

A COMPARATIVE STUDY OF THE GROWTH PATTERNS OF INDIA AND CHINA IN THE PRE AND POST RECESSION ERA

¹Uma. T, ²Dr. N. Kalyanaraman

¹Research Scholar, Bharathiar University, Coimbatore

²Associate Professor and HOD, D. G. Vaishnav College, Chennai

ABSTRACT

The purpose of this study is to investigate the difference in the growth rates of China and India between the pre recession period from 2002 to 2007 and post recession period from 2008 to 2015 by investigating the change in five chosen macroeconomic indicators of each of the two countries. The five macroeconomic indicators chosen are exchange rates, short term interest rates, narrow money supply, gross domestic product and consumer price index.. The results suggest that the growth rates of both countries have shown a significant drop after the financial crisis and there is a significant difference between all the macroeconomic variables in India and China between the pre and post recession period except for consumer price index. It also shows that while the exchange rates, money supply and inflation of India have been negatively affected after the recession, the GDP of China has shown a greater fall after the crisis as compared to India. By examining the change in macro economic variables of India and China between the pre and post recession, the study adds to the scarce literature on the comparative growth of India and China. It is also among the first few studies to analyze the change in the growth patterns of the rising Asian giants before and after the financial crisis.

Keywords: India, China, Global Financial Crisis, Recession, Growth, Macroeconomic indicators

INTRODUCTION

The transformation of the world economy in the 20th century on the back of rapid industrialization and technological changes marked the beginning of an economic revolution characterized by rising productivity ,growing demand and an enhanced economic divide between the developed and developing countries. However, the communication and technology revolution in the 21st century transformed global economic equations. Nations are now connected to each other through political relations, migration, trade flows, or associational alliances which, in turn, have a telling effect on the inflow of FDI and size and nature of investments. (Park,

2004). As a result emerging and developing economies have become increasingly integrated with global economy shifting the balance of power from the developed countries towards newer emerging economies. In this shift of power, the increasing importance of the two Asian economic giants, India and China, has been especially significant since both India and China have a rapidly growing share in the new structure of the world economy which has important implications for business cycles around the world. (Fidrmuc and Korhonen, 2010). The astonishing response of both these countries to the global financial crisis makes the comparisons between them even more compelling. While most developed and developing economies are still struggling to get back on track after the crisis, India and China have continued to post consistent and significant growth rates after the global financial crisis and have exhibited noteworthy differences in the impacts and responses to the crisis due to differences in their economic, social and political backgrounds (Kshetri, 2011)

LITERATURE REVIEW

A comparative study on the reasons for the economic growth between countries has been a favored topic of researchers for a long time. Various studies have analyzed economic growth through various macroeconomic parameters including GDP, FDI, imports, exports and money supply among others. A comprehensive study on the impact of exchange rates on economic growth of 183 developing countries found that less flexible exchange rate regimes are associated with slower economic growth and greater output volatility. (Yeyati and Sturzenegger, 2003). Another compelling analysis of India and China's growth story is a study by Huang and Khanna (2003) which emphasizes the radically different development strategies followed by India and China. The study throws light on the significant role of homegrown entrepreneurship in India over the FDI dependence of China in long term development. Lin and Yunhiu (2005) analyzed the relationship between money supply, inflation and economic growth of China. They theorized that while in the long run money and economic growth boost each other, inflation acts as a deterrent to economic growth. Another interesting study by Srinivasan (2006) comparing the economic growth of India and China concluded that although India has succeeded in becoming a major destination of global outsourcing and in exports of information technology enabled services, it still lags behind China in the field of manufacturing. The study also stressed on India's advantage over China through its vibrant democracy and the legal and financial systems. The sensational Indian growth story from the 1950s till 2005 was brought to light by Basu and Maertens (2007) through a comprehensive study which outlined the GDP growth, imports and exports of India. The study elaborated on the reasons for the emergence of India as a powerful nation in the global economy. Keefer (2007) emphasized the role of governance in the economic growth of China and India. He stated that the two countries were able to leverage policy reforms into sustained, fast growth, in spite of their average governance, due to their large markets and

low cost labor. He added that economic growth did not take off in these countries until significant improvements were made in governance which occurred in the 1970s and 1980s. Bosworth and Collins (2007) conducted another detailed study comparing the economic performances of China and India estimates of the contribution of labor, capital, education, and total factor productivity for the three sectors of agriculture, industry, and services as well as for the aggregate economy. The results showed a roughly equal division in each country between the contributions of capital accumulation and TFP to growth in output per worker. However, the magnitude of output growth in China was found to be roughly double that of India at the aggregate level. The role of foreign direct investment (FDI) in post-reform India's economic growth was assessed by Chakraborty and Nunnenkamp (2008) through Granger causality tests. Results showed that FDI stocks and output are mutually reinforcing in the manufacturing sector, but had only transitory effects in the services sector. A model explaining the economic growth of India and China was made by Bloom et al (2010). The model provided a better fit of the growth experience of China and India if the effect of worldwide shocks was excluded. This showed that purely domestic factors explained their growth rates in a much better manner. The relationship between income inequality and economic growth was measured through another interesting study by Berg and Ostry (2011). The study showed that periods of strong robust growth were strongly associated with equality in income distribution. It stressed on the importance of avoiding inequality in incomes in order to sustain economic growth. A detailed study exploring the relationship between per capita electricity consumption and per capita GDP growth was conducted by Karanfil and Li (2015). Results showed that the electricity-growth nexus is highly sensitive to regional differences, countries' income levels, urbanization rates and supply risks.

OBJECTIVES

Most of the macroeconomic indicators of a country are strongly interdependent and inter related, thereby exerting a significant influence on the economic growth of a country. Hence a comparison of macroeconomic variables can play a significant role in comparing the growth patterns of countries. This paper makes an attempt at investigating the difference in the macroeconomic variables of India and China in the pre recession period from 2002 to 2007, the post recession period from 2008-2015. The macroeconomic variables chosen for this purpose include exchange rates, short term interest rates, narrow money supply (M1), gross domestic product and consumer price inflation. The objectives of this paper can be defined as:

- To compare the contrast the growth of five macroeconomic indicators of India and China between the pre recession period (2002-2007) and post recession period (2008-2015)

- To elucidate the analytical reasons for the changes in macroeconomic indicators of India and China between the pre recession period (2002-2007) and post recession period (2008-2015)

HYPOTHESIS

Since the paper aims to identify the significant difference between India and China with respect to macroeconomic indicators during the pre and post recession period, the hypothesis for the study can be stated as” There is no significant difference between India and China with respect to macroeconomic variables during the pre and post recession era.”

RESEARCH METHODOLOGY

This study of macroeconomic variables of India and China in this study is based on pure secondary data collected from websites of RBI, National Bureau of Statistics, World Bank and International Financial Statistics from IMF for the span of 14 years from 2002 to 2015. The macroeconomic variables chosen for the purpose of this study include exchange rates, short term interest rates, narrow money supply (M1), gross domestic product and consumer price index for both India and China. After collecting secondary data for the adequate number of years the researcher used paired t test to study the significant difference between India and China for each of the five macroeconomic variables for the span of 14 years from 2002 to 2015. Paired t test was also to study the significant difference between India and China for each of the five macroeconomic variables for the span of 6 years of the pre recession period and for the span of 8 years of the post recession period. Besides these measures of central tendency and measures of dispersion are subsequently exploited to identify the significant difference.

FINDINGS AND ANALYSIS

Analysis of the data of India and China for the span of 14 years from 2002 to 2015 has been done using SPSS. The calculation of mean, standard deviation, standard error and t test has been done for each of the five macroeconomic variables for both the countries for the pre and post recession period and for the overall span of 14 years. A comparative analysis between the average value of each macroeconomic variable of India and China helps to determine the difference in macroeconomic developments in both countries for the specified number of years. A comparison of the standard deviation helps to ascertain the extent of deviation from the mean. The t test brings out the significant difference between the macroeconomic variables for both countries. These tests assist in drawing up a comparative analysis of average values, determining the extent of deviations of the values from the mean and ascertaining the significant differences between the macroeconomic variables of India and China. This in turn helps to discern the comparative

change in macroeconomic developments between the two countries during the pre and post recession period..

The following table presents relevant statistical details for each of the five chosen macroeconomic indicators for India and China.

Findings:

	Mean	Std deviation	Standard Error	T Value	Significance
Exchange Rates					
India 2002-2007	45.2080	2.42631	.99054	41.087	.000
China 2002-2007	8.1017	.26999	.11022		
India 2008-2015	52.6901	7.78166	2.75123	16.209	.000
China 2008-2015	6.4857	.31927	.11288		
Short Term Interest Rates					
India 2002-2007	6.9250	.70711	.28868	13.926	.000
China 2002-2007	2.5414	.57912	.23642		
India 2008-2015	7.1276	1.13139	.40001	16.980	.000
China 2008-2015	3.9021	1.23471	.43654		
Money Supply(M1)					
India 2002-2007	6592.9079	1987.5003	811.39360	-10.660	.000
China 2002-2007	9610.8832	2632.0236	1074.5191		
India 2008-2015	16987.5807	4161.56231	1471.3344	-9.492	.000
China 2008-2015	26835.3270	6924.85565	2448.3061		

Gross Domestic Product					
India 2002-2007	53502.2767	8523.12730	3479.5521	20.147	.000
China 2002-2007	23585.7283	4898.95967	1999.9919		
India 2008-2015	90219.9925	15352.41252	5427.8975	19.750	.000
China 2008—2015	46768.3462	9165.24505	3240.4034		
Consumer Price Index					
India 2002-2007	65.4418	5.85667	2.39098	-25.572	.000
China 2002-2007	85.6870	4.11659	1.68059		
India 2008-2015	114.8266	24.45905	8.64758	1.449	.191
China 2008-2015	105.8390	7.07447	2.50120		

Exchange Rates

The application of paired t test on the exchange rate for India and China for the span of 6 years from 2002 to 2007 during the pre recession period and during the span of 8 years from 2008 to 2015 during the post recession period revealed a t value of 41.087, $p = .000$ and t value of 16.209, $p = .000$ respectively. All the values are statistically significant at 5% level. Therefore the hypothesis is rejected at 5% level and concluded that there is a significant difference between the exchange rates of India and China during the prerecession period and during the post recession period. The mean comparison indicates that India has a weaker exchange rate value than the exchange rate of China both during the pre and post recession period separately.

Short Term Interest Rates

The application of paired t test on the short term interest rates for the two countries India and China revealed a t value of 13.926, $p = .000$ and t value of 16.980, $p = .000$ during the pre and post recession period respectively. All the results are statistically significant at 5% level. Therefore the hypothesis is rejected at 5% level and concluded that there is a significant difference between short term interest rates of India and China both during pre recession period and post recession period. The mean comparison indicates that India has higher short term interest rates than China during both the pre and post recession period.

Narrow Money Supply (M1)

The results of the paired t test on the narrow money supply (M1) for India and China revealed a t value of -10.660, $p = .000$ and t value of -9.492, $p = .000$ during the pre and post recession periods respectively. Since the values are statistically significant at 5% level, the hypothesis is rejected at 5% level and concluded that there is a significant difference between the money supply (M1) of India and China during the prerecession period and during the post recession period. The mean comparison indicates that China has a higher money supply (M1) value than the money supply (M1) of India during the pre and post recession period.

Gross Domestic Product

The application of paired t test on the GDP for India and China during the pre recession period revealed a t value of 20.147, $p = .000$. The application of paired t test on the GDP for India and China during the post recession period showed a t value of 19.750, $p = .000$ respectively. Both the values are statistically significant at 5% level. Therefore the hypothesis is rejected at 5% level during both the pre and post recession period and concluded that there is a significant difference between the GDP of India and China both during the prerecession period and during the post recession period. The mean comparison indicates that India has a higher GDP value than the GDP of China during the pre and during the post recession period.

Consumer Price Index

The application of paired t test on the CPI for India and China during the pre recession period revealed a t value of -25.572, $p = .000$ which are statistically significant at 5% level. The paired t test was also applied for the post recession period which revealed a t value of 1.449, $p = .191$. Both the values are not statistically significant at 5% level. The mean comparison indicates that India has a lower CPI than the CPI of China during the pre recession period. However, the CPI of India post recession is higher than that of China. Therefore the hypothesis is rejected at 5% level during the pre recession period and concluded that there is a significant difference between the CPI of India and China during the prerecession period. The hypothesis is accepted during the post recession period and it is concluded that there is no significant difference between the CPI of India and China during the post recession period.

Analysis:

Exchange Rates

The Indian Rupee has depreciated significantly after the financial crisis while the Yuan has appreciated after the crisis. The strong growth of India before the recession ensured that the

rupee stayed between 45-50 vs. the USD till before 2008. The Yuan, on the other hand was kept artificially weak and pegged to the dollar before the recession in order to stimulate Chinese exports. Post 2005, the Chinese government announced a historical regime switching reform by changing its exchange rate from the dollar peg system into a managed floating exchange rate system "with reference to" a currency basket (Ogawa and Sakane, 2006).

The onset of the crisis saw a huge transformation in both the Rupee and the Yuan. The early period of the crisis saw the RBI lower the reference rate of the rupee by nearly 25 percent, from Rs.40.02 in April 2008 to Rs.49.00 in November 2008 (Bhatt, 2011). Following this, there was a huge and rapid depreciation in the rupee due to flight of foreign funds from the Indian market, slowdown in the capital inflows, higher global crude oil prices, an import export imbalance, tapering of quantitative easing by the US Federal Reserve recovery of US dollar, the Euro Zone crisis the and increasing concern over growth in developing economies which made US appear as a safe haven to investors. (Narasimhan, 2014). The People's Bank of China, on the other hand, froze the currency against the dollar once again in order to avoid uncertainties after the recession. With the easing of the Financial Crisis post 2009, China announced that it would shift to a more flexible exchange rate policy and strengthened the Yuan by 0.8 percent against the dollar. In 2014, The People's Bank of China (PBOC) further allowed the exchange rate to rise or fall 2 percent from a daily midpoint rate it set each morning (Sweeney and Jianxin, 2014). This change in exchange rate policy from a pegged system to a slightly more market based system accounts for the appreciation in the Yuan after the recession.

Short Term Interest Rates

The short term interest rates of India have been much higher than that of China during the pre financial crisis and post financial crisis period. India has always had relatively high interest rates in order to check excess liquidity and counter the problems of rising inflation. The first half of 2008-09 saw the government take various fiscal and administrative measures to rein in inflation by adopting a contractionary monetary stance. The repo rate (RR) was increased by 125 basis points in three tranches from 7.75 percent at the beginning of April 2008 to 9.0 percent with effect from August 30, 2008. (Bajpai,2011) Though the repo rates were lowered temporarily in 2009 and 2010 to boost growth, the rates were again increased from 2011 on the back of increasing inflation. The short term interest rates in China, on the other hand, continue to be largely administrated making their influence on money demand hard to interpret (Zhang ,2003),China has always followed a policy of maintain low and almost negative real interest rates. Keeping the short term interest rates low in China is part of a conscious strategy to improve lending and encourage industrial growth. While India's high interest rates are motivated by a need to control inflation, China's low interest rates are designed to stimulate credit

expansion and growth. This fundamental difference in interest rate controls and growth strategy is the main reason for the difference in short term interest rates of both countries.

Money Supply (M1)

While both India and China adopted monetary policies which would boost economic growth, the tools used were completely different and this has led to a significant difference in the money supply of both countries. An increase in the money supply leads to an increase in the growth rate of real output by reducing the standard deviation of unexpected changes in the money supply (Cover, 1992). The high consumption and demand and the high money supply fuelled each other creating a positive effect on the growth of the Indian economy in the pre financial crisis. In contrast, China followed a monetary policy of lowering lending rates, increasing money supply for investment and maintaining the exchange rates at competitive levels to continue its cheap exports in the pre recession period. It also continued to release an amount of Yuan equivalent to the foreign exchange reserves collected. This helped China maintain consistently high levels of money supply in the pre crisis period.

India's supply of M1 has increased 2.5 times between the pre and post financial crisis period. This shows that in spite of the recession India's consumption and demand has bounced back strongly. The narrow money supply (M1) in China too showed a significant increase in the post recession period. This is because China embarked on a strategy of further increase in money supply to boost growth through a \$4 trillion stimulus package to revive the economy. It also continued with its low lending rates. However due to concerns of rising inflation, post 2011 the PBoC embarked on a policy of monetary tightening by adopting the double pronged strategy of raising interest rates and increasing the reserve ratio. (Sun, 2013) which effectively curbed the flow of narrow money supply in China and could have been the starting point of its growth slowdown. Though China's monetary policy has evolved over time, its potency is reduced by the pressure of a managed exchange rate regime and an underdeveloped financial system. (Fan, Kanbur, Wei and Zhang, 2014). The different growth strategies and corresponding monetary policies adopted by the two countries are the major reasons for the difference in money supply of both countries.

Gross Domestic Product:

The pre recession GDP growth of both India and China were propelled by completely different factors. India depended on domestic demand over exports, consumption over investment, services over production and high technology over low skilled labor to boost its GDP (Das, 2006). China's abundance of low skilled and low cost labor gave it a comparative advantage in

low technology intensive products while the country's growing pool of highly skilled labor has helped it to climb the production and export ladder. (Greenaway, Mahabir and Milner, 2008).

The global financial crisis made both countries realize that they could not be insulated from the economic vagaries of the world. To counter the negative fallout of the global slowdown on the Indian economy, the federal Government provided a fiscal stimulus packages in the form of tax relief to boost demand and increased expenditure on public projects to create employment and public assets. (Bajpai, 2011) India also realized that a single point focus on domestic markets and services would not be sufficient to sustain growth and started liberalizing FDI rules and improving focus on manufacturing and investment in infrastructure. In order to counter the negative effects of the financial crisis, the Chinese authorities adopted a combination of an active fiscal policy and a loose monetary policy by introducing an RMB 4 trillion (\$580 billion) stimulus package for 2009 and 2010 in November 2008. (Li, Willett and Zhang, 2012). This was accompanied by a surge in bank lending and a drop in interest rates. This created a rise in infrastructure and construction which helped to sustain the Chinese growth story for a few years till inflationary pressures caught up. The drop in exports and the stiff competition provided by India in attracting FDIs in the post recession period means that China will have to work on boosting domestic demand and consumption to sustain its GDP growth. The GDP growth rates of China have fallen from 11% in the pre recession period to 8% post precession, while India's rates during the same period have dropped from 8% to 7%. Though GDP growth of China was much higher than India in the pre recession period, India has managed to sustain the growth post recession in a better manner as compared to China. However, India's depreciating exchange rate has dented the effects of the growth to some extent.

Consumer Price Index

Both India and China have been up against inflationary capacity constraints from the turn of the century. However, the inflation in India was much lower than China in the pre recession period. Adequate release of surplus stocks of food grains, reduction in issue, and ease in the access to imports and monetary tightening through cuts in key policy rates and CRR helped maintain inflation at moderate levels from 2002 to 2007. (Rbi.org.in, 2003) Inflation in China in the period preceding the financial crisis was majorly driven by international factors, such as food and energy prices (Dreger and Zhang, 2013).

After the recession, India experienced a period of high growth coupled with stubbornly high inflation. The drought of 2009, the uneven rainfall in 2010 and increase in aggregate demand kept food prices inflation in double digits. (Bhandari and Majumdar, 2011) Any change in food inflation has a magnified impact on CPI since food and beverages constitute a whopping 45.86% of the CPI in India. (Krishnan, 2017). The runaway inflation was reined in after 2013 due

monetary tightening, falling crude prices and crackdown on hoarding and black marketing. Food accounts for a big proportion of China's CPI and soaring food inflation remained as one of the main reasons for a consistent high inflation in China in the post recession period. Droughts, weather disasters which decimated crops in various parts of the country and the extreme winters were some of the reasons for the high food inflation. The country also embarked on a lending spree to fight off the effects of the financial crisis which further fuelled inflation. (Telegraph.co.uk, 2011). Domestic drivers like monetary developments and nominal wages also led to a cost push inflation scenario. (Dreger and Zhang,2013).The inflation was brought under control through monetary tightening and falling crude oil prices post 2012.

CONCLUSION

The comparative analysis of the growth of India and China over the last decade and a half throws up some interesting information. The study shows that though both countries have seen strong and sustained growth, China has shown stronger growth during the pre recession period. This can be substantiated from the comparison of the macroeconomic variables of both countries before 2008. China's growth in the pre crisis period was based on its huge GDP and strong currency and was backed by rising exports, huge foreign exchange reserves and a formidable flow of foreign direct investment. Though China had higher inflation and lower money supply than India, its growth was not affected negatively due to these factors since it heavily depended on exports for its growth and domestic consumption had little effect on its GDP. The humungous foreign exchange reserves and an undervalued currency helped to keep its exports strong in spite of the rising inflation in the country. The global financial crisis created hiccups in the growth of both India and China. Though the GDP growth rate both countries fell after 2008, China's growth rate was affected greater than India's growth rate. Rising inflation, growing unemployment and falling exports started taking their toll on the Chinese economy which was already grappling with problems of burgeoning debt and low domestic demand. India, in the meantime showed a quicker recovery from the crisis aided by robust domestic demand, a stable government and strong economic policies. Though the Indian rupee did become weaker after the crisis, it also helped to make its exports more competitive. The attractive interest rates, rising GDP and a weak currency helped to bring in more foreign investments into the country. Thus a comparative analysis between India and China during the pre and post financial crisis period shows that the China's growth has been more negatively affected on account of the crisis. While it is obvious that that neither India nor China can reach the pre recession levels of growth, the two countries continue to remain the lone bright spots in the global economy. The sustained growth of these two countries in the long term will not only help them make the much needed transition from developing to developed economies but will also provide a much needed fillip to the global economy.

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