, by reducing the growth rate of money supply to inhibit the aggregate demand; secondly, by increasing the interest rates to restrain demand of investment and stimulate savings. Thus, in order to balance the aggregate demand and supply. China's central bank has introduced and should continue with the method of reducing currency in circulation in order to boost the demand for money, therefore reduce the inflation pressures. Meanwhile, increase the interest rate which leads to reduction in the amount of loans, thereby, narrow the scale of investment, balance out saving and investment, and eliminate the gap of demand and supply, thus achieving the purpose of preventing inflation.

5.3 Urban-Rural Differences:

The income disparity between urban and rural residents in China is very large. For most of the countries, the income gap ratio is below 1.5:1. As we can see from the figure, China’s income gap ratio has exceeded 3:1 for many years.

Figure 9: Urban-Rural income gap

![Urban-Rural income gap graph](image)

Source: National Bureau of Statistics in China

Such wide urban-rural difference could have adverse effects on China’s future economic development. The wide income gap enhanced wide gap in purchasing power between urban and rural, low spending power of rural residents could lead to insufficient domestic demand. Consumption, investment and net exports are the main engine of economic growth. Past experiences show that the consumption often makes the largest contribution on the economy, this contribution also indirectly measure the

---

63 National Bureau of Statistics in China
extent to which economic growth improves people’s welfare. According to Statistics, an average 1% of increase in people’s consumption power will lead to a 0.755% increase in GDP. As rural residents have much tightening consumption, this is no conducive to domestic demand expansion and thus the economic growth.

**Figure 10: Spending power in rural and urban area in China**

![Spending power in rural and urban area in China](source)

The above figure shows a big consumption gap between China’s urban and rural area in a particular year. With the similar population proportion (half and half). The food consumption in the urban area is 2-3 times higher than in rural area. This fact indicates that the current lack of domestic demand is derived from the limitation of consumption by rural people. There are several possible reasons, firstly, unlike other industries, agriculture generally has low labor productivity, high natural risks, and furthermore, it cannot adjust quickly with the change in demand. In addition, the long standing trend of widening income disparity has a direct impact on the enthusiasm of farmers, reduce their productivity on the agriculture sector, which against the economic growth.

**5.3.1 Possible measure to narrow the gap**

Firstly, there is a need to create a fair competitive environment. In order to provide a market of fair competition, one needs to gradually abolish the system that create unequal opportunities, such as monopoly, establish fair income distribution and eliminate discrimination. Additionally, government should strengthen the supervision

---


and adjustment of high income, provide more employment opportunities for low-income groups in rural areas.

Secondly, to improve the quality of the rural labor force, past experiences show that the development of labor force quality and the level of education are the determinants of economic return as well as the fundamental elements of narrowing the income gap between urban and rural residents. Along with the promotion of basic schooling, government need to invest more in the vocational education in the rural area, to train more high quality labor force and professions. Thus, attract urban workers to cooperate and contribute to the countryside.

5.4 Lack of resources

China is lacking natural resources. Basically, there are two sorts of natural resources, renewable and non-renewable resources.  Non-renewable resources is declining in pace with the economic development. If people can not develop a good recycling system or invent alternatives, they will eventually run out. This exhaust would be accelerated by the irrational exploitation and utilization of resources along with the evocable ecological imbalance, lead to shortage of natural resources that support the economic growth in China.

Forest, people’s over-harvesting lead to destruction of forest regeneration. In recent years, the volume of China's largest state forest has almost reduced by half. The average annual reduction of forest land is approximately 110 million cubic meters.  Construction and farming have further occupied large areas of forest land.

Land, due to excessive and inappropriate reclamation, vegetation was destructed; soil erosion area has reached 160.3 square kilometers, compare with the 50’s, the increase is about 30%. Decertified land area has reached 358,000 square kilometers. In northwest plateau and other inland plains, soil salinization make up 700 million hectares, which account for 15% of the total arable land in the northwest inland regions.

The fact that environmental balance restricts China's economic development is also reflected in human health and living conditions. This is because the environmental damage causes less and less resources for survival. Currently more than 300 cities (out of 500) in China are short in water. Some places are suffered from severely damaged ecological balance; therefore people there could not get rid of poverty. In addition, environmental pollutions damage people's health. In China, 30% of the respiratory diseases are due to air pollution and heavy metal pollution. People’s health,

66 http://www.hudong.com/wiki/%E8%87%AA%E7%84%B6%E5%85%B7%E6%9C%89
survival and reproduction are threatened; it would naturally restrict the economic growth.69

5.4.1 Possible measures

Cyclic economy is a highly efficient system that use of resources and recycling as the core, low consumption, low emission, high efficiency as the basic features, which is consistent with the concept of sustainable economic development.70 Through this, China could utilize its resources more effective and meanwhile protect the environment, finally achieve the objective of minimizing resource consumption and environmental costs, attain the greatest possible economic and social benefits, so that the economic system and natural ecosystems could develop harmoniously.

Developing cyclic economy is the fundamental way out to ease China’s resources bottleneck. Although China has a huge amount of resources, but due to the large population, per capita amount is quite low. Some of the major mineral resources become more and more difficult to mine, the rising cost in mining makes the resources supply quite grim. Since reform and opening up, China utilized the doubling of the resource to support the quadrupled growth in GDP. But this is not possible any more. Even if China wants to double the GDP, there is no sufficient resource to support it. If China continues following the traditional model of development, namely consume large quantities of resources to achieve industrialization and modernization, it is very difficult to make any development. To alleviate the pressure of economic growth on resource supply, China has to adapt the model of cyclic economy.

6. Conclusions and Implications

Thirty-three years ago, China initiated the process of “opening-up and reform”. Its continued high rate of economic growth in the past few decades has been very impressive and attracted worldwide attention, the rapid growth of annual of average 9.4% could be seen as an ideal model to the rest of the world. The success of China’s economic growth is attributed to many factors, from the perspective of input factors, rich labor resources, abundant natural resources and species and vast land area. In short, they are population, resources and environment. Those are the fundamental factors to maintain China’s rapid growth. As a nation with large population, high consumption of resources and pollution, under a certain condition, those factors supporting China’s growth to some extent could also restrict the growth. A brief introduction of these adverse conditions includes population aging, inflation, urban-rural gap and lack of resources.

Simultaneously , the tremendous achievements on exports push China to face some difficulties during the development, especially under the influence of the recent global financial crisis, China’s exports has been so dependent on the foreign needs, which

---

means China’s domestic economic growth is highly related to the world economy. The traditional development model caused a huge depletion of natural resources, serious environmental pollution, to large extent, as mentioned before, hindered the sustained economic development. Additionally, the long term focus on developing exports, thus neglect the growth of domestic market makes the rapid growth even more biased. All these in combination will build a bottleneck for China to maintain its sustainable growth in the future. In order to solve the above problems, at least help to mitigate the seriousness and promote a healthy development path, China need to choose an appropriate strategy to achieve the sustainable development.

In the end, I would like to refer to the word “sustainable development”, it includes three aspects: economy, environment and society. From the aspect of economy, China needs to have continuous and adequate productions to fulfill consumers’ wants and needs; Chinese government needs to ensure a stabilized environment for industry and agriculture production. From the aspect of environment, China needs to construct a stable resources foundation, avoid the over-exploitation of both renewable and non-renewable resources, and create a sustainable ecological system. Lastly, from the aspect of society, China needs to provide effective services, including education, medical treatment and other political right and obligations, etc.

Sustainable economic development is a global issue, although in the past time, many nations have made lots contributions and achievements in the sustainable economic development. However, due to the complex contradictions in the interests of developments, the practical implementation is still very difficult to achieve. The global ecological crisis has not yet been suppressed. Thus, I think the implications for China’s future growth might also worth considering for the rest of the world.

---

References:

24. Calculated from NBSC, assuming China’s growth rate continues to exceed US’s by 8%
25. IMF, 2010 and The World Factbook 2011
27. Tian Guoqiang, China’s reform of public enterprises and the transformation of economic system, Economic Research, 1994, pp. 2-11
28. IMF, World Economic Outlook Database, April 2005, continues
29. China’s Economic Data, published on 12-11-2010
30. BP and Chinese Ministry of Commerce
34. Zhao lihong, Tan Shizhong, published on People’s Daily 28.03.2003
37. World Bank Development Indicators 2008
42. ‘The Great Wall of Waster’, The Economist, 19 August 2004, 2
43. The World Bank, China Quick Facts, 2007
47. The World Factbook 2011
56. “Study of population aging in China” Yu Xuejun, 1995
60. Business Climate Overview, 2011
62. IMF
   http://www.tutor2u.net/blog/index.php/economics/comments/chinas-inflation-problem
63. National Bureau of Statistics in China
65. Gallup Poll China, Raksha Arora 2005
66. http://www.hudong.com/wiki/%E8%87%AA%E7%84%B6%E8%B5%84%E6%A%90
67. Wang Chunfeng, Beijing