Impact of Recent Crisis Episodes on China and India

Divya Tuteja
Delhi School of Economics, University of Delhi

PRESENTATION TO THE
THE INSTITUTE OF CHINESE STUDIES,
DELHI
13TH MAY, 2015

Outline

- Background
  - Recent Crisis Episodes-Global Recession and Eurozone Sovereign Debt Crisis
  - Objectives
- Channels of Transmission
- Macroeconomic Fundamentals of China and India
- Vulnerability Factors
  - Trade linkages
  - Financial linkages
- Testing for the Impact of Crisis Episodes on Real Economy, Stock Markets and Exports of China and India using Markov-switching Analysis
- Conclusions

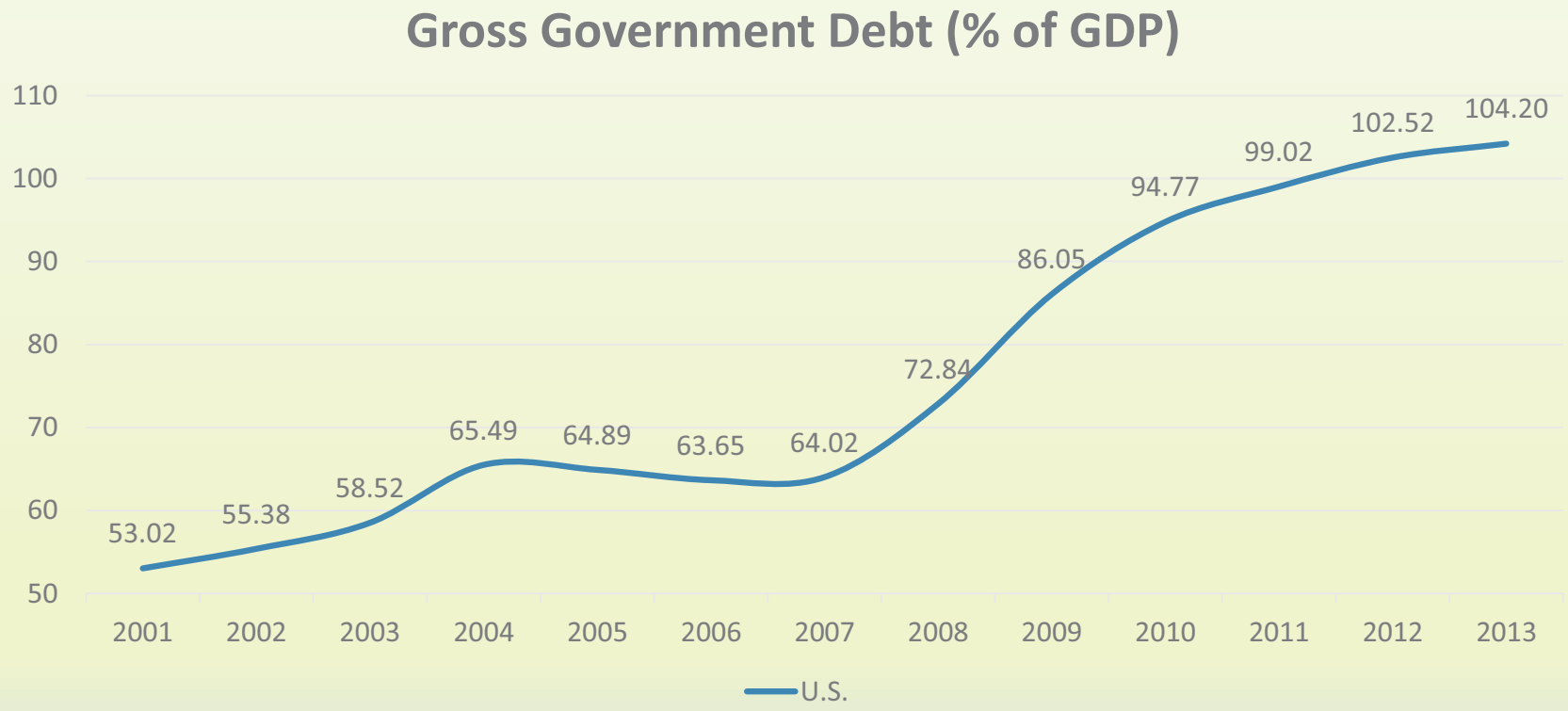
Background

Global Recession and Crises

- Financial crises are triggered by collapse of investor confidence in highly leveraged financial markets (Reinhart and Rogoff, 2009).
- Introduction of more innovative financial instruments increasing the depth of the markets and flexible monetary policy were believed to contain the risk of occurrence of financial crises as these could tackle the underlying business cycle downturns.
- The 'subprime financial crisis' of 2007 in the U.S. could not be tamed, led to a recession in the largest economy of the world which snowballed into a global financial crisis.
- It led to cascading of financial markets around the world in 2008 and triggered a 'Second Great Contraction' in many economies of the world.

U.S. Financial Crisis

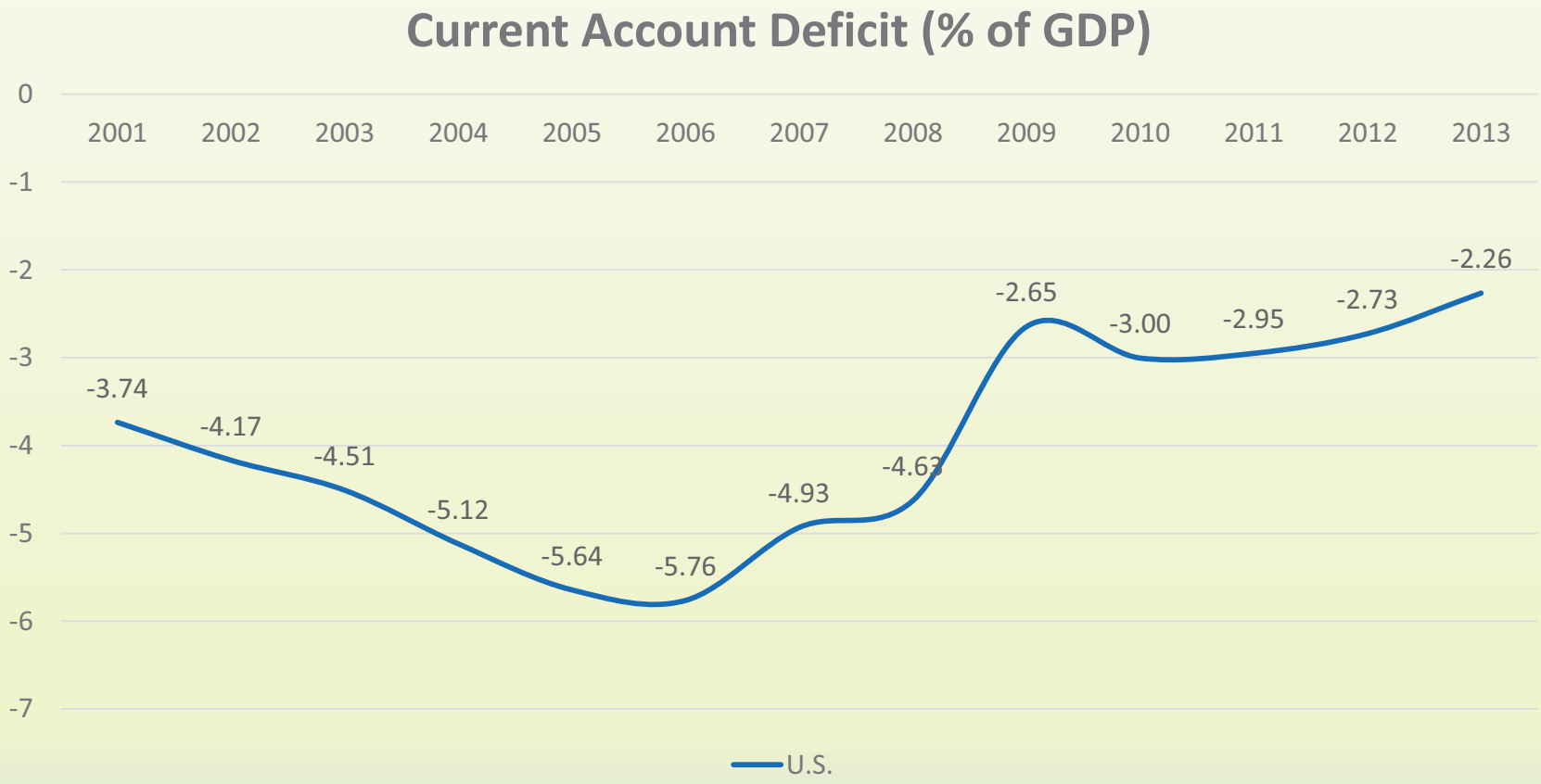
- The gross government debt of the U.S. was around 60-70% of GDP till 2007 but soared to more than 100% by 2012-13.



Source: Federal Reserve of St. Louis

U.S. Financial Crisis

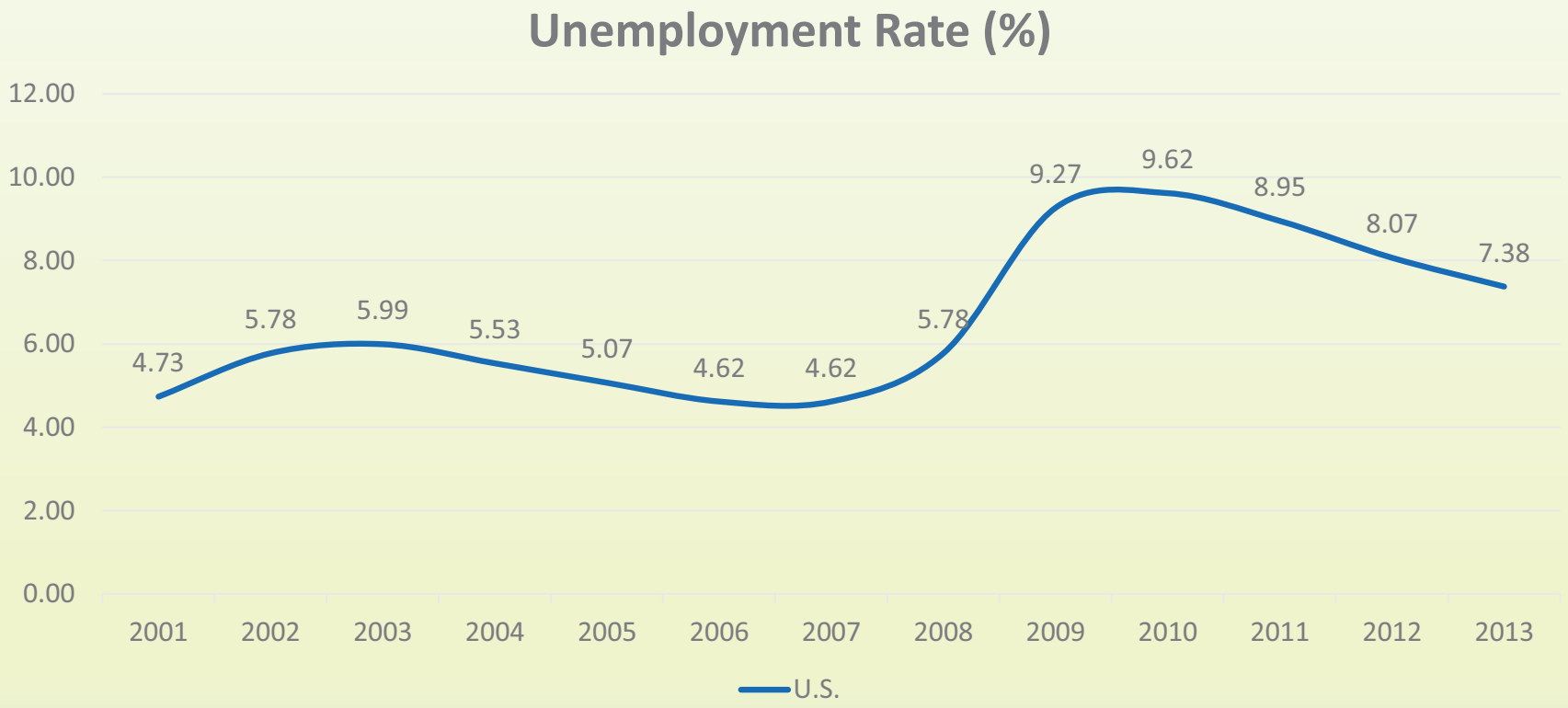
- Current account balance of the U.S. steadily deteriorated till 2006



Source: Federal Reserve of St. Louis

U.S. Financial Crisis

- Unemployment rate peaked in the aftermath of the crisis to about 9.6% in 2010



Source: Federal Reserve of St. Louis

U.S. Financial Crisis

- Growth rate was negative during 2008-10 and according to the latest data stands at about 2% in 2013

Source: Federal Reserve of St. Louis

U.S. Financial Crisis

- According to IMF (2014), the United States accounts for 21% of the world output in 2007 (GDP based on PPP).

- Thus, U.S. being the largest economy of the world, the impact of the global recession of 2008-09 crisis was widespread with several countries of the world tumbling into a recession.

- This subsequently strained governments around the world since they had to overstretch in an attempt to tackle the real effects of the crisis on their economies by undertaking fiscal expansion.

Eurozone

- The Eurozone (EZ) or Euro Area (EA) is a major subset of the European Union (EU) and consists of 17 countries, namely Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain.

- In 1999, eleven EU nations adopted the common currency Euro, and formed an EMU, the Euro Area.

- Thus, the monetary policy of the Euro Area came to be governed by the European Central Bank (ECB).

- Several EU member nations joined thereafter, and by 2011 the number of Euro Area member countries rose to 17.

Eurozone

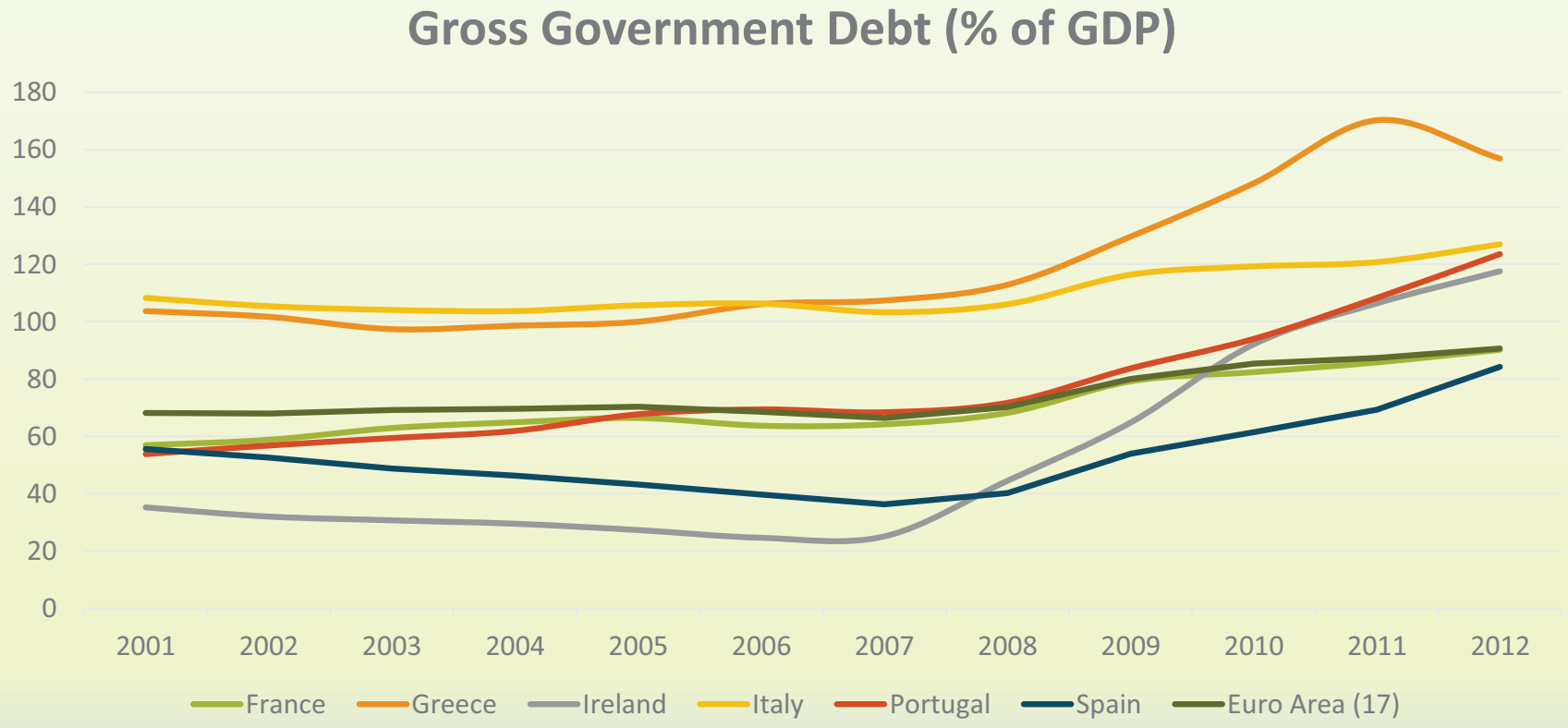
- Eurozone (or Euro Area) nations accounted for 16% of the world output in 2007 (op cit.)

- There was a general growth momentum in the Eurozone till 2007 coupled with a rise in the twin deficits viz. fiscal deficit and current account deficit.

- However, in the aftermath of the Global Financial Crisis in 2008-09, sovereign debt levels of Euro Area nations started to mount.

Genesis of the Eurozone Crisis

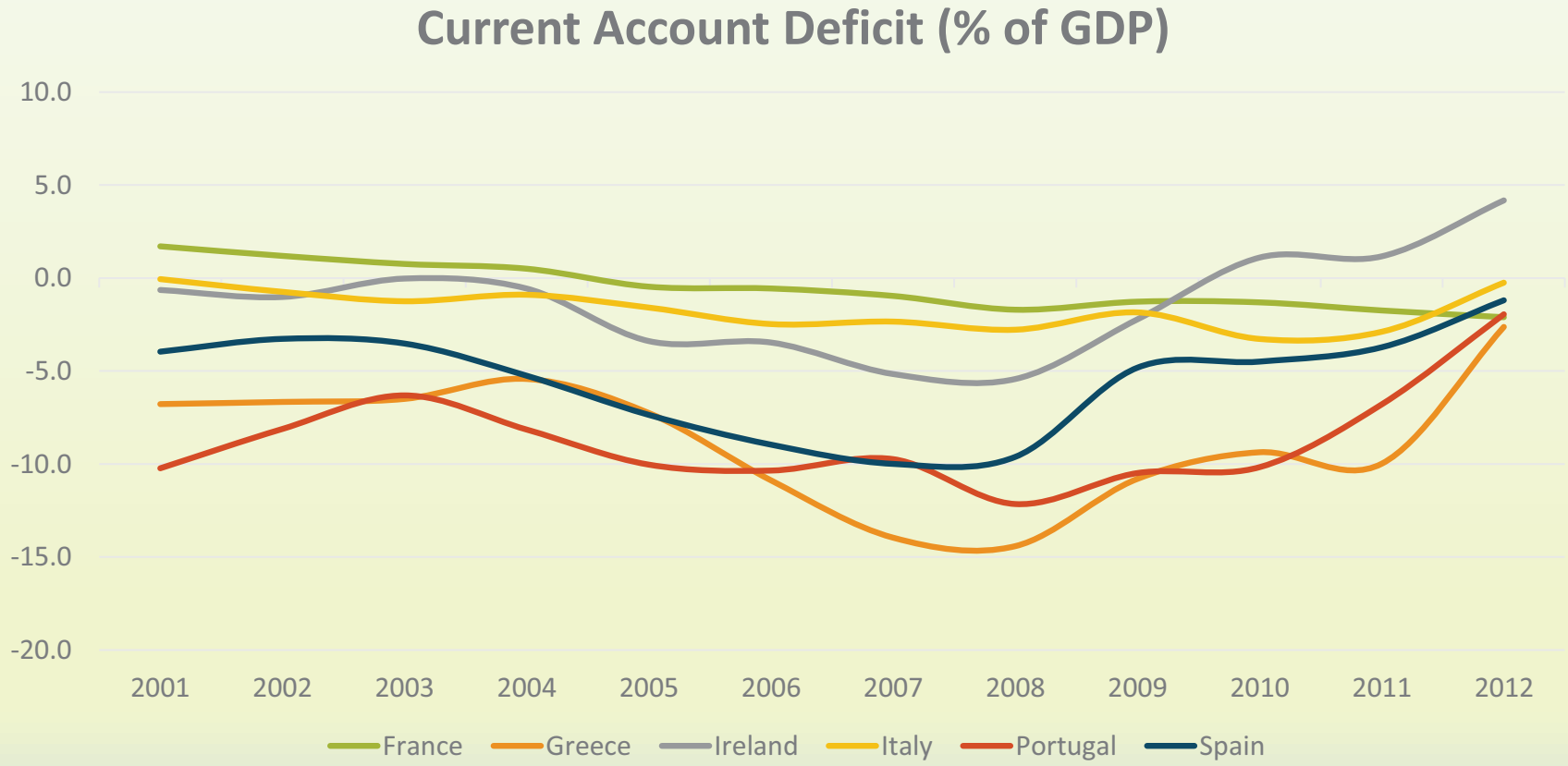
- Higher growth in the Eurozone was achieved at the cost of high fiscal deficits



Source: Eurostat

Genesis of the Eurozone Crisis

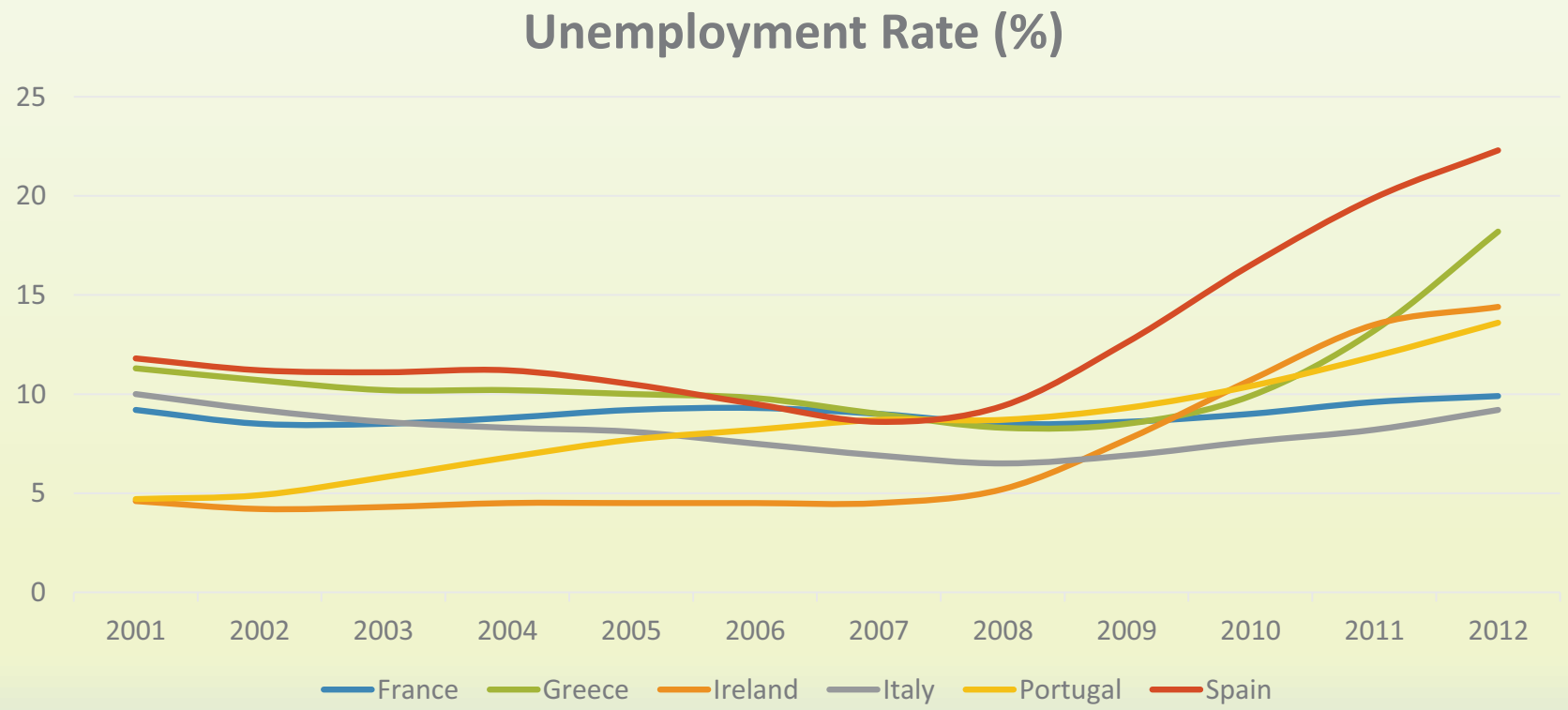
- Due to higher growth, there was a rise in the demand for imports which resulted in large current account deficits for most of the Euro Area economies



Source: OECD

Genesis of the Eurozone Crisis

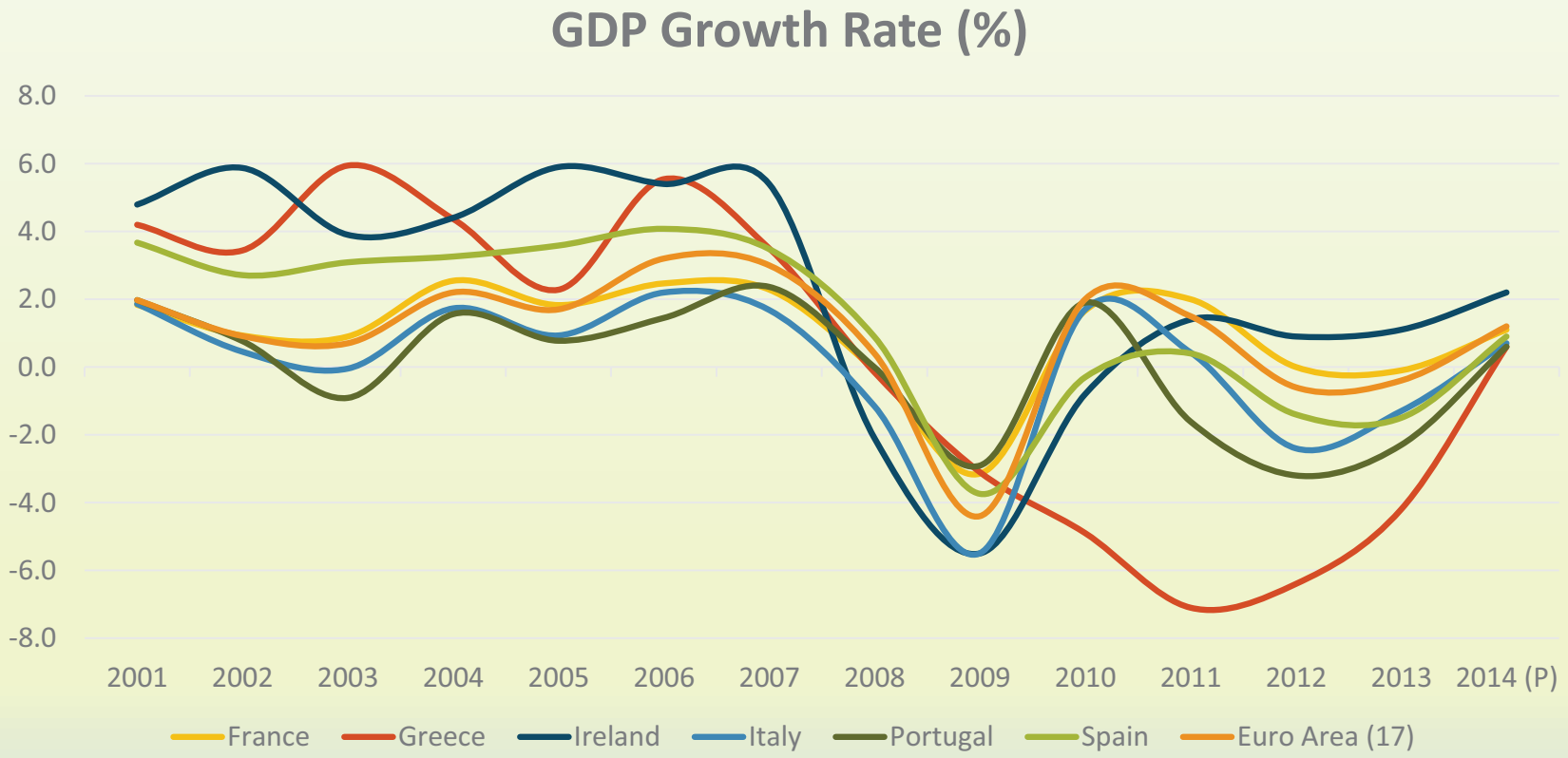
- Further, the Eurozone countries were plagued by high unemployment as a consequence of the Global Financial crisis of 2008-09



Source: Eurostat

Genesis of the Eurozone Crisis

- Since 2007, a severe downturn with negative rates of growth was experienced by most of the Eurozone economies.



Source: Eurostat

Eurozone Crisis

- In May of 2010, Greece, one of the members of the Eurozone, announced that it was facing public finance problems.
- The public debt issues of Ireland, Portugal and Spain were also unmasked subsequently and a sovereign debt crisis in the Eurozone economies seemed to be inevitable.
- As a result of these revelations, financial markets around the world plummeted.
- Consequently, the situation exacerbated into a major Eurozone debt crisis with pan-European and global ramifications especially from the perspective of international trade and financial markets.
- A major fallout of the Eurozone crisis was its dampening effect on international capital flows.

Background

- Banerji and Dua (2010) examine the synchronization of recessions in major developed and emerging economies during the global recession following the Global Financial Crisis of 2008-09 and find that both China and India did not experience a recession but a milder slowdown.

- China and India together held 16% share in total world output (op cit.) in 2007 which is likely to rise to 25% by 2019. It is interesting to appraise the impact that the crises may have had on the two EMEs.

- ECRI Dates for Chinese Slowdowns-
  - -May, 2007 to March, 2009;
  - -October, 2009 to December, 2010
  - -February, 2012 onwards

- ECRI Dates for Indian Slowdowns-
  - -January, 2007 to January, 2009
  - -March, 2011 onwards

Objectives

- Study channels of transmission of the crises-BOP Approach
- Evaluate-Macroeconomic fundamentals
- Vulnerability Analysis-Trade linkages and finance linkages
- Examine-using Markov-switching analysis, the impact of the Global Recession and Eurozone Crisis on
  - growth rates
  - export growth rates and
  - stock market returns

Objectives

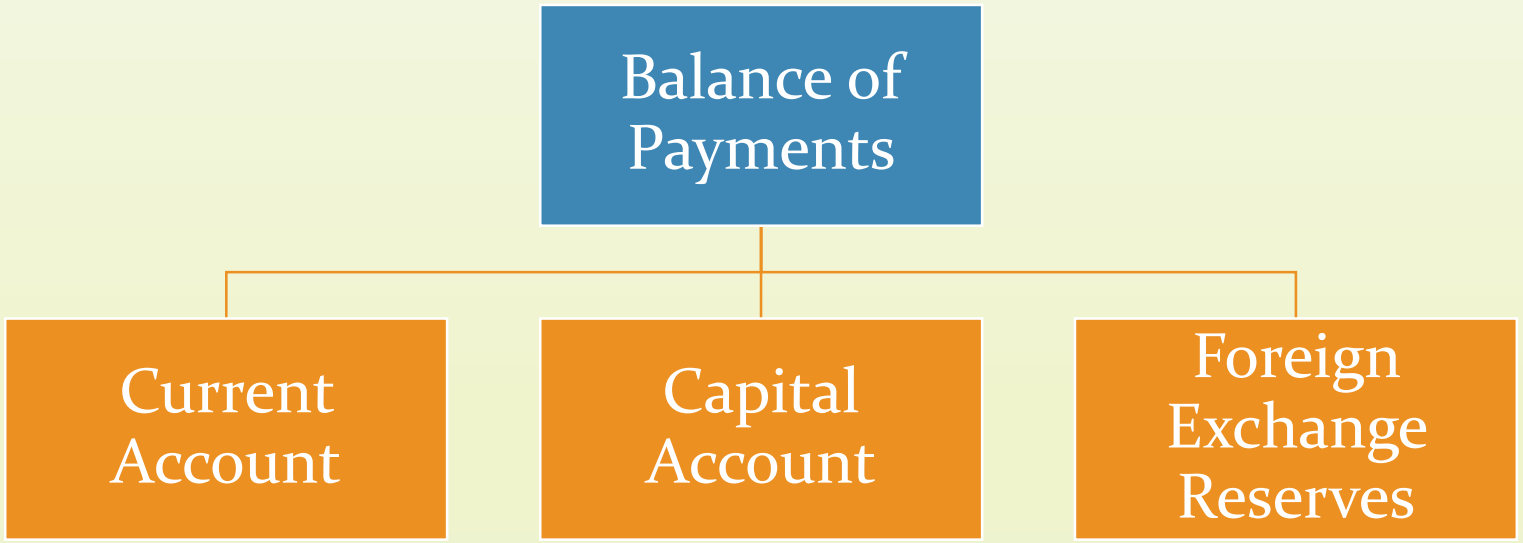
- We outline the channels of transmission of the crises to EMEs using the BOP Approach proposed by Blanchard *et al*. (2010).
- Thereafter, we examine the macroeconomic fundamentals of the two countries to assess the impact on the overall economy.
- We study vulnerability factors or channels of transmission which govern the degree of exposure of the EMEs to the shocks from the crises and include the following factors-trade links which indicate significant dependence on exports to the U.S. and Euro Area countries and financial links implying heavy dependence on FDI and FII flows.
- Finally, we undertake an econometric analysis to ascertain the impact of the crisis on the state of economic growth, financial markets and exports of China and India using Markov-switching analysis.

Channels of Transmission

Channels of Transmission

Blanchard *et al.* (2010)

- Theoretical model focuses on the short-run impact of a crisis on a small open economy with imperfect capital mobility and foreign currency debt
- Transmission of global shocks occurs via Balance of Payments (BOP)



Channels of Transmission

Blanchard *et al.* (2010)

- **Current Account-**

- Fall in demand for the Emerging Market Economy (EME) 's exports due to a fall in the developed countries' output (or a fall in the trading partner country's income).

- Larger the dependence of the EME on trade, indicated by a higher exports/ GDP ratio, the larger the magnitude of such an impact and destabilization in its domestic economy.

- Trade shocks may alternatively result in a fall in the goods prices in place of a decrease in the exports.

Channels of Transmission

Blanchard *et al.* (2010)

- **Capital Account-**
- Dampening of the global investor sentiment leads to sharp fall in the capital inflows.
- A significant rise in uncertainty and risk leading to higher home bias for foreign investors causes a rise in the capital outflows which on the net leads to a negative capital account.

Channels of Transmission

Blanchard *et al.* (2010)

- **Exchange rate/ TOT and Reserves-**

- Higher debt repayment and servicing obligations in terms of local currency for the EMEs resulting from a depreciation of the exchange rate.

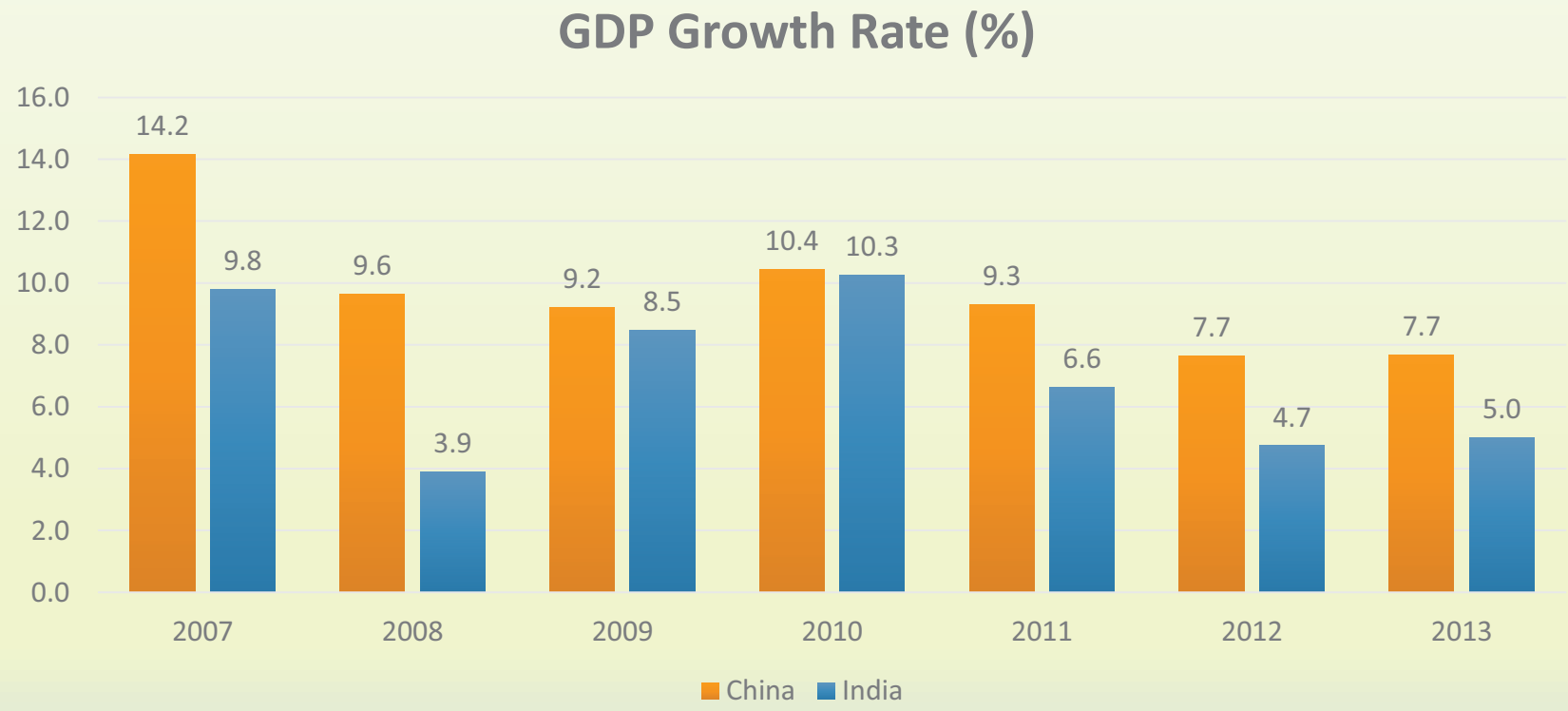
- Fall in the terms of trade which in the absence of the Marshall-Lerner condition being satisfied (which is especially violated for the economies in the short-run) causes the current account deficit to worsen due to higher payment for inelastic imports like crude oil.

- Faced with such a scenario, the EME has the following recourse available to it, either payment for the current account deficit via a capital account surplus or a decline in its foreign exchange reserves.

Macroeconomic Fundamentals of China and India

Macroeconomic Fundamentals-Domestic Economy

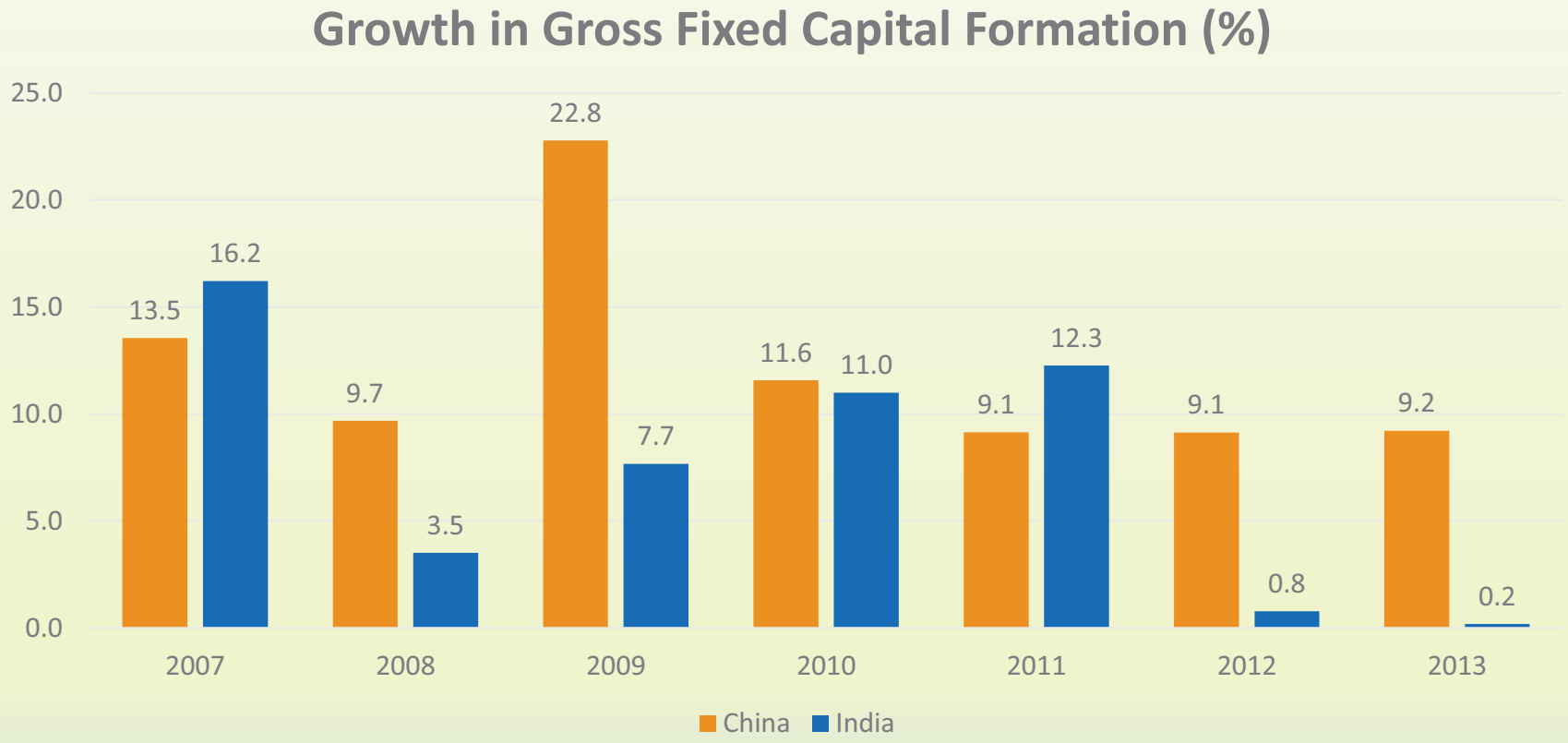
Both China and India witnessed a fall in the rate of growth in 2008 and further, 2011 onwards.



Source: WDI, World Bank and IMF

Macroeconomic Fundamentals-Domestic Economy

Growth in GFCF has fallen drastically for India



Source: WDI, World Bank and IMF

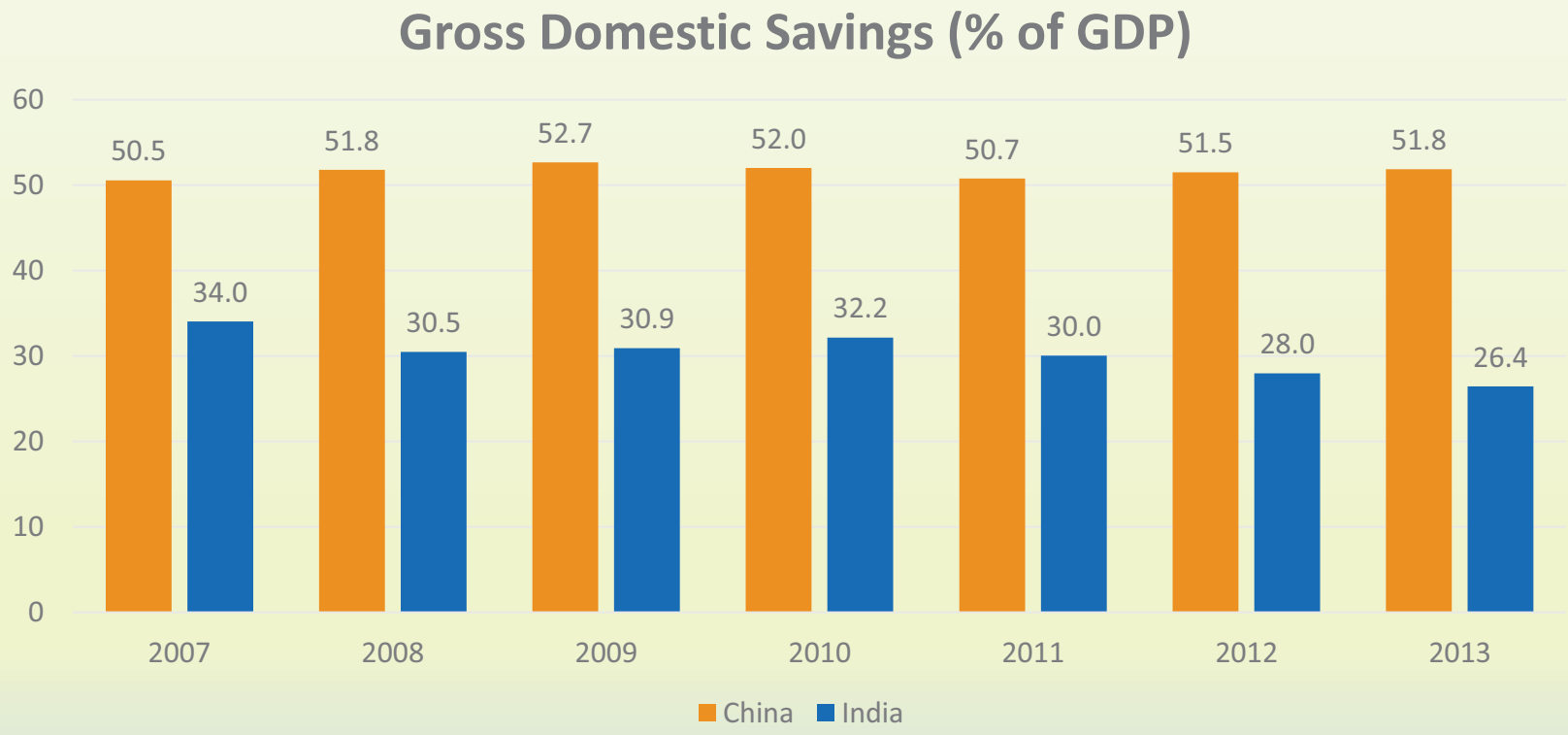
Macroeconomic Fundamentals-Domestic Economy

Market capitalization of listed companies fell for both the economies and more so for China

Source: WDI, World Bank and IMF

Macroeconomic Fundamentals-Domestic Economy

Gross domestic savings rate for India has been declining from 2007-2013. However, the same remained stable for China.



Source: WDI, World Bank and IMF

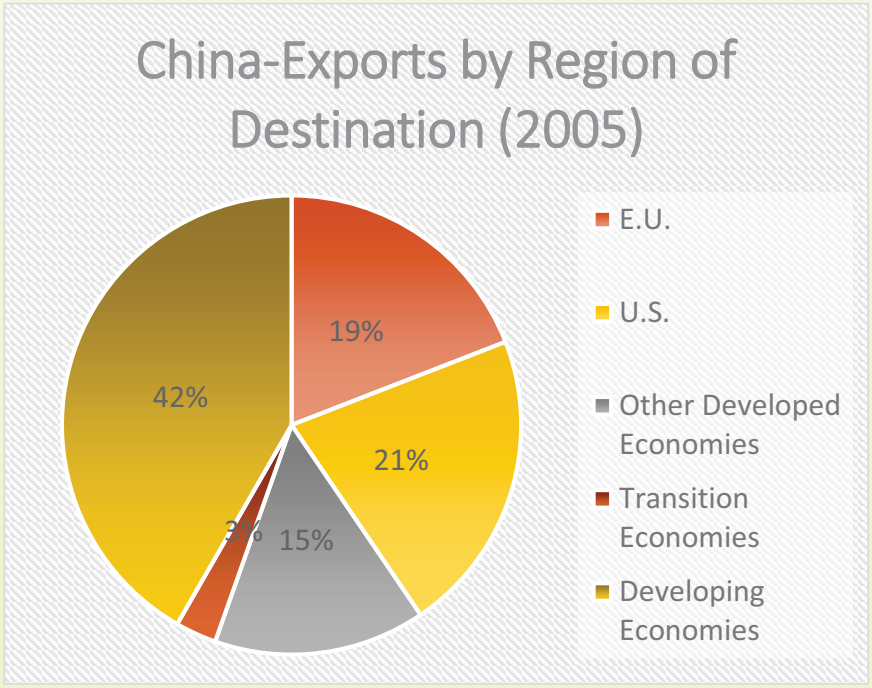
Macroeconomic Fundamentals-Current Account

Share of exports in GDP is much higher for China than India but has been shrinking overtime. The same increased mildly for India.

Source: WDI, World Bank and IMF

Macroeconomic Fundamentals-Current Account

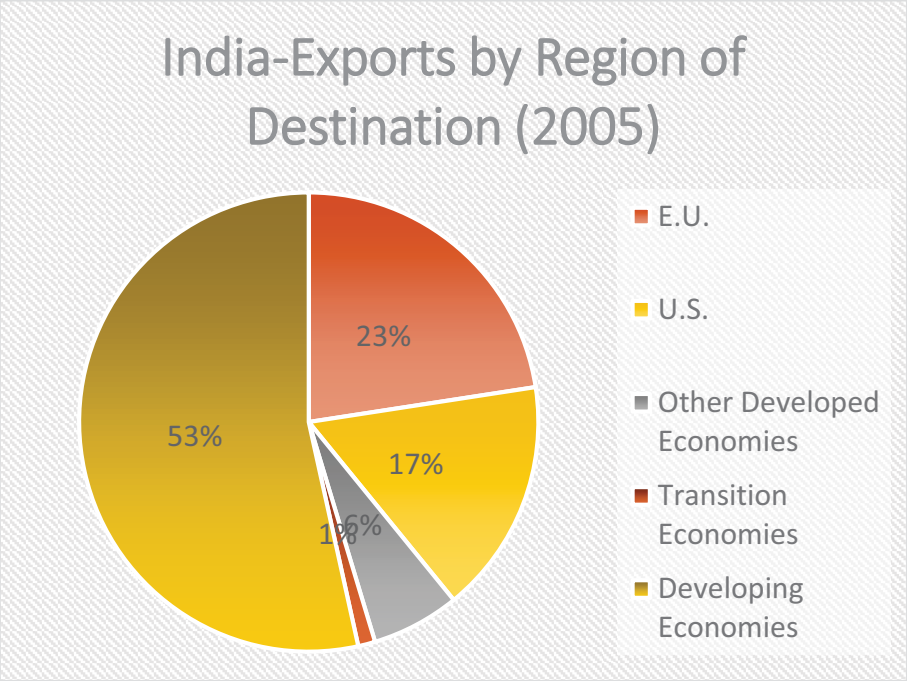
Share of U.S. and E.U. has been decreasing in the total exports for China

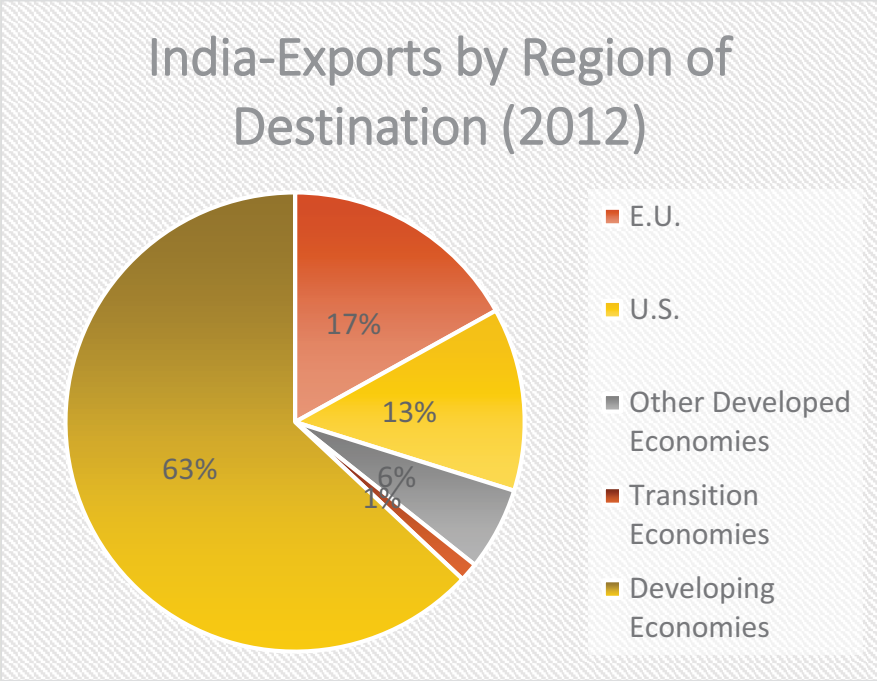


Source: WDI, World Bank and IMF

Macroeconomic Fundamentals-Current Account

A similar trend is observed in the Indian case where in the share of developed countries in exports has been falling

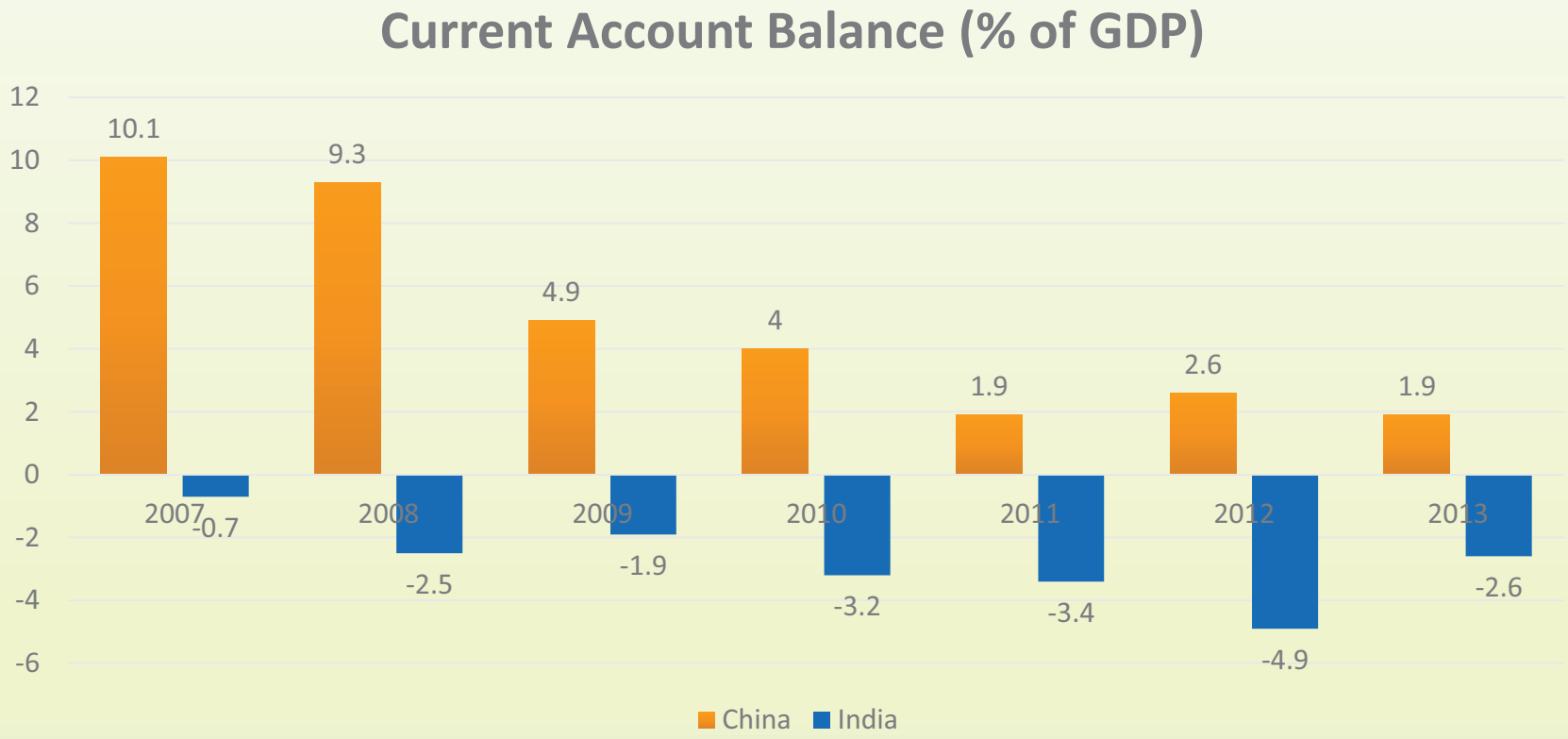




Source: WDI, World Bank and IMF

Macroeconomic Fundamentals-Current Account

The current account deficit is a grave concern for India as it is bordering 3% while China has a current account surplus.



Source: WDI, World Bank and IMF

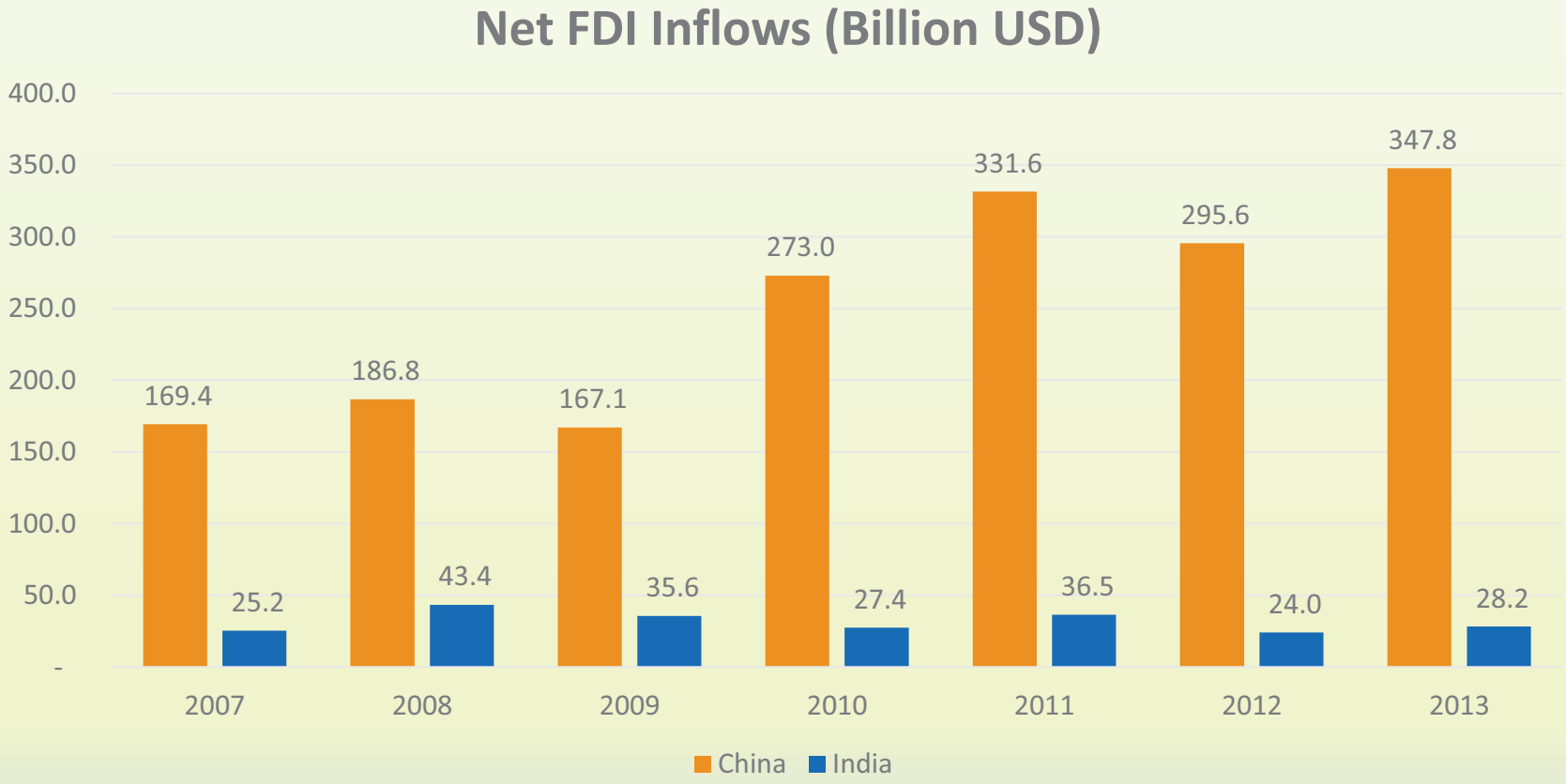
Macroeconomic Fundamentals-Capital Account

The external debt stocks as a %age of GNI has been declining overtime for China indicating sustained growth prospects but the same has risen for India.

Source: WDI, World Bank and IMF

Macroeconomic Fundamentals-Capital Account

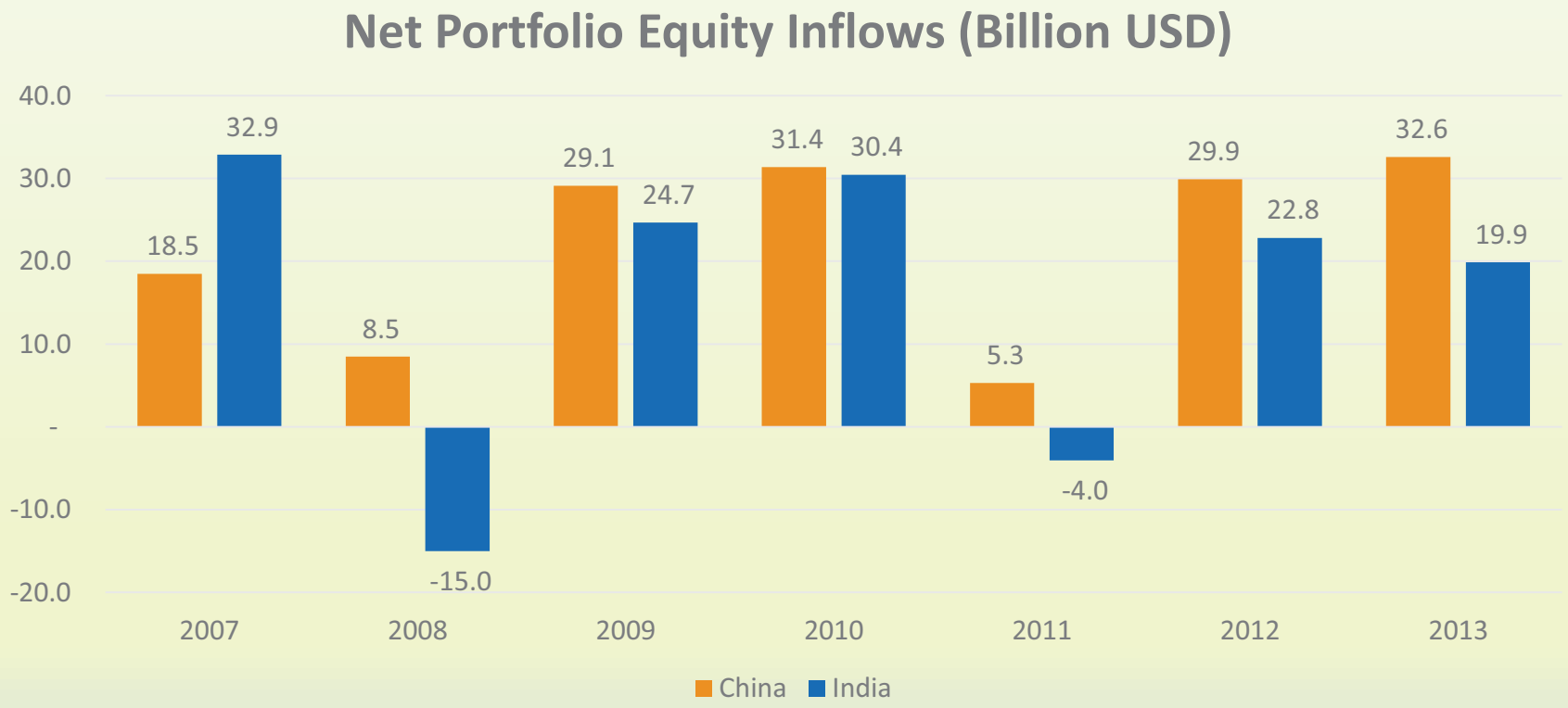
The net FDI inflows have been resilient for both the EMEs



Source: WDI, World Bank and IMF

Macroeconomic Fundamentals-Capital Account

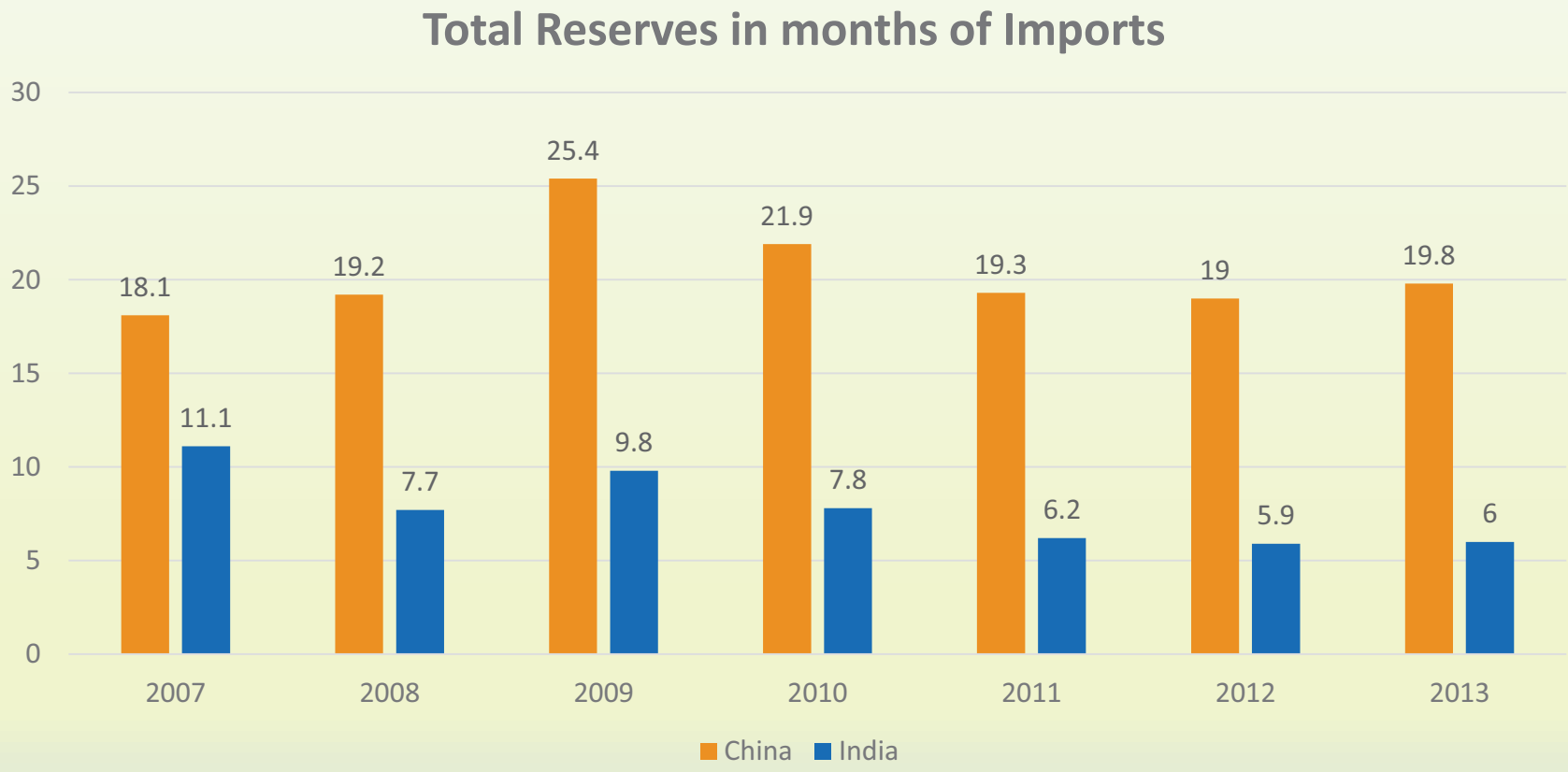
The volatile net portfolio equity inflows fell for both the countries during 2008 as well as 2011.



Source: WDI, World Bank and IMF

Macroeconomic Fundamentals-Reserves

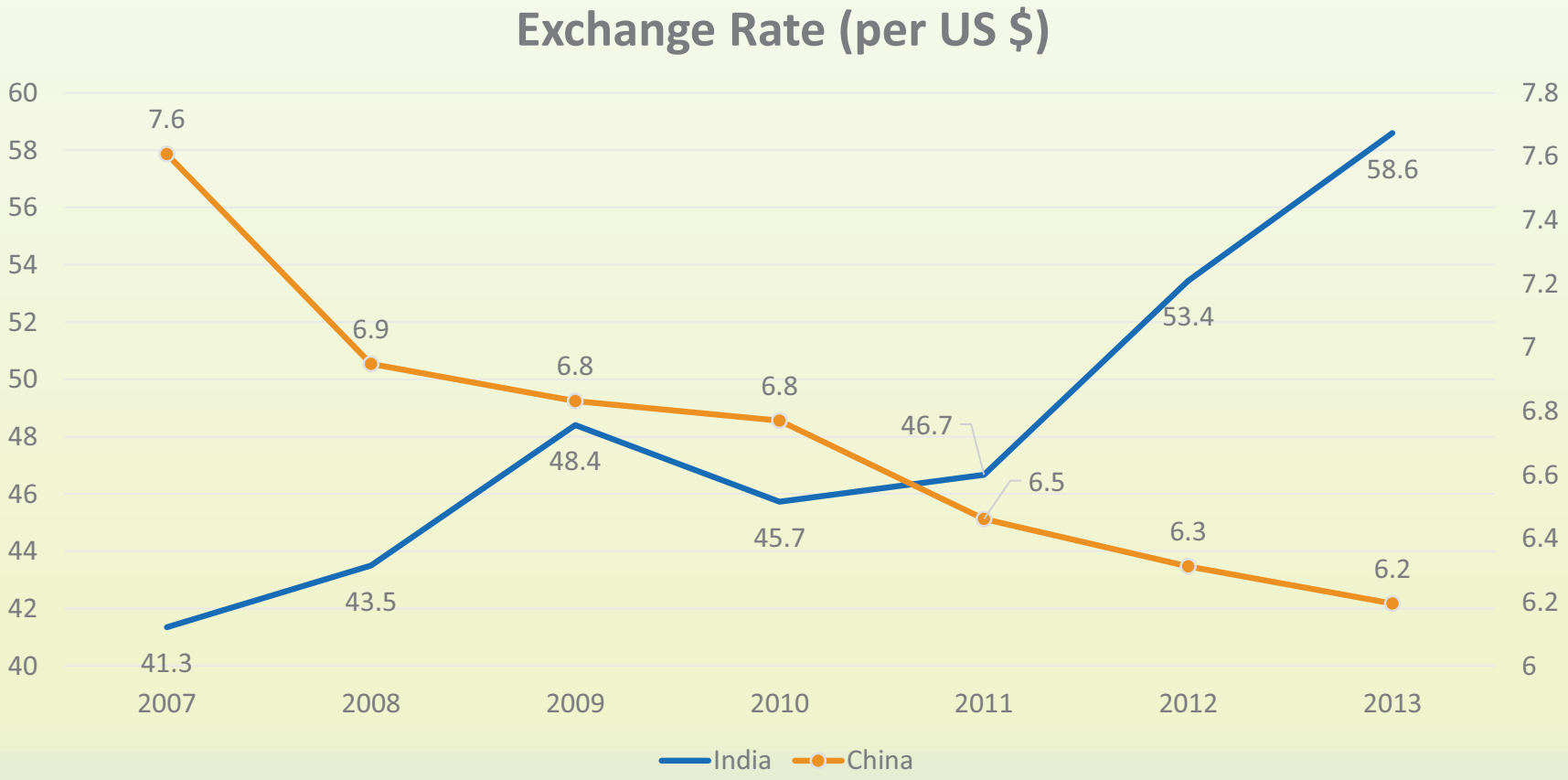
Reserves for both the economies fell as a result of the crisis episodes



Source: WDI, World Bank and IMF

Macroeconomic Fundamentals-Exchange Rate

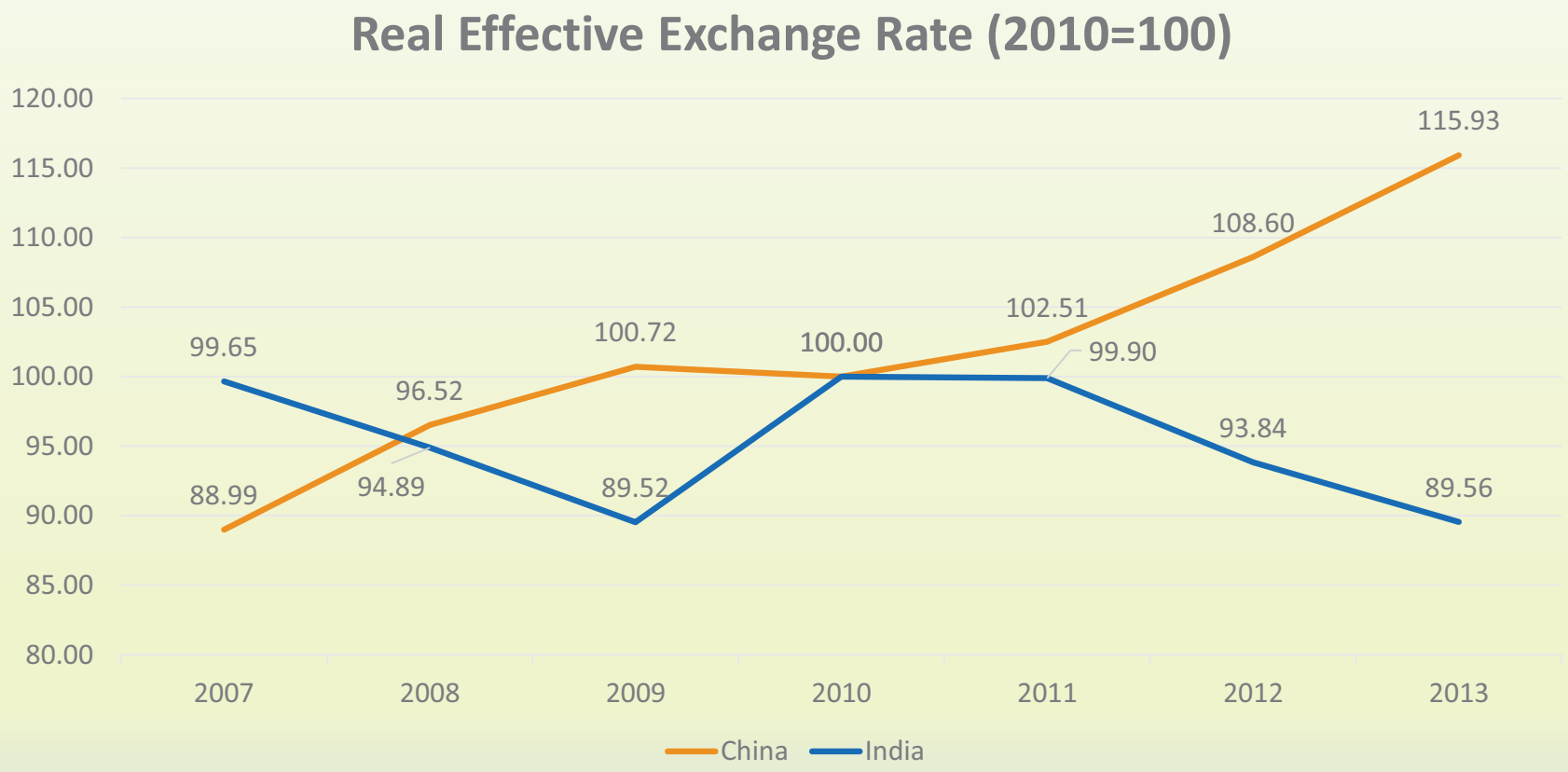
The Indian exchange rate depreciated while the Chinese exchange rate appreciated



Source: WDI, World Bank and IMF

Macroeconomic Fundamentals-TOT

TOT for Indian exports deteriorated and those for Chinese exports improved.



Source: WDI, World Bank and IMF

Macroeconomic Fundamentals

- From the perspective of the macroeconomic fundamentals, we observe the following
  - To sum up, we find that both China and India were affected by the crises.
  - For both the economies, current account balance worsened, the volatile portfolio equity inflows fell and the total reserves of the central banks were depleted. In addition, in the Indian case, the exchange rate depreciated vis-à-vis the U.S. Dollar and the terms of trade deteriorated.
  - Moreover, the Indian external debt obligations are rising overtime. China has been relatively more dependent on exports but the share of U.S. and E.U. in exports of China and India has been shrinking.
  - Overall, these factors marred the growth prospects for China and India.

Vulnerability Factors

(i) Trade Linkages-impact on BoT via demand for exports

(ii) Financial Linkages-impact on capital flows

Trade Linkages

- The share of exports in GDP for India is around 24%. For China the share of exports to GDP has been declining but it is still 27%. The recent downward trend in the case of Chinese exports depicts a conscious reduction of its dependence on exports.

- Both the United States and the European Union are major trading partners of China and India and account for 30-40% of China and India's exports. It is noteworthy that their shares have been declining over time.

- The slowdown in the United States affected Chinese and Indian exports adversely in 2009 but the situation improved in 2010. However, in view of the Eurozone crisis it deteriorated again in 2011-12.

Export Dependence-United States

Share of Exports in GDP (%)[a]		
Year	2005	2012
India	19.3	24.0
China	37.1	27.3
Share of Exports to United States (% of total exports)[b]		
Year	2005	2012
India	16.5	12.8
China	21.4	17.2
Growth of Exports to United States (year-on-year)		
Year	2005	2009
India	21.1	-8.2
China	24.2	-2.6

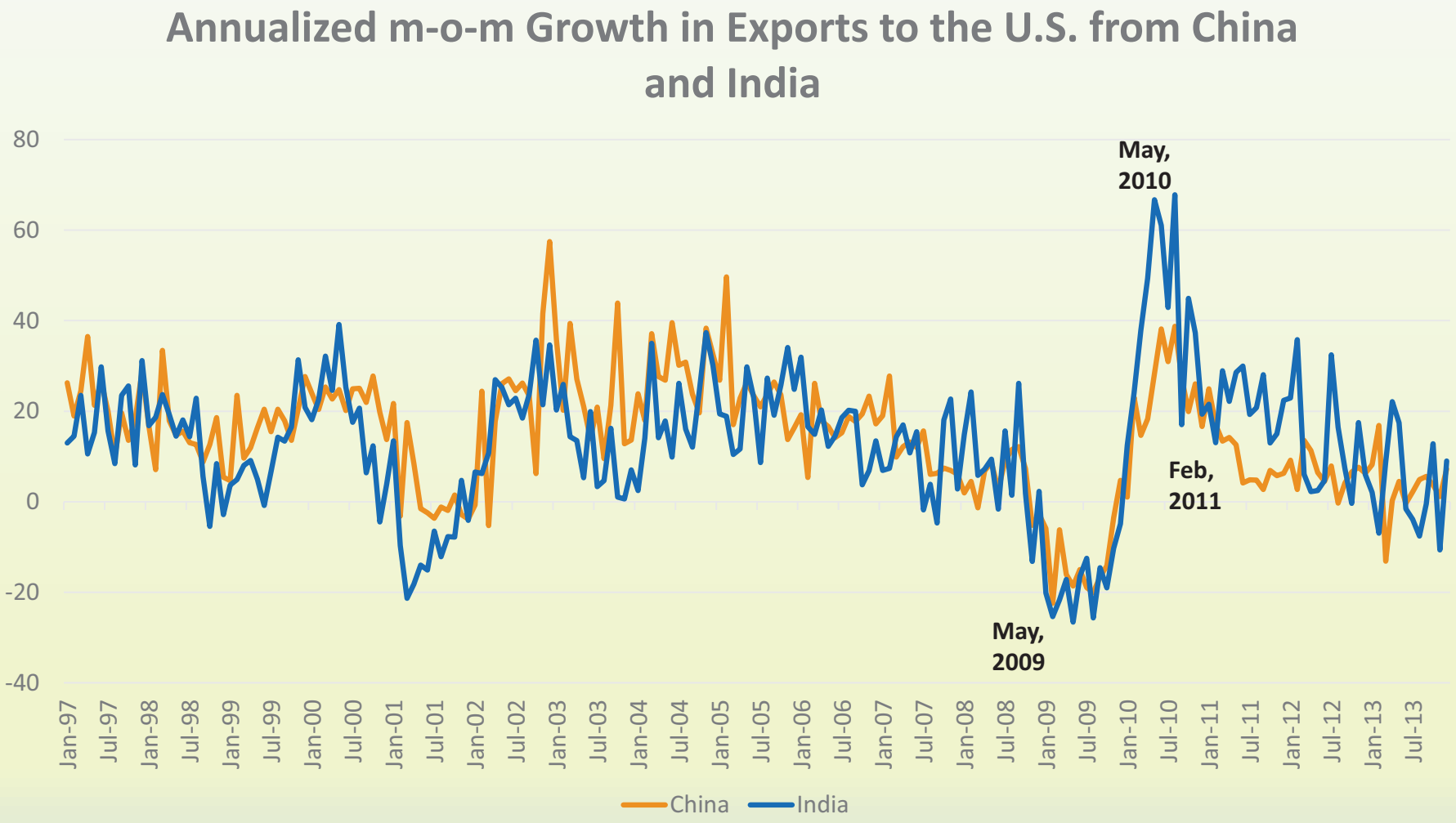
Source: WDI, UNTAD Stat, Eurostat

Export Dependence-Euro Area

Share of Exports in GDP (%)[a]		
Year	2005	2012
India	19.3	24.0
China	37.1	27.3
Share of Exports to European Union (% of total exports)[b]		
Year	2005	2012
India	22.5	16.8
China	19.1	16.3
Growth of Exports to Euro Area (year-on-year)		
Year	2005	2012
India	15.9	-7.4
China	26.8	-2.1

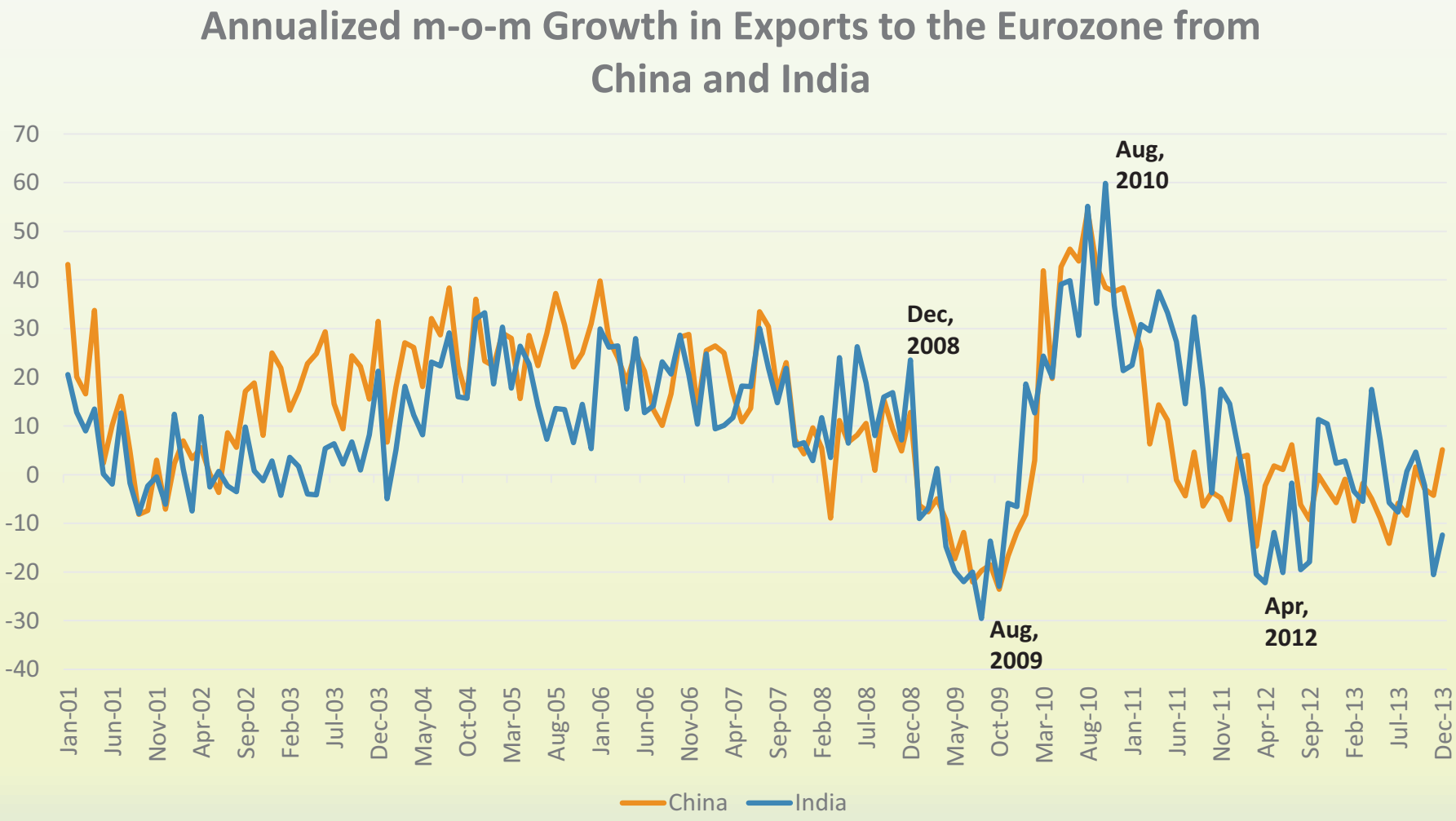
Source: WDI, UNTAD Stat, Eurostat

Growth in Exports to U.S.



Source: U.S. International Trade Commission

Growth in Exports to Eurozone



Source: Eurostat

Detailed SITC Category-wise Exports to U.S. -India

Major Categories for India	Share of Total	2007	2008	2009	2010	2011	2012	2013
	Rate of growth (%)							
Manufactured goods classified chiefly by material	33%	8%	14%	-28%	43%	18%	-1%	15%
Chemicals and related products, n.e.s.	19%	-2%	-12%	-10%	12%	3%	21%	4%
Miscellaneous manufactured articles	16%	-3%	44%	-7%	36%	32%	-2%	6%
Machinery and transport equipment	10%	53%	17%	-23%	33%	17%	10%	-11%

Source: U.S. International Trade Commission

Detailed SITC Category-wise Exports to U.S. -China

Major Categories for India	Share of Total	2007	2008	2009	2010	2011	2012	2013
	Rate of growth (%)							
Machinery and transport equipment	51%	11%	4%	-8%	29%	12%	8%	4%
Miscellaneous manufactured articles	32%	12%	1%	-12%	19%	2%	4%	3%
Manufactured goods classified chiefly by material	11%	10%	8%	-28%	19%	11%	8%	5%
Chemicals and related products, n.e.s.	3%	16%	46%	-21%	26%	28%	2%	4%

Source: U.S. International Trade Commission

Detailed SITC Category-wise Exports to EZ -India

Major Categories for India	Share of Total	2007	2008	2009	2010	2011	2012	2013
	Rate of growth (%)							
Manufactured goods	30%	16%	8%	-15%	22%	21%	-11%	0%
Other Manufactured Articles	18%	11%	1%	-20%	20%	22%	-13%	1%
Manufactured goods classified chiefly by material	10%	20%	0%	-34%	32%	33%	-15%	1%
Miscellaneous Manufactured Articles	8%	2%	3%	0%	9%	10%	-10%	1%

Source: Eurostat

Classification by degree of Manufacturing-India

Major Categories for India	Share of Total	2005	2006	2007	2008	2009	2010	2011	2012
	Rate of growth (%)								
Manufactured goods by degree of manufacturing[j]	66%	17%	23%	27%	19%	-17%	14%	27%	-18%
Labour-intensive and resource-intensive manufactures	26%	16%	16%	13%	9%	-9%	7%	18%	-19%
Low-skill and technology-intensive manufactures	8%	12%	40%	60%	23%	-50%	15%	55%	-23%
Medium-skill and technology-intensive manufactures	12%	19%	31%	33%	43%	-8%	5%	34%	-18%
High-skill and technology-intensive manufactures	14%	25%	26%	41%	16%	-15%	24%	34%	-10%

Source: Eurostat

Detailed SITC Category-wise Exports to EZ -China

Major Categories for India	Share of Total	2007	2008	2009	2010	2011	2012	2013
	Rate of growth (%)							
Manufactured Goods	40%	19%	7%	-14%	33%	4%	-2%	-5%
Machinery and Transport Equipment	21%	13%	7%	-13%	43%	-1%	0%	-6%
Other Manufactured goods	17%	25%	6%	-15%	21%	7%	-4%	-4%
Miscellaneous Manufactured Articles	12%	18%	9%	-5%	16%	4%	-3%	-4%

Source: Eurostat

Classification by degree of Manufacturing-China

Major Categories for India	Share of Total	2005	2006	2007	2008	2009	2010	2011	2012
	Rate of growth (%)								
Manufactured goods by degree of manufacturing[i]	96%	30%	23%	28%	16%	-16%	25%	10%	-11%
Labour-intensive and resource-intensive manufactures	24%	42%	17%	29%	19%	-9%	14%	11%	-12%
Low-skill and technology-intensive manufactures	8%	39%	51%	63%	19%	-36%	46%	2%	-16%
Medium-skill and technology-intensive manufactures	13%	14%	22%	36%	18%	-20%	28%	21%	-10%
High-skill and technology-intensive manufactures	7%	22%	23%	27%	25%	-16%	29%	19%	-6%

Source: Eurostat

FDI Flows from Euro Area and U.S.

FDI flows				
	India		China	
	Euro Area (in mn. EUR)	United States (in mn. USD)	Euro Area (in mn. EUR)	United States (in mn. USD)
2008	225	1,175	-430	15,971
2009	1,173	1,000	125	-7,512
2010	504	315	-608	5,420
2011	1,634	2,031	3,863	-1,087
2012	-941	1,536	7,142	-3,482

Source: Eurostat and OECD

Vulnerability Indicators

- We find that the exports to U.S. and Euro Area have been badly hit for both India and China.
  - Month-on-month growth in exports to U.S. and Euro Area has slowed down in 2009 and 2012.
  - The slowdown is spread across all the major industries exporting to these destinations.
  - The magnitude of Chinese exports to U.S. and Euro Area is higher and it is relatively more exports dependent and therefore it is likely to grapple with lower growth as a result of the crises.
- There seems to be an adverse impact of the U.S. and Eurozone crises on the FDI flows into India or China.
  - The Foreign Direct Investment flows from U.S. to China and India have fallen and are erratic post 2009.
  - FDI flows to India and China from Euro Area have been severely affected in 2010. Although China recovered subsequently in 2011, the investment flows and income seem to be doing deficiently in the case of India.

Impact of Crisis Episodes on Real Economy, Financial Markets and Exports of China and India

(i) Methodology and Empirical Model

(ii) Empirical Results

Methodology

- To **test** for the impact of the crisis, we construct the following dummies for the Global Financial Crisis (DGFC) and Eurozone Debt Crisis (DEZDC).
- We have constructed this dummy using the timelines for these crises available on the Federal Reserve of St. Louis and European Central Bank's websites on the basis of major events during each of the crises.
- Several key events such as announcement of bankruptcy by Lehman Brothers and Greece and Ireland's bail out by the Eurozone countries were utilized to define the dates for the dummy variable.
- $$DEZDC_t = \begin{cases} 1 \; if \; t \in 4/2010 - 7/2010; \\ \\ 1 \; if \; t \in 5/2011 - 12/2011 \\ 0 \; otherwise \end{cases}$$
- $$DGFC_t = \begin{cases} 1 \; if t \in 9/2008 - 3/2009; \\ 0 \; otherwise \end{cases}$$

Estimation Results

Period under Study:

Growth Rates- January, 1994 to February, 2013

Stock Markets- January, 2000 to February, 2013

Frequency: Monthly

Impact on Real Economy and Financial Markets

- Real Economy-we consider year-on-year changes (which eliminate seasonality) in the monthly Index of Industrial Production
  - Markov switching AR models are then used to delineate the slowdown and pick up phases in the growth rates and assess whether the crisis contributed to a dip in the economic activity of the two EMEs
- Financial Markets-returns on the Shanghai Composite Index and the Bombay Sensitive Index are computed (by taking log first differences)
  - Bullish and bearish phases are identified by applying Markov Switching AR models
- The time period for analysis of growth rates is from January, 1994 to February, 2013 and that for stock returns is January, 2000 to February, 2013

Summary

- The Markov Switching analysis reveals two states in the growth rates of China and India which correspond to the behavior of the economy during economic slowdowns and economic pickups
- Similarly, the analysis identifies two regimes in the stock market returns viz. bearish and bullish activity phases
- Results of MS-AR models suggest that both the economies are still in the low growth regime
- The Chinese stock market is in a bearish regime but the Indian stock market seems to be displaying bullish activity
- Results of MS-regression suggest that Chinese growth rate was not significantly impacted by the Eurozone crisis but the Indian growth rate is significantly and negatively affected.
- Stock markets were not significantly affected by the Eurozone crisis

Impact on Export Growth Rates

- Export growth rates-we consider year-on-year changes (which eliminate seasonality) in the monthly total value of exports to the U.S. and Eurozone from China and India
  - Markov switching AR models are then used to identify the slowdown and pick up phases in the export growth rates

- The time period for analysis of export growth rates is from January, 2000 to December, 2013

- We find that a dampening of economic activity levels in the Eurozone as a consequence of the U.S. Financial Crisis and Eurozone Sovereign debt crisis led to a fall in the rates of growth of Chinese and Indian exports to the destinations.

Summary

The analysis so far suggests-

- we find that the demand for exports to U.S. and Euro Area has dampened and China is likely to be more affected due to a higher share of exports in GDP.
- FDI flows to China and India from U.S. and Euro Area have diminished.
- these findings corroborate and lend support to the conclusions from the Markov Switching of growth rates in the two economies i.e. both China and India are likely to be in a low-growth regime since the Euro zone crisis will have affected their growth potential.
- that India is worse hit since it has to deal with lower demand for exports as well as capital outflows along with worse resilience indicators.
- Similar analysis for export growth rates shows that the same have fallen for both China and India in response to lower economic growth in U.S. and E.Z.

Conclusions

Conclusions

- We study the impact of recent crisis episodes viz. global recession of 2008-09 and Eurozone debt crisis of 2010-12 on the EMEs of China and India.
- Growth in the economies has slowed down in the aftermath of the crisis episodes in the West
- China has been relatively more dependent on exports, the share of developed economies of U.S. and E.U. in exports of China and India has been shrinking over the period 2007-13.
- Current account balance has indeed worsened, along with a reduction in the volatile portfolio equity inflows and diminishing of the total reserves for both China and India.
- Additionally, the Indian Rupee depreciated vis-à-vis the Dollar and the terms of trade for India deteriorated.
- Indian external debt obligations have been rising over the period 2007-13.

Conclusions

- The analysis of macroeconomic indicators of the two EMEs reveals that the impact of the crises is in line with that suggested by Blanchard *et al.* (2010).
- Resilience indicators such as current account balance, reserves, external debt, government debt and so on show that China is better-positioned than India.
- Markov-switching analysis reveals two states in the growth rates of China and India which correspond to the behavior of the economy during economic slowdowns and economic pickups. Similarly, the analysis identifies two regimes in the stock market returns viz. bearish and bullish activity phases.
- Results of MS-AR models suggest that since both the economies were still in the low growth regime and the crisis seems to have worsened the situation and dampened the growth potential in the aftermath of the Global Financial crisis.
- The Chinese stock market was in a bearish regime but the Indian stock market seemed to be displaying bullish activity.

Conclusions

- From an analysis of vulnerability indicators, we find that the demand for exports from Euro Area has dampened and China is likely to be more affected due to a higher share of exports in GDP.
- On the other hand, the FDI flows to India from the countries seemed to have diminished.
- Clearly, the findings corroborate the conclusions from the Markov Switching of growth rates in the two economies i.e. both China and India are likely to be in a low-growth regime since the Euro zone crisis will have affected their growth potential.
- These results lend credence to the MS-regression results which suggest that Indian growth is more affected owing to impact via trade and financial channel.
- Finally, a similar analysis for export growth rates suggests that these have fallen for both China and India in response to lower economic growth in Euro Area.

Thank you