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Growth of Service Sector in China: An Empirical Analysis

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Abstract: The growth of service sector in China took place only when China committed to the World Trade Organization in 2001 to open its service sector. The paper examines the growth of various services such as Tourism, Mobile and Cellular services, Insurance services in commercial service exports and imports. It also takes into consideration the impact of policy reforms on various services. Time Series Regression model is used to empirically test the significance of different factors in explaining growth in each of the services taken in China. The results indicate that the fast growing sectors in China such as financial services and hotels and catering, reforms have a significant impact.

Keywords: China, Service Sector, Tourism, Insurance, Commercial service exports, Time Series Regression

INTRODUCTION

Since 1970, China moved from a centrally planned economy to market oriented economy. China has grown in services and ranks third after US and Japan. Growth of service sector in China is been overshadowed by the country's focus on manufacturing exports and the significant barriers to trade and investment in the services sector. Nevertheless, China's commitment to the World Trade Organization in 2001 was an opening of its service sector which helped China to climb the ladder in services faster. In 2012 the services sector produced 43 percent of China's annual GDP, which is only next to what manufacturing sector has produced. However, in terms of employment agriculture sector still employs a larger share of workforce as compared to services. Although the service industry in China is growing rapidly but is being characterized by lower proportion of employment, value added and per capita (Dazhong, 2003).

Before reforms in China its service sector was basically operated by the state and had shops, which had regulated prices. After reforms in 1978, this sector too expanded, with the onset of a huge commercial sector. Services such as wholesale, retail has expanded largely with various retail shops, chain of hotels restaurants constructed in urban area. Tourism too has expanded significantly and is a huge source of foreign exchange earnings (Ilan, 2003). The growth of telecommunication in China started during the

fourth five year plan that is from 1971-75. In the eighties more foreign technologies were infused into the system which helped in the production capabilities of this sector.

The expansion of the service sector in China was diversified till 1987 and most of the parts in China were linked by telephone, telegraph, radio, and television. The increased pace of growth of this sector took place in the nineties. Foreign investment played a major role for the growth of this sector in the late nineties and early 2000. Due to the growth in foreign direct investment, China became the world leader in the early 21st century, in terms of number of cell phone subscribers. Telecommunication revolutionized in the 21st century in China. In terms of numbers of mobile, fixed-line telephones as well as internet users, China ranks first in the world. Tourism industry in China has also expanded since the reforms. China has attracted tourists from all over the world and there is an increase in outbound tourism as well.

COMMERCIAL SERVICE EXPORTS AND IMPORTS

China's commercial service exports and imports have picked up since 1992 and have gained momentum from 2000 onwards. There is not much significant difference in the exports and imports in the commercial service from 1978 to 1992. From Figure 1, it can be concluded that there was a positive balance in the commercial services. However, from 1992 onwards commercial service imports rose higher than the exports and maintained a negative balance. At the end of 2013 China's global trade exceeded 4.16 trillion dollars. Mainly China's imports consist of industrial supplies and capital goods, machinery and high tech equipment mainly from Japan and US. We can see from Figure 1 that the rate of growth of commercial service trade has increased from 2000 onwards.

The ten year cumulative average growth rate of commercial service export during 1991-2000 is 18.72 percent whereas the ten year average growth rate during 2001-10 is 19.68 percent. However, import has shown a considerable difference between these periods. The ten year cumulative average growth rate of commercial service imports during 1991-2000 is 29.05 percent, and 18.59 percent in 2001-10. It is evident that however the growth rate of exports of commercial services has not increased much during 2001-10, but imports have considerably declined.

TOURISM

China has become one of the hottest spot for tourism. Inbound as well as outbound tourism has increased considerably from 1997 onwards. China is the third most visited country in the world, and fourth largest in the world in terms of revenue earned due to foreign tourists which amounts to 45.8 billion US dollars in 2010.

The growth in tourism is not only for the recreation purpose but business travel tours are also increasing due to the high development in China. Tourism due to business travel in China is 38 percent, whereas in US and UK it is 21 and 28 percent respectively (Puvaneswary, 2013). Inbound tourists reached an amazing 129 million visitors in 2013, and income generated was 51.7 billion USD which increased by 14 percent from 2012 (China Tourism, 2013).

From Figure 2, the growth of foreign exchange revenue from tourism is depicted. The average growth rate in foreign exchange revenue from tourism industry in China from 1978 to 2012 is 19.92 percent. This industry showed negative growth only in 1989, 2003, and 2008 and 2009. In 1989 the country was more concentrating on the expansionary policies in the manufacturing sector, therefore tourism did not pick

up pace. In 2003, due to Asian crises all the countries were going through a tough time in terms of foreign exchange. Global meltdown in 2008 and 2009 is responsible for the negative growth of foreign exchange income in tourism in China.

MOBILE AND CELLULAR SUBSCRIPTIONS

Communications in China was established long back in 1950. In fourth five year plan, that is, during 1971-75, major development in communications system took place. However, there was rapid growth in the telecommunications sector during 1980s and this growth was accelerated in the 1990s due to the infusion of technology into it and growth in foreign investment. Specifically the growth was in internet usage and cellular phone subscribers. China became the world leader in the early 21st century, in terms of number of cell phone subscribers (Harwit, 2004). In mobile, fixed line and internet users, the country ranks first in the world. In 2012, the mobile phone subscribers increased to 1.01 billion, out of which 144 million are connected to 3G networks. However due to the increase in mobile subscribers, the number of landline phones dropped by 828,000 within two months to a total of 284.3 million.

In Figure 3, it is clearly evident that the growth of mobile phone subscribers has increased from 1999 onwards at a phenomenal rate. It is seen that from 2006 there is a continuous rate of decrease in landline subscriptions as mobile subscriptions has phenomenally increased in the 1990s. The five year average rate of growth of mobile subscriptions has shown the maximum increase during the period of 1991 to 1996, which has increased by a rate of 193.91 percentages. From 2006 onwards there landline subscription in China is decreasing at an average rate of 3.00 percent approximately.

INSURANCE SERVICES

The Chinese insurance industry has experienced swift expansion over the past decade, due to the strong demand of insurance products in China. China became the sixth largest Insurance market in the world by the end of 2010. According to China Insurance Regulatory Commission (CIRC), premiums of the insurance industry increased from RMB 159.6 billion in 2000 to RMB 1,452.8 billion in 2010. This increase is of 810 percent during this period representing an average compound annual growth rate of 24 percent.

More than 50 percent of the Chinese insurance companies are domestic funded and rest are foreign-funded. Approximately 50 percent share of the life insurance market is of China Life Insurance Company. The increased insurance assets are more than reached RMB 550 billion. At present, the gross assets of China Life Insurance have exceeded RMB 1 trillion. And the total capital of the whole insurance industry goes beyond RMB 200 billion, 5.6 times that of 2002. The industry is still in the elementary stage despite all this growth. The average rate of monthly growth in total assets in insurance companies of China since 2000 is 2.14 percent (Figure 4).

The objective of this paper is to some descriptive statistics of some of the services in China and find out the important macroeconomic factors responsible for growth of it.

LITERATURE REVIEW

China's service sector expanded post 1990. Initially due to data constraints the estimation of service value added was not that appropriate and was significantly understated but gradually this problem was being

resolved and more appropriate estimates were done (Shuguang and Zhang, 2002). The paper by **Yong-Jian (2005)**, studied some factors, including per capita incomes and income distribution (GINI coefficient), which influence the growth of service industries and analyse China's present condition.

Paper by **Dazhong (2003)** focuses on the service development in China and explores the factors affecting services. He concludes that intensive development in services is based on the labour productivity and technical innovation which leads to international competitiveness of China's services.

Huijuan (2013) in his paper discusses the influence of various types of demands on the service industry in China. Using input output analysis it was concluded that consumer service industry is affected by the local final demand mainly, and the producer service industry is affected by the local intermediate demand mainly. Study conducted by **Ming (2007)** explored the factors influencing regional disequilibrium in the China's service industry. This paper also focuses on inter-regional, intra-regional and inter-provincial disparities of Chinese service industry.

DATA AND METHODOLOGY

Most of the variables for the China's service sector are extracted from World Bank indicators such as data on financial services, growth of commodity producing sectors, growth rate of external trade volume. These datasets are from 1993-2010. The data for telephone and mobile subscribers was extracted from National Bureau of Statistics of China. Data of whole sale retail trade, restaurants and hotel, transport and storage are extracted from OECD database from the period 1991-2011 which is in USD million. The growth of various services is explained by the explanatory variables and the growth which has remained unexplained is explained by the dummies, which account for the policy changes and reforms in both the countries.

METHODOLOGY

Time Series Regression Model

Firstly stationarity issue is addressed as we are dealing with the time series data (Table 1). It has been found that all the variables are stationary at different lag lengths. In time series regression model estimation of separate equations is done using time series data to explain growth in each service activity. This methodology was adopted by Gordon and Gupta (2003) to empirically test the significance of different factors in explaining growth of different service activities. Dummy variable is used for both the countries to capture the influence of reforms and policy changes. In India reforms in the service sector were mostly carried in 1990s, whereas in China the reforms began in 1978 and were carried out in the early eighties. However as most service activities in China grew only after 1990 therefore dummies in China's case does not specifically and directly indicates reforms but moreover it represents the policy changes and other factors. Therefore, a significant coefficient for the dummy would indicate that, there is an unexplained part for the growth in each of the services which is being attributed to the policy reforms and its implementation in the respective countries.

The use of dummy variables has its own limitations. Dummy variable does not isolate whether the growth is due to the reforms or some other event during that time. Also the timing and the different kinds of reforms are not distinguished (Gordon and Gupta, 2003). Regression Equation 4.1 provides decade specific dummies, for both India and China.

The regression equation which we use for India and China is

$$GSER^{it} = C^i + \alpha^i GCDTY + \beta^i GTRD + \gamma^i GEXS + \delta^i DRe + \epsilon^i \quad (4.1)$$

The dependent variable in equation 4.1 is the annual growth rate of *i*th service activity in year *t*. The right hand side variables include the growth rate of commodity producing sectors (GCDTY), the growth rate of external trade volume (GTRD), and the growth rate of export in service (GEXS), in year *t*. All growth rates are measured in three years moving averages.

Growth rate in commodity producing sector is intended to capture the effect of growth in final demand for which GDP is taken as a proxy. Growth in the volume of trade is intended to capture the increased openness and see whether increased openness is responsible for the increase in growth of the services. Growth in service exports are also taken in the equation as activities such as business services and hotel industry, are highly dependent on foreign demand. Moreover, growth which has remained unexplained by these three variables is explained by the dummies for the reforms in 1980s and 1990s, which account for the policy changes and reforms in both the countries. The equations are estimated using Ordinary Least Squares, and the results are reported in the tables.

Model Estimation and Discussion of Results

Estimation regressions for China are shown in the Table 2 below. For China's service sector we have used dummies for the nineties as the data which has been taken for China's service sector is from 1993 to 2010. Dummies in China signify the implementation policies in the service sector. Results in Table show that for the fast growing sectors such as financial services and hotels and catering, the dummies for 1990s are positive and highly significant. In some of the services such as telephone and mobile subscriptions, wholesale retail trade and transport storage policies during 1990s do not have a significant impact. This might be due to the fact that China was going through heavy reforms in manufacturing and industrial sector and its resources were being diverted to manufacturing sector only. The value of coefficient is highest in the absolute terms in telephone and mobile subscribers which shows that the growth of this sector has gained momentum after year 2000, when Chinese developed the quest for technology driven growth (Sigurdson and Yao, 2005).

The growth in the volume of trade has significant impact on financial services and whole sale retail trade. Although the coefficients show negative value which infers that volume of trade has a negative impact on the growth of these services. This is due to the fact that China is the power house in manufacturing activity and growth in the service sector has arisen only recently (i.e.) post 2005. Therefore it shows the negative impact.

The growth in gross domestic product in China has a positive and highly significant impact on the growth in financial services and mobile subscriptions. The GDP growth has shown that financial services will increase in the coming years as GDP in China is growing exponentially. Services such as hotels and Catering, whole sale and retail trade, and transport storage show that GDP growth does not have a significant impact on the growth of other services as domestic demand is not even fulfilled. The data for Information Technology Service was not available for China, this is the constraint due to which the growth of this sector cannot be predicted and the impact of other factors on IT could not be dealt with.

Table 1
Unit Root Test for Variables in Service Sector

<i>S.No</i>	<i>Variable</i>	<i>Test</i>	<i>Calculated Stats</i>	<i>Prob. Val</i>
1	GSER ^{mt}	ADF	-2.26	0.0271
2	GCDTY	ADF	-4.49	0.0014
3	GTRD	ADF	-3.58	0.0181
4	GEXS	ADF	-5.26	0.0002
5	GSER ^{ft}	DF	-3.26	
6	GSER ^{wt}	ADF	-4.27	0.0196
7	GSER ^{tt}	ADF	-3.94	0.0112
8	GSER ^{ht}	ADF	-2.29	0.025

Source: Author's Calculation

Table 2
Service Regressions using Time Series data in China (1993-2012)

	<i>GSER^{mt}</i>	<i>GSER^{bt}</i>	<i>GSER^{ft}</i>	<i>GSER^{wt}</i>	<i>GSER^{tt}</i>
Constant	76.60*	7.33	-54.43	18.75	76.6
	(2.15)	(1.17)	(-5.03)	(0.65)	(2.15)
GCDTY	4.78**	0.12	7.56*	0.63	-4.78***
	(2.12)	(0.20)	(7.67)	(0.83)	(-1.98)
GTRD	0.63	-0.05	-0.4	-0.44	0.63**
	(1.09)	(-0.39)	(-1.82)	(-0.04)	(2.09)
GEXS	-0.75	0.18	0.33**	0.62*	-0.75
	(-1.13)	(1.07)	(2.17)	(3.46)	(-1.13)
Dm	9.36	2.82*	4.84**	-5.2*	-9.36
	(3.53)	(2.45)	(2.56)	(-2.47)	(-0.53)
R2	0.94	0.77	0.98	0.93	0.94
DW	1.31	1.64	1.89	2.13	1.71

*, **, *** indicates significance at 1, 5 and 10 percent respectively.

Regressions estimated using data from 1993-2010, t values are given below in the parenthesis

CONCLUSION

With reforms in 1978, service sector in China too has expanded and contributed in employment. The manufacturing in China is much ahead than the service sector; specifically in the eighties and nineties. However, since last decade services in China has improved and shown an accelerated growth. The rate of commercial service exports and imports picked up after 2000.

Tourism services gained momentum after 1992. Both inbound as well as outbound tourism has increased considerably from 1997 onwards. China is the third most visited country in the world. The average growth rate in foreign exchange revenue from tourism industry in China from 1978 to 2012 is 19.92 percent.

Growth of mobile phone subscribers has increased from 1999 onwards at a phenomenal rate. The five year average rate of growth of mobile subscriptions has shown the maximum increase during the period of 1991 to 1996, which has increased by a rate of 193.91 percentages. The Chinese insurance industry is also escalating since the last decade, with annual life-insurance premiums growing from 10 billion U.S. dollars in 1999 to 143 billion U.S. dollars in 2010.

Time Series Regression model is used to empirically test the significance of different factors in explaining growth in each of the services taken in China. The growth in volume of trade in terms of exports and imports seem relatively less important in explaining growth of these activities as their coefficients are mostly insignificant. In whole sale, retail trade, and restaurants and hotel services, the growth in exports is quite insignificant in nature in India. Expectedly, IT services have a positive and significant coefficient in the equation.

For the fast growing sectors in China such as financial services and hotels and catering, the dummies for 1990s are positive and highly significant. In some of the services such as telephone and mobile subscriptions, wholesale retail trade and transport storage policies during 1990s do not have a significant impact. This might be due to the fact that China was going through heavy reforms in manufacturing and industrial sector and its resources were being diverted to manufacturing sector only. The value of coefficient is highest in the absolute terms in telephone and mobile subscribers which shows that the growth of this sector has gained momentum after year 2000, when Chinese developed the quest for technology driven growth (Sigurdson and Yao, 2005).

Therefore we can conclude that both India and China is moving ahead in a considerable speed in services. However India is also focusing in its manufacturing sector and China in services. Overall China and India experiences provide a productive comparison on the factors which are responsible for the growth of the economy.

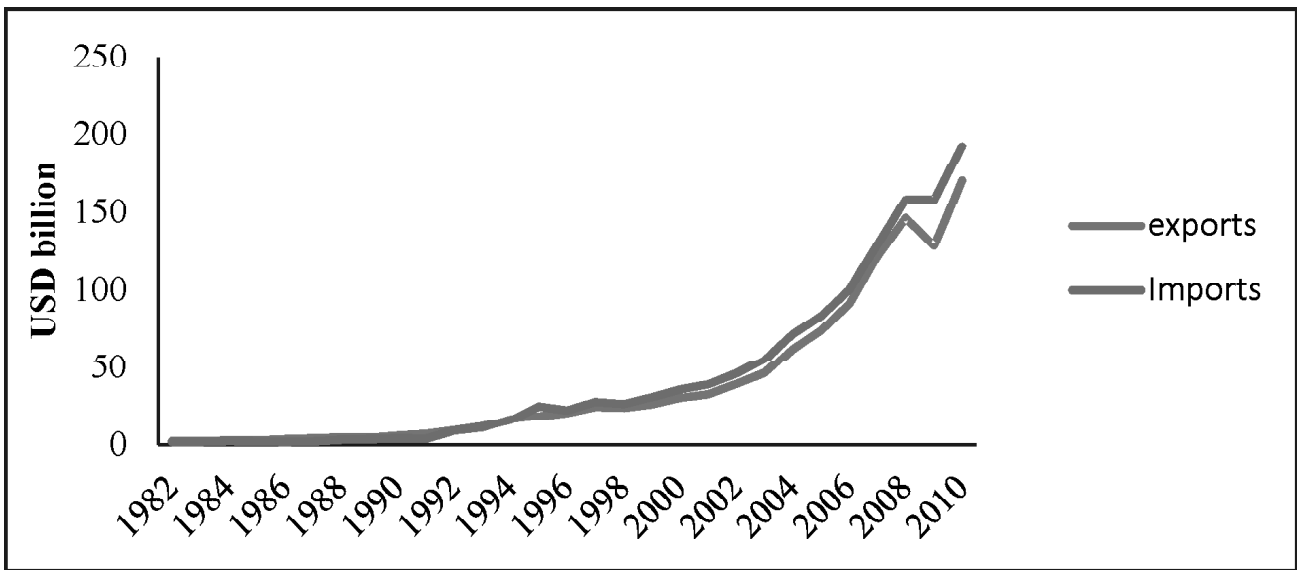


Figure 1: Commercial Service Exports and Imports in China (In Billion USD)

Source: World Bank database

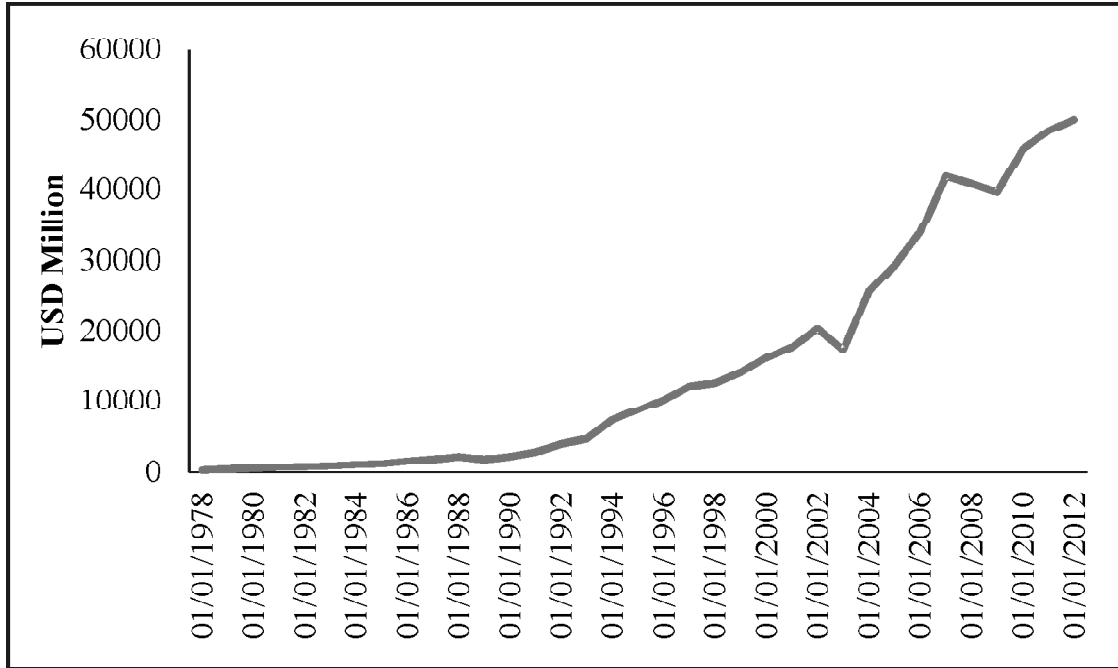


Figure 2: Foreign Exchange Revenue from Tourism in China (In Million USD)

Source: China National Tourism Administration

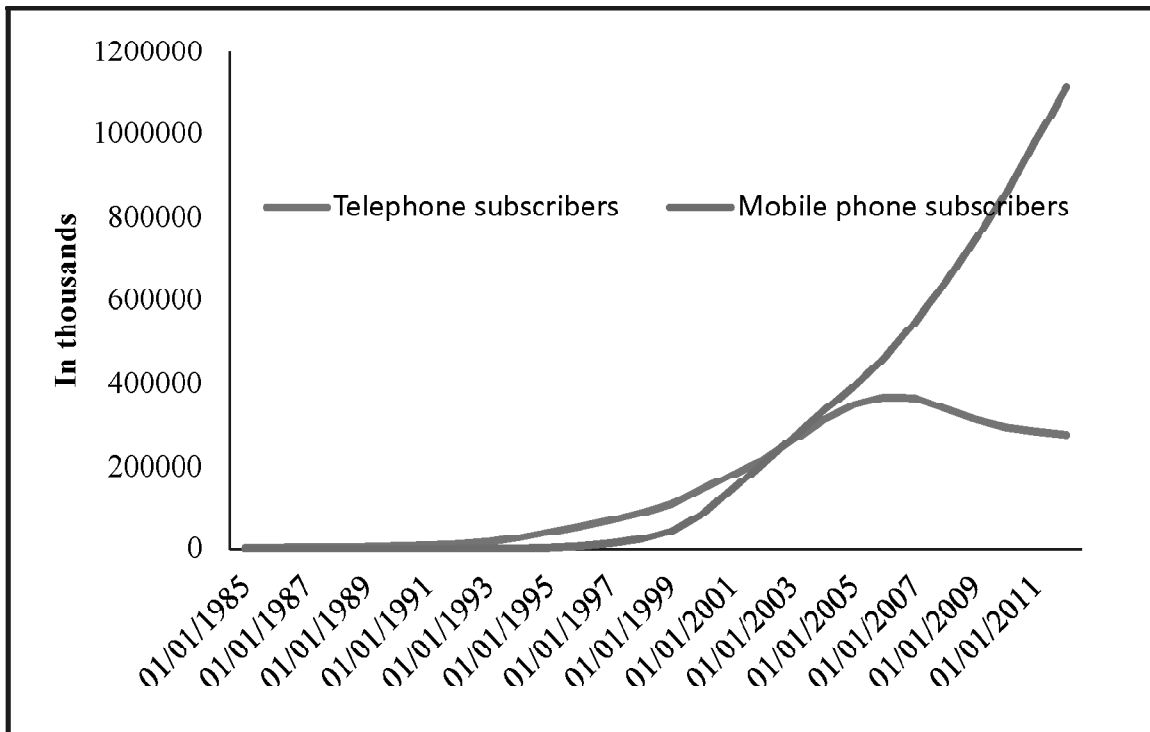


Figure 3: Telephone and Mobile Subscribers in China (In thousands)

Source: Ministry of Industry and Information Technology, China

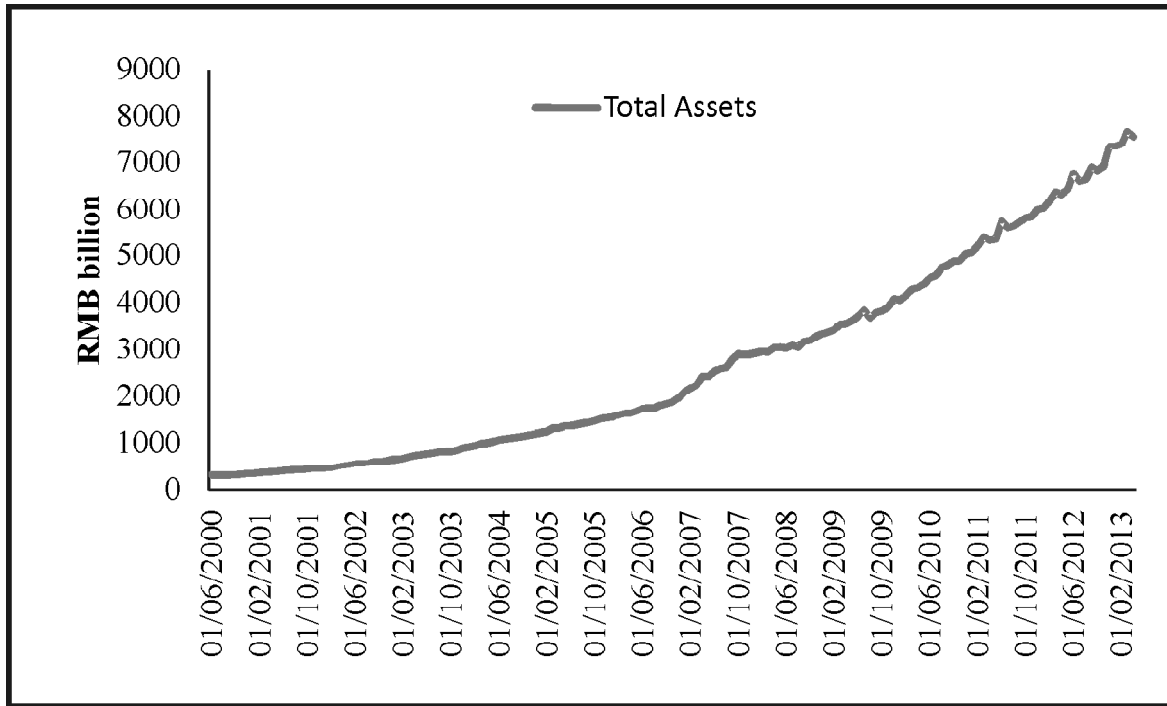


Figure 4: Total Assets of Insurance Companies in China

Source: China Insurance Regulatory Commission

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