Economic Growth and Middle Income Trap: An international comparative research based on field survey

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Introduction

1. Imagery of Middle Income Trap and its fundamental reason

For the concept of the middle-income trap, its proposition, definition, connotations and so on, see Chapter 1. In short, the middle-income trap is not a very rigorous academic concept, but refers to a kind of objective phenomenon. When the economic growth and per capita income of countries reach the middle-income level, many of them remain stagnant; the typical case is the Latin American countries. Therefore the middle-income trap is also called the "Latin American disease". Of course there are economies which have crossed the growth trap stage smoothly. The typical case is Korea and Taiwan.

Figure 1 shows the most typical case for economies in the world. From the figure we can see that the growth of Korea and Taiwan continued to increase, and obviously they changed from low-income countries into middle-income countries successfully, then crossed the middle-income trap smoothly, and entered into the ranks of high-income countries. In contrast, Brazil, South Africa and Philippines which once were considered by the world as countries with a lot of potentials bogged down in the middle-income trap inextricably due to various reasons for a long time. Brazil's per capita income was US$ 1400 in 1965 and its economy grew 9% annually for more than ten years. After the per capita reached US$ 4600 in 1979, the growth ceased abruptly. By 2005, the per capita income is only US$ 5000; meanwhile the annual growth rate for 1979-2005 was only 0.3%.

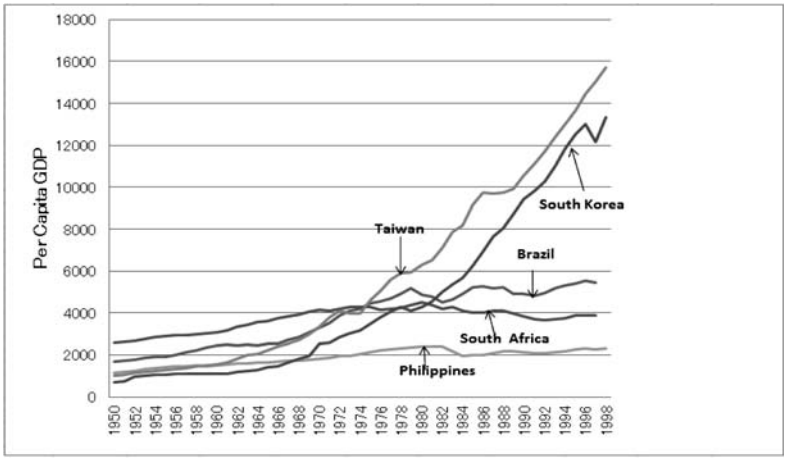
Why did so many promising economies bog down into the middle-income trap inextricably at the end? Why have economies such as South Korea, Taiwan which have small territories and scant natural resources performed

extraordinarily？ On the surface, the causes of the middle-income trap vary, for example, the disorder in the economic and social transformation, the gap between rich and poor, the defects of the financial system and capital market, disappearance of population bonus, and social unrest. In fact, each country has its own shortcomings and difficulties. The above examples are the phenomenon rather than the cause of the middle-income trap. What is the root cause？

When the World Bank praised the East Asian miracle, Krugman did not regard it as right. He pointed out that the East Asian miracle is not a miracle, but just a growth that relies on a large number of inputs of capital and labor. It is similar to the Soviet Union's growth model that is not sustainable and will collapse eventually. Although his prediction is not accurate, Krugman's hypothesis is economically reasonable.

The economic operation model of an economy which depicts change from the rank of the original low-income country into the rank of middle-income

Figure 1. **Levels of Per Capita GDP in** 5 **countries**, 1950-99
(1990 **international Geary-Khakis, US$**)



Source: Angus Maddison, The World Economy: A Millennial Perspective (Development Centre Studies), OECD (June 12, 2001)

country successfully may not be suitable for leaping from middle-income to high-income level. When the marginal benefit of labor and capital begin to decline a great deal, the contribution of innovation of knowledge and technology to economic growth will improve a lot. Various case analysis and studies have proven that total factor productivity (TFP) is the key point to successfully move across the middle income trap (see Chapter 1).

2. China's economic growth: Yifu Lin's optimism and Krugman's 2 prophecies

So far, China has made remarkable achievements. Although in the past 30 years, China has crossed the poverty trap, but we cannot guarantee that it will succeed again in crossing the middle-income trap. We presented this question based on the following two-point argument.

1) In the first chapter I will elaborate that the original motivating factors of economic growth are labor, capital, technology and system. Entering into the middle-income stage, disappearance of population bonus and decreasing effect of capital gains have gradually become prominent and growth momentum began to shift relying on technology and system. But now China just lacks these two strengths.

2) Regardless of resources and environmental problems, currently in China, the trouble is that it is at an awkward stage of losing its competitive advantage. That is to say, on one hand, the World Factory is now gradually losing the advantage of low cost due to the rapidly increasing labor cost. On the other hand, there is a considerable gap between China and the developed countries in the field of high value added products.

As to whether China can cross the middle income trap or not, the key point is to see whether it can further exploit its comparative advantages and deepen reform, especially reform of the system (see Chapter 1).

2-1 Representative of China's economic optimism: Professor Lin, Justin Yifu

Discussion on the trend of China's economy has been very heated. There are a variety of views about whether China will fall into the middle-income trap and inextricably bog down. Lin and Krugman are the two representative scholars.

Professor Lin, Justin Yifu who once served as the chief economist of the World Bank is a representative of the optimistic perspective. Lin (2012)[1] presents the theoretical framework in a state of " endowments, comparative advantage, viability, strategy and economic development " transformed and developed out of his New Structural Economics that is referred to as the analysis framework of NSE. This method is intended to provide a theoretical basis of the economic development for all developing countries including China. When China's economic growth rate has been falling, on various occasions Professor Lin said that China could maintain 8% per year of growth potential in the next 20 years. The possibility of rapid growth comes from what he called Subsequent Advantage Theory.

Lin (2013)[2] thought that continuous innovation in technology and upgrading of industry are the deciding factors for modern economic growth. But different from developed countries, the technology and the existing industry used in developing countries belong to a part of the world's technology and industrial chain, so that the technological innovation and industrial upgrading can be achieved by imitation, introduction and integration, etc. Therefore, the risk and cost in developing countries are much lower than R&D in the developed country. This is the so-called " Subsequent Advantage ". If China can continue to deepen reform, eliminate all kinds of structural defects, and

1 Justin Yifu Lin, *New Structural Economics: A Framework for Rethinking Development and Polic*, The World Bank, 2012

2 www.ftchinese.com, 2013.8.28

develop the economy in line with its comparative advantage to make full use of the subsequent advantage, China can make the 8% growth potential into real growth rate.

But there are also many experts who point out that Professor Lin's theory is based on many " if's ". Professor Sen Wei (2013)[3] of Fudan University points out that the NSE framework is actually " institutions free ", and that only in a modern constitutional democracy, the New Structural Economics framework of Yifu Lin could be really implemented and used. However, Professor Sun Di (2013)[4] of the School of Business in California State University Long Beach has raised suspicion to this optimism. He stressed that Subsequent Advantage as the support of China's economic growth is constantly being depleted.

2-2 **Prediction of economics authority: Professor Paul Krugman**

In 1994, when the world is optimistic about the Asian economies, Professor Krugman, the former Nobel Prize winner, criticized that the East Asian model focused on the quantity expansion but contempt of innovation of technology that is the so-called built on loose sand " East Asian miracle ". But only half of his prediction is right, because his prophecy is built up in " a limited supply of labor ". The other half of the prediction about China is wrong, because of not considering the existence of " a large number of infinite labor supply " at that time in China.

Coincidentally, this year in July, Professor Krugman published an article in the New York Times (2013.7.20)[5], putting forward the arrival of the " Lewis point ", that is with the end of " an unlimited supply of labor " era, the " Chinese model is about to hit it's Great Wall ". Not only that, less than a

3 www.ftchinese.com, 2013.7.10

4 www.ftchinese.com, 2013.9.23

5 Paul Krugman, *Hitting China's Wall*, 2013.7.20

week ago, Professor Krugman has published the second article in the New York Times (2013.7.25)[6]. By quoting George Orwell's *Politics and the English Language* he ridiculed the Chinese economy and government. As a Chinese, although I feel very uncomfortable with the sarcastic words of "Chinese wall Ponzi bicycle" and "fascist Octopus song", I do think that China should make a timely serious introspection. Especially in the last sentence of his article, "the current Chinese government isn't that bad; but 'not as bad as Stalin'" is not, exactly, an inspiring slogan. After all, the inefficiency, unfairness and corruption in the former Soviet Union as the representative of the State Capitalism Model ultimately ended in failure.

Professor Krugman believes that China has reached the "Lewis point". Simply to say, China's rural surplus labor is decreasing. His prescription to China is that consumer spending must rise substantially to replace the position of investment, because no matter what the government does investment will sharp decline. Then he came to the conclusion that if consumption does not increase fast enough, China will experience a serious economic downturn.

About whether the Chinese Lewis point has come or not is no controversy. However, I cannot agree completely to Professor Krugman's point view on the relationship between China's consumption and investment. I think, at present in China, consumers are important, but investment is still the driving force for economic growth, and this power can still let China maintain a steady growth rate in the future for at least 10 years. This is the main reason that I cannot agree with Professor Krugman's conclusion that the Chinese economy is waiting for a serious recession. The details on investment and how it will continue to lead China's economic growth will be discussed in chapter 6, *Expanding domestic demand: China's opportunities and prospects.*

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6 Paul Krugman, *China's Ponzi Bicycle Is Running Into A Brick Wall*, 2013.7.25

3. Structure of the paper

In 2011 when we designed the structure of this paper, China's economy suffered serious dilemmas such as excess capacity and diminishing return on capital, etc. We attempt to analyze the success and failure of some countries experiences in order to discuss the development trend of China's future. We chose Philippines, Brazil and South Korea as comparative case studies to China. In the crossroads of the middle income trap, the performance of each country is very different. South Korea has successfully crossed it, however Philippines and Brazil suffered different fates, and their economies have inextricably bogged down for decades.

Before starting to write this paper, I had the feeling that it will be an analysis of the causes of economic growth rather than a discussion of the road map of restarting for China. At last, about whether China can cross the middle-income trap did not elicit a positive answer, but I still agree with the views of Professor Lin. Of course, my co-authers, Professor Fujino (Chapter 3) and Professor Umali (Chapter 2), may have not delved into this, while Mr. Ohara (Chapter 4) who is familiar with the Chinese economy even holds different views.

To pursue a happy life is the common aspiration of people, but each country doesn't have the same path of development. Now, when you go to any corner of the world, you could almost feel the presence of South Korea, just as in the past, ' Made in Japan ' was in demand everywhere. I admire greatly Korea which has a population of only 45 million. It only took half a century to ascend and become an OECD member from a poor and backward agricultural country. In fact, lucky countries such as South Korea are not many. On the contrary, many developing countries who were expected to enter the ranks of developed countries could not realize their dreams due to economic stagnation, poverty, political chaos, corruption, and even wars and so on.

This paper consists of the introduction, chapter 1-6 and postscript.

In the introduction, the author puts forward the core problem discussed in this paper that is why so many promising countries such as Brazil and Philippines finally have inextricably bogged down in the middle-income trap. While South Korea, Taiwan etc. have small territory and lack natural resources and yet can span the middle-income trap into the ranks of high income countries. Then, the author quoted the point of view about the Chinese economic growth, discussed by two famous scholars, Lin and Krugman, put forward the question and the research subject of representation and the Sources of the middle-income trap.

Chapter 1, Re-Thinking of the Middle Income Trap: Sources of Economic Growth first explains the proposition, definition and connotation of the concept of the middle-income trap. Then, the sources of economic growth such as labor, capital, materials and technology (i.e. total factor productivity, TFP), system are considered and analyzed one by one. According to the author, when a country's economic development reaches a certain level, a valid separatrix will arise between labor supply and capital amount, referred to as" Lewis point ". When the turning point is traversed" population bonus " will gradually disappear and " capital diminishing returns " will appear gradually. Here, the economy should maintain sustainable economic growth only by improving TFP. But generally speaking, the level of TFP reflects the relative merits of an economic system. In this paper, by analysing the case of China the author considered that only continous deepening reform and opening-up can keep stable and sustainable economic growth.

Chapter 2, Economic Growth in The Philippines: An Analysis of theMiddle-Income Trap assesses the economic growth of the Philippines amid the industrial restructuring in the country. Like many countries in Latin America, after World War Ⅱ, the Philippines had remarkable achievements. Unfor-

tunately, due to various reasons, it has failed to escape the middle-income trap. The growth of the Philippine economy can be attributed for one to FDI —led industrialization and export oriented growth strategy. The economy of the country has improved substantially but could not progress beyond the middle—income status. In this regard, this section studies why the country is held captive in the middle—income level and looks at factors that can help the country escape from this trap.

Chapter 3 deals with the subject of Economic Growth in Brazil: From the " Brazilian Miracle " to " BRICs " through " Lost Decades ". Brazil had already achieved a high GDP growth rate of 11% or more from 1968 to 1973 (Brazilian Miracle), then it experienced the " lost decades " (Foreign Financial Crises, Hyper Inflation etc.) Thus, Brazil is not a " Newly Emerging Market " like other BRICs countries. After the economic reform in the 1990s, the Brazilian economy has been revitalized and begun to grow rapidly. This time, the engine for growth is the creation of " Middle Income Class " through economic policy of cash transfer and continuous rise of minimum wage in more than ten years. But, investment for infrastructure is not enough, and this might make Brazil to face the " Middle Income Trap " issue.

Chapter 4, Korea's Economic Success Experience: from " Hangang Miracle " to " OECD Membership ", will try to answer the question which has troubled many people for a long time, namely, whether Korea is a model or an exception for economies to succeed in escaping middle-income trap. Post World War II, rapid growth has allowed only few economies to advance from relatively low level to high-income level, especially among relatively large population economies. The Korean economy is one exception. When we consider population and 2010 GNI, 13 economies have population of more than 20 million and GNI per capita more than US$ 12,276 in 2010. The Chapter reviews the Korean economy using statistics.

Chapter 5, The Plight of China's Economic Growth: Overcapacity—Anal-

ysis the Comparison between China's Steel and Port Industries with Japanese Steel and Port Industries—. Overcapacity generated in the emerging industries and capital-intensive industries which are the existing leading industry resulted in a negative impact on the health-wise sustained growth of the Chinese economy, and currently, has become a bottleneck in the industrial structure adjustment of China's economy. In other words, currently overcapacity problem is a major issue in the Chinese economy but we can learn how to resolve the problem from the past Japanese industrial overcapacity experiences. In this chapter, with reference to the experience of Japan, we recommend strategies for industrial structure adjustment to overcome the problems of overcapacity in the Chinese steel and port industries.

Chapter 6, Expanding Domestic Demand in China: Opportunities and Prospects, mainly analyses how the present China rely on domestic demand to spur economic growth. Relative to consumption, the author still believes that the continued high rate of investment is the main impetus to Chinese growth. According to the author, as in past Japan, high rate of investment is a necessary stage for the economic development of China. In addition, the author also thinks that raising the proportion of the service industry and improving per capita income are guarantees for expanding domestic demand.

Chapter 1

Re-Thinking of the Middle Income Trap: Sources of Economic Growth

(Typical Chinese Village: 2012.3 in Anhui Province)

1. Per capita Gross National Income and Middle Income Trap

1-1 What is per capita Gross National Income?

According to the per capita gross national income, the World Bank ranks the levels of economic development of countries all over the world. Gross national income (GNI) refers to the gross domestic product (GDP) plus foreign factor income minus foreign elements of expenditure.

The formula is:

GNI=GDP+(Income factor from abroad
−Expenditure of foreign elements)

Among them, income factors from abroad refer to the income of resident getting from abroad such as wages, interest, dividends etc.

Per capita gross national income refers to the gross national income divided by annual average population, which is equal to per capita gross national product (GNP), and roughly equal to the per capita gross domestic product (GDP).

Gross national income is the total of original income, which includes labor

wages, total production subsidies, tax, depreciation of fixed assets, operating surplus and the original property income that all country residents gain in a certain period of time (usually 1 year).

Per capita gross national income includes enterprise income and government income, as well as personal income of residents. But per capita income only includes the personal income of residents.

1-2 Income grouping criteria based on country by the World Bank

The World Bank uses the Atlas Method to calculate the GNI and per capita GNI to classify economies. The so-called " Atlas Method " uses the 3-year-moving average exchange rate of the domestic currency to the U.S. dollar.

The world is divided into three groups, namely low-income countries, middle-income and high-income countries by the World Bank. The middle income countries are divided into lower middle-income countries and upper middle-income countries. But the above standard is not fixed, but is continuously adjusted with economic development. According to data released by the World Bank, the income grouping criteria in 2011 are: less than $ 1005 for low-income countries, between $ 1006 and $ 12275 for middle-income countries, and more than $ 12276 for high-income countries. The per capita GNI of lower middle-income countries is between $ 1006 and $ 3975, while that of the upper-middle income countries is $ 3976 to $ 12276.

Table 1-1 Per capita Gross National Income grouping criteria by the World Bank

Per capita gross national income groups		Classification standard
Low-income countries		less than $ 1005
Middle-income countries	Lower middle-income countries	$ 1006～$ 3975
	Upper middle-income countries	$ 3976～$ 12275
High-income countries		more than $ 12276

According to this standard, in the 215 economies in the World Bank statistics, there are 35 countries in the low income group, 110 in the middle-income group and 70 in the high-income group. In the middle-income group, lower middle-income countries and upper middle-income countries number 56 and 54, respectively. Most of the low income economies are concentrated in the " Sub-Saharan Africa ".

The " 70 economics high-income club ", can be roughly divided into 6 categories. 1) The developed countries in Europe and America. 2) Some of the islands managed by or closely related to the developed countries in Europe and America, such as Guam, Greenland, the Cayman Islands, French Polynesia. 3) Oil rich countries, including Saudi Arabia, the United Arab Emirates, Kuwait, and Brunei. 4) Central and Eastern European transition countries, including Poland, Hungary, Czechoslovakia, Estonia, and Slovenia. 5) Some successful East Asian economies, including Japan, South Korea, Singapore, Hong Kong and Macao (Taiwan is not included). 6) Israel.

Middle income economies are mainly distributed in 4 regions, that is Latin America and the Caribbean, Europe and Central Asia, mainly in the former Soviet Union and Eastern European countries, East Asia and Pacific, Middle East and North Africa.

1-3 Putting forward and defining the concept of Middle Income Trap

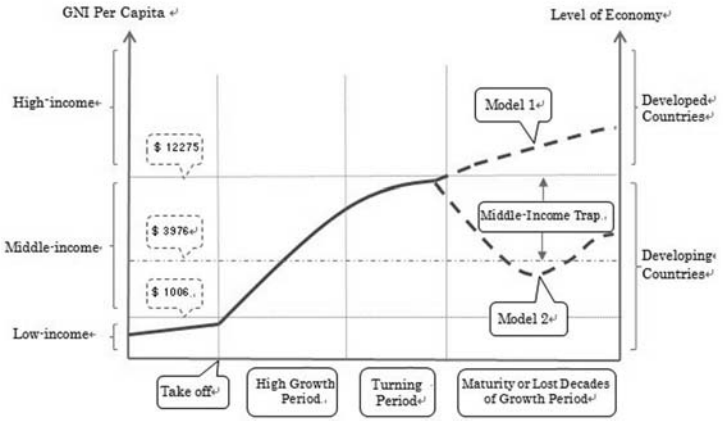
The author believes that either the index of GDP or GNI can define the middle-income trap. According to the GDP per capita, the so-called middle-income trap assumes that if GDP per capita reaches between $ 5000 to $ 12000, GDP growth will slow down, economic development will lose its power, and the economy will enter a slow growth track.

According to the measure of per capita gross national income (GNI), the

middle-income trap refers to the situation that when middle-income countries achieve the upper middle-income level (see Table 1-1), economic development will enter into a period of instability, needing a huge change (reform) of the development model once more. If this change is successful, the economy can maintain sustainable development and the country can smoothly enter the ranks of developed countries. On the contrary, if the change is not successful, the economic growth will not be sustainable. Then the development of the state would be hindered and it will still hover as developing country and remain stagnant even experience a long recession. Then, we believe the country has entered into the middle-income trap. As shown in Figure 1-1, according to the World Bank's new standard of per capita gross national income (GNI), the author sets the interval of $ 3976-$ 12275 as middle-income trap.

Middle-income trap means the economies of middle-income nations rarely enter the high income level successfully, because these economies tend to fall into a period of economic growth stagnation. They can not only compete with

Figure 1-1 **The Conceptual graph of Middle-Income Trap**



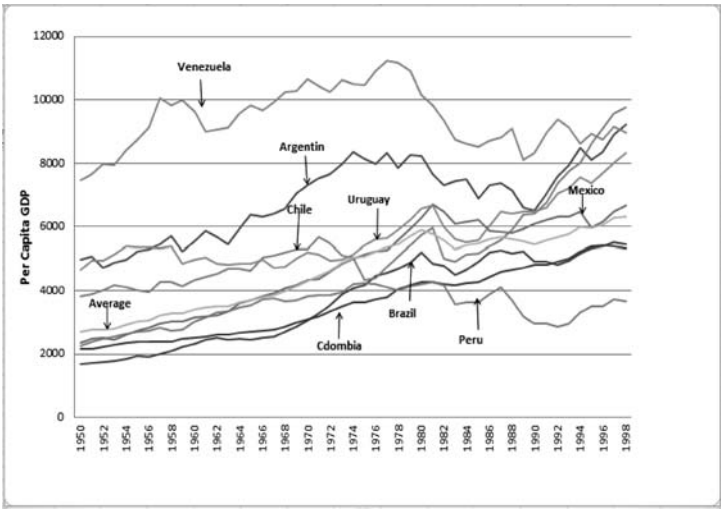
NOTE: In accordance with the standards of the World Bank on per capita GNI, middle-income countries are divided into lower middle-income countries ($ 1006～$ 3975) and upper middle-income countries ($ 3976～$ 12275).

low income countries with respect to low cost such as labor wages, but also with rich countries in terms of technology innovation.

After World War II, many developing economies had experienced rapid growth in a certain period of time, but when quite many economies reached the middle income level, the growth rate slowed down, and hovered at the gates of the high-income club. The most typical example is Argentina a representative of some Latin American countries.

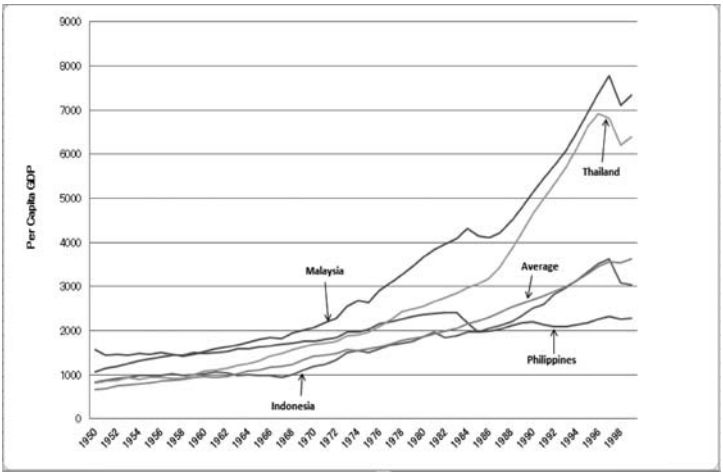
According to statistical data, Argentina reached the middle-income levels in 1975, Chile in 1962, Uruguay in 1973, Mexico in 1974, Brazil in 1975, Columbia in 1979 (figure 1-2), but they have not become high-income countries so far. Malaysia (figure 1-3) and Syria (figure 1-4) reached the middle-income level in 1977 and 1978 respectively, but still they remain middle income countries nowadays.

Figure 1-2 **Levels of Per Capita GDP in** 8 **Latin American Countries, Annual Estimates**, 1950-98(**million** 1990 **international Geary-Khamis dollars**)



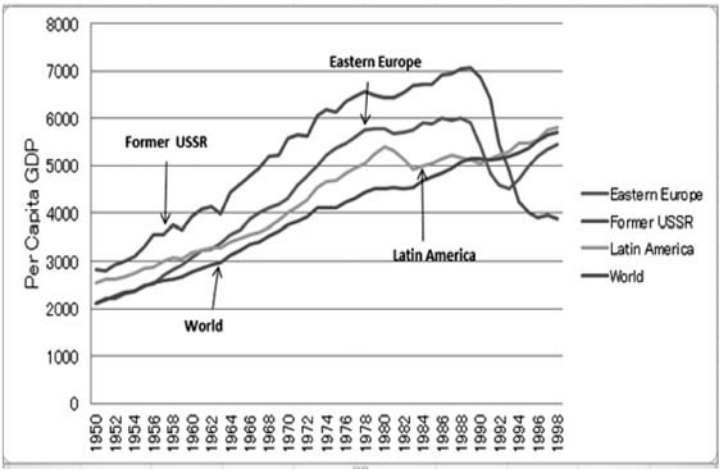
Source: Angus Maddison, The World Economy: A Millennial Perspective (Development Centre Studies), OECD (June 12, 2001)

Figure 1-3 **Levels of Per Capita GDP in ASEAN**4, 1950-99(1990 **international Geary-Khamis dollars**)



Source: Angus Maddison, The World Economy: A Millennial Perspective (Development Centre Studies), OECD (June 12, 2001)

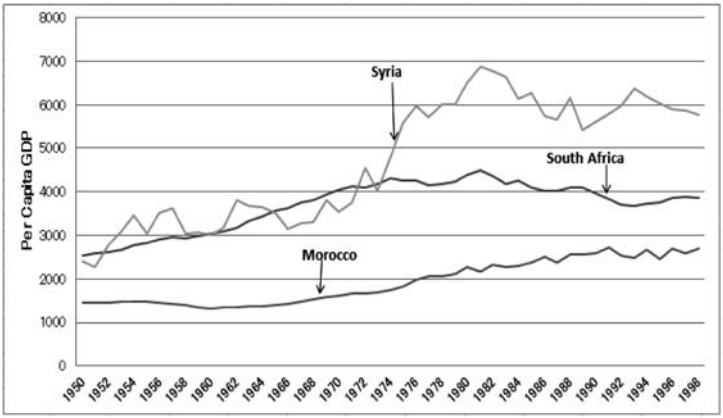
Figure 1-4 **World Per Capita GDP by Regions, Annual Estimates**, 1950-98 (**million** 1990 **international Geary-Khamis dollars**)



Source: Angus Maddison, The World Economy: A Millennial Perspective (Development Centre Studies), OECD (June 12, 2001)

A similar situation can be seen in other parts of the world as in the case of Morocco and South Africa (figure 1-5), as well as the former Soviet Union and Eastern Europe.

Figure 1-5 **Levels of Per Capita GDP in** 3 **others Countries**, 1950-99 (1990 **international Geary-Khamis dollars**)



Source: Angus Maddison, The World Economy: A Millennial Perspective (Development Centre Studies), OECD (June 12, 2001)

But whether in theory or in practice, the Middle Income Trap is not a necessary phenomenon which must appear during the economic growth and development process.

If we observe nearly two hundred years of economic history, Britain, Continental Europe and the United States have successfully experienced the industrial revolution, starting from the low growth and low-income state of traditional agricultural society, passing the middle-income level and finally becoming a rich high-income Society.

So the developed countries in Europe and America underwent a dynamic, but very continuous process without having to stay in the so-called middle income level.

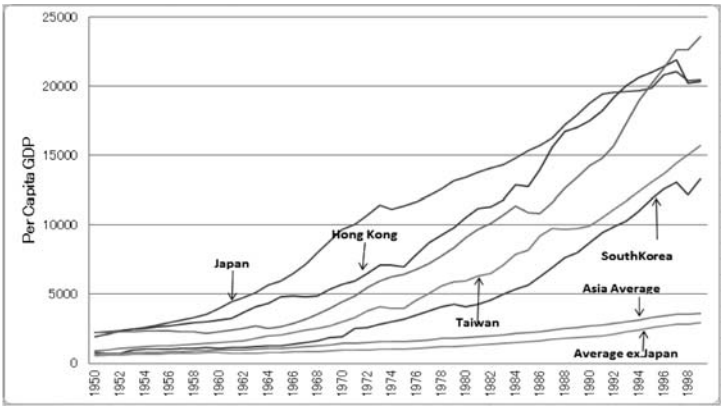
It is generally believed that Japan and the " East Asian NIEs4 " are suc-

cessful economies which have stridden over the Middle Income Trap. They completed the transformation from low-income to high-income level (figure 1-6). Per capita GDP of Japan was close to $ 3000 in 1972 and $ 10000 by 1984. That of South Korea was more than $ 3000 in 1987 and $ 11469 in 1995. It took Japan about 12 years while South Korea took 8 years to cross from a middle-income country to a high-income country.

However, some scholars consider that Japan has completed the industrialization and entered the high income countries through the Meiji Restoration before World War II. So Japan is out of the issue.

After 30 years of rapid growth, the pace of development in China has slowed down and many problems have emerged. People begin to worry about whether China will fall into the trap just like former Latin America countries.

Figure 1-6 **Levels of Per Capita GDP in NIEs**4 **and Japan**, 1950-99 (1990 **international Geary-Khamis dollars**)



Source: Angus Maddison, The World Economy: A Millennial Perspective (Development Centre Studies), OECD (June 12, 2001)

2. Economic growth

2-1. Source of economic growth and its restrictive factors

Source of economic growth

In macroeconomics, the source of economic growth is usually studied using the production function.

The concept of economic growth as discussed by Adam Smith will be used as the starting point in this paper. Labor, capital and land are considered as output sources by Adam Smith and Ricardo. The production function can be represented as follows:

$$Y=f(L, K, N) \tag{1}$$

In the formula, Y represents the output, the variables L, K, N represent the inputs of labor, capital and land, respectively. The land N is fixed invariably, so it is generally simplified as:

$$Y=f(L, K) \tag{2}$$

Technical condition is often connected to the economy's output and production elements in the macro production function. The macro production function is:

$$Y=Af(L, K) \tag{3}$$

Technology is represented as A.

If the human capital is inputted as a factor, the production function can be written as:

$$Y=Af(L, K, H) \tag{4}$$

In this paper, source elements of economic growth will be considered as follows:

Labor, capital, material, technology (i.e. Total Factor Productivity, TFP), and institution are represented as L, K, M, A, I, respectively. The production function can be described as the following:

$$Y=f\ (\text{Labor, Capital, Material, Technology, Institution}) \text{ or}$$
$$Y=f\ (L, K, M, A, I) \quad (5)$$

Restricting factors of economic growth

If we know the source of promoting economic growth, we will also understand the restrictive factors of the economic growth. According to the production function formula (5), we can assume that economic growth is limited by the following aspects by reverse thinking.

(1) Labor and capital restrictions. The quantity and quality of labor and capital should be first included, respectively. There is a dividing line between the relationship of the quantity of labor supply and the amount of capital, which is " Lewis turning point ". If this point is not reached, " population bonus " will be often mentioned, whereas if the turning point is passed through, " capital diminishing returns " will appear.

(2) Resource restrictions, including natural conditions and natural resources. For countries such as China, resources can be imported and the environmental management objectives of the government might also be completed, but to solve the climate warming and the shortage of water resources will not be an easy job.

(3) The Total Factor Productivity (TFP) restrictions. Its important contribution to the GDP is undoubtedly above suspicion. The allocation of resources and technology innovation often is the key to the problem.

(4) Institutional restrictions. The institution provides people's mode of labor, labor organization, circulation of material and commodities, income allocation etc. It provides the boundary of the economic behavior. Its contri-

bution to GDP is easy to see, but it is difficult to quantify. People often put production efficiency enhanced by the institutional arrangements into the total factor productivity (TFP). Generally, total factor productivity (TFP) reflects the quality of the institution.

2-2 Contribution of labor and capital

High investment rate and the decrease of marginal efficiency of capital

As mentioned above, both Smith, the originator of economics and Ricardo considered labor and capital as sources of output.

The production function can be expressed as:

$$Y=f(L, K) \tag{3}$$

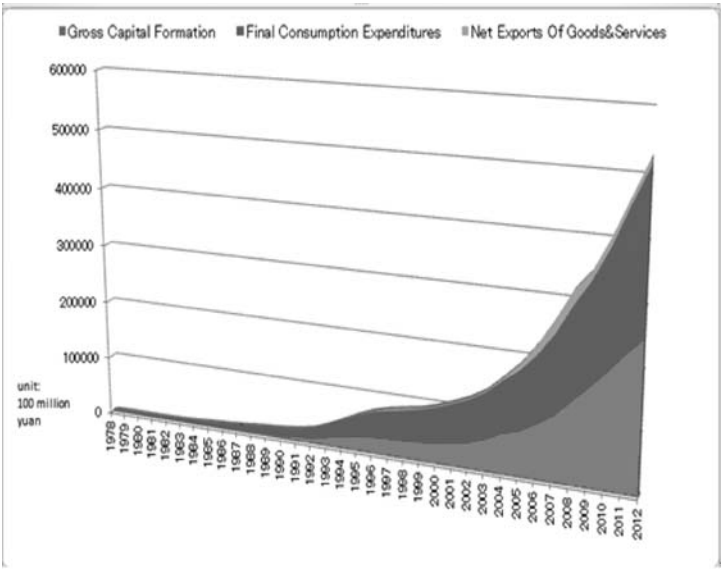
From the nearly 30 years of Chinese economic reform, we can learn that, 1) Firstly, there is a large number of surplus rural labor, that means there is infinite supply of labor force in China's economic growth; 2) Secondly, there is sustained high investment rate, that is the rapid growth of China's economy has long relied on high capital investment.

We often talk about consumption, investment and export as the three carriages that drive GDP growth. In fact, these three carriages are derived only from the expenditure approach, i.e. talking about GDP from the perspective of total demand.

If you look at the demand side, 30 years of Chinese economic reform strategy can be described as "investment-led strategy" (Figure 1-7). Although this strategy has led to China's rapid development making it the second biggest economy in the world in terms of GDP, today we doubt whether this mode of economic development is sustainable.

In the Chinese expenditure structure of GDP in 2008, consumption accounted for 48.59%, of which 35.32% can be attributed to resident con-

Figure 1-7 **China's GDP by expenditure approach**, 1978-2012



Source: China Statistical Yearbook 2013

sumer, government consumption stood at 13.27%; capital formation accounted for 43.54%, of which fixed capital formation was 41.13%, the increase in inventory was 2.4%; net exports accounted for 7.86%. In the same year, the corresponding figures of India were as follows. Consumption was 66% (private consumption, 55%, government consumption, 11%), capital formation was 39% (fixed capital formation 34%, inventory increase 5%), and net export was -5%. By comparingthe expenditure structure of China with that of India, we can see that, capital formation and net exports occupied a dominant position in China while in India it was consumption.

We can know from table 1-2, compared with other economies in high growth period, the proportion of China's investment was still the highest.

In western economics, there is a saying that the rate of marginal efficiency of capital shows a decreasing trend.

China however has maintained a high rate of investment for economic de-

Table1-2 **Comparison of capital coefficient**

		Investment ratio (Proportion of GDP, %) a	Growth rate (%) b	Capital coefficient a/b
China	1991-1995	39.0	12.3	3.2
	1996-2000	36.6	8.6	4.3
	2001-2007	40.9	10.2	4.0
	2008-2011	46.9	9.6	4.9
	(1991-2007)	39.1	10.3	3.8
	(1991-2011)	42.2	10.4	4.1
Japan	(1961-1970)	32.6	10.2	3.2
Korea	(1981-1990)	29.6	9.2	3.2
Taiwan	(1981-1990)	21.9	8.0	2.7

Source: Guan Zhixiong (2008), China Statistical Yearbook 2012

velopment in the past 30 years. Why hasn't this law played a role? The answer is in the supply of labor.

This law is based on a limited supply of labour force. But in China, after the economic reform, a lot of surplus labor is released from the countryside. It formed an unlimited supply of labor force in China's economic growth. So for a long time, marginal efficiency of capital has not shown any decreasing trend.

Today's question is, whether this phenomenon will be sustainable. Will the unlimited supply or surplus labor be sustainable? The answer is no.

From 2004 to 2005, the situation in China has reversed. In some industrial concentration areas along the southeast coast, the so-called "shortage of migrant workers" has emerged. At that time, many experts predict that China's "Lewis turning point" has become apparent. "Lewis turning point" usually appears with the disappearance of "Population bonus".

"Lewis turning point" and "Population bonus"

Lewis turning point is the turning point in which supply of labor turns from

surplus to shortage. It means that during the process of industrialization, along with the gradual transfer of surplus rural labor force to non-agricultural industries, the surplus rural labor force gradually will be reduced, and finally exhausted. This was proposed by W. Arthur Lewis, a Nobel Laureate in Economics.

As early as 2007, a report from the Chinese Academy of Social Sciences (CASS) warned that labor force in China is shifting from surplus to the shortage. The point will appear in " The 11th Five-Year Plan " period, the exact time may be in 2009. In 2007, Labor Shortage emerged from the Zhujiang River Delta to Yangtze River Delta in China's eastern coastal area.

Corresponding to the concept of " Lewis turning point " is " Population bonus ". The increasing cheap labor force which is due to the increasing number of young population, provided a cheap price for the elements of economic development. For many developing countries, cheap labor is an important factor in economic development. This situationis obviously seen in the current mode of economic growth in China. It is generally believed that China has begun to enter the " Lewis turning point " period in 2004, and by 2015 the " Population bonus " will end.

There seems to be a positive correlation between " Lewis turning point " and " Population bonus ". The appearance of the former is often a precursor for the gradual disappearance of " Population bonus ". Various studies show that China's " Population bonus " is disappearing. The 2010 census revealed that Chinese juvenile dependency ratio had fallen even faster than the previous prediction. Chinese labor population will begin to decline around 2015, the disappearance of the " Population bonus " will be confirmed then.

The number of children a woman gives birth to in her lifetime is called Total Fertility Rate (TFR). It is generally believed that 2.1 is the lowest level of population replacement, while the average level in developed countries is 1.6. TFR in Japan is 1.3, NIES, South Korea, Taiwan and Hong

Kong all are 1.1 and Singapore is 1.2. As a result of the one-child policy in China, the population growth rate and fertility level of the population have greatly decreased. China's fertility rate has dropped substantially since the 1980s, and after the 2010 national census it is generally considered to be 1.4-1.5. It is not only lower than the average level in developing countries and lower than the world average, but also even lower than that of developed countries (1.6). We can say that the fertility level in China has been low for many years.

As table 1-3 shows, together with South Korea, Taiwan, Hong Kong, and Singapore, also known as NIES, China will come to the end of the " Population bonus " in the years 2010-2015. This is a huge challenge for China who has just entered the ranks of middle-income countries. That is also called " age before it gets rich " in China.

Prof. Cai Fang of the Chinese Academy of Social Sciences (CASS), verified the relationship between population change and economic growth and

Table 1-3 " **Population bonus** " **in Asia**

	period		per capita GDP
	start	end	2012 (US$)
China	1965-70	2010-15	6,091
NEIS			
South Korea	1965-70	2010-15	22,590
Taiwan	1960-65	2010-15	23,113
Hongkong	1965-70	2010-15	36,796
Singapore	1965-70	2010-15	51,709
ASEAN			
Thailand	1965-70	2010-15	5,474
Malaysia	1965-70	2035-40	10,381
Indonesia	1970-75	2025-30	3,557
Philippines	1965-70	2040-45	2,588
Vietnam	1970-75	2020-25	1,596
Japan	1930-35	1990-95	46,720
India	1970-75	2035-40	1,489

Source: Oizumi (2007), World Bank, China's National Bureau of Statistics

made a schematic diagram (Figure 1-8) according to the database of the World Development Indicators of the World Bank. The diagram reveals the relationship between the " Population bonus " and economic growth, as follows:

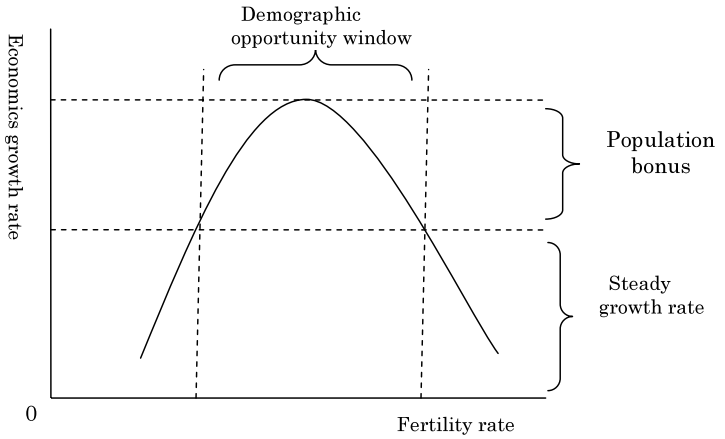
1) When the total fertility rate is at a high level, the economic growth rate is also at a very low steady-state level (assuming no population change and technical progress);

2) With decreasing fertility rate, the productive population age structure will gradually be formed, the economic growth rate will accelerate, thus the " Population bonus " will be obtained;

3) When the fertility rate continues to drop to a lower level, the aging degree will be increased; the economic growth rate will drop to a low steady-state level.

Capital investment is the material capital, but it is closely related to " Population bonus ". In the early days of China's one-child policy, low birth rate led to fewer children (dependency ratio decrease), that means China's working

Figure 1-8 **Relationship between fertility rate and economic growth**



Source: Cai (2011) " Population bonus " is embodied in almost all sources of economic growth, especially in the labor input and capital input.

population (15-65 years old) ratio has increased. By analyzing the relationship among the personal income, savings and consumption in the life cycle, increasing the labor population ratio brought about by fewer children can also be understood as a means of increasing national savings rate. While high saving rate represents high investment rate, it is an important source of economic growth.

In addition, surplus labor from the countryside in China has provided " the infinite supply of labor force " for China's economic reform.

This explains why China's capital input did not produce the phenomenon described in economics textbooks on the decrease of marginal efficiency of capital until the early 21st Century. Now, " Lewis turning point " has emerged in China, and this point means that the effect of this kind of " efficiency " appears.

This also means that, even if a high investment rate is artificially maintained continuously in the future, with the decrease of marginal efficiency of capital, the situation of pulling GDP growth will not be sustainable only by inputting high capital investment.

2-3 **Total factor productivity in the economic growth**

Solow Growth Model, since the 1960s, is also known as the new classical economic growth model, or the exogenous growth model. The new classical theory is based on the independent variable of labor input and capital input to establish a growth model by Cobb-Douglas production function. In this model the technological progress is explained as exogenous factor to economic growth. Thus it comes to the conclusion that the long-term economic growth will stop when factor income appears to decrease progressively.

The " new economics ", the Theory of Endogenous Growth, formed in the early 1990s, explains the long-term growth rate by the endogenous factors. That is to say, labor input contains the human capital formed by formal edu-

cation, training, on-the-job learning, etc., while the physical capital accumulation contains the technical progress formed by R&D, invention, etc. Technical progress factors are considered endogenous, namely the existence of factor earnings of technological progress will increase progressively, and come to such conclusion that the long-term growth rate will be positive.

Of course, many economists, such as Schumperter (1934), Schulz (1990), Becker (1989), have found out the role of human capital and technology progress on economic growth very early, however, they have always regarded them as exogenous factors. Although Solow Growth Model regards technological progress as exogenous, it is also sure that technological progress can lead to permanent growth of per capita output.

However, the endogenous growth theory considers that a country's long-term economic growth is determined by human capital, knowledge or technical progress and other endogenous variables, among which the endogenous technical progress is the decisive factor to ensure sustained economic growth. And it also considers that only these endogenous variables can avoid the decrease of capital efficiency rate stated in the new classical growth model.

As we mentioned in the previous section, in China, now that long-term unlimited labor supply is over, the growth of China's economy is faced with "the decrease of marginal efficiency of capital". For further improvement in output, "technical progress" is the only way.

Total factor productivity (TFP) generally refers to the efficiency of development and utilization for resource, including human, material and financial resources. From the perspective of economic growth, inputs of capital, labor and productivity etc. are all contributing to economic growth. From the perspective of efficiency, productivity is equal to the ratio of output in the national economy and various resource elements of total input within a certain period.

TFP is an index used to measure the production efficiency. It has three

sources: the first is improvements in efficiency; the second is the technology progress; the third is the scale effect. In the calculation, it is a " residual " removed from the labor, capital investment, land and other elements. So far, there have been differences on the definition of total factor productivity in the academic field. TFP, in this paper, refers to the increase of output led by technical progress and ability achieved beyond the input elements, such as capital and labor. It is a " residual ", not included in the contribution arising from input elements. It was proposed first by Solow (1957), so it is also called the Solow's residual.

Let us first analyze the differences between Labor productivity and TFP. Labor productivity is an index which only focuses on labor factor among the production factors put into production, while TFP is an index which does not only focus on labor factor but also in consideration of capital and raw materials, etc. Therefore the improvement of TFP is considered to be the improvement of production efficiency that does not depend on the material input, that is to say it is an indicator of technological innovation and operational efficiency improvement.

Labor Productivity = Production / Labor input

Total Factor Productivity (TFP) =

Production / All production factors input

Here, taking the case of Japan and South Korea, as well as the Latin American region, let us illustrate the function of TFP and its contribution to economic growth.

As shown in the table 1-4 below, we can find that, the low TFP of Japan is the cause of the so-called lost 20 years of the Japanese economy after the economic bubble burst in 1990.

In Figure 1-9, looking at the growth rate of the whole industry TFP and manufacturing industry TFP at different time periods in each country, except

Table 1-4 **Contribution of each element of economic growth in Japan**

	1974	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09
GDP growth rate	-0.4	4.4	3.9	4.6	2.0	0.9	1.4	-0.4
Contribution of working hours	-1.7	0.7	0.8	0.4	-0.3	-0.4	-0.4	-0.5
Contribution of (quality) Labor configuration	0.7	0.3	0.6	0.3	0.1	0.3	0.3	0.3
Contribution of capital	2.7	1.8	2.0	2.3	2.2	1.2	0.6	0.5
Contribution of TFP	2.2	1.6	0.5	1.6	-0.1	-0.2	0.8	-0.6

Source: METI " White Paper on International Economy and Trade 2013 "

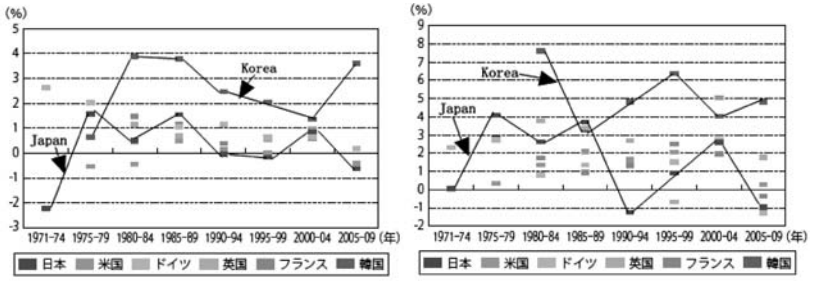
for the first half of the 2000s, TFP growth rate in Japan has been inferior to other countries consistently since 1990.

The most notable is South Korea. Since 1980, it's TFP rate of increase has consistently maintained a higher level compared to the other countries.

Qi and Zheng (2012) considered that only by analyzing the two factors of production of labor and capital, and the gap of human capital, cannot make a

Figure 1-9 **Productivity comparison of all industries**

(1) whole industry TFP (2) manufacturing industry TFP



NOTE: In the Figure, Nationality mark in order from left to right respectively is Japan, USA, Germany, Britain, France and South Korea.

Source: METI " White Paper on International Economy and Trade 2013 "

Table 1-5 **Economic growth rate structure of some countries in Latin America**

Country	Period	GDP rate (%)	Contribution of each element on GDP		
			Labor	Capital	TFP
Argentina	1960-2002	2.4	0.5	1.2	0.7
	1960-1980	4.2	0.8	1.6	1.8
	1981-2002	0.8	0.3	0.8	-0.3
Brazil	1960-2002	4.3	1.8	2.2	0.4
	1960-1980	7.2	2.1	3.1	2.0
	1981-2002	1.8	1.5	1.4	-1.1
Bolivia	1960-2002	3.3	1.6	1.1	0.6
	1960-1980	4.7	1.3	1.2	2.2
	1981-2002	2.0	1.8	1.0	-0.8
Chile	1960-2002	4.1	1.4	1.3	1.4
	1960-1980	3.5	1.1	1.1	1.3
	1981-2002	4.7	1.7	1.5	1.5
Columbia	1960-2002	4.1	1.6	1.4	1.0
	1960-1980	5.3	2.1	1.4	1.8
	1981-2002	2.9	1.2	1.4	0.3
Costa Rica	1960-2002	4.9	2.3	1.9	0.7
	1960-1980	6.2	2.4	2.4	1.4
	1981-2002	3.7	2.1	1.5	0.1
Dominican	1960-2002	5.6	2.3	1.6	1.7
	1960-1980	7.3	2.3	1.7	3.4
	1981-2002	4.9	2.3	1.6	1.0
Ecuador	1960-2002	4.6	2.0	1.5	1.2
	1960-1980	8.4	1.8	1.7	4.8
	1981-2002	2.1	2.1	1.3	-1.3
Mexico	1960-2002	4.5	1.9	2.1	0.6
	1960-1980	6.8	2.0	2.7	2.1
	1981-2002	2.5	1.7	1.5	-0.8
Peru	1960-2002	3.1	1.8	1.5	-0.1
	1960-1980	4.6	1.6	1.8	1.1
	1981-2002	1.8	1.9	1.1	-0.3
Uruguay	1960-2002	1.5	0.3	0.3	0.9
	1960-1980	2.2	0.8	0.3	1.1
	1981-2002	0.8	-0.2	0.3	0.7
Venezuela	1960-2002	3.0	2.1	1.3	-0.5
	1960-1980	5.1	2.7	2.1	0.3
	1981-2002	1	1.7	0.7	-1.3

Source: Andrés Solimano, Raimundo Soto, “ Economic Growth in Latin America in the Late 20th Century: Evidence and Interpretation ”, May 21, 2004, p.15。

Figure 1-10 **Relative TFP in the Latin American region** (**American**=1)

Source: Pedro Cavalcanti Ferreira, Samuel de Abreu Pessôa, Fernando A. Veloso,“ On The Evolution of TFP in Latin America ”, May 2011, p.13。

convincing explanation for the stagnation of economic growth in Latin America. They pointed out that the fundamental reason of stagnation in Latin America is the decline in TFP (see table 1-5 and figure 1-10).

So, what are the factors that lead TFP in Japan and Latin America to a long-term stagnation and even decline? Many scholars think that either the inefficient allocation of resources or the weak technical innovation ability, or both of the problems have existed for a long time in these countries[7].

In China, the problem of inefficient allocation of resources and the weak technical innovation ability both exist at the same time. It is imminent to promote TFP for China just at the time the “ Population bonus ” is disappearing.

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7 About the discussion on Japan, see Cai Fang: Avoid the middle-income trap, Social Science Academic Press (China), November 1, 2012.

About the discussion on the Latin American countries see Qi-Chuanjun, Zheng-Bingwen: Research on the Middle Income Trap in Latin America: the framework of total factor productivity, Latin America Yellow Book: Report on the development of Latin America and Caribbean 2011-2012 ”, Social Science Academic Press (China), May 8, 2012.

However, how difficult is it to increase TFP. At present in China, in the period when high-speed growth is ending and stable growth is setting in, China's TFP is not promising (Cai Fang & Zhao Wen (201)[8].

Nakagane (2012) regards that, during the past 10 years of Hu Jintao and Wen Jiabao government ruling, the government has been aware that the original development model is not sustainable. The government put forward a strategic slogan, that is, the transformation of the economic growth model, the so-called" harmonious society "and" scientific outlook on development ", but so far China's economic growth model has been still the extensive type (table1-6).

Table 1-6 **China's TFP after the reform and opening up**

	GDP growth rate (%)				reference	Contribution to growth (%)			reference
	GDP	Labor	Capital	TFP(1)	TFP (2)	Labor	Capital	TFP(1)	TFP (2)
1978-1988	5.6	3.1	10.0	2.9	3.6	12.3	59.4	28.3	35.1
1991-2001	10.3	1.1	9.5	4.2	5.0	4.3	55.3	40.4	48.5
2002-2010	10.9	0.5	13.2	2.8	4.1	1.8	72.7	25.5	37.2

Note: The labor distribution rate of TFP (1) and respectively TFP (2) is 0.4 and 0.5.
Source: Nakagane (2012)

At the beginning of this section, I consider that labor, capital, material, technology (i.e. TFP), institution to be the source elements of economic growth, as expressed in the following production function:

$$Y=f(L, K, M, A, I) \quad (5)$$

Currently in China, it seems that all the problems have been concentrated on the institutions which hinder the efficiency of resource allocation and the improvement of technology innovation. The key to solve these problems is

8 Cai Fang & Zhao Wen, When Demographic Dividend Disappears: Growth Sustainability of China, in Masahiko Aoki and Jinglian Wu (eds), The Chinese Economy: A New Transition, Basingstoke: Palgrave Macmillan, 2012.

reform of the institution. Institutional factors and economic growth will be discussed in the next section.

2-4 **Institutional Factors in Economic Growth**

How can we improve the Chinese TFP? Further deepening of the reform is the only way. We just discussed the " population bonus " above, but recently in China " reform bonus " has been talked about more often, which refers to the institutional factors in economic growth. If the institution has a positive significance to economic development, it is called " reform bonus ", or so-called " institution bonus ".

In China, the argument about institution has begun from the beginning of China's reform and opening up in the 1980s. At that time, the biggest focus is the ownership problem, because management and ownership of Chinese state-owned enterprises are separated from each other then. In the west concept of " property " is considered to be inviolability, while till nowadays in China it is still in debate. The phenomenon of ignore and offensive can be seen everywhere, and it is happening all the time. For example, the problem of " advance of the state companies, retreat of the private companies " in the economic structure, the problem of " agricultural land and homestead " in the process of urbanization, etc..

In the past 20-30 years, different from the former Soviet Union and Eastern European countries, China and Vietnam which are the so-called socialist countries have greatly developed their economies by taking advantage of bold reforms. Next, let's review how the institutional reform has promoted social progress of China and Vietnam.

Unlike the former Soviet Union and Eastern European countries' " shock therapy ", China and Vietnam adopted a gradual reform method. In order to avoid confusion, such as economic decline and anxiety of society caused by rapid change, the gradual reform stand at the basic conditions of the stability

of domestic politics first, without touching the political reform in the original stage, and make the reform limited in the economic area, a reform starting from the bottom, the non-state-owned sector, to the top.

Features of gradual reform method that has been conducted in China and Vietnam are as follows.

(1) For political stability, at the original stage of the reform, through increasing the incremental quantity (so-called incremental reform of the non-state-owned sector) rather than the reform of existing economic sector (so-called stock reform of the state-owned sector) to achieve the high speed economic growth. Lagging behind in light industry and tertiary industry relatively and with the decline in the overall industrialization level provide a great development space for the growth of non-state-owned sector. A large amount of the surplus labor force caused by rural reform also may provide a sufficient labor force for the development of non-state-owned sector. By retaining the existing economic status firstly, allowing the significant development of the non-state-owned sector, then gradual reform method shall promote the growth of the whole country even the growth of some of the traditional state-owned sector.

(2) By abandoning the People's commune and introduction of the Household Contract Responsibility System in rural areas, while performing profit reservation system in urban areas, it is possible to achieve improved efficiency and improvement in enthusiasm for labor.

(3) At the beginning of the gradual reform, it is considered to be on the double-track. That is to say except the track of traditional planned economy, the track of market also should be cultivated. Double-track reform was started from the double price system. That is, besides maintaining the planned price, market price will be allowed. At the same time, some industries monopolized by traditional state-owned enterprises were opened to non-state-owned sector, and the economic and social resources were relocated. With

the deepening of the reform and if most of the products of industry were determined by the market, the government would allow complete marketization of prices.

The situation in China at present is very different than before. China's reform has entered into a deep zone, but the successful experience of the gradual reform also has practical significance for China now.

In China nowadays, there are many institutions that need to be reformed. Except for reform in the political institution, in the economic field, the formulation and promulgation of a reform scheme in the following three aspects are considered to be a pressing matter at the moment.

1) Marketization of factor prices including interest rate and exchange rate etc.

2) Transformation of resources

3) Privatization of property

Today, it seems that China is hovering between two systems. One is Adams Smith and Joseph Schumpeter's entrepreneurial capitalism, which typically symbolizes private property, free competition, survival of the fittest and creative destruction. Another form is state capitalism, which once was popular in Latin America, Southeast Asia (especially in Indonesia), and so far Russia.

Some scholars interpret state capitalism as crony capitalism or bureaucrat capitalism. It is through administrative monopoly, special regulations and so on, that make state-owned enterprises enjoy the priority of scarce resources. In state capitalism, very similar to the central planning economic institution, the distribution of social scarce resources are led by administrative power, market access is limited, competition is suppressed, and the inherent superiority of the market economy cannot be played and released. At the same time, state capitalism is inefficient and unfair. It is also a hotbed for the breeding of corruption. It is necessary to point out that state capitalism in a

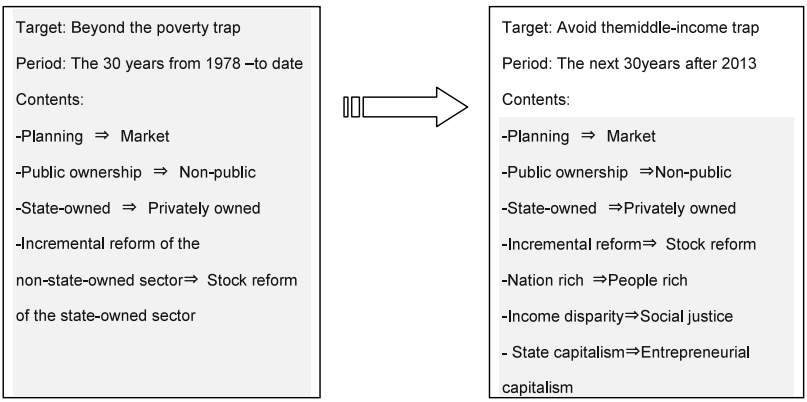
period of time can also enjoy economic prosperity, for example after the October revolution in the Soviet Union it was so unstoppable.

In contrast, entrepreneurial capitalism protects the enterprise in a fair and transparent policy environment, and fosters free competition and survival of the fittest, so that efficiency of the allocation of resources can be maximized. In a competitive market economy environment, because the abuse of privilege in bureaucratic institution can be restricted, the corruption space can also be greatly compressed. Although entrepreneurial capitalism does not always ensure justice in income distribution, at least it is such high efficiency that the most reasonable allocation and use of the social scarce resources can be assured.

Today's China seems to be at a crucial moment, similar to that in 1978 or 1992. At this time, there is a need to develop a set of new strategic reform plan keeping in mind great wisdom.

In this strategy, we are more looking forward to seeing structural reform, the so-called institution reform. In order to promote market-oriented process unswervingly, it is important to break the state monopoly, strengthen private enterprises, safeguard fair competition, and encourage innovation. In so

Figure 1-11 **The "institution bonus" of the** 30 **years from** 1978 **—to date and the next** 30 **years after** 2013



doing, China will be able to fully release its inherent tremendous development potential and the Chinese economy will be able to maintain sustainable development.

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Chapter 2

Economic Growth in the Philippines: An Analysis of the Middle Income Trap

Photo**2-1** the Shopping Centre in Manila (by Celia Umali)

Photo**2-2** the Street in Manila (by Celia Umali)

Introduction

The Philippines has been getting positive assessment because its economy has shown a relatively good and vibrant performance with gross domestic product (GDP) growth rate of 7.6% in 2010 and 6.6% in 2012, the highest among its ASEAN neighbors. In attestation to this, in March 2013, a global rating agency upgraded the investment status of the Philippines to BB+ which translated to the good performance of the stock market and increased confidence of foreign direct investors. This optimistic outlook on the economy is a good opportunity for the country to promote itself as a rising and promising growth area. The World Bank said that the Philippines is no longer the sick man of East Asia, but a rising tiger (Katigbak, 2013). The country was in a similar situation more than half a century ago when the Philippines was one of the countries in Asia that showed a lot of promise in terms of economic progress. In 1962 the Philippines had a GDP growth rate of 4.8% which was higher than that of South Korea whose economy grew 2.5 %, to be outperformed from the 1970s and since 2010 the economy of the Philippines could be seen re-emerging (Table 1). But behind this optimism and given the fact that the gross domestic product and per capita income have grown over the last 50 years, to become a Tiger (just like South Korea,

Table 1. GDP growth rates, selected countries.

	Philippines	Indonesia	Thailand	Malaysia	Singapore	S.Korea
1962	4.8	1.9	7.6	6.4	—	2.5
1970	3.8	8.2	11.4	6.0	13.8	8.3
1980	5.1	8.7	5.2	7.4	10.0	−1.5
1990	3.0	9.0	11.2	9.0	10.1	9.3
2000	4.4	4.9	4.8	8.9	9.1	8.8
2010	7.6	6.2	7.8	7.2	14.8	6.3
2011	3.9	6.5	0.1	5.1	4.9	3.6
2012	6.6	6.0	5.5	4.5	1.3	2.0

Source: UNData, United Nations Statistics Division.

Taiwan and Singapore) there is still one hurdle to overcome: the middle income trap.

Middle income trap

In this paper we take the definition of income brackets suggested by the Asian Development Bank (ADB) (Felipe(a), 2012): nations with GDP per capita of less than US$ 2000 are considered in the low income category, U$ 2,000 −U$ 7,250 (at 1990 PPP) are classified as lower middle income and U$ 7,250−U$ 11,750 as upper middle income and over U$ 11,750 as high income. Further to this ADB stated that nations in the lower middle income bracket have to attain a GDP per capita growth rate of at least 4.7% a year to get out of the middle income trap, and those in the upper middle income have to achieve a GDP per capita growth of at least 3.5% again to elude the trap. In the case of the Philippines the per capita income in 2010 has reached US$ 2,140 (Table 2)that ranks it at the lower middle income category and if the current growth rates are sustained it can move up from the lower income level to the middle income level or why not even to the high middle income status. But for a long time now the Philippines has been held captive in the low income level and more recently in the (lower) middle income trap.

The Philippines had traditionally an agricultural economy which provided employment to majority of the population and where most of the exports

Table 2. Per capita income, Philippines and other Asian nations (current prices US$).

	1960	1970	1980	1990	2000	2010	2011	2012
Philippines	146	209	764	797	1,048	2,140	2,370	2,701
Indonesia	-----	82	526	679	773	2,952	3,495	3,592
Thailand	101	200	705	1,547	1,997	4,934	5,318	5,678
Malaysia	299	343	1,913	2,612	4,168	8,691	9,977	10,578
Singapore	395	925	4,989	12,874	24,063	44,087	50,087	50,323
S Korea	257	284	1,719	6,291	11,598	21,063	21,063	23,113

Source: UNData, United Nations Statistics Division

originated. The foreign direct investment (FDI) —led growth and export oriented policy adopted in the 1970s gained momentum in the 1980s and led to the industrial restructuring with the contribution to GDP and employment of agriculture on the decline and that of manufacturing and later on services on the rise. But at the early stage the Philippines focused on light and labor intensive industries like textiles, garments, footwear and furniture. In the 1980s -1990s as part of the internal restructuring in advanced countries like Japan which dropped the production of low value goods and as a consequence pushed foreign companies to invest in the country (along with other ASEAN countries) for the assembly of imported parts and components of electronics and semiconductors and which up to now are the main manufactured exports and form a big part of the industrial (electronics) development of once a natural resource based economy. During this process of industrialization however services have preeminently been the leading contributor to economic growth but failed to lift the economy out of the middle income trap either. Against this background the premise is that the Philippines has lost it competitive advantage in the production of low end-low value goods and yet could not evolve in the production of high end-high value goods and this is one of the reason why the country could not break free from the middle income trap after all these years.

From the 1960s to the 1980s, the country's economy posted good economic performance. The GDP per capita of the Philippine was higher than that of Thailand only to show a reversed trend from the 1990s when it grew twice that of the Philippines (Table2). Similarly, South Korea and the Philippines showed a small divergence in per capita income in 1960-1970 but from the 1980s the Philippines was totally left behind with the income of South Korea ballooning up to 10 times that of the Philippines (Table 2). It can be noted also that there was a big improvement in income in the Philippines since the 1960 but the country has reached the stumbling block of not being able to ad-

vance to a middle income or high income position. The objectives of this chapter are to trace the economic growth of the Philippines in a historical perspective that enabled it to achieve the (lower) middle income status; study why the Philippines has not broken the (lower) middle income glass ceiling throughout the years, and look at issues that can help the Philippines get out the (lower) middle income trap.

Conditions of dynamic growth

The ASEAN model of growth and development is based on more open regimes. The FDI led industrialization and export oriented growth basically led to the emergence of the electronics and semiconductor industry whose products found their way to the international market using the distribution network of the mother company. But in the case of the Philippines it has failed to graduate to the manufacture of more high level products and in the same light home grown entrepreneurs and innovators failed to develop, learning from the imported technology acquired through foreign direct investments. The industrial deepening that Habito (2013) and Tham and Loke (2011) pointed out calls for the need for entrepreneurs whose innovative capabilities have to be developed and nurtured. Industrial deepening (Tham and Loke, 2011) also refers to the development of human capital and an industrial policy to support the growth and development of the manufacturing sector and fortify its linkages with the rest of the economy. And this takes time and commitment (Nelson and Winter, 1982).

For long term growth, productivity has to be improved through physical but also human capital accumulation. Taking Solow's production function, in the Philippines growth relied on inputs as sources of growth (labor and capital) and not on productivity that would be based on R&D and innovation driven, better management and organizational capabilities. The World Bank

(2011) confirmed with empirical studies the positive relationship between firm led innovation (which can be measured by R&D efforts and new products) and total factor productivity. For a firm its highly qualified workers and managers can learn, absorb, create and bring the innovation to market. The country however can not advance to the manufacture of more innovative products due to weak human capital accumulation which deals with not only the quantity but also the quality of education. In order to break the glass ceiling investment in human capital that will raise productivity and return to capital has to be strengthened. In the same light, Lucas, Mankiw and Romer (1991), Dowling and Valenzuela (2011) contend the importance of education to provide the skilled labor as countries shift to more valued added manufacturing.

There are many theories to explain the growth of the economy. Lewis (1955), Rostow (1959), and Chenery and Taylor (1968) look at growth as a dynamic process that involves industrial restructuring where allocation of resources moves from the sector that has low productivity to that of higher productivity. And this needs a big push (investment) to start industrialization. Hidalgo et al. (2007) and Hidalgo and Hausmann (2009) and (Lall, 2001) put more credence to the above propositions and state that economic development involves the production (and export) of more complex and high technological products and this needs deeper learning to get the knowledge and techniques to manufacture these products (Felipe (b), 2011). Hidalgo and Hausmann (2009), Felipe (b) (2011) and Sutton (2001, 2005) put forward the concept of capabilities of workforce for a country to advance to high productivity. The workers are in the frontline of firm activities. Human capital development in general or the education and training of the workforce in particular will render them more qualified to engage in highly productive—high end sectors of the economy. (Felipe et. al. 2012). Doing so will translate to increase in wage income.

Gottinger (2012) supports the theory of Abramovitz (1986) that for a country to grow technical capability and social components have to be developed. Social institutions like education, entrepreneurship, liberal trade regime and economic freedom are the determining factors that would dictate the capacity as well as the speed of technology absorption or production efficiency.

Investment in human capital is very important to break this glass ceiling and escape the lower middle income trap but this is not enough for long term growth. The Economist (2012) presented the issue of industrial stagnation which it describes as the inability of the industry (manufacturing) to position itself up the high tech global market chain. This is in line with the research findings of Hausman and Klinger (2006) which showed the strong relationship between sophistication (higher value added) of exports and long term growth and per capita income. And why can't the Philippine do exactly this. ADB (2007) and Bocchi (2008) cited many reasons such as the weakness in human capital investment and the lack of a clear coordinated industrial policy (Lall, 2001) as well as problems in infrastructure like roads, power supply and ICT connectivity. One other factor as important to consider is defective institutions (World Bank, 1993) or poor governance (e.g. corruption and bribery) that retard economic growth specially in developing economies, evident in Asia (Wei, 1999) and Latin America (Fukuyama, 2008). All these factors have an impact on the cost of doing business in a country and discourage local entrepreneurs but also foreign investors to continue doing business or engage in start-ups (Usui, 2012). The lower the investment, the slower the capital formation which translates to slower economic growth (Dowling and Valenzuela, 2010).

Philippine Economic Growth: Historical Perspective

FDI-led industrialization and export-oriented growth

Agriculture was the largest sector in the Philippines until the 1960s. During this time the economy was highly dependent on the country's traditional natural resource-based and agricultural exports accounting for 85% of total exports in the 1960s. Industrialization adopting inward looking and import substitution strategy behind protectionist sentiments and tariff structures and overvalued peso (strong) started in the Philippines in the 1950s. The main goal of this action plan was to protect infant industries that would cater to the domestic market. The nation's comparative advantage at this time was founded on natural resource-based industries. This is the reason why the Philippines had to import consumer goods which eventually resulted in the drain of the international reserves of the country. The government implemented import control to correct this problem and the amount of consumer goods imported was reduced and replaced by domestic production. The importation of machines and equipment, raw materials and intermediate goods needed by the new industries in the country such as textiles, transport equipment, electrical appliances and non-electrical machinery and metal products needed during the 1950s-1960s increased giving rise to a negative balance of payment. In response, the government pursued an export oriented industrialization policy in the early 1970s and this covered the following provisions: 1. Introduction of new investment laws like giving special treatment to foreign investors in export activities; 2. Adjustments in the investment incentive system like the offering of tax concessions to manufacturers of products for export and 3. Changes in the tariff structure including duty free imports of raw materials, parts and components and intermediate inputs for export manufacturing, 4. Establishment of export processing zones and 6. Extensive deregulation.

Accompanying the liberal market-led growth strategy was the establishment of export-processing zones (EPZs). Till the 1980s the country had very poor physical infrastructures which were considered advanced factor endowments to attract FDI. The poor infrastructure was a deterrent to the inflow of foreign direct investors hence the need for the development of export-processing zones or in some cases special economic zones (SEZs) or free trade zones (FTZs). EPZ (SEZ or FTZ) is an area developed by the government, the private sector or a joint public-private endeavor where MNCs can locate on the provision that they export a major part of their production. The EPZs have all the modern infrastructures like water, electricity and telecommunications and usually are connected to main ports and airports by well-developed roadways. Multinational companies that located in the EPZs were given preferential treatment such as tax holiday and duty and tax exemption on imported parts, capital equipment and raw materials.

Foreign direct investment in the Philippines although smaller in value compared to other nations in ASEAN, started to deepen from the 1980s peaking in 1995-99 valued at U$ 7 billion and again in 2005-2009 valued at U$ 11B (Table 3). There have been irregular oscillations in FDI which is greatly influenced by global economic cycles. Most recent was the negative economic impact of the ' Lehman shock ' in 2008 which sent shockwaves throughout the international business world resulting in a 23% decline in FDI. A great portion of this foreign capital was invested in manufacturing particularly in electronics (Tables 3 and 4). The inflow of FDIs into the Philippines led to the transformation of the Philippine economy and beginning of the industrialization process. The economy grew at a slower pace in the 1990s and saw manufacturing sector grow overpassing agriculture (Table 5). Electronics, transport equipment and chemicals which were practically negligible in the past now became a main contributor to the growth of the manufacturing sector.

Table 3. **FDI in ASEAN** (**U$ B**).

Countries	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-11	2000-11
Indonesia	1.5	2.9	1.1	2.2	8.6	13.3	-5.8	34.4	32.7	61.3
Malaysia	1.1	2.2	5.7	4.0	22.1	26.0	14.6	27.3	21.1	63.1
Philippines	0.2	0.6	0.9	2.2	4.7	7.2	5.2	11.2	2.6	18.9
Singapore	1.1	1.9	6.9	12.1	25.9	63.9	80.1	137.9	112.6	330.7
Thailand	0.4	0.4	1.4	3.7	10.0	21.9	22.9	42.2	19.3	84.5
Vietnam	0.0	0.0	0.0	0.0	3.9	9.5	7.1	28.2	15.4	50.7
Total	4.2	8.1	16.0	24.3	75.1	141.9	124.1	281.3	203.7	609.1

Source: Arangkada, Philippines
http://www.investphilippines.info/arangkada/growth/low-foreign-direct-investment-flows/#fig22

Table 4. **FDI in the Philippines by industrial sector**, 1999-2012 (**U$M**)

Net FDI by industry/sector

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	1999-2011
Agriculture. Forestry & Fishing	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.1	3.7	0.7	0.2	2.4	4.0	11.2
Mining & Quarrying	31.0	80.5	0.0	21.5	-7.2	0.2	0.4	32.4	154.6	154.9	6.2	282.1	-240.4	516.1
Manufacturing	149.6	237.5	275.1	744.4	89.5	83.6	531.6	408.7	548.6	311.9	887.8	-1,275.2	102.3	3,095.5
Electricity. Gas & Water	18.0	0.0	0.0	0.0	0.0	8.6	-6.3	200.4	699.2	224.7	389.6	-14.8	-22.6	1,496.8
Construction	4.5	16.2	15.5	21.5	19.4	-15.5	-2.9	8.7	50.4	171.9	79.2	-1.6	28.1	393.4
Wholesale & retail trade	0.0	31.5	1.8	5.5	0.0	18.6	3.6	8.3	4.6	22.2	4.2	32.4	30.6	163.3
Accommodation & food service	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	5.7	14.9	105.7	2.9	131.7
Transport. storage & communications	12.1	360.0	104.0	0.0	0.0	1.6	-32.4	-8.5	12.8	-27.0	7.3	106.3	262.7	798.8
Financial & insurance activities	291.1	38.6	67.8	68.8	-35.9	6.8	199.5	-20.1	-22.6	215.7	237.5	59.6	211.6	1,318.4
Real estate	0.0	2.6	6.7	0.0	27.5	54.8	111.9	120.5	137.7	158.3	89.1	181.5	111.6	1,002.3
Services	0.0	0.0	16.5	316.2	-307.2	89.9	17.1	-119.5	42.3	-11.5	18.0	112.3	35.4	209.7
Health & social work	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-14.9	-14.9
Others (not elsewhere classified)	671.8	565.7	70.5	428.4	462.6	500.9	358.3	692.9	515.2	7.7	-2.8	13.3	1.6	4,086.0
Total equity	1,178.0	1,333.0	556.0	1,607.0	249.0	750.0	1,181.0	1,324.0	1,949.0	1,235.0	1,751.0	-396.0	513.0	13,210.0
Reinvested earnings	449.0	-334.0	-258.0	255.0	168.0	141.0	140.0	485.0	620.0	53.0	155.0	182.0	365.0	2,401.0
Other capital	-380.0	1,241.0	-103.0	-300.0	74.0	-203.0	533.0	1,112.0	547.0	256.0	77.0	1,512.0	384.0	4,550.0
Total Net FDI	1,247.0	2,240.0	195.0	1,542.0	491.0	688.0	1,854.0	2,921.0	2,916.0	1,544.0	1,983.0	1,298.0	1,262.0	20,161.0

Source: Arangkada, Philippines
http://www.investphilippines.info/arangkada/growth/low-foreign-direct-investment-flows/#fig22

Table 5. **GDP by industrial origin, Philippines**.

	1990	2000	2011
Agriculture	22	16	12
Industry	34	32	33
Services	44	52	55

Source: APO Productivity Databook, 2011.

Unlike in the 1960s when 54% of total exports were derived from food exports, in the 1980s this declined to 24% and was replaced by manufactured exports which accounted for 23%. The manufactured goods for exports mainly consisted of chemicals, food, basic metals textiles and electronics (i.e semiconductors, electronic data processing equipment, office equipment, telecommunication equipment, communications and radar, medical and industrial equipment, automotive electronics, consumer electronics and solar cells). The important contribution of the electronics sector to the economy is corroborated by its over 50% share in the total exports as depicted in Table 6.

The good performance of the economy in the decade from the 1960s though was marred by the political and economic crisis in the 1980s leading to the devaluation of the peso, decline of public investment, massive monetary contraction, and high interest rates (Lim, Joseph Y. and Manuel F. Montes 2000). As a result the economy dipped by 7% in 1984-1985, but soon to recover in the late 1980s with the economy growing at 2.7% in the 1990s

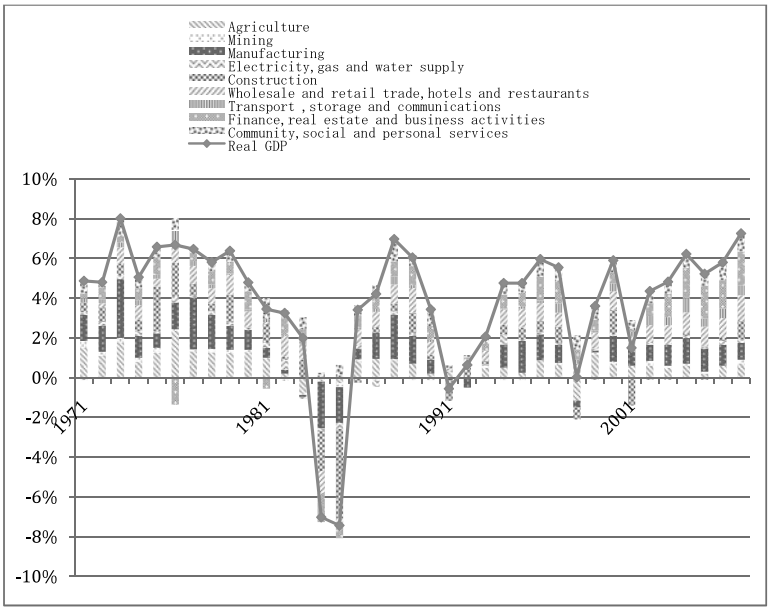
Table 6. **Share of electronics in total exports, Philippines**.

Year	% share to total exports
2000	71
2001	68
2002	69
2003	66
2004	67
2005	66
2006	63
2007	61
2008	58
2009	58
2010	61

Source: Board of Investment (B0I), Department of Trade and Industry, Philippines, The Philippine Electronics Industry Profile, February, 2011; http://www.investphilippines.gov.ph/downloads/sector/Electronics.pdf

although the per capita income has not changed much from the 1980s (US$ 764) to the 1990s (US$ 797) (Figure 1 and Table 2).

Figure 1. GDP growth rate by industrial origin.



Source: APO Productivity Databook, 2011.

The two factors that led to the growth of country were openness and technology transfer. As economies of developing countries grow, they can not sustain this growth in the long term if they highly rely on the exports of labor intensive low value added products. Increased growth in a country also translates to wage increase and which eats up much of the company's income. It is hypothesized that due to the export-oriented growth strategy, FDI flowed in continuously and generated employment for labor drawn out from the agriculture and increased income. As an off-shoot of the export oriented development strategy and the FDI-led industrialization, the economy of the Philippines followed the same economic growth trajectory only taking severe dips

in the 1980's due to the political turmoil during the Marcos regime, in 1998 the aftermath of the 1997 Asian financial crisis and the aftereffect of the Sept. 11 event in 2001 in the US (Figure 1). The Lehman shock that led to the global recession did not have an adverse affect on the Philippine economy due to the increased domestic consumption which accounted for 70% of the GDP as well private spending on real estate financed by overseas remittances that amounted to 10% of GDP in 2011. Due to FDI in the manufacturing sector there developed a new industrial sector (e.g. electronics and auto industries) which was practically non-existent in the 1960s. Together we saw the economy grow at 5.8% in the 1970-1980's with GDP per capita of US$ 209 in 1970, jumping six fold to US$ 764 in 1980 and increasing more than three times as much to U$ 2,701 in 2012 (Table 1).

Passive foreign direct investment

Prof. Lall of Oxford University investigated the experiences of many countries in the acquisition, adoption and expansion of technology. He identified four models which for the purpose of this paper will be lumped together into 2 clusters based on the role of FDI: 1. FDI independent (autonomous and import substituting industries) and 2. FDI dependent (strategic FDI dependent and passive FDI dependent) (Lall, 2001).

Countries that use the FDI independent model restrict FDI and promote exports. They either import technology and over time develop the domestic technological capacity through a pronounced industrial policy (autonomous) or private sector (domestic or foreign) led modernization, transformation and expansion of industries. The foundation of the local capabilities has already been previously well in place in these countries. The FDI dependent model on the other hand typically explains the growth pattern in East Asia. The advanced countries in East Asia like Singapore adopt the strategic model while those in the middle income trap embrace the passive model. The stra-

tegic behavior of nations welcomes and steers FDI to high value added—high end business activities having laid out a strong industrial policy (e.g. skilled manpower, institutions and infrastructure) and R&D and technological facilities. The development strategy of the Philippines is based on the passive FDI dependent scheme. Incentives were put into effect to attract FDI whose manufactured products were mostly for exports taking advantage of the inexpensive workforce. But this scheme just brought in technology in the form of equipment, process or patents and did not involve enhancement of local skills nor improvement technological ability. Further to this, over time the export driven industries flourished at the expense of domestic (manufacturing) industries which functioned in isolation (Lall 2001).

Industrial deepening

The Philippines participates in the globalization of production network but the product range of exports in the Philippines is limited. Basically the country just manufactures (assembles) electrical machinery, non-electrical appliances and machinery and semiconductor which accounts for 60% of the manufactured exports. They are low in value and are vulnerable to price and demand fluctuations in the international market. This is a too narrow range of differentiation of manufactured products. Usui (2012) pointed out that the country and in the strictest sense the firms have failed to expand the variety of industrial manufactured products and exports from basically electronics and most often times parts and components are imported into the Philippines and using labor to assemble them to finished products or sub—assemblies and re-exported. In reality there is no indigenous or homegrown innovation being used or developed to be adopted. As shown in Table 7, R&D expenditures in the Philippines on a worldwide basis and as a percentage of GDP are almost nil. The number of patents approved in the case of the Philippines was just 6 in the 1990-1994 and 18 in 2000-2004 (Table 8). This shows the very

low level of innovation in the country. Where manufacturing stands now lacks the industrial deepening that could increase the labor productivity which translates to higher wage and income per capita. The industrial sector can provide the impetus for growth and improved income by job creation but Usui (2012) emphasized that the industrial dynamism is inexistent while Habito (2013) highlighted the missing industrial deepening. More spirited and enterprising individuals have failed to emerge. Even the top ten biggest companies in the country are engaged in agribusiness, retailing, finance, real estate and telecommunications and not in high tech manufacturing. The industrial sec-

Table 7. **R&D expenditures.**

Country	R&D expenditure 2002		R&D (%GDP)	
	US$ B	% World	1992	2002
Korea	20.8	2.5	1.9	2.5
Singapore	2.2	0.3	1.2	2.2
Taiwan	12.2	1.5	1.8	2.3
Indonesia	0.3	0	0.1	0.1
Malaysia	1.5	0.2	0.4	0.7
Philippines	0.4	0	0.2	0.1
Thailand	1.1	0.1	0.2	0.2
China	72	8.7	0.8	1.2

Source: Milan Brahmbhatt and Albert Hu, Ideas and Innovation in East Asia, The World Bank Research Observer, vol.25, no.2 Aug.2010, page 180.

Table 8. **No. of Patents granted, USPTO.**

Country	1990-1994	2000-2004
Korea	633	4009
Singapore	36	382
Taiwan	1307	6593
Indonesia	6	15
Malaysia	13	64
Philippines	6	18
Thailand	6	43
China	48	368

Source: Milan Brahmbhatt and Albert Hu, Ideas and Innovation in East Asia, The World Bank Research Observer, vol.25, no.2 Aug.2018, page 182.

tor seems to have failed to maximize its potential and contribution to growth and further improvement of income.

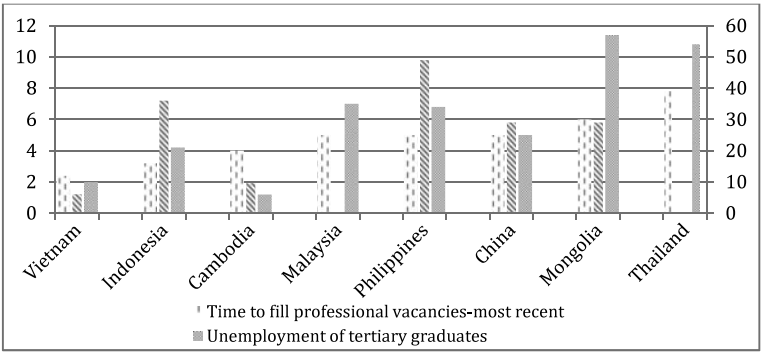
Even until now, semiconductors and electronic microcircuits and finished electrical machineries and electronics are the main exports of the Philippines. And yet 55% of the national income is derived from the service sector (and not the manufacturing sector, 33%) which generates employment for 58% of the workforce in 2012 vis a vis manufacturing (8.8%). With the developments in ICT (information and communication technology), BPO (Business processing outsourcing) businesses such as customer service, software development, finance animation, medical transcription and accounting services give much boost to the service sector accounting for 14% of the total exports amounting to U$ 8 B in 2009. Likewisethe growth rate of transport and communications services doubled from 4.3% in 2011 to 9.1 % in 2012. Real estate, renting and business activities, which include the ICT-BPO had a better than expected growth of close to 8% and the impressive performance of tourism-related subsectors, such as hotels and restaurants, and recreational, cultural and sporting activities had a record 13.3% growth compared with only 7.1% in 2011 (Olchondra, 2013). And yet the service sector has failed to further lift the per capita income.

Demand and supply of labor gap of skilled labor

Together with improvement in the standard of living (rising middle income) is the improvement in the educational level in the country at indicated by the literacy rate of 95% in 2011. Ironically inspite of the 6.6% growth rate in 2012 and although jobs were there, unemployment and underemployment rates of 6.9% (2.8M) and 19.3% (7.16M) prevailed, respectively. Obtaining a university degree does not guarantee a well paying job since 30% of the graduates are unemployed (Figure 2). The number of people entering the workforce annually is 1.1M. But the domestic job market according to

the World Bank in the formal services and manufacturing industries can not absorb all the people who are ready to work. A gap between the supply and demand for graduates exists. The industrial sector is having difficulty to find the appropriate workers given the high literacy rate (Figure 2).

Figure 2. **Literacy rate, unemployment and time to fill jobs in Asia**, 2011.



Source: World Bank, Securing the Present Shaping the Future, World Bank East Asia-Pacific Economic Update 2011 Vol.1, page 55.

The World Bank (2011) reported that it takes 5 weeks to fill up a professional position. Many young people pursue degrees in nursing or medical related fields, engineering and hotel and restaurant management in the hope of working overseas. The chronic brain drain is one reason for the mismatch. The other is that many jobs were available in the service sector (e.g BPO) where innovative capacity requirement is not high and not in the industrial sector. Amid the industrial transformation the service sector is the main driver of growth. The service sector's labor productivity and labor absorption though have been lower and the overall linkages in the economy are rather weak (Usui, 2012).

Main determinant of growth: factor input driven

From the above discussions we can gather that much of the growth in the Philippines was factor input driven. The industrialization policy typified by an FDI/export oriented led industrialization saw the transition from traditional agricultural economy to that of manufacturing economy in the 1970s and to services from 2000. The economic progression though started from light labor intensive industries like garments and textiles, furniture, bags, footwear and toys then to the manufacture of electronic and semiconductor, an industry has thus evolved in the country in just a short time and now investments have been directed at business processing services. In all account, the main engine of growth was cheap factor inputs: labor and capital. This is accompanied by a shift of employment of labor force to the manufacturing/service sectors from agriculture leading to improved per capita income.

As can be seen in Table 9 it has been capital and labor that have contributed much to the growth of the economy from the 1960s and 40 years later factor productivity has improved. This is in agreement to the argument that growth has been (cheap) input driven and not productivity driven. It is also a held belief that increased capital accumulation can lead to long term growth through its contribution into the production activities in a county which all depends on the savings rate. But in developing countries savings are still small.

Table 9. **Contribution of labor and capital to growth**, 1961-2006(**percent**).

Period	Contribution of capital stock	Contribution of Labor	Contribution of Total factor productivity
1961-1970	3.98	1.18	0.06
1971-1980	4.57	1.38	-0.64
1981-1990	2.05	1.37	-1.62
1991-2000	1.77	0.87	0.25
2001-2006	1.12	1.24	2.41

Source: ADB, Critical constraints to Growth, 2006, page 10.

Hence in the Philippines these shortcomings are compensated by overseas remittances and foreign direct investment.

Agenor and Canuto, and Jelenic (2012), Canuto (2011); Eichengreen et al (2011) explain the Lewis theory of development that as internal transformation and subsequent shift from agriculture which can be characterized as a low value sector to a high productive sector like manufacturing industry occur in a country, income per person improves. This materializes as technology from overseas sets into the country but usually low end manufacturing that takes advantage of cheap labor for assembly of imported parts and components. The job generation shift from agriculture to industry, gives rise to increase in wages pushing them to the middle income status but at the same time the country loses its competitive edge as far as labor cost is concerned.

With the internationalization process wherein technology was transferred through FDI it is believed that in parallel human capital (workers capability) and physical capital (infrastructure) have to be improved. FDI can bring about long term growth (e.g. increase in income) if it brings technology and if this technology can improve productivity (Makki and Somwaru, 2004) as a result of better absorptive capacity of the labor force. In 1996 Paul Krugman however said that East Asia was good at mobilizing cheap labor and foreign capital and stressed that once these inputs are exhausted, the growth will be affected (BusinessWeek, 1996) because they do not have the productivity and innovation to sustain growth. And this is where the weakness of the Philippines economy lies as wage levels go up: innovation technological readiness and infrastructure (Table 10). In the 2012-2013 Global Competitiveness Report, the country was ranked low in all three indicators but more specifically the quality of research institutions, the government procurement of cutting edge technology and substandard ports and airports and problems with IT connectivity. Inevitably, the global competitiveness rank of the country was no.75 and no.65, respectively, relatively low (Table 11) compared

Table 10. **Global competitiveness ranking, Philippines**, 2012-2003.

Indicators	Rank (out of 144)
Innovation	
1. capacity of innovation	86
2. quality of scientific research institutions	102
3. company spending on R&D	58
4. universtiy-industry collaboration on R&D	70
5. government procurement of advanced tech products	107
6. availablity of scientists and engineers	91
7. PCT patents, application/m pop	83
Technological readiness	
1. availability of latest technology	56
2. firm-level technology absorption	46
3. internet users, individuals (%)	90
4. broadband internet subscriptions/100 pop	91
5. internet bandwidth	75
6. mobile broadband subscription/100 pop	93
Infrastructure	
1. quality of overall infrastructure	98
2. quality of roads	87
3. quality of railroad infrastructure	94
4. quality of port infrastructure	120
5. quality of air transport infrastructure	112
6. quality of electricity supply	98
7. mobile phone subscriptions/100 pop	95
8. fixed phones line/100 pop	103

Source: Klaus Schwab (ed), The Global Competitiveness Report 2012-2013, World Economic Forum, 2013) p.293 http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2012-13.pdf

to other AEAN economies.

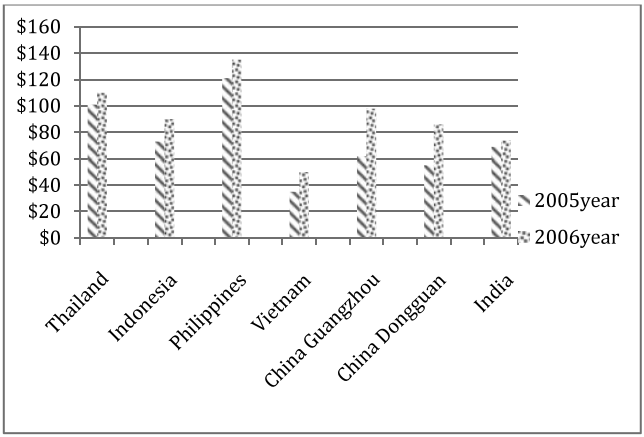
The Philippines has lost its competitive edge in the manufacture of low value added goods in one end which has sustained the economy for decades. In terms of labor costs the Philippines has lost out to Vietnam, Cambodia and Myanmar where the minimum wages are 3-5 times less expensive (Figure 3 and Table 12). In seven years from 2006 to 2013 monthly wage rates have

Table 11. **Global competitiveness indexes**, 2011-2013.

	2011-12	2012-13
Philippines	75	65
Thailand	39	38
Indonesia	46	50
Malaysia	21	25
Singapore	2	2
Vietnam	65	75

Source: Klaus Schwab (ed), The Global Competitiveness Report 2012-2013, World Economic Forum, 2013) p.13 http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2012-13.pdf

Figure 3. **Monthly minimum wage in Asia.**



Source: Jetro, Comparative Survey of the Labor Environment in ASEAN, China, India, Overseas Research Department, October 2006, page 16. http://www.jetro.go.jp/thailand/thai/pdf/laborsurvey06.pdf

gone up in the Philippines from US$ 134 to as much as US$ 300 which are higher than in Thailand and Malaysia. As this progresses the country does not possess the ability to manufacture high value added goods which are efficiency and innovation driven on the other end (Schwab 2013), that could pave the way for increase in wages. All the gains from foreign direct invest-

Table 12. **Minimum monthly wage rates in Asia**, 2013.

Country	Monthly minimum wage, US$
Myanmar	16.52
Cambodia	61.00
Pakistan	70.41
Vietnam	66.05-94.36
Mongolia	97.22
Indonesia	84.46-223.74
China/Shenzhen	140.63-242.46
Thailand	220.45-297.91
Malaysia	260.01-292.51
Philippines	295.95-322.08
Taiwan	633.96
Hongkong	865.53
South Korea	1032.15
Japan	1532.20-1988.42

Source: Philippines Dept. of Labor and employment, National wages and Productivity commission, Statistics, Comparative Wages in selected countries, http://www.nwpc.dole.gov.ph/pages/statistics/stat_comparative.html

ment have also been exhausted that they have failed to increase further the income per capita. FDI were just to assemble products for export making use of labor when wages were still very low but over time increased productivity from industrial reallocation did not seem to work either. These two factors at each end of the spectrum have been keeping the economy penned up in the middle income status.

Concluding Note: Escaping the middle income trap

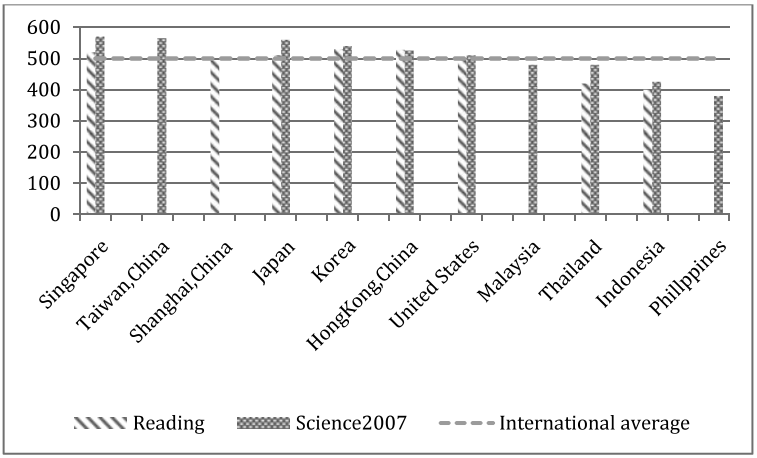
The idea of the Philippines becoming a tiger economy is much to be desired and the middle income glass ceiling be broken. Philippines made it from low income to lower middle income triggered by FDI led industrialization and export oriented growth strategy. This led to an internal industrial change and increase in per capita income. And if a nation remains stuck in a set of indus-

tries (low end manufacturing) it loses its competitiveness because wages increase as the economy moves up the ladder to industrial maturation. But the country can not advance itself out of the lower middle income status to higher middle income level and not even to high income status. The passive FDI technology transfer of machines, parts and management and marketing knowhow did not propel domestic (indigenous) industrial development nor did it provide the bedrock of the domestic industrial base. The robust growth of the country at present is mainly attributed to dollar inflows from OFWs and investments in property by overseas Filipinos and the remarkable expansion of outsourcing, BPO.

A good indicator however of a country's economic strength is true industrialization that requires industrial deepening where innovators, technical standards, research facilities to support technology and high quality education to support all these exist. There is a need of industrial deepening which actually entails investing in human capital, in terms of training and education of workforce who industry and firms need to operate efficiently, improve productivity and initiate innovation. Education has to advocate a strong science and engineering knowledge. A World Bank (2011) report shows that the science ability of students in the secondary level of education in the Philippines was low compared to the ASEAN-4 countries and very low in relation to the international average (Figure 4).

Graduates capable of deeper learning than the simple assembly of low end manufactures where skill upgrading is rather low, have to be groomed. This takes time and a lot of effort but in the long term will lead to increased productivity of labor and increase in wage and income. Many universities are underfunded and research funds are lacking and this has to be corrected through a good fiscal policy. In parallel there has to be a strong industrial policy that includes a long term industrial development plan where in the government will identity the strategic industries (e.g. ICT, electronics, shipbuilding

Figure 4. **Science education in Asia**.



Source: World Bank, Securing the Present Shaping the Future, World Bank East Asia-Pacific Economic Update 2011 Vol. 1, page 54.

and biotechnology) it will nurture and protect. The government should coordinate and communicate with educational institutions the curriculum to meet the manpower needs of these strategic industries.

Alliances among the public/private universities and foreign or local big or small and medium sized-firms mixing foreign and indigenous knowhow as a way to improve domestic capabilities can be promoted (Lall 2001) and innovative ideas and patents derived can be sold for commercialization or start up/venture business can be initiated. Ideas and techniques developed by brilliant students from universities and research laboratories can be tapped and with the private-public support encourage start ups. Firms backed by government guidance and support (e.g. low interest loans, subsidy and tax breaks) can initially do original equipment manufacturing (OEM) or electronics manufacturing services (EMS) the products of which are produced for the mother company and marketed through its distribution channel. In time the local firms go down the learning curve and advance to the development of their original product the technology of which was derived from this OEM/

EMS arrangement. The country can start as OEM/EMS just as how firms in Taiwan and Korean started but again there has to be highly skilled people to do this. FOXXCON of Taiwan started as a small and medium enterprise, partook in an EMS arrangement in the manufacture of smartphone, ipad and game consoles and now plans to come out with its own gadgets.

No one final good now is produced in one country by a single firm. Rather the vertically integrated production process of parts and components and finished goods can now be broken up into finer steps giving rise to cross border division of manufacturing with the aim of reducing costs and increasing profitability. Parts and components are produced in different countries of ASEAN depending on their comparative advantage (e.g. cost, quality of labor, market and government policy) (Yip, 2000, Umali, 2006). Given this the recent overseas operations of Japanese companies show very aggressive investments in Asia both to capture markets as well as serve as production centers for the world market and to maintain price competitiveness. Japanese companies are creating supply hubs in certain countries in Asia for specific products and then engage in intra/extra Asian trade. Japanese companies which had the biggest FDI in manufacturing have established a regional supply chain and an efficient production network of intermediate goods (e.g. electrical and machinery products) produced in optimal locations in ASEAN and then transported within the ASEAN for final assembly of products geared for the local and international markets. Why can't the Philippines participate actively in regional production sharing in Asia by identifying which industry it has a comparative advantage and concentrate on this, enacting the right industrial policy and gearing education to meet the needs of this sector.

As important is infrastructure development to reduce the cost of doing business in the Philippines so the provision of sufficient and cheap supplies of electricity, water, information and communication technology (ICT) and transportation have to be assured. Good governance has to be prioritized so

that corruption is eradicated, bureaucracy streamlined and national security assured. To improve the fiscal position of the country, a thorough and honest implementation of the tax collection system can be strongly pushed. To complement the manufacturing and service industries agribusiness, tourism and medical services industries where indigenous firms can actively participate can be promoted to provide industrial diversity and better regional (local) development.

Industrial deepening that involves the evolution of highly productive industries can free the Philippines from the low value industrial trap and the provision of skilled and suitable labor force to these industries will lead to increased wage income releasing them from the (low) middle income trap. This will not come into fruition unless there is a strong industrial policy and political will.

Summary

The growth of the Philippine economy can be attributed for one to FDI—led industrialization and export oriented growth strategy. The economy of the country has improved substantially but could not progress beyond the middle income status. The domestic (indigenous) manufacturing and skills of the workforce though have not grown and advanced that are needed for industrial deepening to enable the country to produce more value added goods. This involves looking at the institutional factors such as investing in human capital. Firms need qualified workforce to operate efficiently, improve productivity and initiate innovation. In parallel a good and sound industrial policy to support industrial deepening and good governance have to be put in place.

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Chapter 3

Economic Growth in Brazil: From the " Brazilian Miracle " to " BRICs " through " Lost Decades "

Photo**3-1** the Slum in Rio de Janeiro **(2013.03.10)**

Photo**3-1** the City of Brasilia **(2013.03.15)**

1. **Why Brazil, now?**

It is quite clear that so-called "Emerging Economies/Markets" like Brazil, Russia, India and China will occupy the most important position in the world economy in at least more than ten years from now on. Among Asian countries, those economies/markets would be China and ASEAN countries which have deep relationship with Brazilian economy/market.

For example, Brazilian foreign trade both in export and in import with China has exceeded those with U.S. in amount since 2011 which for long had occupied first place in Brazilian foreign trade. This means, from Chinese side, foreign trade with Brazil has deeply involved Chinese people in their daily life up to the point that now "there is no Chinese family without Brazilian soy beans on the kitchen table".

Many Japanese corporations have raised such business strategy in their middle term corporate planning as to target "Middle Income Class" as most important markets in Thailand, Malaysia, Vietnam, Indonesia and so on. But, as to the economic size, Brazil's GDP is larger than the sum of ASEAN 10 countries, and as to the technology level, Brazil is much superior to such South-Eastern countries.

For Example, in the field of aircraft industry Brazilian assembler EMBRAER is the third largest assembler company in the world, following to Boeing and Air Bus, and is the supplier of the aircraft for Japan Air Lines with smaller size. On the other hand, under the sea, Brazilian national petroleum enterprise, which listed American Depositary Receipt at the New York Stock Exchange market, has the most advanced engineering technology to exploit under sea oil resources in the world.

In the field of electronic business trade, Rakuten, the largest Japanese virtual trade enterprise, has begun its "Virtual Shop Business" in Brazil in 2012, foreseeing that in five to ten years Brazil will become one of the largest mar-

ket in the world of such electronic business trade. (The president of Rakuten, named Mikitani, answered to an interview by Nihon Keizai Shimbun on April 26th, 2012.)

Natural resources are so abundant that there is no lack of minerals in Brazil except petroleum, which has become one of the self-sufficient natural resources of the country by the discovery of the sea-bottom oilfield under the near Rio de Janeiro Sea in 1980s and the development of the excavation technology.

Agri-business is also well developed and Brazil is one of the world largest countries in the area of export of agricultural goods. Mitsui Trading Corp., one of the largest Japanese trading company " Sogo-Shosha ", has decided to invest to produce grains in Brazil by making joint venture company with the largest Brazilian agri-business company, SLC AGRICOLA, according to the Nihon Keizai Shinbum's report on July 9, 2013. In my survey in Brazil in March 2013, the Executive Officer and CEO for South America of the Soujitsu Corporation, another large Japanese Sogo-Shosha or the trading company at his office in Sâo Paulo explained that they would invest more in the field of agribusiness in Brazil.

Major agro-products are as following: soy beans (the second largest in production and the largest in export in the world), beef (the second largest both in production and in export in the world), orange juice (the largest both in production and in export in the world). These data mean Brazil is not only the large and important exporter of minerals but also that of agro-products.

As it is well known, it has been decided that Brazil is to be the host country for the 2014 FIFA World Cup and the 2016 Olympic Games in summer will be held in the city of Rio de Janeiro, so the construction and the repair work had already begun for the event and might influenced to the Brazilian economy in the positive direction.

But, from the beginning of June, 2013, the increase in public bus and sub-

way fare caused nationwide demonstration for protest, some part of which included rioters, although the mayors of both Sao Paulo City and Rio de Janeiro City had decided the withdrawal of such fare raise on the day of June 19th, 2013. The demonstration of protest against social gap still continues throughout the country so that President Dilma Vana Rousseff had postponed her official visit to Japan to strengthen the two countries economic relationship at the end of June in 2013, and she still needs enforcing to stabilize such demonstration for protest.

At the moment or from now on, how could Brazilian economy be understood in the trend of the world economy, which has overcome the " hyper-inflation and the heavy foreign debt " in the 1980s or at least in the early 90s.

2. Is Brazil the member country of BRICs as " Emerging Market "?

In 2001, Jim O'Nille, the economist with Goldman Sachs Securities, named Brazil, Russia, India and China as " BRICs ", taking of the initial letter of such four countries, defined and featured as " Emerging Markets. "

At that time, according to his answer to an interview made by one of the largest daily Japanese newpaper Asahi-Shimbun in Tokyo on January 7th in 2013, the idea of BRICs was based on the standard of population. He said that he had chosen four growing countries with large population, thinking and sensing emerging countries with large population might make more important role in the world economy along with the evolution of globalization without any significant change in social structure.

Whether they were chosen on the basis of the standard of population or not, when they named and called them " Emerging Markets ", it might be generally understood that these countries have grown up and still being emerging, and Russia (R), after the collapse of the Soviet Union, India (I) and China

(C) were exactly " newly emerging markets " which have begun to grow rapidly since 1990s..

But, aspect of Brazil is quite different from these three countries. Brazil had already achieved high economic growth during the period from 1968 to 1973 at the growth rate of eleven percent or more of GDP, which ended in 1973 when the first " Oil Shock " had attacked the world economy seriously.

That high economic growth for seven years over ten percent per annum was named and praised " Brazilian Miracle, " and during such period not only US—and European companies but also Japanese major companies had invested to Brazil and constructed factories/offices in almost all industrial areas.

Then, Brazilian economy suffered the second " Oil Shock " and it caused for two decades heavy foreign debts and " Foreign Financial Crises, " stopping repayment of such foreign debt both in the public sector and in the private sector. Furthermore, Brazil had experienced so-called" Hyper Inflation " too in the 1980s and in the early stage of the 1990s.

Thus, Brazilian economy had been in a seriously confused situation for two decades as " lost decades " since the end of miracle high rate economic growth. In this meaning, Brazilian economy is neither " Newly Emerging Market " like Russia, India and China nor unknown country for foreign investors to invest.

In addition, there lived more than one million Japanese and the their descendants, who initially came to Brazil as agricultural immigrants more than one century ago and have achieved good performance in various areas and gained the reputation of " Reliable Japanese " as human resources.

In this meaning, when it is said that X-company has decided to enlarge its production capacity in Brazil, whether it be US- or European company or Japanese, it doesn't always require new money to invest from the ground to buy land, build the trans-electricity facilities to supply electricity to the

production lines or construct new production lines, but some incremental investment on the already built and constructed " existing assets " invested and gained in the period of 1960s and 1970s.

For example, in case of the automobile industry in Brazil, the sales amount achieved the number of three million and eighty hundred thousand cars in 2012, which is the fourth largest country as domestic automobile market, following China, U.S.A. and Japan. Except the numbers of the imported cars, Brazilian domestic car production had reached the same size as Japanese domestic automobile market, excluding " Kei-Jidosha, " which is the Japanese specific classification of cars and means the cars with the amount of exhausted gas from engine be less than six hundred and sixty cc.

But, the automobile industry in Brazil has long history to grow up to recent production level, and already had produced the number of more than one million cars, which was at the leading position in production among the developing countries except Soviet Union at that time. Most of the automobile producers in Brazil were US- and European auto-makers such as General Motors, Ford, VolksWagen and Fiat etc. No Japanese automobile makers hadn't produced any cars in Brazil except the Toyota's production of land cruiser and Honda's fabrication of motorcycles.

As above mentioned, Brazil suffered and experienced economic confusion for two decades, but through the re-scheduling of the foreign debt in public sector and with the help of the so-called " Brady Plan, " which has securitized foreign debt in private sector, Brazilian economy has been revitalized through the economic measures named " Real Plan, " established in 1994 by Fernando Henrique Cardozo. He was the Finance Minister of the government at that time, and after and with the success of the Reform Plan assumed the President of the country of Brazil.

The Plan, as an economic policy mix for eradication of hyper-inflation, based on the elimination of the notorious " Indexation System " with price

slide clause, has succeeded to stabilize the people's daily life and consumption and opened the way for the companies to resume to invest in Brazil.

In accordance with such recovery of economic situation and conditions for investment, the automobile industry in Brazil, especially in the case of US- and European multinational automobile makers, has begun to enlarge their production capacity and achieved increase of the numbers of cars sold and sales amount after the economic policy change.

Contrary to this corporate behavior adopted by the US—and European multinationals, Japanese companies were too much reluctant to invest to enlarge their production capacity in Brazil, affected by the nightmare or the past memory that Brail is the country of " hyper-inflation and foreign debt crisis " and very much difficult market because of them.

Thus, they, Japanese automobile makers, have fallen a step behind their US- and European rivals in the car market in Brazil.

Far behind their rivals, Toyota Motors have invested and opened their new factory in Sâo Paulo State in September 2013, for the production of smaller size car with the specification for the " Emerging Markets ". Honda Motors has decided, in August in 2013, to invest more than forty three billion YEN for the purpose of construction new car factory to product one hundred and twenty thousand smaller cars per year for the local market, which will enter into operation to produce cars in 2015.

In case of Nissan Motors, it had no facilities to produce cars in Brazil before, but Carlos Ghosn, the Chief Executive Officer of the Corporation, who has experience to be the president of Michellin Brazil at the time of hyper-inflation and foreign debt crisis, could sense the possibility of the development of Brazilian automobile market and has decided to invest to attend for increasing domestic demand in Brazil. Nissan's new factory begins to manufacture more than two hundred thousand vehicles per year at the site in Rio de Janeiro State from the year of 2014.

As seeing above, most major Japanese companies, not limited in automobile manufacturers, were reluctant to this " emerging market " and recently have begun to try to face on the fact that this market be possibly attractive as same as another " emerging markets. "

3. Brazilian Economy and the increase of " Middle Income Class "

The size of the Brazilian economy is, measuring by nominal Gross Domestic Production (GDP), is two trillion and five hundred billion US dollar, which is the sixth largest country in the world and one third of China, which is the second largest in the world with the GDP of seven and three hundred billion US dollar. In comparison with another BRICs countries, Brazilian economy is one point three times bigger than Russia of which GDP is one trillion and nine hundred billion US dollar and ninth largest in the world, and one point four times bigger than India of which GDP is one trillion and seven hundred billion US dollar and tenth largest in the world.

As to GDP per capita, Brazil's one is near thirteen thousand US dollar per person along with Russia, which is two point four times higher than China's five thousand and four hundred US dollar per person and more than nine times higher than India's one thousand and four hundred US dollar per person. (All the data mentioned above, related to GDP are based on the statistics of World Bank and numbers or value be based on the data in year of 2011.)

The population of Brazil is estimated over one hundred and ninety million, which is much smaller than China (one billion and three hundred millions) and India (one billion and two hundred millions), but is the fifth largest country in population in the world.

The land area of Brazil accounts for eight million five hundred ten thousand

square kilometers, which is as big as twenty three times of Japan and almost the same land area as U.S.A. And there exist no threat of natural disaster caused by the earthquake nor hurricane/typhoon.

Turning back to the economic aspects, GDP growth ratio was two point three percent per year in 2013, based on the growth during July and September, 2013 in comparison with the same period of last year. It is higher than the real GDP growth ratio in 2012 which was under one percent (0.9 percent a year). The GDP growth ratio remains in relatively low level as other BRICs countries, considering the fact that GDP growth ratio in 2011 was two point nine percent per year.

The average GDP growth ratio for the period of twelve years beginning the year of 2001, when Brazil was first counted as one of the BRICs countries, to the year of 2012 is 3.4 percent a year (simple average), and this level is considered to be near to the Brazil's potential growth rate.

As to the composition of the GDP, the ratio of personal consumption reaches approximately sixty percent, similar to that of Japan. And, it is the evolution of " New Middle Income Class " that has had considerable effect to the personal consumption.

Although the income thresholds for the different income groups be various, in general, so-called " Middle Income Households " exceeds fifty percent in Brazil together with in Mexico, and especially in Brazil it is said that approximately estimated forty million people had entered into the income thresholds of " Middle Income Class " during the period of ten years beginning in 2003.

It is also said that it was Professor Marcelo Cortes Neri, who was working with the one of the influential private research institutes in Brazil, Fundacâo Getulio Vargas Research Center, which published and revealed his discovery /result on the emergence of " New Middle Income Class " in 2008.

He classified the income thresholds in Brazil at that time into five (A, B, C, D, E), and the Class C as the center of such five classes with the income

thresholds of the monthly revenue from two hundred and fourteen Reals to nine hundred and eighty three Reals (equivalent to ten thousand Yen to forty four thousand Yen at the recent foreign exchange rate). And he reported, surprisingly enough, that the Class C had gone over fifty percent for the first time in the history of Brazil and reached fifty one point nine percent.

According to the present income thresholds used by the Fundacâo Getulio Vargas Research Center, Class A is defined as the monthly family revenue over nine thousand seven hundred and forty five Reals, Class B with the monthly family revenue from one thousand seven hundred and thirty four Reals to nine thousand seven hundred and forty five Reals, Class C with the monthly family revenue from one thousand and eighty five Reals to seven thousand seven hundred and thirty four Reals, Class D with the monthly family revenue from one thousand and eighty five Reals to one thousand seven hundred and thirty four Reals, and Class E with the monthly family revenue less than one thousand and eighty five Reals. The Class A and B are considered to belong to the " Rich Class ", Class C be to the " Middle Class ", Class D to the" Poverty Class "and Class E be to the" Extreme Poverty Class. "

Thus classified Class C (" Middle Income Class ") accounts for more than one hundred million people in 2011 and represents fifty four percent of the total population of the country, hundred and ninety three million, which had increased from thirty eight percent in 2003 by the increase of sixteen percent. During this period, more than forty million people have joined to the " Middle Class " as " New Middle Class. " (Sources: Fundacâo Getulio Vargas Research Center)

The land area of Brazil expands from the equator in the Amazon River basin as the northern end to southern pasture located at south latitude 34 degree, where in sometimes snows, equivalent to the width from Singapore to Kyushu Island of Japan in Northern Hemisphere.

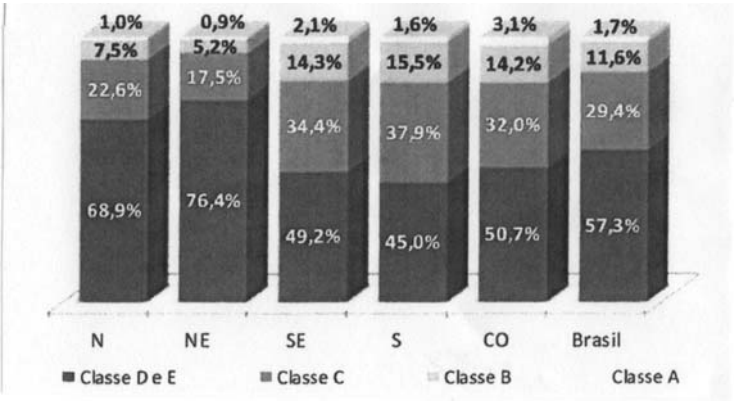
Traditionally, southern part of the land has been highly industrialized, es-

pecially in the three states of São Paulo, Rio de Janeiro and Minas Gerais, and there exists so-called " South-North problem " between " abundant South " and " poor North. "

Hereinafter presented figure is the geographic or regional distribution of income classes by monthly family revenue. (These data was gathered and arranged by Professor Márcio Issao Nakane with the School of Economics, Business and Accountancy in University of São Paulo, in February 2013, based on the real data on 2011.)

In this research, thresholds of monthly family revenue are defined in a different manner from the Fundacâo Getulio Vargas Research Center's criteria above mentioned. That is Class A is defined as the monthly family revenue over thirteen thousand and twenty six Reals, Class B with the monthly family revenue from four thousand one hundred and fifty nine Reals to thirteen thousand and twenty six Reals, Class C with the monthly family revenue from one thousand seven hundred and forty one Reals to four thousand one hundred and fifty nine Reals, Class D with the monthly family revenue from one thousand and eighty five Reals to one thousand seven hundred and thirty four Reals, and Class E with the monthly family revenue less than one thousand and eighty five Reals.

The Distribution of Family Revenue by Region in Brazil (**data**: 2011)



As seen in the figure above, in the regions of “ South-East(SE) ”, “ South (S) ” and “ Middle-West (CO) ”, “ Class D ” which represents “ Poverty Class ” and “ Class E ” represents “ Extreme Poverty Class ” are below fifty percent or a little bit over fifty percent, and “ Class C ” which represents “ Middle. Class ” remains one third.

But, on the other hand, in the region of “ North (N) ” and “ North-East (NE) ”, “ Class C (Poverty) ” exceeds two thirds and “ Class E (Extreme Poverty) ” is over three fourths, while “ Class C (Middle Class) ” remains twenty two point six percent and seventeen point five percent.

This tendency or fact shows that in Brazil still exists so-called “ South-North problem ” between “ abundant South ” and “ poor North ”, but apparently new move is progressing in the “ North ” after entering in the years of 2000s.

For example, US automobile company, Ford Motors had constructed and been operating their new factory in the Bahia State and Italian automobile company, Fiat Motors’ new factory has been constructed in Pernambuco State in the year of 2013. This move may mean that “ North-East ” is becoming new industrial area with wide land and abundant labor force, instead of “ South-East ” which is almost saturated with the needs for expansion.

One of the major Japanese food companies, Ajinomoto Corporation has invested to construct their new factory in November 2012 for the expectation of evolution of “ Middle Income Class ” in the region of “ North-East ”. (Hiroteru Kato, “ The Aspect and Future of Brazilian Market: The Evolution of Huge Middle Income Class ”, *Global Management*, No.371, September 2013, p13.)

This tendency would increase the number of the “ Middle Income Class ” in the region of “ North ”.

4. What has brought New Growth to Brazil and "Middle Income Trap"?

As examined hereinabove, Brazil had once experienced long time high GDP growth from 1968 to 1973, called "Brazilian Miracle", while most US-, European and Japanese companies had invested in the country and manufactured various kinds of goods. Then, undesirable two decades passed, Brazilian economy has been revitalized and counted as one of the "Emerging Markets", BRICs.

At that time, what had made Brazil grow could be strong leadership of the Presidents, but this time what has brought "New Growth" to Brazil?

Many economists point out that it is the evolution of middle income class that made Brazilian economy grow.

Then, what has made middle income class grow so widely throughout the country, including the "Poor North?"

There are two major policies on wage and salary of the poorer people: one is the Conditional Cash Transfer System to the poor people named "Bolsa Familia" which President Lula Ignacio has initiated in 2003 and was succeeded by his Labor Party substitute, the President Dilma Vana Rousseff. This policy of cash transfer to the poor has continued for more than ten years for the Lula's presidency of eight years and Dilma's three years.

Another measures adopted by Labor Party Presidents was continuous raise-up of the minimum wage, which also began with the start of Lula's presidency and still continues under the reign of President Dilma. (Reference: Kotaro Horisaka, *Brazil: The Trace of Leap*, Iwanami, 2012, pp.116-122.)

Since the composition of personal consumption is approximately sixty percent, the effect of these two measures might have been strongly enough.

Although Brazilin economy still has several traditional problems such as lack of infrastructure, multi-stages tax system and so on, as long as these two

measures continue, the economic growth pattern based on the personal consumption by the evolution of the " Middle Income Class " may continue.

At last, what could we comment on the " Middle Income Trap " issue and Brazilian economy, after the micro-economic analysis on it ?

According to the one of the Asian Development Bank's working papers (reference: Jesus Felipe, " Tracking the Middle-Income Trap: *What* is it, *Who* is in it, and *Why* ? Part 1 ", No.306|Marh 2012, p.22), Brazil's GDP per Capita in 2010 measured by 1990 ppp $ was six thousand seven hundred and thirty seven dollar, which belongs to the category of Lower Middle Income Class and Brazil has stayed there for fifty three years.

The author also insists that to avoid " Middle Income Trap " is a question of how to grow fast enough to cross the lower-middle segment in at most twenty eight years and the upper middle-income segment in at most fourteen years. (*ibid*. " Executive Summary ").

But, fifty three years before of 2012 might be 1959 or so, several years before the " Brazilian Miracle " in the economic growth and the prosperity of the country. Then, the Country had experienced historical hyper-inflation and huge foreign debts crisis and has overcome those economic problems and restarted its economic growth. It has just passed only less than twenty years since the " Real Plan ", which means Brazil's restart.

So, ignoring the each country's economic history, lacking of in-depth income structure, especially its change and the speed, it is quite difficult to calculate and analyze when and whether one country can avoid " Middle Income Trap " .

Brazilian economy has long history from its high rate GDP growth stage and the restart from its collapse. In that sense, economic policy of creation of Middle Income Class can be considered as adequate and inevitable measures for the time being, to the people and the country of Brazil, in condition that the economic policy mix to increase public investment and improve infrastructures be adoptted.

Chapter 4

Rise of Korea: Model or Exception?

Smartphones™ and tablets™ are images of Korean innovation.
Source: Korean Overseas Information Service
http://www.korea.net/AboutKorea/Economy/Leading-Industries

1. Introduction

Despite global economic growth since the 1950s and 1960s, few countries, especially those with relatively large populations, have fostered high-income economies. Korea's economy is one of the few. Korea's annual GDP growth rate averaged 6.8% from 1961-2012.[1]

According to the World Bank (2012a), of 101 middle-income economies in 1960, only thirteen had become high-income economies by 2008: Equatorial Guinea, Greece, Hong Kong, Ireland, Israel, Japan, Mauritius, Portugal, Puerto Rico, Korea, Singapore, Spain, and Taiwan.[2] We can narrow the list

1 When diamond-rich Botswana is excluded from the comparison, Asian economies dominated the top six among 89 countries, for which 1961-2012 data are available. They are China 8.3%, Singapore 7.8%, Malaysia 6.8%, Korea 6.8%, Thailand 6.3%, and Indonesia 5.7%.

2 World Bank (2012a) used the Maddison database.

from thirteen to ten because Equatorial Guinea, Mauritius, and Puerto Rico have unique industrial structures.[3] The list also shrinks to only six economies, Greece, Japan, Portugal, Korea, Spain, and Taiwan, if we consider median population in the analysis, because Ireland, Israel, Hong Kong and Singapore are excluded.[4]

It appears to takea miracle to elevate middle-income economies to high-income economies. Drawing on statistics and previous research, this paper reviews Korea's growth since the 1950s and examines its macro-economy, economic policy, and innovation including research and development (R&D) as well as technology transfer.

2. Previous research

The World Bank published " The East Asian Miracle " in 1993 funded by the government of Japan.[5] This report names Korea and seven other countries[6] as high-performing Asian economies,[7] an uncommon term in 21st century economics. Following Japan's struggles with deflation and recession during the 1990s and 2000s, Korea and Taiwan have become models for economic growth in East Asia.

Many scholars have researched Korea's economic growth and economic development during the 1960s and 1980s.[8] Scitovsky compared Korea's economy with Taiwan's using growth rates, debt ratios in manufacturing,

3 Equatorial Guinea emerged as an oil-producing country, Mauritius has become an offshore financial center, and Puerto Rico is a US trust.

4 This book features large-population economies such as China, Brazil, the Philippines, Korea, and Taiwan. The median population of 185 economies for which IMF population data are available was 7,505,000 in 2010. Ireland, Israel, Hong Kong, and Singapore had fewer persons than Beijing, Metro Manila, Sao Paulo, Seoul, and Tokyo in 2010.

5 See Terry (1995) and Wade (1996).

6 Japan, Hong Kong, Singapore, Taiwan, Indonesia, Malaysia, and Thailand.

7 World Bank (1993), pp.1-2.

8 Scitovsky (1985)

manufacturing structure, and social indicators such as the Gini index. Like many researchers, he notes that both economies are rich in labor, labor skills, education, and ingenuity. Scitovsky also highlights Korea's insufficient domestic saving and need to borrow abroad.[9] After the 1997 Asian financial crisis, many researchers realized that relatively high short-term borrowing rateand foreign debt caused the crisis.[10]

Large conglomerates, called *Chaebol*, are an important factor in Korean industry. These diversified corporations under single-family ownership arose in the 1950's and gathered political influence for obtaining scarce credit. After Korea's economy recovered from the 1997 Asian financial crisis, the *Chaebol* presented a structural dilemma. Large conglomerates like Samsung, LG, and Hundai, dominated significant portions of Korea's economy. Three corporations accounted for almost 70% of exports, and their total revenues equaled half of Korea's GDP.[11] Since the 1997 Asian financial crisis, restructuring the *Chaebol* has been regarded as a prerequisite for restoring Korea's global competitiveness.

International organizations have collected and constructed data for an analysis of economic growth.[12] Previous research has cited human capital, eco-

9 Taiwan financed its entire gross domestic capital formation from 1965 to 1981 with domestic savings. Its domestic saving rate, which averaged 28.7% of GNP, marginally exceeded its investment rate of 28.4% and allowed small capital exports. (See Scitovsky (1985), p.242) Korea financed less than two-thirds of its 26.5% average investment rate with a domestic saving rate averaging 18.6%. The remainder was financed by capital imports, of which one-third was aid, not quite two-thirds loans, and a negligible proportion of foreign direct investment.

10 Heo at al. (2007), p.16.

11 Choe Sang-Hun, "South Korean Family Conglomerates Pressured," *New York Times*, September 13, 2011. This article just wrote "today" without mentioning a year.

12 The United Nations Development Programme has reported Human Development Indicators since 1990. The World Bank has collected data on research expenditures and number of researchers since 1996 among World Development Indicators. The World Bank introduced the Knowledge Economic Index in 1995.

nomic plans, the role of large conglomerates, and innovation as reasons for Korea's economic growth. Recent researches[13] are focusing oninnovation, R&D, and technology transfer. We define those factors as the Korean model.[14]

3. Few Larger Economies

First, this paper categorizes economies by population and national income, two major economic indicators. Among the world's 200 economies, 2010 population data are available for 186 countries from the International Monetary Fund World Economic Outlook Database.[15] It notes that 84 economies had populations exceeding 10 million and fifty-seven had populations exceeding 20 million. The World Bank classified 71 economies with per capita 2010 Gross National Income (GNI) exceeding US$12,276 as high-income economies.[16]

In 2010, the United States, Japan, Germany, France, the United Kingdom, Italy, Korea, Spain, Poland, Canada, Saudi Arabia, Taiwan, and Australia had populations exceeding 20 million and GNI exceeding US$12,276. We describe these 13 as large high-income economies.

In 1950, five years after World War II, the world's average and median per capita GDP were US$ 2,104 and US$ 1,327, respectively, according to the Maddison Project Database. Of the 13 large high-income economies, Taiwan's and Korea's per capita GDP were below US$ 1,327.[17] Per capita GDP of Korea and Taiwan rose more than 25-fold during 1950-2010 (Figure 1, Table 1).

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13 See OECD (2009), Gill and Kharas (2007).

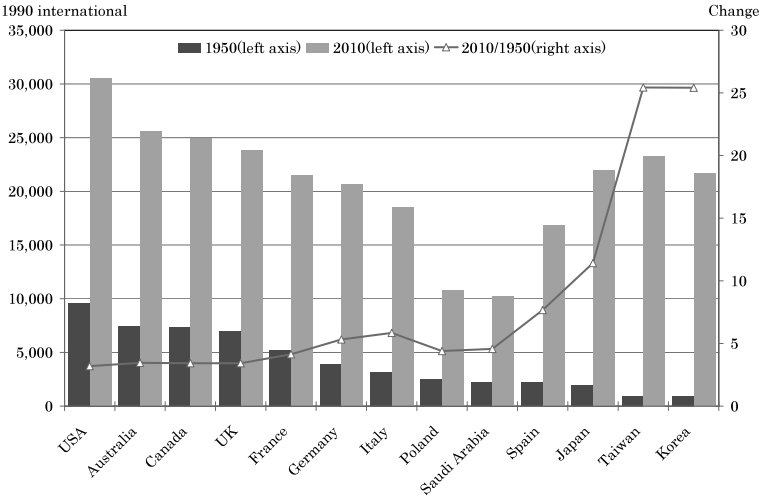
14 Korea became the second Asian member of the OECD in 1996.

15 October 2013.

16 World Bank (2012b), p.391.

17 Japan's per capita GDP in 1950 was US$ 1,921.

Figure 1 Per Capita GDP



Source: Bolt, J. and van Zanden, J. L. (2013). The First Update of the Maddison Project: Re-Estimating Growth Before 1820, the Maddison Project Working Paper 4.

Table 1 Upper-middle-income and High-income Economies in selective Larger Population Economies

	Population	World Bank	Per capita GDP			Percent of Change					
	Millions	Classification	1950	1990	2010	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000	2000-2010
China	1,341	UMC	448	1,871	8,032	47.8%	17.6%	36.3%	76.3%	82.8%	134.8%
USA	310	HIC	9,561	23,201	30,491	18.5%	32.7%	23.6%	24.9%	23.7%	6.2%
Brazil	195	UMC	1,672	4,920	6,879	39.7%	30.9%	70.0%	-5.3%	10.1%	27.0%
Russia	143	UMC	…	7,779	8,660	…	…	…	…	-32.4%	64.6%
Japan	128	HIC	1,921	18,789	21,935	107.5%	143.7%	38.2%	39.9%	9.0%	7.1%
Mexico	114	UMC	2,365	6,085	7,716	33.4%	36.9%	46.3%	-3.7%	19.6%	6.1%
Iran	74	UMC	1,720	3,526	6,456	25.4%	94.2%	-5.1%	-11.3%	22.0%	50.1%
Turkey	73	UMC	1,623	5,399	8,225	38.5%	37.0%	30.6%	34.3%	20.4%	26.5%
Thailand	67	UMC	817	4,633	9,372	32.0%	57.1%	50.8%	81.4%	39.0%	45.5%
South Africa	50	UMC	2,535	3,834	5,080	20.0%	33.0%	8.5%	-12.7%	2.3%	29.6%
Korea	49	HIC	854	8,704	21,701	43.6%	76.7%	89.8%	111.6%	72.3%	44.7%
Spain	46	HIC	2,189	12,055	16,797	40.3%	105.7%	45.6%	31.0%	30.4%	6.8%
Colombia	46	UMC	2,153	4,826	7,063	16.0%	23.9%	37.6%	13.4%	11.4%	31.4%
Argentina	40	UMC	4,987	6,433	10,256	11.5%	31.3%	12.4%	-21.6%	30.7%	22.0%
Poland	38	HIC	2,447	5,113	10,762	31.4%	37.7%	29.6%	-10.9%	42.9%	47.3%
Algeria	36	UMC	1,365	2,947	3,513	53.0%	7.7%	40.1%	-6.5%	-3.3%	23.3%
Peru	30	UMC	2,308	3,008	5,774	28.7%	29.8%	10.6%	-29.4%	24.2%	54.5%
Venezuela	29	UMC	7,462	8,313	9,874	29.3%	10.6%	-5.0%	-18.0%	1.2%	17.4%
Malaysia	29	UMC	1,559	5,131	10,094	-1.9%	35.9%	75.9%	40.3%	53.5%	28.2%
Taiwan	23	HIC	916	9,938	23,292	47.8%	87.5%	107.3%	88.9%	67.3%	40.1%

Notes: Economies are divided into income groups according to 2010 per capita GNI, calculated using the World Bank Atlas method. The groups are: low-income economies ($1,005 or less) lower-middle-income economies ($1,006-$3,975), upper-middle-income economies ($3,976-$12,275), and high-income economies ($12,276 or more).

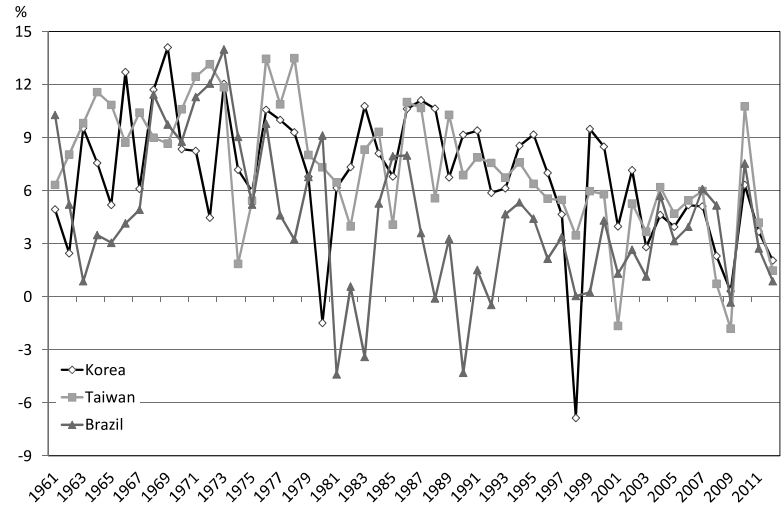
Source: World Bank (2012b), p.391, International Monetary Fund, World Economic Outlook Database, October 2013, and Bolt and Zanden (2013) Review on Korea Growth.

4. Growth of Korea's Economy

A look at GDP growth rates shows Korea's economy has fluctuated with the business cycle (Figure 2). From 1961[18] to 2012, Korea experienced three periods of economic turmoil: the 1979 oil crisis, the 1997 Asian financial crisis, and the 2008 Global financial crisis. However, Korea's economy overheated during 1976-78 because of export expansion.

Korea was hit by economic and political turmoil, including the 1979 oil shock and the October 1979 assassination of President Park Chung-hee,[19] a military dictator who orchestrated Korea's rapid economic growth. Following his assassination, the Korean people expected a democratic government, but

Figure 2 GDP Growth



Source: World Bank and Executive Yuan, Taiwan

18 The five-year economic development plan began in 1962.

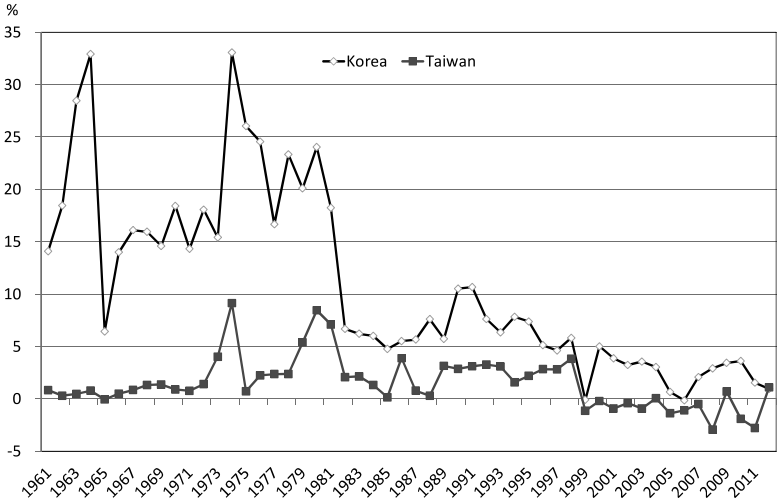
19 His presidency was between December 17, 1963, and October 26, 1979. Ms. Park Geun-hye, Korea's current president, is his daughter.

their expectation was blocked by another military dictatorship[20] under Chun Doo-hwan. GDP growth was negative (-1.5%) in 1980 during the second oil crisis.[21]

Korea's government initiated a series of economic development plans in 1962. Once a four-year plan or a revised four-year plan had been agreed upon and established, the government encouraged investment in targeted sectors and industries through tax concessions, credit on favored terms and especially low interest rates, and informal pressure. Korean policymakers apparently encouraged more investment than domestic saving and foreign capital inflows could accommodate.

Even before the oil crisis, Korea's economic growth occurred alongside chronic inflation (Figure 3), which suppressed the domestic saving rate and sustained Korea's dependence on foreign capital. Korea's GDP deflator ex-

Figure 3 GDP Deflator



Source: World Bank and Executive Yuan, Taiwan

20 Korea's first direct presidential election was in 1987.

21 Heo at al. (2010), p. 2.

ceeded 15% during 1961-1981.[22]

5. Innovation

Technology transfer has been a key issue in economic development since the 1960s. It may be difficult for middle income economies to apply the Korean model in this century. For instance, Korea achieved a relatively high level of economy before establishment of the World Trade Organization (WTO),[23] which enforced the Intellectual property rights. R&D expenditures will be a burden for small, developing economies and companies besides multilateral corporations.

Many researchers and the World Bank have examined the knowledge economy and R&D. Gill and Kharas (2007) emphasize the importance of innovation in generating ideas and technological progress, using gross expenditures on R&D as a metric.[24] They note that in Korea, Singapore, and Taiwan, business firms are among the principal engines for creating new ideas and learning through systematic, long-term, and large-scale investments in research and development (R&D), resulting in discoveries that add to global knowledge, that may be patented, and that are the principal sources of competitiveness and profitability. They measure technological achievement by the number of patents registered with the United States Patent and Trademark Office. Developing East Asia lagged Japan and the United States, which accounted for about 20% and 60% of registrations, respectively.

However, they said that economies and firms in East Asia have used trade to acquire technology, depending on the sector and stage of development. The original equipment manufacturing may have accounted for 70-80% of Korea's electronics exports around 1990.[25]

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22 Except 1961, 1965, 1966, and 1969.

23 The inaugural ministerial conference was held in Singapore in 1996.

24 Gill and Kharas (2007), p.55.

25 Gill and Kharas (2007), p.23.

According to World Bank 2010 data, Korea's R&D expenditures were 3.7 % of GDP, ranking first in Asia, exceed Japan, and third worldwide after Israel and Finland (Table 2). China's R&D expenditures were 1.8% of GDP, ranking third in Asia and 18th worldwide. China will be beyond some high-income economies[26]

By comparison, R&D expenditures in Russia, Malaysia, Turkey, Mexico, Brazil, Columbia, and Argentina were below 1.3% of GDP, the average for upper-middle-income economies. Spain and Poland also were below average even though both were high-income economies. Malaysia and Thailand did not equal the Korean Model in research expenditures even though their economic growth was relatively high.

Table 2 R&D Expenditures and Number of Researchers in selective Larger Population Economies

	GDP per capita, PPP (constant 2005 international $)		R&D expenditure (% of GDP)		Researchers in R&D (per million people)		GDP Growth (per capita, PPP) 2010/2005
	2005	2010	2005	2010	2005	2010	
United States	44,314	43,952	2.6	2.8	4,633.5	···	-0.8%
Japan	30,441	31,030	3.3	3.3	5,385.0	···	1.9%
Spain	27,392	26,908	1.1	1.4	2,528.4	2,922.3	-1.8%
Korea	22,783	26,774	2.8	3.7	3,822.2	5,481.5	17.5%
Poland	13,784	17,372	0.6	0.7	1,628.8	1,685.4	26.0%
Malaysia	12,131	13,801	···	1.1	···	···	13.8%
Mexico	12,017	12,412	0.4	0.5	412.5	···	3.3%
Russia	11,853	14,182	1.1	1.2	3,229.7	3,092.3	19.6%
Turkey	11,532	12,671	0.6	0.8	574.4	884.4	9.9%
Argentina	10,843	···	0.5	0.6	823.9	···	···
Venezuela	9,869	10,894	···	···	121.8	···	10.4%
Iran	9,173	···	0.7	···	···	···	···
South Africa	8,597	9,516	0.9	···	362.0	···	10.7%
Brazil	8,502	10,079	1.0	1.2	588.3	703.7	18.5%
Colombia	7,280	8,450	0.1	0.2	166.4	···	16.1%
Algeria	7,000	7,249	0.1	···	170.1	···	3.6%
Thailand	6,791	7,987	0.2	···	307.4	···	17.6%
Peru	6,349	8,503	···	···	···	···	33.9%
China	4,115	6,819	1.3	1.8	855.5	···	65.7%

Source: World Bank's World Development Indicators
http://data.worldbank.org/

26 Research and development expenditure (% of GDP) in 2010; Germany 2.8%, France 2.2%, Canada 1.8%, UK 1.8% and Italy 1.3%.

6. Conclusion

Drawing upon previous research and data, this paper has reviewed Korean economic growth since the 1950s, examining its macroeconomy, economic policy, and innovation. The World Bank published Asian Miracle in 1993 funded by the government of Japan. After Japan was struggling with the deflation and the recession in the 1990s and 2000s, Korea emerged as a model for economic growth in East Asia. In the 21st century, economists and researchers cite Korea is a model of economic growth instead of Japan.

In section three, this paper categorized economies by population and national income. The world economy is composed of around 200 economies. Out of this, fifty-seven had populations exceeding 20 million. Only thirteen economies, including Japan, Korea, and Taiwan, had populations exceeding 20 million and GNI exceeding US$12,276 in 2010. The paper identified them as large high-income economies.

In section five, the paper reviewed innovation as measured by research expenditures as a percentage of GDP. Gill and Kharas (2007) describe the importance of innovation in generating ideas and technological progress as measured by gross expenditures on R&D. They also mentioned that corporations in Korea, Singapore, and Taiwan are among the principal engines for creating ideas and learning through systematic, long-term, large investments in R&D.

According to World Bank 2010 data, Korea's R&D expenditure was 3.7% of GDP, ranking third worldwide. On the other hand, high-income economies Spain and Poland were below average. Developing Asian economies like Malaysia and Thailand are relatively low.

Technology transfer has been a key issue since the 1960s. However, after 1996 WTO regime, intellectual property rights joined the critical agenda among developed economies and multilateral corporations (Figure 4). The

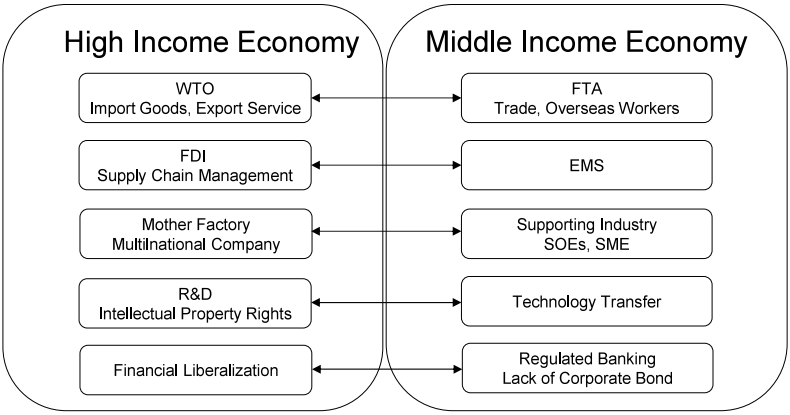
World Bank (1993) noted[27]:

> Openness to direct foreign investment (DFI) has speeded technology acquisition in Hong Kong, Malaysia, Singapore, and, more recently, Indonesia and Thailand. Japan, Korea and, to a lesser extent, Taiwan, China, restricted FDI but offset this disadvantage by aggressively acquiring foreign knowledge through licenses and other means.

On the other hand, Gill and Kharas (2007) focus on protection of intellectual property rights. They said there is evidence that intellectual property rights are a significant consideration when multinational companies consider locating in middle-income countries.[28]

This paper is has examined only innovation, including research expenditures and intellectual property, rights as sources of conflict between high-income and middle-income economies. We hope to explore this issue with empirical research.

Figure 4 Conflicts in Economic Policy between High-income and Middle-income Economies



Source: revised from Ohara (2009)

27 World Bank (1993), p.21.

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Chapter 5

The plight of China's Economic Growth: Overcapacity

—Analysis the comparison between China's Steel and Port Industries with Japanese Steel and Port Industries—

Introduction

Since China was estate the socialist market economic system in the year 1992, the conflict of the market mechanism and macro control of the government has caused the institutional overcapacity. In addition, since 2001, in the implementation of quantitative monetary easing policy to concentrate on capital-intensive industries and emerging industries, there was an excessive capital investment problem huge due to low-cost funds this compounded the problem in overcapacity to a greater extent.

Overcapacity generated in the emerging industries and capital-intensive industries which are the existing leading industry resulted in a negative impact on the health basis of sustained growth in the Chinese economy, and currently, has become a bottleneck in the industrial structure adjustment of China's economy. In other words, currently overcapacity problem is a major issue in the Chinese economy but we can learn how to resolve the problem from the past Japanese industrial overcapacity experiences.

At the beginning of the stable economic growth period in Japan, there was serious overcapacity in iron & steel, and ports industries. However, through the industrial structure transformation and overcapacity processing methods for the overcapacity in those industries, a stable growth was attained in 1970-

1980's, and the Japanese economy overcame the " trap of middle-income countries ". Therefore, as the same big economic country, it may be significance advantageous experience for China.

In this chapter, with reference to the experience of Japan, we recommend strategies for industrial structural adjustment to overcome the problems of overcapacity in the Chinese steel and port industries.

Section I: Overcapacity and Industrial Structure Adjustment of steel industry

First we introduce the Chinese steel industry, which is primarily a basic material industry that provides the essential basic materials of steel in large steel intensive industries such as automobile, shipbuilding, heavy machinery, electricity, housing and construction. China's industrial economic growth is experiencing periods of rapid growth, and many steel industries are considered the pillar of the economic growth. Toda (1984, p.170), the development of the steel industry, has a direct significance effect on the usage of the nation's held resources, and the supply of basic resources essential to the national economy. The expansion of gross national product, saving of foreign currency, such as the expansion of employment is not only very large, but also there has been a significance promotion of regional development and the development of related industries, which brings a ripple effect and dynamic significance to the economy as a whole. Furthermore, the demand for steel is great due to the fact that China has the highest population in the World and it's not realistic for the population to rely on importation of the iron and steel for domestic consumption. Moreover, the Chinese government values the development of the iron and steel industry as crucial national policy, and uses the production of iron and steel as an important index of economic growth.

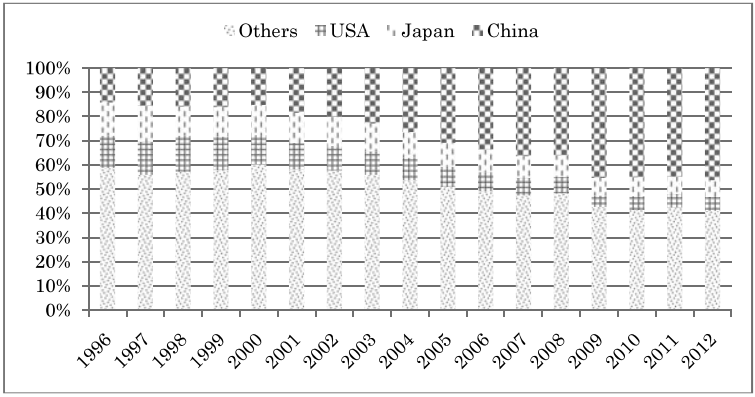
In addition, when viewed from different levels such as the local govern-

ment and from the banks point of view, steel companies are important sources of taxes, especially, as they are highest borrowers from the local banks. Therefore, in case of manufacturing, there is a positive significance on the research about the impact, formation mechanism, and effect of steel industry's overcapacity in China.

1.1 The Growth and Overcapacity in thesteel industry

According to the World Steel Association Report, by the year 2012, China was the best iron and steel producer and consumer for the last 17 consecutive years. In the fiscal year of 2012, 717 million tons of crude steel production produced in the world, China accounted for 46.3% of world total production from 1991, crude ore consumption demand has risen rapidly in China, becoming the best iron and steel consumer in the world surpassing Japan since 1996, as depicted by the Figure 1.

Figure 1. **The percentage of Chinese steel production compared in the World**

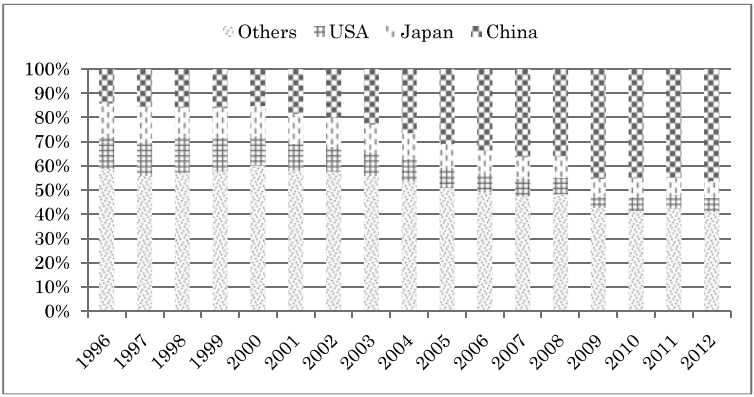


Source: Based on World Steel Association

From 1990 to 2006 China was the Steel Net importer especially in early 1990s and 2000s, Import volume of China's steel products increased rapidly as

depicted in Figure 2, as it is reflected, there was small fixture in China steel industry in the early 1990s and 2000s. In particular, the lack of supply of high-quality steel products drove the expansion of import volume. After the year 2006, China became the Steel Net exporting country in the world. However, from 2009, import volume of China's iron and steel was reduced, and export volume increased significantly.

Figure 2 **China's import iron ore, crude steel, and export crude steel** (**Unit**: 10,000 **tons**)



Source: Based on " China Statistical Yearbook "

Since the year 2000, the rapid expansion of steel production in China, was the main driving force of growth in the manufacturing sector, infrastructure investment and railways rapid economic growth, roads, and ports, shipbuilding, machining, automotive, and consumer electronics, the urbanization was supported by housing investment and simultaneously steel industry experienced rapid growth too especially with the china's admission in WTO.

By the year 2000 China's was still experiencing under capacity in steel production however, since the year 2003, there was an excessive steel industry capital investment demand for the expansion of the steel export and domestic demand for steel products thus creating overcapacity in the steel in-

dustry but the problem of overcapacity in steel industry did not surface up until 2008, under the influence of the global financial crisis of the year 2008, which started with the subprime mortgages problem in America, export volume of the China's steel slowed down, but there was an increase in steels domestic consumption, which was driven by the stimulus package of the year 2008 offered by the Chinese government and ended in the year 2011 which resulted in the expansion of production capacity, the economic stimulus package in 2012, hastened the overcapacity problem in China steel industry. For example, if you look at the financial reporting of the fiscal year 2012 of the listed companies, in China out of the top 10 listed companies with deficit, steel companies accounted for seven, with a total loss of 27.5 billion yen.

Simply put from the year 2003, the Chinese government had attached great importance on problems of overcapacity, but the problem persisted and continued to worsen in reverse. Take for instance, from 2012, the overcapacity in the steel industry surfaced, but the capital investment of the Chinese steel industry still continued without structural adjustments implementations

The current overcapacity problem has impacted economic growth on the steel industry, both in micro and macro levels. On the micro side of the enterprise there are, slump in sales, deterioration of competition, falling prices, decline in profits, higher default rates, which impacts the enterprise restructuring, macro side, such as decline in Producer Price Index (PPI), reduction of fiscal revenue and output value, trade friction, increase of non-performing loans, and rising unemployment rate have compounded. There is a possibility that if we do not act on the problem of overcapacity now, it might lead to long-term effects on the China's economic growth thus causing an entire economic slowdown, increase in budget deficit and anxiety in the financial system.

1.2 Overcapacity in the steel industry and government Intervention

When an enterprise is capital—intensive, and capital stock, large iron and steel are involved it is paramount to use huge amount of funds. Generally, steel companies acquire loans from the banks with lower interest rate than the fixed interest rate but, since 2003, real interest rate in China has been on the negative side, and the steel companies can still acquire the funds at interest rates lower than the reference interest rate. Moreover, Steel enterprise still experience huge financial subsidies from the Chinese government such as export exemption policy of the steel, tax preferential policies on income taxes, the Chinese government has also maintained at a lower level the price of power and industrial water as price regulations. The problem is the steel enterprises are experiencing higher profits offered by the government bureaucratic policies, while ignoring especially the plight of farmers, laws and regulations of the central government, the provision of low-cost land, tax incentives, local governments, and through the benefits of loan sometimes which threatens capital investment and the survival of the local businesses in the neighborhoods. As the intervention of government, investment willingness in financing capability in steel companies continues, the management investment scale of the capacity has exceeded significantly.

Financial subsidies lower interest rate policy, tax revenue and preferential government policies, such as government intervention in local government, there is a merit development of steel industry, such as the promotion of exports.

However, there is a distortion of factor prices and production costs in the investment cost government intervention which is lower than the market price. Through these distortions of the production factor prices, companies can gain Excessive profits. The incentives of the " excess profits " forms a production capacity based on the capital investment of the original plan,

production capacity which results with an excessive demand than the reality. In addition, as the management of iron and steel enterprises deteriorates and overcapacity occurs; there is a possibility that this situation could be used to acquire financial assistance from the government, alternatively, if the government and financial institutions bear the losses of the management. As a result, this creates overcapacity in steel industry, therefore as the capital investment in the iron and steel enterprises continues, the worse the overcapacity problem becomes.

1.3 Experience Japanese steel industry overcapacity and the structural adjustment

The high economic rapid growth period of Japan, also impacted the Japanese steel industry due to the higher demand in steel consumption. When the rapid growth stabilized the Japanese government established administrative guidelines to streamline the steel industry which was already in overcapacity due to higher consumption demand however, on the other hand, the Japanese steel industry had a competitive edge in the long term due to its global presence the demand was high for Japanese technology. Below are the steps of structural adjustment implemented by the Japanese government to overcome the over capacity problem, which I have used as a reference of how to overcome the overcapacity in the China steel industry

1.3.1 Response to the Japanese steel industry overcapacity

① Setting of the law

For reconstruction of these industries given name " structural recession industry ", the Japanese government undertook the following steps to reduce the overcapacity. It created a " stable basic plan ", which was as follows " temporary legislation for 5 years " as the main content structure recession measures, such as installing and " instruction cartel " system, " Identified

the sick industry trust fund ", back in May, 1978 the government " Identified sick industry and took temporary Law as measures for stability " but the temporally laws were abolished in the year 1983. In addition, in November 1978 affected by recession in these industries " specific area recession measures for small business Temporary Measures Law " was implemented for the regional unemployed and anti-small business, and for the rural areas " specific depressed region leavers was also established as the temporary Law Measures " for specific regional; development.

② The guarantees by specific industry recession credit funds

The second methodology was that, in the private sector investments the Japan Development Bank guaranteed the obligations of the existing debt of the companies in these industries easing borrowing of capital necessary for processing of overcapacity as funds specific industry recession credit funds.

③ Creating a stable basic plan

For the steel industry in recession, measures such, prohibition of processing equipment, or the new limit of the facilities, were established for business transformation to promote the stability of employment. In addition, to this measure, careful consideration to the stability of the management of the related SMEs and employment stability was also included

④ Reduction of government intervention

In order to improve the industrial structure in the steel industry, the behavior of firms in the industry was left to be regulated by the market principles and the Japanese government refrained from direct intervention. Everything was entrusted to the market structure mechanisms. However, according to Chuo University Institute of Economic Research in (1980), under the umbrella of the Japanese government measures of supporting big enterprises were discontinued but small and medium sized enterprises still continued to be helped. Although there was a proper use of real intention and principle, the overcapacity of industry, in the steel, aluminum smelting such as, while

achieving harmony with the problems in regional economy regional employment issues and processing of overcapacity, such as problems of small and medium-sized enterprises under the umbrella, the Government of Japan, in order to promote the smooth processing of overcapacity, direct government intervention was led to the stop, target companies, were taken as a remedy only for that time only, it was pointed out that in futureit should serve the self-help efforts of the company based on the self-responsibility system. Therefore, industry, such as steel industry, was converted to market-led government-led in direct government intervention.

There was still lack of self-responsibility system with the companies and the institute expected the government interventions and administrative guidance of the ministries and agencies, including the former ministry of International Trade and Industry in the enterprise side to be continued to harmonize the problems in regional economy, regional employment and processing of the overcapacity issues.

⑤ Instruction cartel system

On the basis of the market mechanism, sluggish demand for steel to overcapacity caused the price decline; industrial adjustment occurred selection by competition was carried out, which was being treated as the equipment at the end of excess. However, in the apparatus system steel industry with a huge equipment, movement of capital and labor was extremely difficult, both and, a level international advanced, Facilities・state of the art steel industry gap between companies was less. Because of this, Japan did not adopt the optimization of the time by the competition mechanism, the flexible operation of the " Antimonopoly Law ", was recognized merger of steel companies, and partnership.

As measures of the above, in the early 1980s and late 1970s, the Japanese government was corresponding overcapacity of steel industry. The recovery of the domestic steel consumption in the bubble economy period in the 1980s,

in the early 1990s and the late 1980s, the Japanese steel industry was in boom.

1.3.2 Experience of Japanese steel industry structural adjustment

① Technical advantages

In order to accomplish the high productivity, the Japanese steel industry was promoting the rationalization of equipment. And Equipment of Japanese steel industry largely as a facility advanced equipment was streamlined. Technical advantages in facilities contributed to the international competitiveness of enterprises the most.

② Efforts of management aspect

The management aspect, the present invention was not limited as a factor of increased interest costs and depreciation in advanced equipment, such as pressure of performance, and profitable on plus as necessarily. For example, eliminating the waste of raw materials, to improve the yield rate of the product to ensure quality control, and conducts substantially the automation of the factory. In the 1970s, in many companies Japanese. as compared with the Western developed countries, the degree of streamlining technical Japanese steel industry was high, and was in a state where labor productivity was also higher than in Europe and the United States.

③ Coastal location of the steel industry

On to the coastal area of the Japanese steel industry. The result of location, as compared to a foreign country, was not necessarily unfavorable cost In particular, foreign dependence on iron ore of iron and steel producer was high more, the price of imported iron ore in the Japanese steel industry that are located in the coastal area was lower than the national steel industry, such as China's which are located in the inland.

④ Increase in industry concentration degree of Japanese steel industry

During the high economic growth period, many companies entered the steel industry, and the degree of concentration in the Japanese steel industry reduced companies market share, but roughly since 1965, corresponding to the iron and steel industry recession 1970's and 1990's, many Japanese steel companies had rebuilt. For example, the establishment of Nippon Steel merger of Yawata capital Fuji both of steel in 1970, and capital alliance of three companies Nippon Steel, Kobe Steel, Sumitomo Metal 2002. As a result, sales-based concentration (Sumitomo Metals Nippon Steel, JFE Holdings, Kobe Steel, Ltd.) of three of Japan's top steel companies was 66.7 percent in fiscal year 2012. In addition, Facilities・technological level of the Japanese steel industry reached the highest levels in the world in the late 1960s.

In other words, economic high-growth period and later, the Japanese steel industry was due to the decrease in production volume in the " decline industries, " but, as mentioned above, on the basis of increased rationalization of equipment, improvement of business management, coastal location, the industry concentration degree had competitive advantage in the long term in the international market.

1.4 **The nature of China steel industry's future growth**

About the current state of Chinas steel industry compared with the past experiences of the Japanese steel industry, the future; of the industry is considered as follows

① Minimum government intervention and the expansion of domestic demand:

In China, there is a possibility that, steel demand will increase, due to the promotion of the development of the Midwest infrastructure and promotion of new urbanization, and it's possible to eliminate the excess production capacity in existing steel industry the industry will experience boom again, if the housing infrastructure will be the primary usage of iron and steel. For ex-

ample, the Japanese steel industry was in recession in the early 1980s and late 1970s, however, the recession was turned in to a boom due to the increased domestic consumption of steel derived from infrastructure investment and housing investment in the economic bubble period in the early 1990s and late 1980s.,

On the other hand, the main cause of overcapacity in China's steel industry is a distortion of capital investment behavior through government intervention. The possibilities of government intervention must be minimized to the capital investment behavior of the steel industry, it is possible to eliminate the overcapacity existing in the expansion of investment demand, but to make a new large-scale capital investment the cost is high, by the end of the investment demand, it is considered likely to serious fall into overcapacity again in the steel industry. Therefore, in the future, in the capital investment behavior of the steel industry, government intervention should be minimized, for the China's sustained healthy growth in steel industry.

② Promotion of exports, the shift to overseas production and Selection of non-efficiency equipment

There is a price advantage in the world of basic materials such as steel because it's lower in China. Export markets other than Europe and North America; demand in ASEAN, emerging countries, African countries has increased. Therefore, the demand for steel will be expanded as steel exports for these countries. For example, since 2008, with the decline in steel exports in nations such as the United States of America, EU, Japan, and South Korea, steel exports increased to 14.19 million tons in 2012 from 10.75 million tons in 2008 for the ASEAN nations.

In addition, export expansion of steel products such as in China is one of the countermeasures of overcapacity, but there is a possibility that this can lead to trade friction. For this reason, it is necessary to shift to overseas production from domestic production of previous overseas investment in Chi-

na iron and steel enterprises. As a result, of labor and overcapacity some have shifted abroad, which has reduced domestic production capacity.

In addition, overcapacity of the industry such as China steel industry is structural overcapacity, for the lack of efficiency equipment at a high technological level, there is an excess of non-efficiency equipment, which is obsolescence. Jiang (2009), Li (2010), and basically selection based on market competition mechanism, but in the case of local protectionism, set of selection target, the central government selection I pointed out the need that is driving the selection as a way of financial assistance to, and the restrictions of the environment.

③ Rise of the industry concentration degree and adjustment of industrial location

The waste of resources and excessive competition in the low concentration of iron and steel industry in China, an increase in industry concentration degree is necessary. For the steel industry with a huge equipment, movement of capital and labor and is extremely difficult. In addition, there is a large impact local economy, local employment, to small businesses under the umbrella process of this overcapacity. In this case, the processing of the overcapacity due to competition mechanisms is not the best measure. For the maintenance of industrial competitiveness and stable growth of the Chinese economy, the merger of steel companies, such as the alliance is necessary.

In addition, overseas dependence on mineral resources such as iron ore in China has reached 50% or more. Located in the coastal part of the rivers at the inland and in the steel industry, the overall cost due to an increase in transportation costs are high. For example, transportation costs of export iron ore ranked 2 of Iron and Steel Company of China in the middle of the Yangtze River " Wuhan Iron and Steel " company, the higher the about 100 yen per ton from the transportation cost in the downstream part of the Yangtze River " Bashan Iron and Steel " company. Future, it is considered to

maintain the price advantage in the world, that it is necessary that the production of some to relocate to coastal areas from inland iron and steel industry in China.

④ Increase in surface production technology and improve management

Compared to the steel industry in Japan which had reached the highest level in the world of high economic growth period, China steel industry now (reference Figure 3) the difference between the highest level of the world due to a decrease in productivity is large. For the steel industry in China, winning it a competitive advantage through technology rise in productivity is necessary.

Figure 3 **Comparison of the Japanese steel industry productivity and China**

Item	China	Japan
Converter steel primary energy consumption per unit (2010)	26.9	22.9
Average crude steel production per employee (2009)	189.9ton	420.4ton
Shipments of steel industry for per ton of crude steel (2008)	$ 1323	$ 1995
Average amount of 1 ton steel exports (2008)	$ 1071	$ 1172

Note: $ 1=103.36 yen=6.945 yen exchange rate in 2008

Source: Based on " estimate of energy consumption per unit of time in 2010, " RITE, " Japan Statistical Yearbook ", " China Statistical Yearbook " and " China Iron and Steel Industry Yearbook " .

Also, having the state-of-the-art facilities in the world (for example, the most common blast furnace of China 4000 m3), with issues such as quality control and production management, iron and steel many companies in China, production of the Chinese steel enterprises is not high. Mainly Export steel is lower steel in low added value. Therefore, it's necessary for China's steel enterprise to make improvement on business management and technological advances.

⑤ High added value of products

Figure 4: shows the changes in the sector steel consumption structure According to the table below, the proportion of the construction is 47.2%,

while the demand for construction-related and other industries which are included as part of the energy, and half of the total demand actually, it is assumed that there are more than consumed for the construction. Due to a decrease, manufacturing demand for machinery, automobiles, consumer electronics, and shipbuilding is an increased demand for the construction from 2012-2005, in addition due to a decrease in the proportion of general-purpose steel corresponding to the construction and shape steel bars・wire, I have to increase the proportion of high-quality steel that corresponds to the car・shipbuilding・Mechanical・consumer electronics such as sheet steel・band. Therefore, in future, in response to changes in demand for steel structure, steel industry of China is required conversion to production of high-quality steel which is a high value-added product.

Figure 4 **Changes in sector steel consumption structure in China**

Department	2005year	2012year
Construction	51%	47%
Machines	15%	17%
Cars	3%	8%
Consumer electronics	2%	5%
Shipbuilding	1%	4%
Energy industry	5%	4%
Other	23%	16%

Source: Based on " China Steel Industry Yearbook "

Section II: Overcapacity and Structural adjustment of China port industry

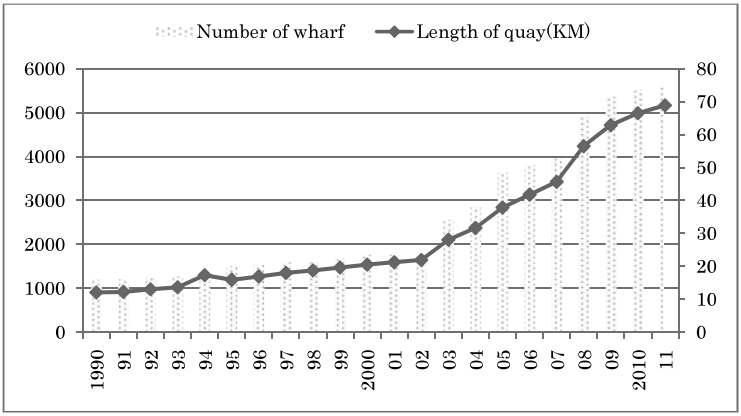
China's economic growth pattern trend has become " export-dependent " or " trade-dependent ", trade in cargo shipping occupied more than 90%. In China, production areas and consumption areas and producer of minerals such as coal, of manufactured goods are far apart, various manufactured goods and coal for domestic consumption primarily use shipping as the mode

of transportation. The port is a connecting point of land and sea, and there is a large role in the export of products and import of resources, there is a close relationship between location and growth pattern in China, foreign trade, industrial structure adjustment, and the consumption of energy. Therefore, in this section, as it is the case, port industry is considered to be a service industry, and we can reference the experience of Japan port industry, to examine the corresponding predicament of China industrial structure adjustment.

2.1 **Growth of China port industry and overcapacity**

In China from 1949 to 1978, factors such as political reform did not open up the Chinese economy. That time, with the low amount of foreign trade in China, ports were primarily handling domestic cargo. From 1978 to 1989 foreign trade was initiated and took off. However, up to that time, to export cargo during this period the resource mainly coal and labor-intensive products such as cotton fiber, oil, and mineral, with the increase in exports of these goods, handling of cargo in the ports of China slight increased. In addition, in since the 1990s, (except 1995 and 1994), it is clear that China's eco-

Figure 5 **Number of wharf and length of quay in China**

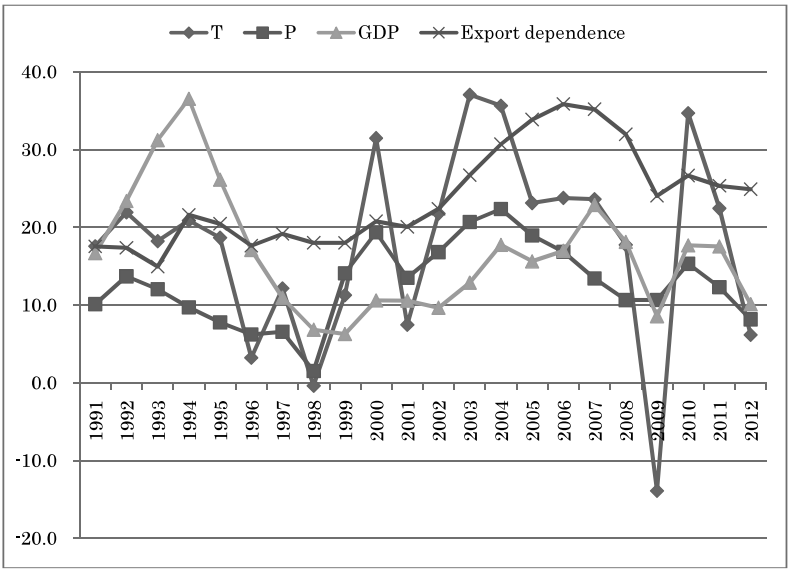


Source: Based on " China Statistical Yearbook "

nomic growth was led through domestic demand which was 20 % or less dependence on exports. Therefore, the increase in cargo volume in China port industry was dependent on domestic demand mainly in the 1990s. For the low growth of cargo volume of China port industry, as shown in Figure 5, the amount of increase in the length of the quay and the number of wharf formed from China port investment in the 1990s was small.

As shown in Figure 6, since 1999, housing reform in China, WTO accession, in heavy and chemical industrialization, foreign trade of China, nominal GDP has grown larger, with export dependence of 20% in the 1990s in years but it was increased to more than 30% in years 2004-2008 ofthe foreign trade. As a result, exports and product imports and overseas resources, handling cargo volume of the China's port industry in the transfer of product and domestic resources were increased significantly. In addition, during this

Figure 6 **The Growth rate of China's Port cargo handling volume** (**P**)、**Nominal GDP**(**G**)、**Trade**(**T**) **and export dependence**



Source: Based on " China Statistical Yearbook "

period, as high economic growth period of Japan, growth rate of cargo handling volume of China port industry is larger than the growth rate of nominal GDP. To rise in cargo handling volume of the port industry, as shown in Figure 5, the length of the quay and the number of quay 2000s, formed from China port investment has increased significantly.

However, under the influence of the global financial crisis of 2008, China's exports slowed, export dependence fell to about 25% from 30% over 2004-2008. As a result, since 2008, there is a state of overcapacity in the Chinese port industry.

2.2 Overcapacity of the port industry in government intervention

Since 2001, In China, cargo handling volume of China port industry has grown significantly due to the rapid industrialization, and the proliferation of export in heavy machinery and chemicals. Also the Port industry has grown significantly due to the growth of heavy and chemical industries as part of the improved infrastructure. On the other hand, management of Chinese ports authority has transferred from the traffic department to the local government, in city and coastal areas. Many provinces had set a goal of " develop the economic by port " from 2002. In addition, " China Tenth Five-Year Plan " (2001-2005), " China eleventh Five-Year Plan " (2006-2010), " China twelfth Five-Year Plan China traffic transportation industry " (2011-2015), " Yangtze River Delta, Pearl River Delta, Bo-sea Bay area three coastal port construction plan (2004-2010) " in such, you have set the growth target for the port industry. On the basis of these, it was capital investment of port companies and local governments to reference the goals of the central government, because there is no control of the port investment scale in port companies and individual local governments, local governments realistically and the total amount of capital investment scale of the port company is great-

er than the plan of the China government.

Another way, in China, high savings rate and banks are dependent on the interest rate differential, banks willingness to lend to transportation companies that proves that, there is a profitable stable and long-term such as some highway companies, and port companies which are strong. From fiscal year 2001 to 2011, we look at the financial statements of listed Chinese port companies, often with a high rate of return on capital. In fact, with the harbor with many companies rather than submit a request appeal for funds to commercial banks, commercial banks submit loan request to port company. In addition, since they are state-owned enterprises and commercial banks port companies, port companies can borrow at interest rates lower than the market interest rate. Result of reduction in capital cost due to the low interest rate, there is a possibility that the level of investment will be excessive.

In addition, since the 1990s, because of the attraction of the port facilities and investment against obsolescence and lack of port facilities in China, the Chinese government has made a huge financial subsidies and corporate tax preferential policies to port facilities investment. The financial subsidies and tax incentives, because of obsolescence or lack of port facilities earlier, there is an advantage to attract capital investment of port. However, if there is overcapacity in the port industry, there is a disadvantage that promotes overcapacity.

The performance appraisal system of port top companies, local government attaches great importance on goods (especially container) handling volume, scale of assets, and tax benefits and whether it's possible to recover the invested capital, without considering the rate of return on capital, return on investment, such as sustainable growth and environmental issues. The investment of local state-owned enterprises which are local government-led, local bureaucracy during the term of investment. Therefore, I have attached great importance to regional GDP. However, as a result, it is the performance

of (business owners) or local Bureaucracy, if the investments fails the loss is to the government but if the investments is successful the gains belongs to the local government and the management. In general, port investment is low due to the cost of needs occupying the (water) or broad land, investment in at large. China have applied the land system the government the ownership scale of land, corporate and personal that buy the right to use the land from the government, in the case of port investment, occupying the land around it and the water is a wide rare resource, but investment in this case is small, because the government is leading the local GDP through the port investment, the local government allows the port companies to use the land at a low value or zero value at times. Therefore, port companies get right to use the land at the lowest cost or no cost at all.

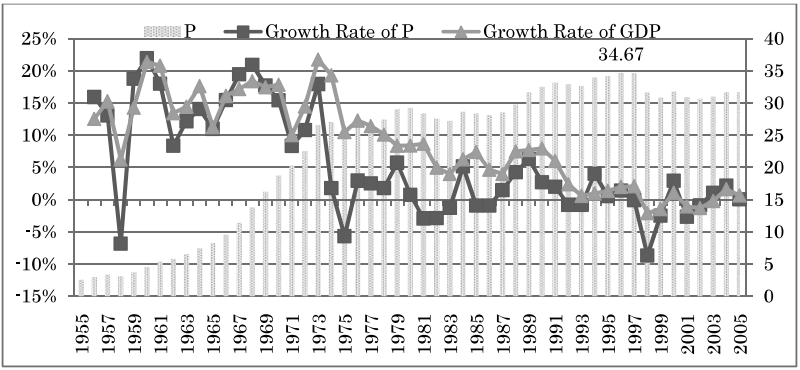
Through the local government intervention and government policies described above, has resulted in a distortion of the capital investment management behavior in the port companies. As a result, some are in overcapacity because of larger setting than the for real demand of the port company capital investment plan.

2.3 Experience overcapacity and structural adjustment of Japan port industry

Japan is a maritime country, and acts as a window of international exchange and trade, port plays a major role in supporting the development of culture and society not only the country's economy but in all ages. It is well known, that, the Japanese economy has a dependence on advanced foreign trade, for the development of trade and the industrial growth which are inseparable from trade structure raw materials imports, and exports from the top of the industrial location, coastal industrial zone and port is that of they are behind the process leading with a significant relationship to each other. 99.7% of import and export cargo to support the economy of Japan.

As shown in Figure 7, after the war, economic growth, (1955～1973) high-growth period, (1974-1991) period of stable growth, low (negative) growth phase growth of the Japanese port is (after 1991). Figure 8, is the one that shows the handling the actual total amount of the year which ended with the Japanese port development Five-Year Plan.

Figure 7 **Japan's Volume and Growth Rate cargo handling of Japan** (**P**), **Growth Rate of nominal GDP**



Source: Based onthe data from Cabinet Office, the Ministry of Land, Infrastructure and Transport

Figure 8 **Japanese Five-Year Port Development Plan and the Results**

	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
Plan period	S36～40	S40～44	S44～47	S46～50	S51～55	S56～60	S61～H2	H3～7	H8～12
Investment (\100million)	2,500	6,500	10,300	21,000	31,000	42,600	44,000	57,000	74,900
The plan of port handling (10^8 tons)	6.23	10.5	15.3	33.8	37	41	30.8	33.8	37
Port handling the ended year (10^8 tons)	7.45	13.8	20.33	27.06	29.03	28.66	31.67	34.18	31.78

Source: Based on the data from " Japan port history ", Ministry of Land, Infrastructure and Transport

① High economic growth period

As shown in Figure 7, within the period of high economic growth that began in mid-30s (Showa) volume of handling port increased every year. During that period, the growth volume of handling port, nominal GDP, and the trade amounted to vary substantially. " Japan port history " (p.40) observed that, " the high economic growth period, the steel industry was a basic materials industries, such as Steel industry, metal industry, Mechanical oil refining and petrochemical industry, synthetic fiber industry was a high growth, they were industry responsible for the period. "

" Japan port history " (p.369) also observed that, in the high-growth period of the Japanese economy, modernization of Japan port was delayed, the absolute amount of port facilities was remarkably poor by comparison with the cargo handling volume, which resulted in ship backlog. These factors caused the Japanese economy and its residences serious trouble. In other words, in Japan during the high economic growth period, compared with economic growth, investment in port was significantly delayed, and was in a state of under-capacity port industry.

② Stable economic growth period

As indicated by " Japan port history " (p.369) Japan made the transformation of industrial structure from the second half of the 1970s as the turning point of the oil crisis. Through the two oil crises, the Japanese economy entered the softening・service period, Specific gravity of the service industry increased when viewed from the industry side, and value knowledge, technology, and services such as increases than the thing-in-itself, service expenditures, such as leisure and leisure grew significantly, rather than demand of the thing in life surface.

On the other hand, from cargo handling volume of the port industry in 1975, the goal of handling cargo volume of port industry that has been established in the 6th Five-Year Plan and port development 5th was too high.

Result of demand that has been forecast this was greater than the reality demand is in a state of over capacity port industry in Japan from stable growth period.

③ Low economic growth period

During the " lost 20 years " during 1991-2010, as vertex 515 trillion yen in 1997, nominal GDP in Japan fell by about 7 percent to 479 trillion yen, foreign trade amounted to I increased (approximately 0.7 times yen) approximately 1.65 times to 1.458 trillion U.S. dollars to 551.3 billion U.S. dollars. However, handling volume of the harbor, has declined to 2.802 billion tons (2010) from 3.467 billion tons of 1996 is a vertex.

Therefore, the low growth period of the Japanese economy, foreign trade volume increased significantly, but I found that the amount of cargo handling port and nominal GDP also decreased.

④ Experience of Japan port industry

At first, during the high economic growth period, the growth rate was higher than the GDP amount of cargo handling port industry. There is a possibility to predict the amount of cargo handling port industry based on the GDP When it comes to stable economic growth, if you want to predict the cargo volume of the port industry based on GDP, it's good to focus on GDP structural changes industrial structure adjustment, diversification of national demand, such as in high-value-added product is required. In other words, to predict the amount of cargo handling port industry based on the GDP we must always focus on economic growth pattern.

Second, growth of the port industry are those that occurred with the growth of the heavy chemical industry, by the end of the heavy chemical industry stage, the growth of the port cargo handling industry amount was finished.

Third, for the overcapacity of the port industry, function change of port space was required. Increase in the old factory site definitive overcapacity of

the port industry, “c. because among the maturation of the society had progressed, in addition to material wealth, corresponding to the increase of the demand for marine recreation and the growing demand of the people for the improvement of quality of life, comfort that they had the core and green space to promote the development waterfront, marina, marine environment etc.” and “f. in order to ensure a new space were available to expand the port function and promote port redevelopment in areas having potential for advanced use aging facilities, obsolescence proceeds, and the like located in the vicinity of the city” were written in Port improvement Eighth Five-Year Plan.

2.4 **The nature of China port industry future**

As described above, the growth of the port industry in economic growth of China and Japan has revealed. The economic high-growth period, the amount of cargo handling port industry of the two countries has grown significantly along with the advanced economic growth, economic high-growth period and later, was to slow down the growth of cargo volume of Japan port industry. Domestic transfer location adjustment of industrial value-added・lightweight・Soft of products in China industrial structure adjustment, such as steel industry, and transfer to overseas manufacturing, implementation of the “Energy conservation and emission reduction”, such as the adjustment of energy structure in, is expected to be in the slowed growth of cargo volume of China port industry.

Conclusion

At the transition period from the period of high economic growth to stable economic growth, both of Japan and China have experienced serious overcapacity problem brought by excessive capital investment, through govern-

ment interference in the high economic growth period. During this period of high economic growths, it means that, both governments have interfered in capital investment had a significant difference, than the market mechanisms. Therefore, government interference was the major cause of the overcapacity.

In the Steel industry, port industries and other existing capital-intensive industries, it is possible to mitigate the overcapacity expansion of investment demand, promotion of exports, through the selection of inefficient equipment, but the resolution of the overcapacity problem is based on market competition, rather than the government interference although industrial structure adjustment is required. In other words, reform of government, which aims to minimize government interference.

In reliance with the market forces in the government reforms, internal adjustment of industry and improvement of business conditions and improved productivity can be attained in past industries that are now in excess of existing equipment, which can be turned into automobiles productions, from the old leading sector of the steel, and ports industries thus realizing the industrial level up or new leading sector of high value-added industrial machinery and electronic products

In other words, China's economy has become the plight of growth which causes problems such as overcapacity; it's our views that, it's time for the Chinese government to conduct institutional reforms that are based on the market mechanism, in order for the Chinese economy to experience boom again. It is believed that with " reform bonus " the Chinese economic growth can be sustained for a long time.

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Chapter 6

Expanding Domestic Demand in China: Opportunities and Prospects

(A village is located in the Chinese inland provinces: 2012.3 in Guizhou Zunyi)

1. Domestic demand and consumption

1-1. What is domestic demand

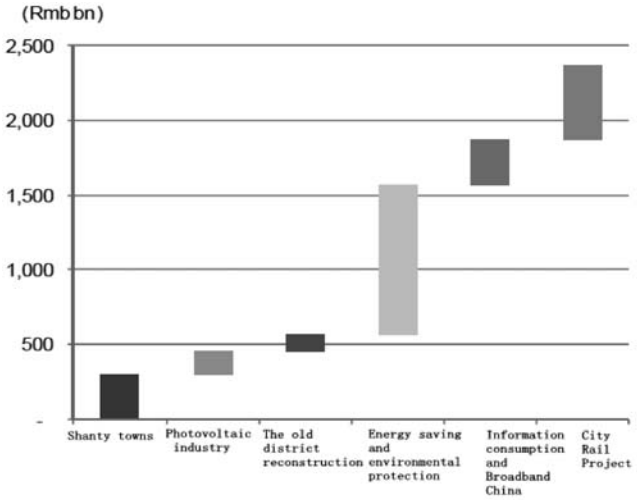
In China, whether the government or private sector has long said that consumption, investment and exports are the three GDP driving carriages. The so-called domestic demand includes two of these, that is, consumption and investment.

The economic growth model in China has been not only the overseas market dependent type but also the investment dependent type since China's reform, especially since the 1990s. Among them, the investment dependent

type is the most outstanding. Investment accounted for more than 40% of GDP. Even in the high growth period of Japan, investment accounted for just more than 30% at the high point. Therefore, China's economy depended too much on investment. Just because of this, many experts and scholars believe that China should reduce the proportion of investment and increase consumption in the future. But is the idea of stimulating economic growth mainly by consumption, practical ?

The structure of GDP can be divided into four parts namely, consumption, investment, government spending and trade, that is, GDP=C+I+G+T. Investment can be divided into private investment and government investment. Private investment can be further divided into enterprise investment and

Figure 6-1 **The Chinese government announced policies to stimulate the economy in the third quarter of** 2013



NOTE: In the Figure, Nationality mark in order from left to right respectively is Shanty towns, Photovoltaic industry, The old district reconstruction, Energy saving and environmental protection, Information consumption and Broadband China, City Rail Project.

Source: Wang Hanfeng, Strategy outlook for the A stock marketin the fourth quarter 2013, CICC, Sep 2013

residential investment, while government expenditure investment includes public investment and other expenditures. Among them, public investment in government spending includes infrastructure such as high-speed rail and road etc., and nowadays includes providing low-income housing and low-rent housing construction for middle-income and poor Chinese, as well as shanty towns' renovation project. The recent investment of the Chinese government is shown in Figure 6-1. Other social and public services such as social security, medical care, education etc. belong to the consumption expenditure of government expenditures.

In fact, the three GDP driving carriages which is often said in China is the same as the four constituents of GDP mentioned above. That is to say that the so-called domestic demand is identical to the sum of final consumption (private+government) and capital formation (private+government).

1-2. **Consumption in domestic demand**

The coming of Lewis turning point and the population bonus indicates the following results: Along with the ending of the era of unlimited supply of labor, the average wage is experiencing a 2-digit annual increase, and the proportion of labor reward will enter into a rising stage. All of these promote consumption; the proportion of consumption will also gradually increase.

In the expenditure structure of China's GDP in 2011, final consumption is 49.1%, in which the ratio of private consumption and government consumption is 72.2:27.8. In the same rapid growth period of 14 years from 1956 to 1970, average private consumption in Japan was 58.4% of GDP. Therefore, consumption in the current Chinese economic growth is the most vulnerable part.

However, along with the implementation of new urbanization in China, as well as the reform of the income distribution policy etc., consumer demand is expected to have a rapid growth in the future in China.

After the transformation of the Japanese economy in 1973, consumption rate increased rapidly. As mentioned above, final consumption includes private consumption and government consumption. Social and public services such as social security, medical care and education etc. belong to the consumption expenditures in government expenditures. Therefore, especially after the " new-type urbanization " was proposed in China, when we discuss about domestic demand, we should not only consider the past consumer spending, but also need to further consider the expenditures of public services from government such as education, pension, medical care, social security etc..

2. Investment indomestic demand

2-1. Upgrading investment and sustainable investment

1) To establish a new pillar industry

Like the successful transition in Japan and South Korea in the past, China will also re-establish a series of new pillar industries. Rapid growth in China has been relying on high input for the past 30 years or more. It is generally considered to be unsustainable. Especially in the case of the iron and steel, shipbuilding and photovoltaic industries, the overcapacity has brought a negative long-term effect on China's economic growth. At the same time enterprises are also facing huge transformation pressure.

But the actual fact is that there is insufficiency in high-end production capacity and serious overcapacity in low-end production. For instance, the high-ranking steel industry still relies on imports from Japan and Korea.

As we mentioned above, in the future China's government is going to increase public investment and consumer spending which will require huge government fiscal funds. The main source of government revenue is the enterprise tax. However the tax system reform and state-owned enterprise

profit redistribution are another dimension of the topic. If enterprises do not invest in creating high added value products, the government's public expenditure is not sustainable. So it is necessary to continually maintain a high level of investment. As to whether it is feasible, the key point is to see the" quality " and " quantity " of investment in the future. " Quality " refers to the so-called " high additional value " which is often referred to the smooth upgrade of industry. " Quantity " refers to the direction and fields and extent of coverage of investment in the future.

From the aspect of industry transformation, with the elimination of the excess capacity and economic transformation in the future, new pillar industries will be established in the next 10 years or even a longer growth period. Some kinds of high technology industries such as information, bio-pharmaceutical and other emerging industries, may not immediately occupy a high share in the total economy, but the contribution rate of these industries to economic growth will be very high. I think, the construction industry and real estate industry will still undoubtedly occupy a significant position in the pillar industry list. In addition, energy industry including renewable clean energy will continue to become the national pillar industry. Moreover high value-added machinery manufacturing industry such as automobile, aircraft and track traffic etc. are also included.

2) Urbanization and the development of regional economy

In the process of urbanization in the future, in addition to private investment, public investment in government expenditures, such as bridges, roads, high-speed rail, highway, airport, harbor and other infrastructure, as well as the shanty towns renovation project, low-income housing and low-rent housing construction for middle-income and poor Chinese also will be an important investment in the future.

At the same time, considering the actual situation of the Chinese government fiscal deficit, the government will further relax restrictions on invest-

ment of public domain, and will encourage private capital investment in these areas by implementing more preferential policies.

2-2. **Strategic layout and the investment direction**

In the 12th Five-Year Plan, the strategy layout of urbanization called " SanZongLiangHeng " was explicitly proposed. The " SanZong " refers to the three longitudinal channels, the first is China's eastern coastal line, the second lineis the railway connecting Haerbin-Beijing and Beijing-Guangzhou, and the third line is the railway connecting Baotou-Kunming. " LiangHeng " refers to the two horizontal channels, one is the continental bridge channel connecting the Eurasian region between Lianyungang and Huoerguosi, and the other is the Yangtze River channel connecting Shanghai and Chengdu (Figure6-2).

Along with urbanization in China, a multilevel network development pat-

Figure 6-2 " **SanZong LiangHeng** " —**Urbanization strategy layout in China's** 12**th Five-Year Plan**

Source: the Outline of the " 12th Five-Year Plan "

tern including “ eastern coastal regions ”, “ central and western regions ”, and “ along the border regions ” will be formed. The details are as follows:

1）“ Eastern coastal regions ” are around Beijing, Shanghai, Guangzhou, the three big centers of the coastal metropolis circle.

2）“ Central and western regions ” are many kinds of urban belts containing multi-centers and multi-growing levels.

3）Near the Chinese long border area, “ along the border regions ” are centers of border central cities relying on energy economics and geopolitics.

Predictably, the development process with polycentric and multicenter growth poles will further promote large-scale investment of the government and private sector in the next 10 years.

So far, we have discussed a lot about the “ eastern coastal regions ” and “ central and western regions ”. Here, I want to talk about the development of “ along the border regions ” which is rarely known. The economic development of “ along the border regions ” not only relates to the stability and prosperity of the frontier region of China, but also relates to Chinese energy channel security and geopolitics and will be the new driving force for China’s economic growth.

In the next section, I will present examples to explain the development of “ along the border regions ”

2-3. **Analysis of regional development example**

I think that the economic development of “ along the border regions ” are divided into three levels, namely, “ existence effect ” model, “ expansion effect ” model and “ diffusion effect ” model.

Along with the industry upgrade of the coastal economic belt and the industrialization of the central and western regions in China, the development of the border regions was also launched at the same time.

In the early 1980s, Deng Xiaoping put forward an economic development

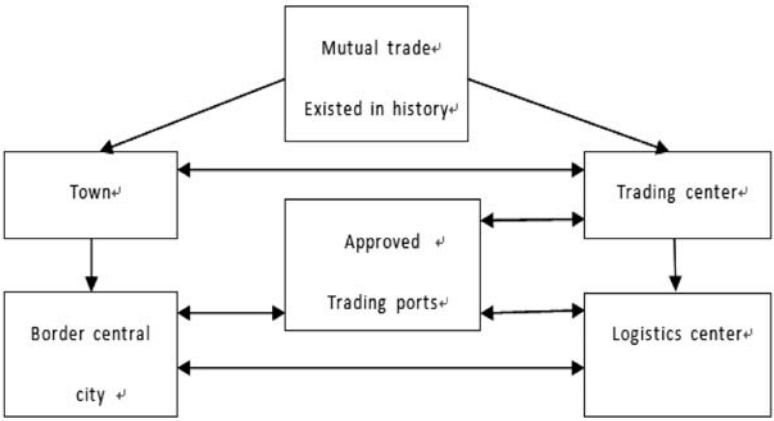
strategy which gave priority to the development of labor-intensive export processing industry in the eastern coastal areas. Later, in the early 1990's (1993), China put forward a model of land border economic development which built the border trade base and logistics base relying on export-oriented along the Chinese land border.

It took me 6 years to do field research along the Chinese border. Every developing stage and scale of the border areas are different, but almost all of the development models can be divided into three levels that consist of the "existence effect" model, "expansion effect" model and "diffusion effect" model. And at present, it can be considered that the regional economic cooperation between China and the neighboring countries is all in accordance with the three models.

1) The first level of border development: "existence effect" model based on "mutualtrade (互市) —logistics center"

The economic development in the Chinese border area started from border trade. The embryonic form of this border trade was mostly built on the basis of ancient border's mutual trade (互市). This is one of the prerequisites to

Figure 6-3 **The first level of border development: "existence effect" modelbased on "mutualtrade—logistics center"**



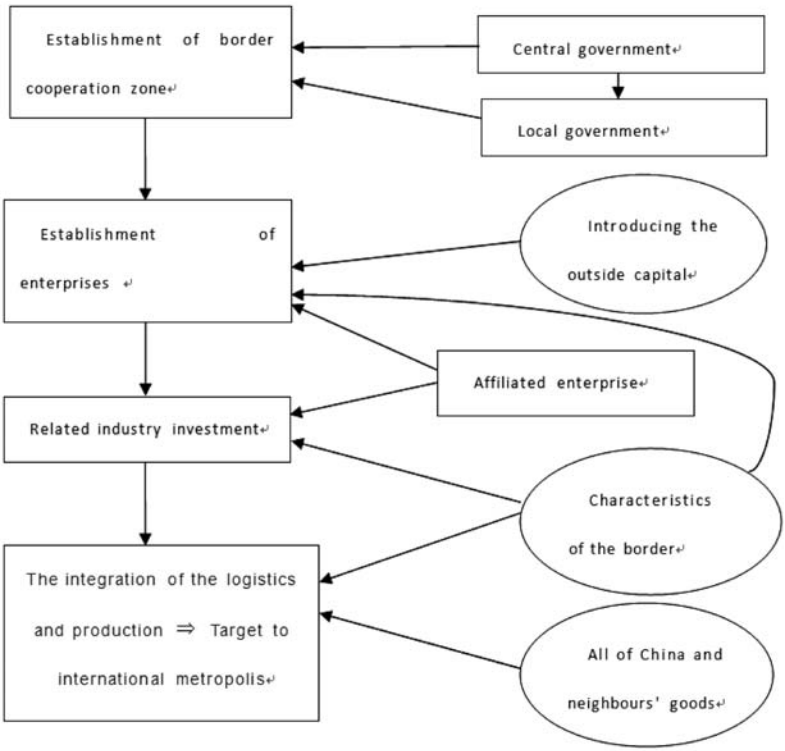
Source: Xue(2011)

establish border economic development. As a result, border cities came to have the function of logistic center directly, or we can say that logistics centers (emerged) in the border cities. At the same time, border cities with the function of logistics center gradually developed from the long border trade serving as trading port between countries.

2) The second level of border development: "expansion effect" model based on "investment promotion—border economic cooperation zone"

In 1992, China issued the "Notice on the opening of four border port cities including Heihe city etc." The policy agreed to establish the border econom-

Figure6-4 **The second level of border development: "expansion effect" model based on "investment promotion—border economic cooperation zone"**



Source: Xue(2011)

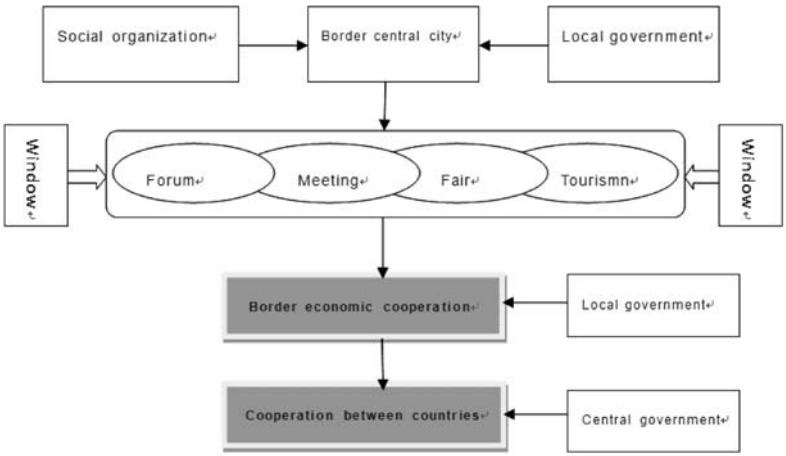
ic cooperation zone opening Heihe city and Suifenhe city in Heilongjiang province, Hunchun city in Jilin province and Manzhouli city in Inner Mongolia province to the outside world.

After that, in the long border, the Chinese government opened 15 state-level border trading port cities in all. Also, in various provinces and cities along the border regions, numerous border economic cooperation zones were also established under a variety of names.

3) The third level of border development: "diffusion effect" model based on "co-operation window—regional economic co-operation"

The third level is closely related to the surrounding countries that China has geopolitical relations with. For example, Mekong sub-regional economic cooperation, Xinjiang energy industry cooperation, China-ASEAN 10+1 model, and Tumen River basin economic cooperation. If there is no such kind of inter-regional economic cooperation around surrounding countries, state-level regional economic development and cooperation cannot be carried

Figure 6-5 **The third level of border development: "diffusion effect" modelbased on "co-operation window—regional economic co-operation"**



Source: Xue(2011)

out. So the third level of the economic development pattern is a model of promoting international co-operation " diffusion effect " .

2-4. **Summary**

About how to look at China's investment rate remaining high, and how to evaluate the growth effect of high investment in China, we should first consider a prerequisite is, that which development stage is China in.

It was in 1960 when Japan reached the Lewis turning point. And Japan had been developed for 30 years from 1960 to 1990 before the bubble burst. If completely according to the case of Japan, let's suppose China got to the Lewis turning point in 2005, then China can be developed by 2035. The year is 2013, so China still has 22 years to develop. This analogy is a bit too ethereal, but till the current government expires in 2022, that is the next 10 years, I think that high investment rate will still be the main line of China's development.

Such considerations are mainly based on the following 2 points. One is the large economic gap between east and west which has the potential to be tapped. The other is that China has 1.3 billion people which have great market potential. I also agree with Yifu Lin's point of view that these 2 points provide the necessary conditions for his Subsequent Advantage Theory.

3. **Guarantee for expanding domestic demand—raising the proportion of service industry and improving the per capita income**

3-1. **Inevitable trend: raising the proportion of service industry in GDP**

According to the production approach, GDP=primary industry+secondary industry+tertiary industry.

At present, compared with western developed countries, the percentage share of the Chinese primary industry in the GDP is relatively larger, while the share of the tertiary industry is relatively smaller. This does not only mean that industrialization is in the process of developing, but also reflects that the process of urbanization in China should be further improved.

From table6-1, looking at the value-added and labor structure of Japan and China, it can be surmised that the composition of the three industries in the period of the Beijing Olympic Games is roughly consistent with that of the Tokyo Olympic Games.

From 1960 to 2008, changes in the Japanese industrial structure are characterized by the following features.

First of all, in Japan in the 1960s, the proportion of the tertiary industry based on the service industry was relatively low, while that of the second industry based on the manufacturing industry was the highest.

By 2008, the proportion of the primary industry in Japan had fallen to 1%, tertiary industry had risen to 72%, and secondary industry had declined from 45% in the 1960s to 27%.

Then, the labor structure of the three industries has also changed. In 2008, the proportion of labor population in the primary industry dropped to the lowest point, while the tertiary industry was at its highest.

According to Japan's experience on the changing industrial structure, we can make some predictions of the trend in China's industrial structure based on the following three points.

First, the output and labor force in the primary industry will be transferred to the secondary industry and tertiary industry. In the future, the proportion of the tertiary industry based on the service industry will gradually increase. This is the so-called Petty Clark's law.

Second, the Japanese economy was in a period of rapid growth in the 1960s and it began to enter a period of steady growth since 1973, only to ex-

perience a downturn after the bursting of the economic bubble in 1991. Although China's economy has achieved rapid growth for the last 30 years, its industrial structure is still similar to Japan in the 1960s. From this point of view, even if China enters into a period of steady growth, its economy will maintain a certain level of growth for quite a long period of time in the future.

Third, accompanied by the rapid industrialization process, a great deal of rural population transferred to the cities after the high growth period in Japan. In the future, Chinese urbanization process will be expected to move forward at a rapid speed.

From table 6-1, **value-added and labor structure of industries in Japan and China**

	Year		primary industry	secondary industry	tertiary industry
Japan	1960	industrial structure	13%	45%	42%
		labor composition	33%	30%	37%
	2008	industrial structure	1%	27%	72%
		labor composition	4%	27%	69%
China	2008	industrial structure	11%	47%	42%
		labor composition	40%	27%	33%

Source: China national bureau of statistics, Word Bank, The Statistics Bureau of Japan Internal Affairs and Communications Ministry

3-2. **General trend: improving people's per capita income**

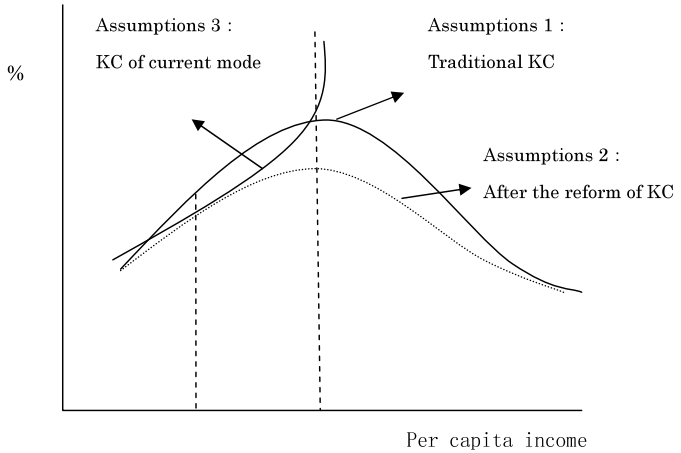
The coming of the Lewis turning point and the demographic dividend also indicates the following two results:

First of all, accompanied by the end of the era of unlimited supply of labor, the annual wage will continually increase by double-digits, and the proportion of laber compensation to national income will also continually enter a rising period. It will stimulate consumption, and the share of consumption will also gradually increase.

Secondly, continual increase in wages will provide power to the Chinese future for its successful crossing the Kuznets turning point. The Kuznets curve

is an inverted U shape representing the relationship between income distribution and economic growth of a country. With the rising national income, income distribution gap will tend to be larger, however when the economy reaches a high level, the gap will begin to shrink. Kuznets turning point is the vertex of the U curve. This shows that the focus point of economic development transfers from efficiency to equity. The key point of escaping the middle-income trap and moving up to become a high income country is for a nation to successfully improve the income distribution gap and cross the Kuznets turning point.

Figure 6-6 **Three assumptions on the China's " Kuznets income curve " in the future**



At present in China, the key problem restricting the growth in consumption is lower per capita income and unreasonable income distribution. The ratio of disposable income for urban residents to per capita net income for rural households is probably about 3:1 which will perhaps rise continually over a period of time in the future. This paper does not plan to discuss the question of income gap between rural and urban areas in China. The new model of urbanization may be an opportunity to increase the income of rural residents

and promote the improvement of the national per capita income.

In the future, the general trend will be that China's per capita income will continually increase. This will also promote the development of China's consumer market.

There is a direct relationship between inadequate consumption and high savings. In China, high savings mean over investment and insufficient consumption. This was repeatedly mentioned in the debate about the appreciation of the RMB between China and the United States. From a macroeconomic perspective, China's economy has been pushing forward utilizing the model of high investment rate which has suppressed the common labor wage, as well as inhibited the domestic consumption rate so far. The improvement of labor wage level in China has lagged behind the improvement of productivity for a long period of time. It also caused distortions in the China's economic structure that for a long time low labor wage level had inhibited the growth of domestic consumption.

At present, China has begun to pay attention to improving the working environment and raising the wage level, and put forward a national income doubling plan at the end of 2012. In the future, with the advancement of new type urbanization, rural migrant workers will gradually gain citizenship rights; and public services will also cover the entire urban citizens. If the above can be realized, it may indicate that the inflection point of "Kuznets income curve" has appeared.

However, according to the current situation, China should do the following 4 points at least to solve the problem of income distribution. First of all to stop corruption; second, to have a fair competitive market; third, to minimize monopoly, especially administrative monopoly; fourth, there should be a set of universal coverage of social security and welfare system.

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Postscript

Statistically, the probability has been very low for any middle-income economy to successfully develop further into a high-income economy. Many economists, including the co-author of this report Mr. Ohara, have attributed the success of Japan and Asian NIES (Korea Taiwan Singapore, Hone Kong) as exceptions whose paths cannot be readily followed by other developing countries.

Unfortunately, most developing middle-income economies follow the paths of Brazil and Philippian which are covered in our report: not only did both fail to enter the ranks of the developed countries, but both have fallen deeper into the Middle Income Trap, unable to extricate themselves.

China's economic development in the last 35 years has been nothing short of a miracle. Many have predicted that it is just a matter of time before China overtakes the United States to regain its long lost glory as the world's top economy. However, the challenge China faces today is more daunting than ever. Regardless of its past success, China will inevitably face the same great challenges of the Middle Income Trap, as it escapes from poverty into a middle-income economy.

Economic Growth and Middle Income Trap is a frequently studied subject in the field of Development Economics. The five researchers on our team come from three different countries. In their own special fields, they have dedicated their work on this subject with great accomplishments. As the organizer of this research effort and editor of this report, I am especially honored to work with the best of the best in this field. During the whole effort, I have learned so much from Professor Fujino, Professor Umali, and Mr. Ohara. They have not only done stellar research work, but have also shared openly. They have provided me their unreserved support and encouragement during the whole research and editing process. I am utmost grateful to each

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