The State of the Global Economy

Part I

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Introduction: The Shifting Centre of Gravity of the Global Economy

- The most important development in the global economy during the last three and a half decades is the shifting of its centre of gravity, caused by the reform and opening of the Chinese economy and its participation in the World economy beginning in 1978.
- As a result, the centre of gravity of the global economy, in terms of both GDP and international trade, has been gradually shifting from North America and Western Europe to East Asia, and within East Asia from Japan to China.
- The break-up of the former Soviet Union and the former Eastern European bloc of socialist economies in 1990, the relative decline of the Japanese economy since the early 1990s, and the introduction of the Euro in 1999, all had significant impacts on the global economy, but not of a comparable order of magnitude as the reform and opening of the Chinese economy.

Introduction: The Shifting Centre of Gravity of the Global Economy

- However, the rate of growth of the Chinese economy has recently begun to slow down from almost 10% per annum to a “new normal” of around 7% per annum. It will be accompanied by major adjustments in not only the Chinese economy but in capital and commodity markets worldwide.

Introduction: The Rise of the Internet-Based Economy

- The second most important development is the rise of the internet-based economy. Despite the bursting of the internet bubble in 2000, the internet-based economy has continued to grow by leaps and bounds. It has resulted in the rise of new business models, new industries, new enterprises, new jobs, new wealth and new winners and losers.
- In particular, the internet-based economy has greatly facilitated economic globalisation and created significant value through division and sub-division of labour, but at the same time it has also caused disruptions in economies everywhere, through what the economist Joseph Schumpeter called “creative destruction.” It has also greatly facilitated the distribution and transmission of information to as well as the acquisition of information by consumers, revolutionising their behaviour everywhere.

Introduction: The Rise of the Internet-Based Economy

- For example, internet-based bookstores have largely replaced brick-and-mortar bookstores. Virtual books, or e-books, have begun to supplant real printed books. Internet shopping malls are doing the same thing to brick-and-mortar shopping malls.
- Efficient and timely delivery and logistical services have become vital in this internet age.
- With real-time tele-communication through the internet, any job that can be moved away to a lower-cost location either has been or will be moved away.
- Robots, including some that can be controlled remotely, have begun to replace human workers in some industries in some countries.

Introduction: The Global Financial Crises since 2007 and the Aftermath

- The third most important development, albeit a negative one, is the series of global financial crises that have occurred since 2007 (some of them are still on-going to some extent today). They began with the sub-prime mortgage loan crisis in the United States in 2007, followed by the collapse of Lehman Brothers in the U. S. in September 2008, and the European sovereign debt crisis since late 2009.
- In order to save the U. S. financial system in the aftermath of the collapse of Lehman Brothers, the U.S. Federal Reserve Board undertook a series of "Quantitative Easing" policies, which succeeded in stabilising the U.S. financial sector, but failed until recently to return the U.S. real economy to a path of sustainable growth. These financial crises have also proven to be drags on the global economy.
- These financial crises were caused and/or exacerbated in part by financial "over-engineering"; and unless this tendency can be curbed, financial crises are probably unavoidable in the future. Already, Wall Street banks have been trying to roll back the financial reforms mandated by the Dodd-Frank Act before they are even implemented.

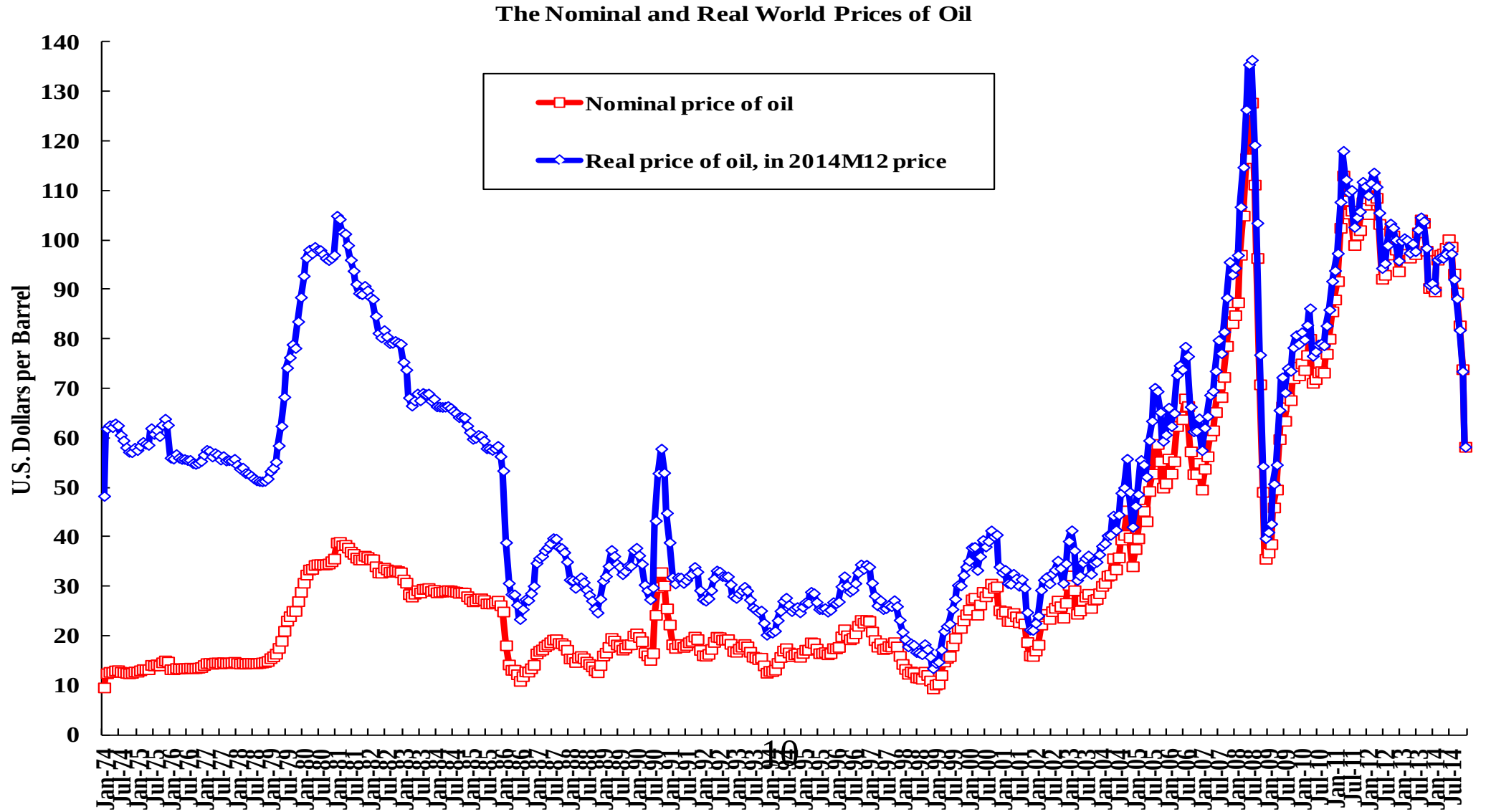
Introduction: The Global Financial Crises since 2007 and the Aftermath

- In order to counter the effect of the QEs on the exchange rate of the Japanese Yen, the Bank of Japan undertook the "Qualitative and Quantitative Easing (QQE)" in December 2012 as part of the Abenomics programme. It succeeded in driving the exchange of the Japanese Yen from its peak of 75 Yen/US$ to a level around 125 Yen/US$.
- In addition, the European Central Bank has just launched its own QE by committing to buy more than US$1 trillion worth of bonds in a year.
- All of this implies that the World will remain awash in liquidity and the US$ will continue to appreciate with respect to other currencies.
- The temptation for conducting carry trade is strong, given the very low rates of interest in Europe and Japan, and the arbitrate opportunity presented by the higher rates of interest in the U.S. However, developing economies are will advised to discourage short-term borrowing in foreign currencies as well as short-term capital inflows.

Introduction: The World Price of Oil

- The fourth most important development is the and the steep rise in the World price of oil in the early 2000s as well as its steep decline since mid-2014 (see the following Chart). It is not possible to predict the World spot price of oil as it is not really determined by supply and demand.
- The steep rise in the World price of oil has led to the discovery and widespread application of the hydraulic fracturing ("fracking") technology in the U.S. for the exploitation of shale oil and gas. This new technology has fundamentally altered the World energy supply situation.
- In the first place, it has turned the U.S. from a net energy importing country into a net energy exporting country. That is why Canadian, Mexican and Middle Eastern countries are all anxious to explore the export of oil and gas to China, currently the largest energy importer of the World today.
- Secondly, with the "fracking" technology, shale oil and gas can be brought into production within a very short period, unlike conventional oil and gas, which has a long investment gestation period. This means that as soon as the price of oil exceeds US$60 a barrel, shale oil and gas production can be quickly reactivated. This places a cap on the future level of the World price of oil.
- A decrease in the World price of oil should bring a net positive benefit to the World economy.

The Nominal and Real World Prices of Oil (2014 prices)



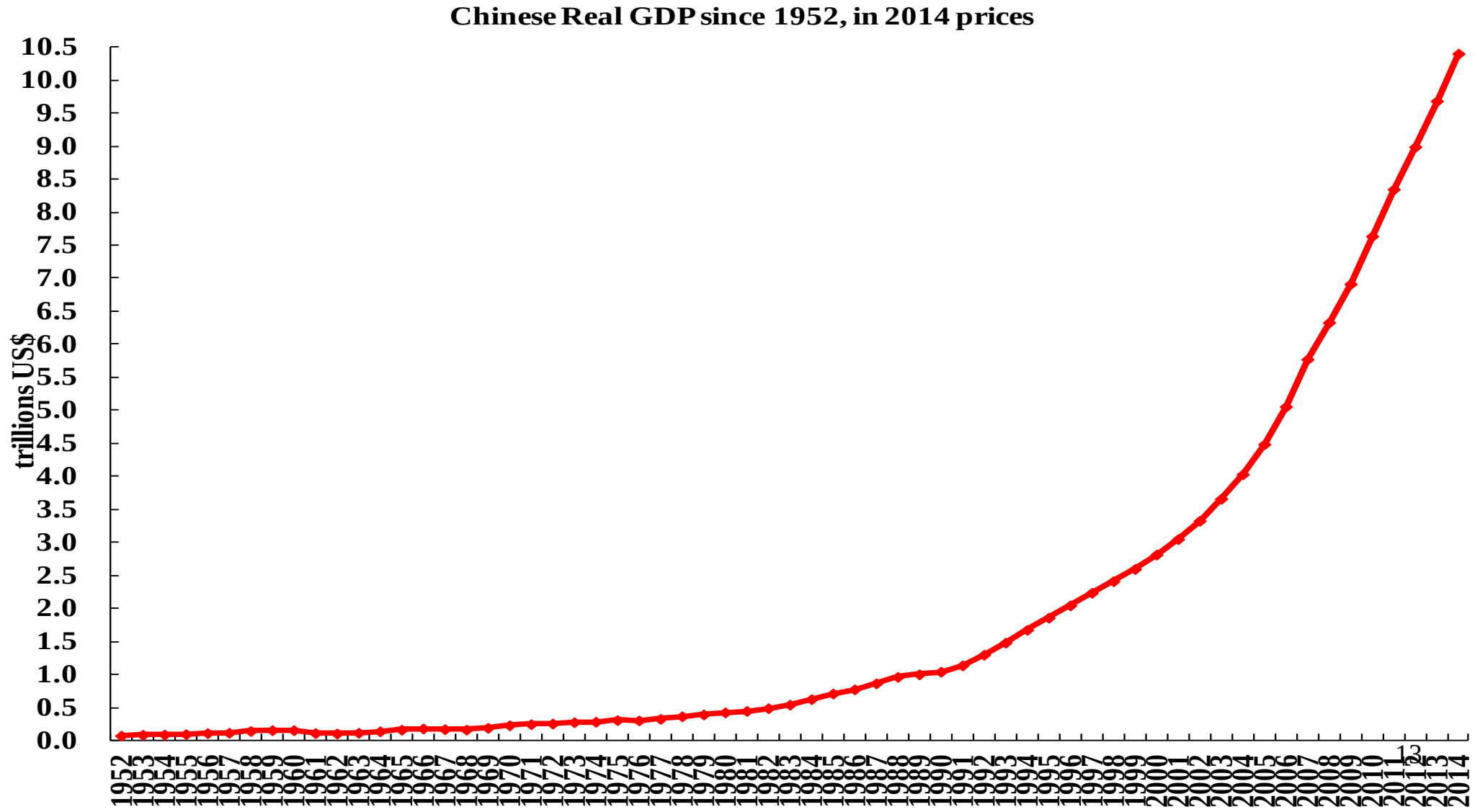
Introduction:
The Increase in Income Disparity

- The rise of the internet-based economy and the economic policies adopted in the developed economies since the global financial crises have also greatly increased the degree of income disparity in many economies, developed as well as developing, with negative consequences on not only their respective economies but also on their political and social stability. However, we shall be unable to address this issue here.

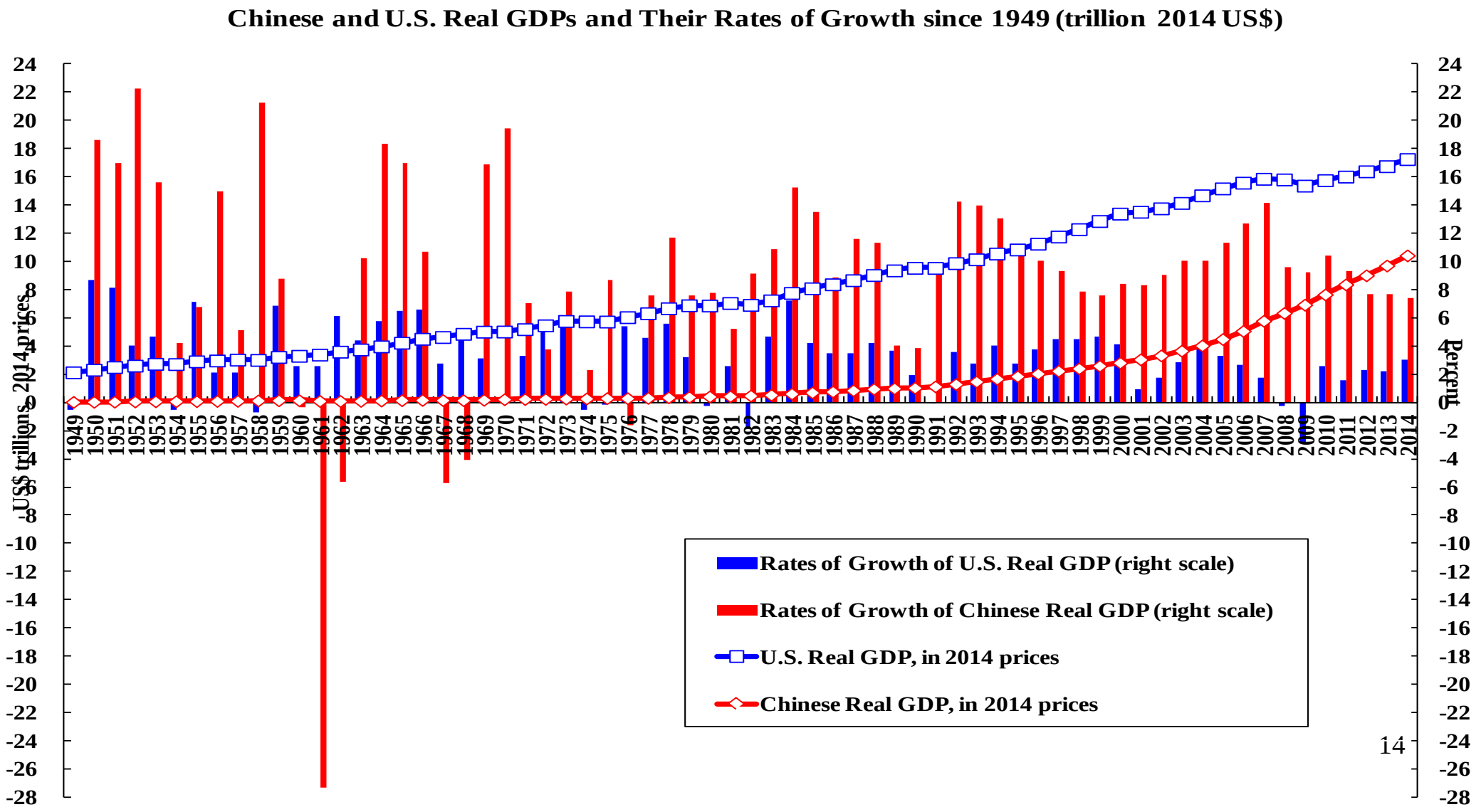
The Shifting Centre of Gravity of the Global Economy: GDP

- We begin by examining the effects of the reform and opening of the Chinese economy and its participation in the World.
- China has made tremendous progress in its economic development since it began its economic reform and opened to the World in 1978. China is currently the fastest growing economy in the World—averaging 9.7% per annum over the past 37 years. It is historically unprecedented for an economy to grow at such a high rate over such a long period of time.
- Between 1978 and 2014, Chinese real GDP grew more than 28 times, from US370.74 billion to US$10.4 trillion (in 2014 prices), to become the second largest economy in the World, after the U.S. By comparison, the U.S. GDP of approximately US$17.4 trillion was a little less than 1.7 times Chinese GDP in 2014.

Chinese Real GDP in US$ Since 1952 (2014 Prices)



Chinese and U.S. Real GDPs and Their Rates of Growth (2014 US$) since 1949



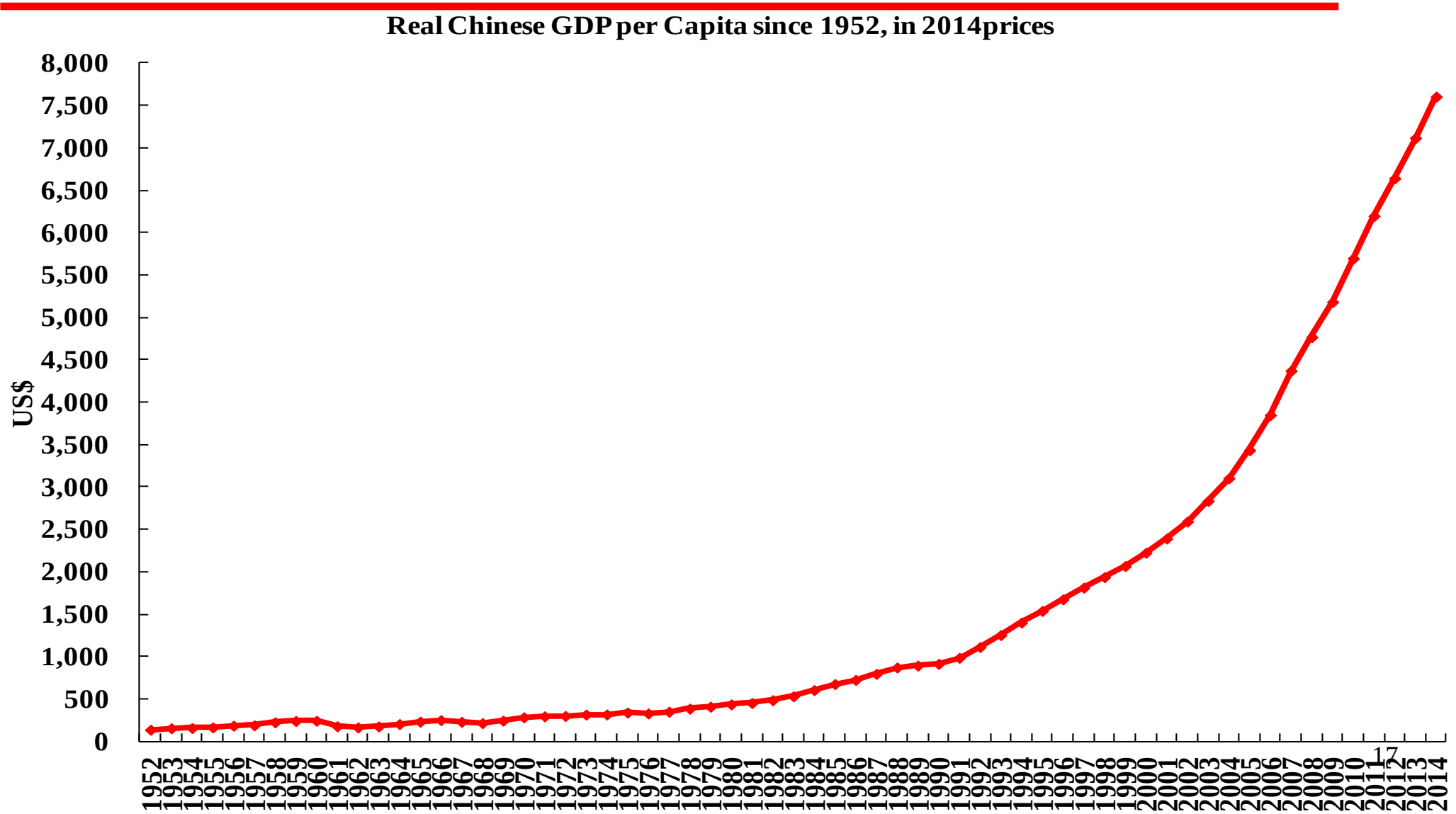
The Shifting Centre of Gravity of the Global Economy: GDP

- Researchers at the International Monetary Fund, have suggested, on the basis of "purchasing-power-parity (PPP)" calculations, that the Chinese economy is now almost equal in size to the U.S. economy, with a PPP GDP of US$17.4 trillion in 2014 compared to US$17.6 trillion for the U.S. (International New York Times, 20th-21st December 2014). However, PPP comparisons between economies are not reliable because they are highly sensitive to the particular set of prices chosen to evaluate the goods and services produced in the different economies. The particular set of prices may not reflect adequately the preferences and the scarcities faced by the different economies.

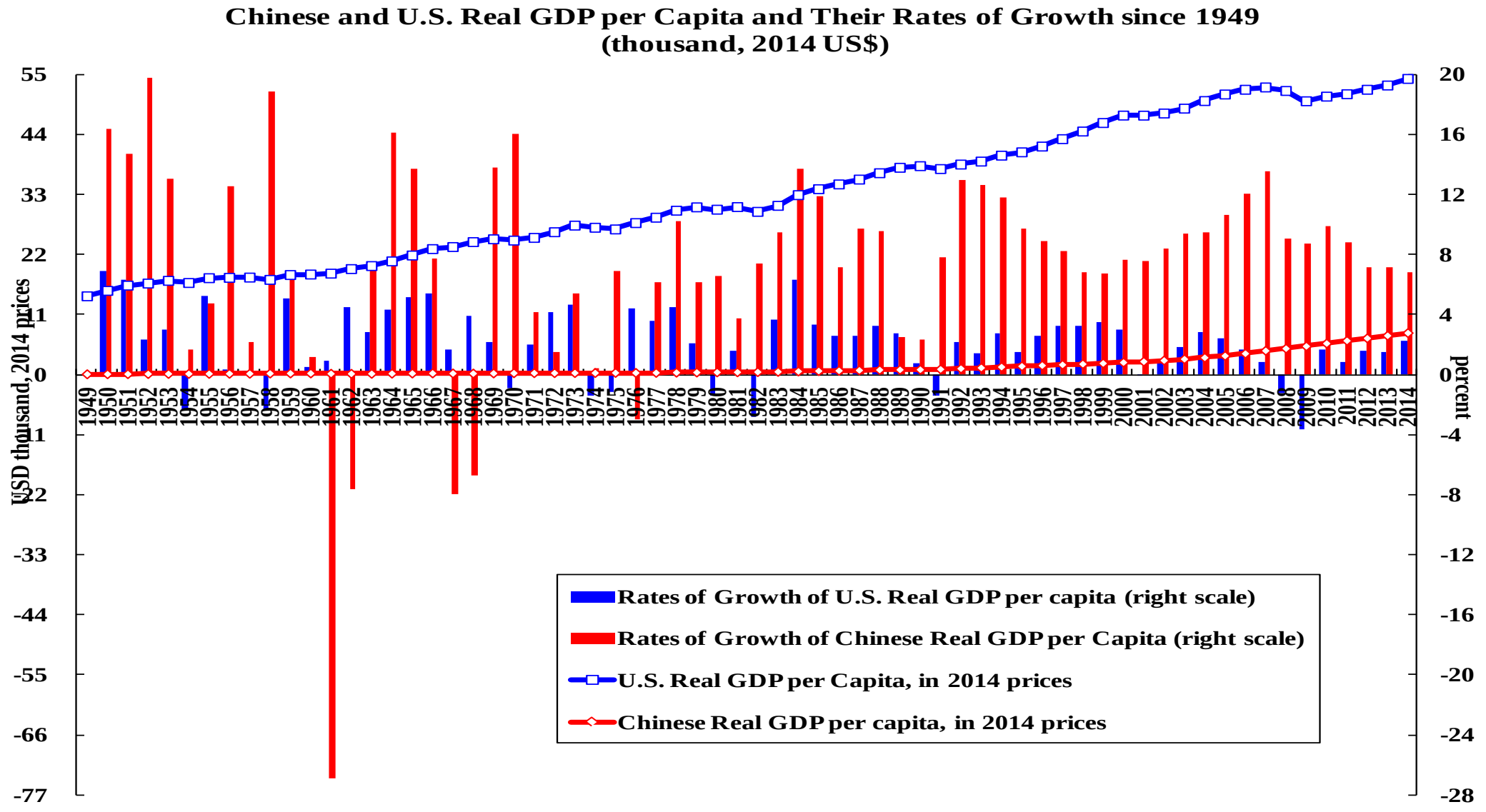
The Shifting Centre of Gravity of the Global Economy: GDP per Capita

- Despite its rapid economic growth in the aggregate, in terms of its real GDP per capita, China is still very much a developing economy.
- Between 1978 and 2014, Chinese real GDP per capita grew 19.7 times, from US$385 to US$7,604 (in 2014 prices).
- By comparison, the U.S. GDP per capita of approximately US$54,664, was 7.2 times Chinese GDP per capita in 2014.

Real Chinese GDP per Capita in US$ since 1952 (2014 Prices)



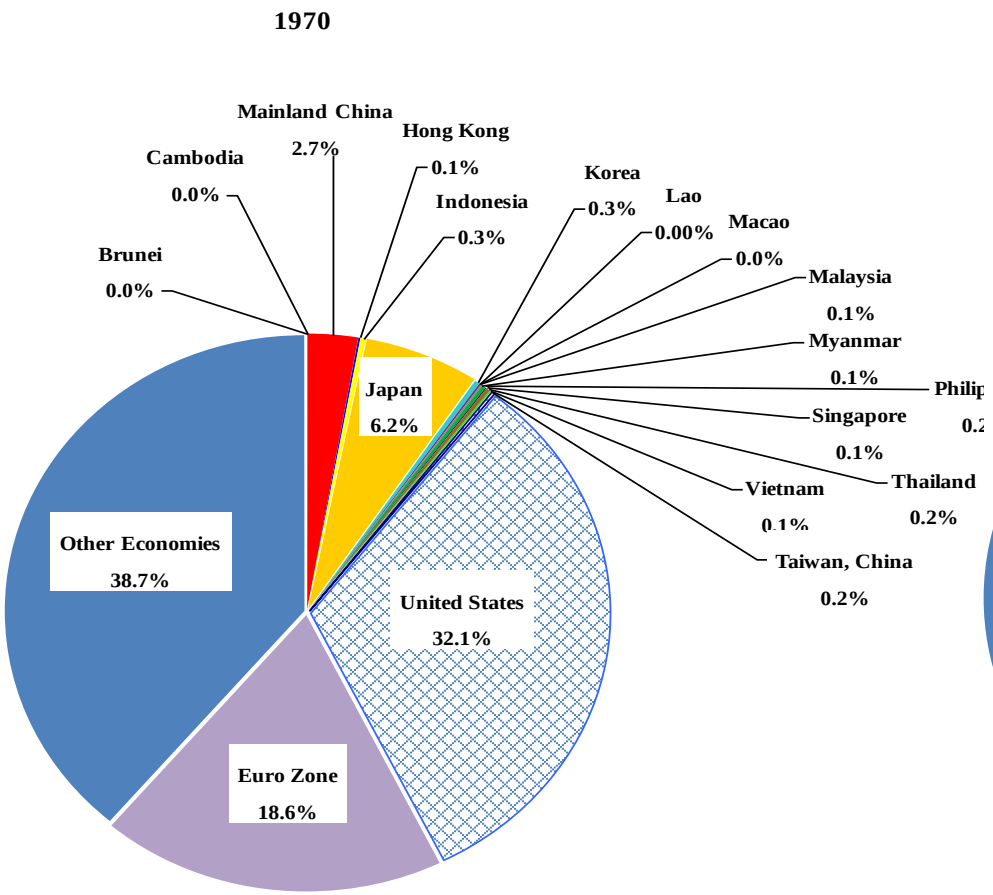
Chinese and U.S. Real GDP per Capita and Their Rates of Growth (2014 US$) since 49

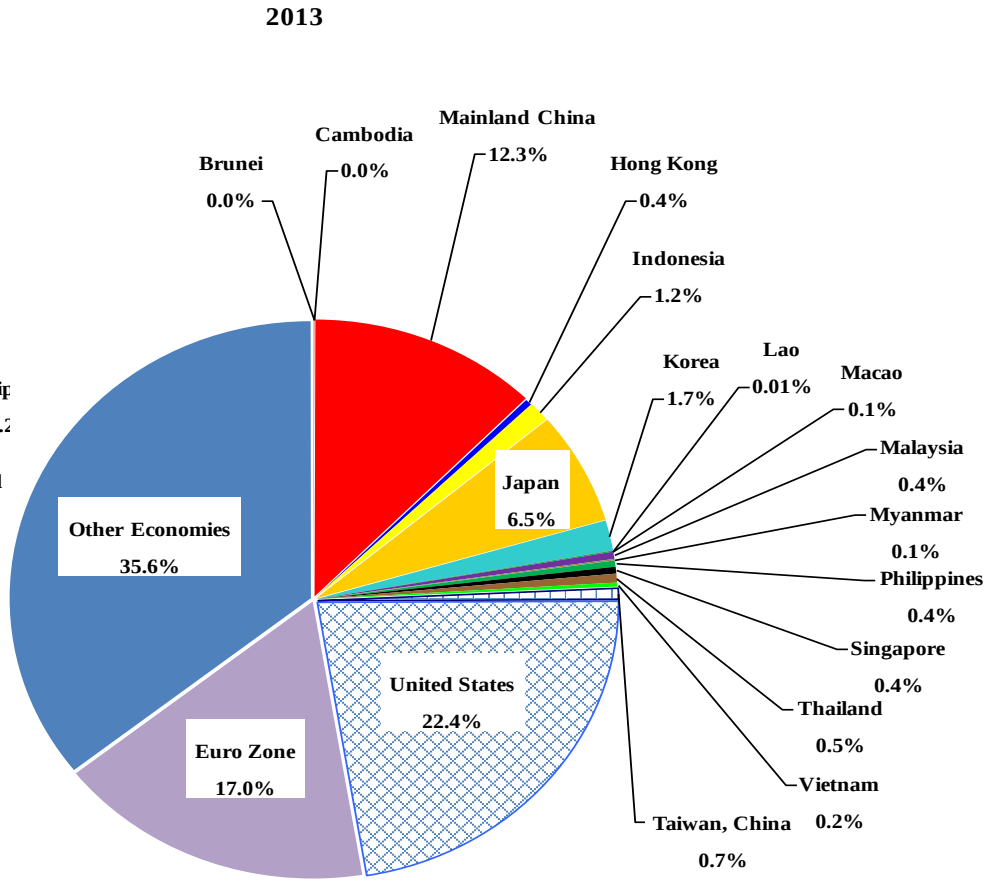


The Shifting Centre of Gravity of the Global Economy: GDP

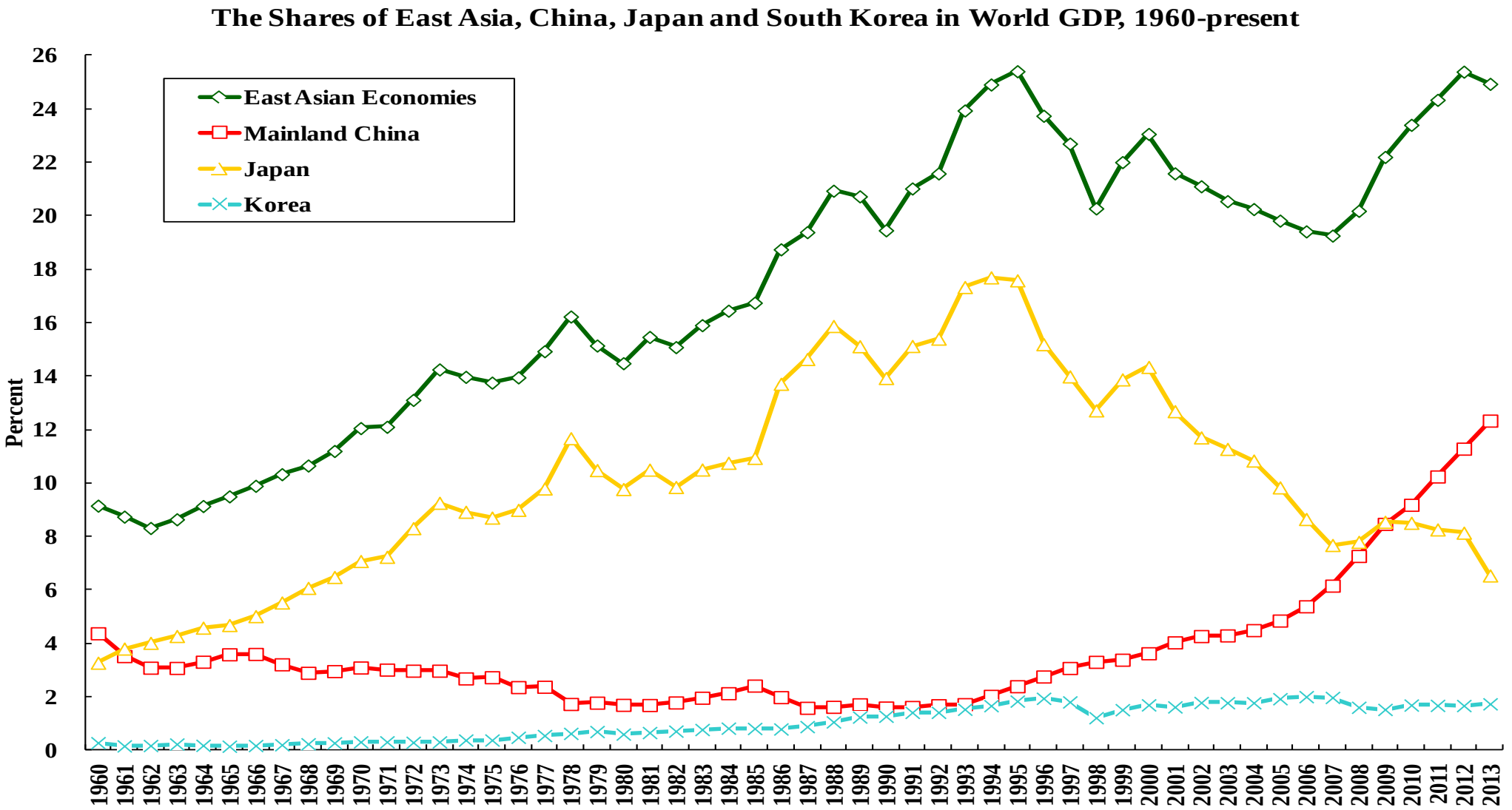
- In 1970, the United States and Western Europe (including countries such as West Germany and the U.K.) together accounted for almost 60% of World GDP. By comparison, East Asia (defined as the 10 Association of Southeast Asian Nations (ASEAN)--Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam--+ 3 (China, Japan and the Republic of Korea)) accounted for approximately 10% of World GDP.
- By 2013, the share of United States and Western Europe in World GDP has declined to approximately 45% whereas the share of East Asia has risen to around 25%.
- The Japanese share of World GDP declined from a peak of almost 18% in the mid-1990s to 6.5% in 2013 while the Mainland Chinese share of World GDP rose from 2.7% in 1970 and less than 4% in 2000 to over 12.3% in 2013.

The Distribution of World GDP, 1970 and 2013, US$





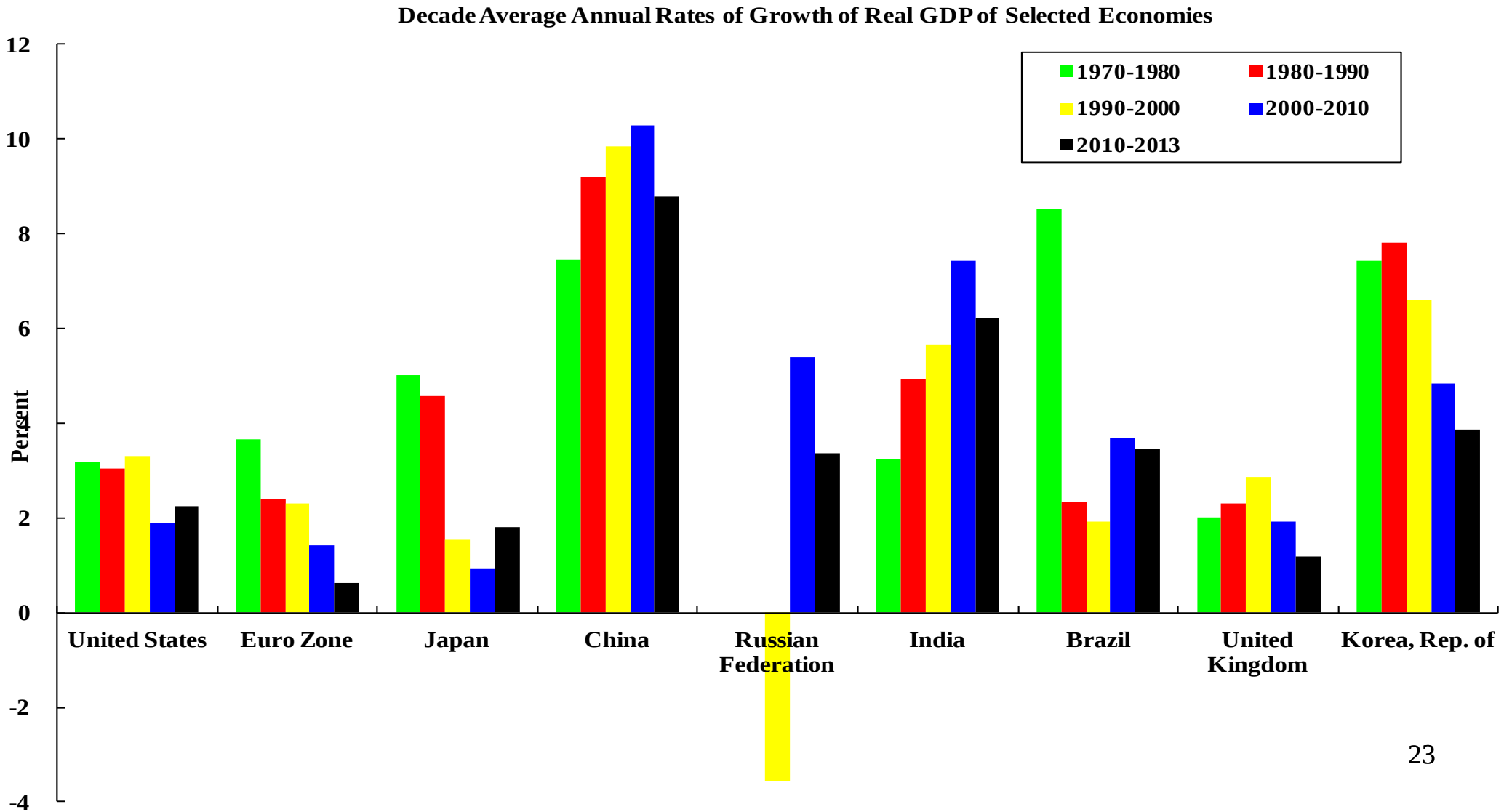
The Shares of East Asia, China, Japan and South Korea in World GDP, 1960-present



The Shifting Centre of Gravity of the Global Economy: Economic Growth

- In the following Chart, we present the average annual rates of growth of real GDP of selected economies in different decades.
- China, India and South Korea are among the fastest growing economies during the past four decades.
- Russia has also grown at a very high rate during the past decade because of its significant oil production and high oil prices. But the economy has begun to falter because of the sharply lowered oil prices and the sanctions imposed by the U.S. and the European Union because of the Ukrainian crisis.
- Brazil has also grown very fast during the past decade because of the world natural resource boom but has begun to slow down recently.
- However, all the developed economies—the U.S., the Euro Zone, Japan, and the U.K.—had relatively low and declining growth rates during the past decades. Even though there are now early signs of a steady U.S. economic recovery, the rates of growth have remained low by the historical standards of these economies.

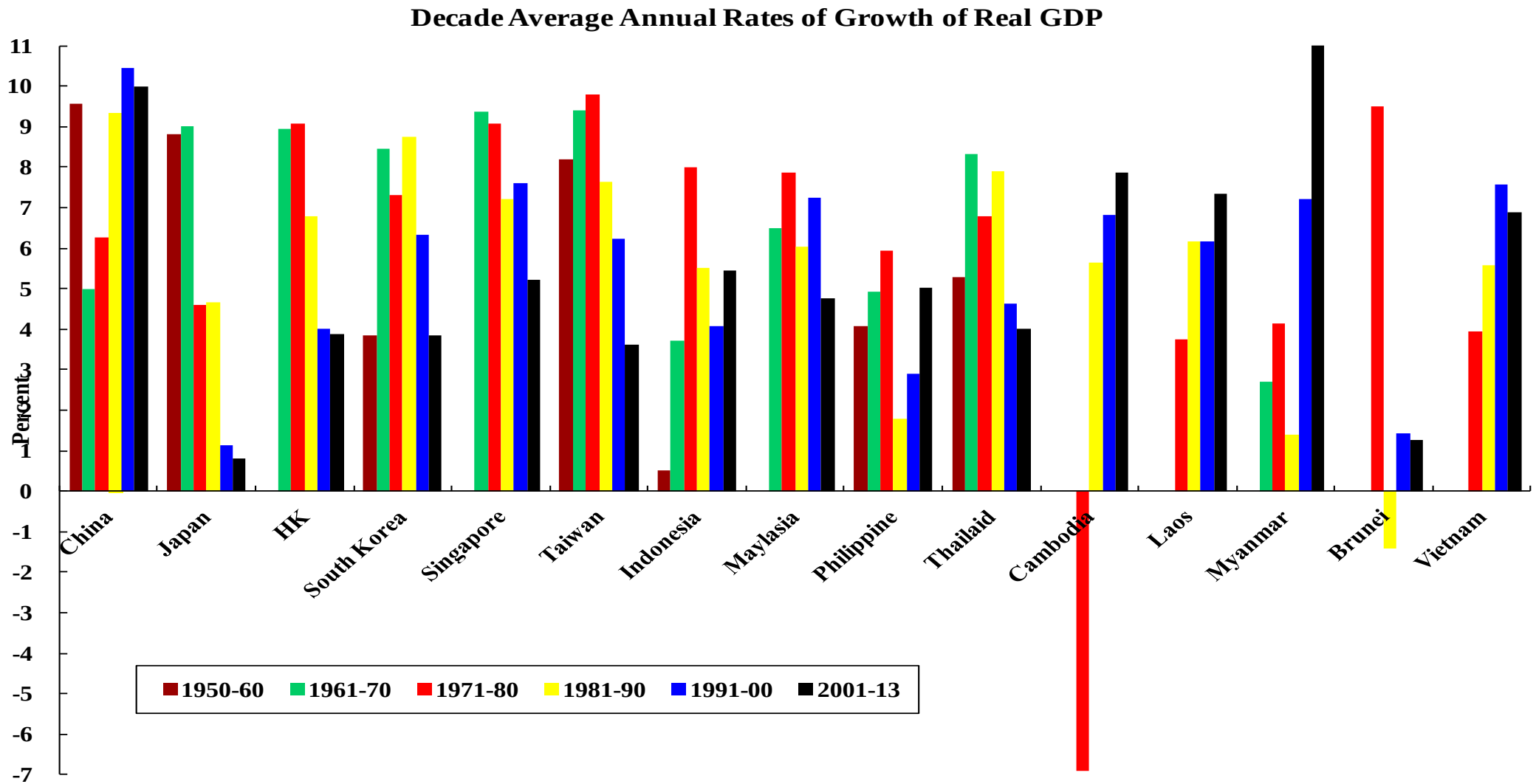
Decade Average Annual Rates of Growth of Real GDP of Selected Economies



The Shifting Centre of Gravity of the Global Economy: Economic Growth

- In the following Chart, we present the average annual rates of growth of real GDP of East Asian economies in different decades. It is interesting to see the diversity among them.
- Japan had a very high rate of growth in the 1950s and 1960s, and began to slow down in the 1970s and the 1980s, but hardly grew at all since the 1990s. China actually had a high rate of growth in the 1950s, but then went through the Great Famine and the Great Proletarian Cultural Revolution in the 1960s and 1970s.
- The four "newly industrialised economies (NIEs)" of Hong Kong, Singapore, South Korea and Taiwan grew rapidly in the 1960s and 1970s and even the 1980s.
- Thailand also started growing in the 1960s, followed by Indonesia and Malaysia in the 1970s.
- In the 1980s, China began to grow rapidly and beginning in the 1990s, Cambodia, Laos, Myanmar and Vietnam began to grow too.

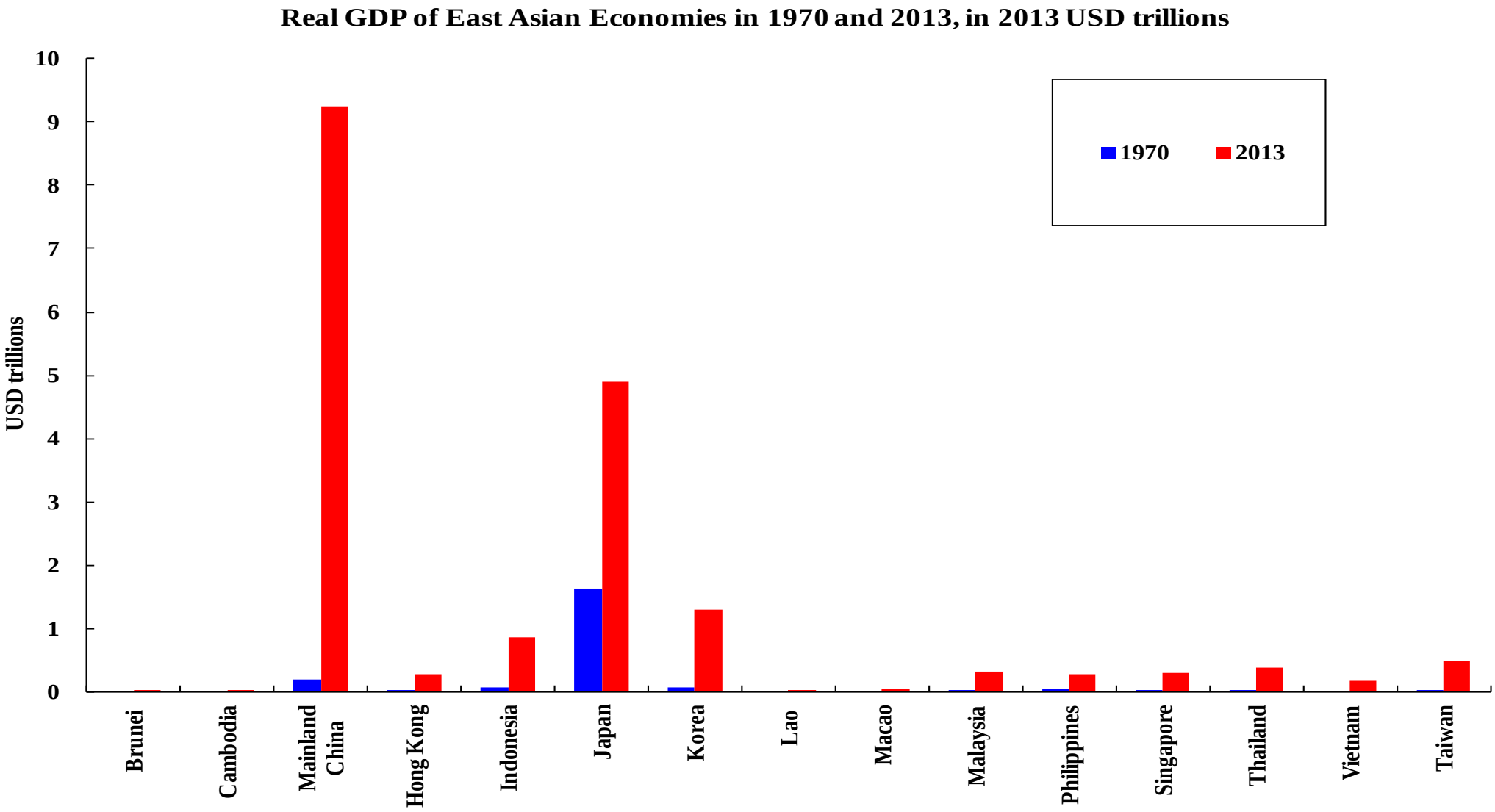
Decade Average Annual Rates of Growth of Real GDP of East Asian Economies



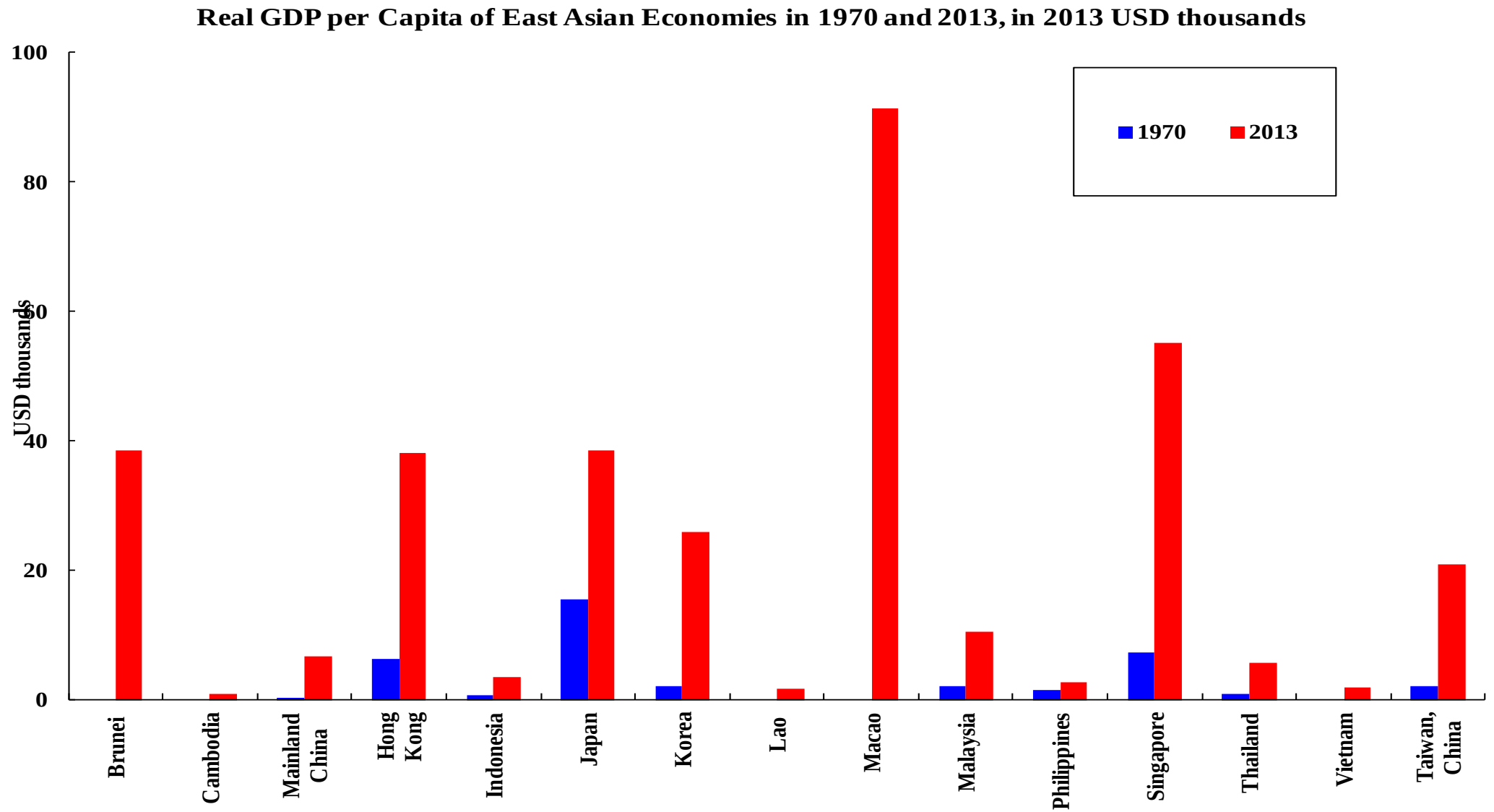
The Shifting Centre of Gravity of the Global Economy: Economic Growth

- In the aggregate, the Chinese economy has made the most progress among East Asian economies, followed by Japan.
- In terms of per capita GDP, China still lags significantly behind the other East Asian economies. Macau has the highest per capita GDP, thanks to its gaming industry, followed by Singapore, due in part to the rise in its exchange rate relative to the U.S. Dollar. Brunei has a high GDP per capita because of its oil. Otherwise, the high GDP per capita economies consist of only Japan and the four NIEs of Hong Kong, Singapore, South Korea and Taiwan.

The Growth of Real GDP in East Asian Economies, 1970-2013



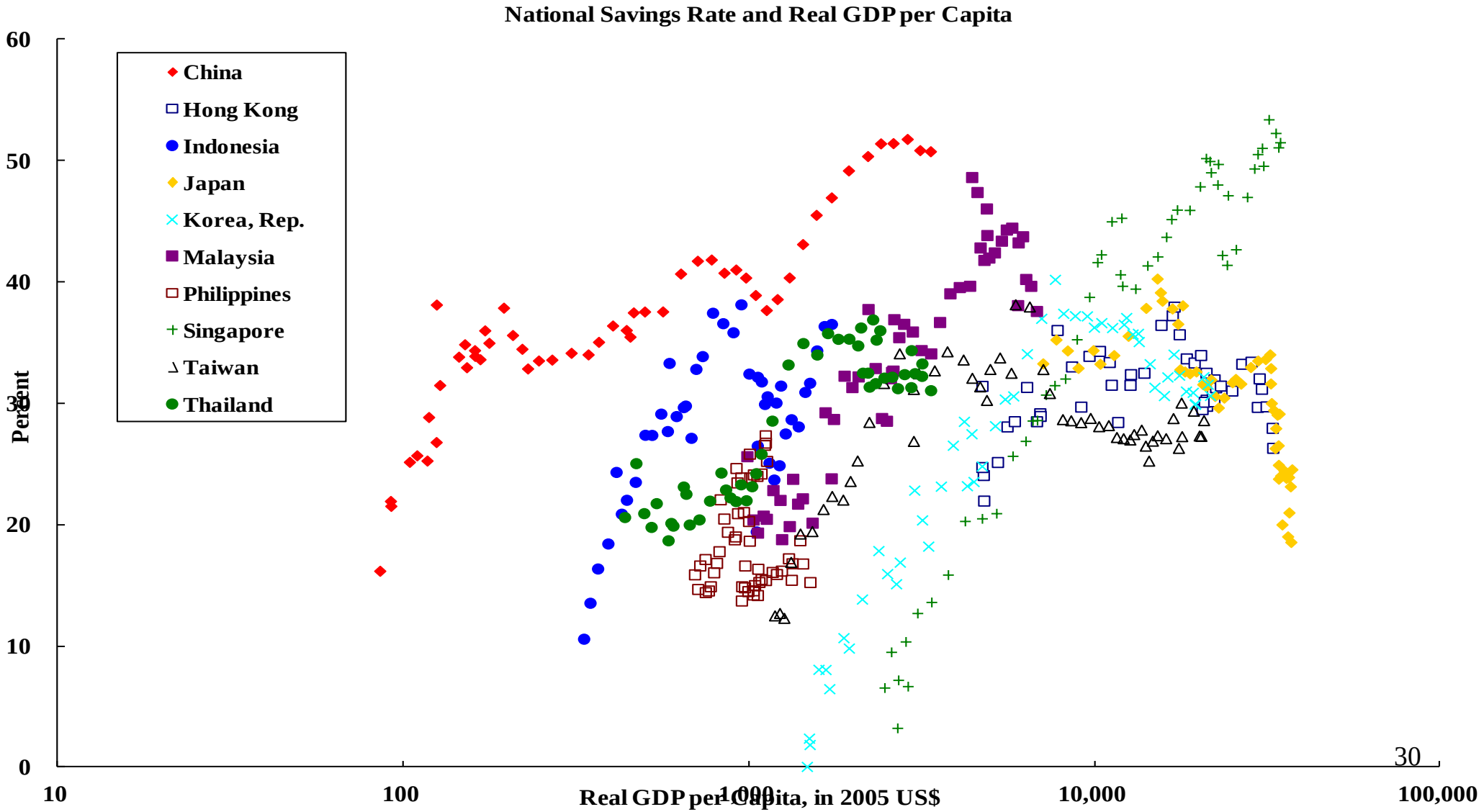
The Growth of Real GDP per Capita in East Asian Economies, 1970-2013



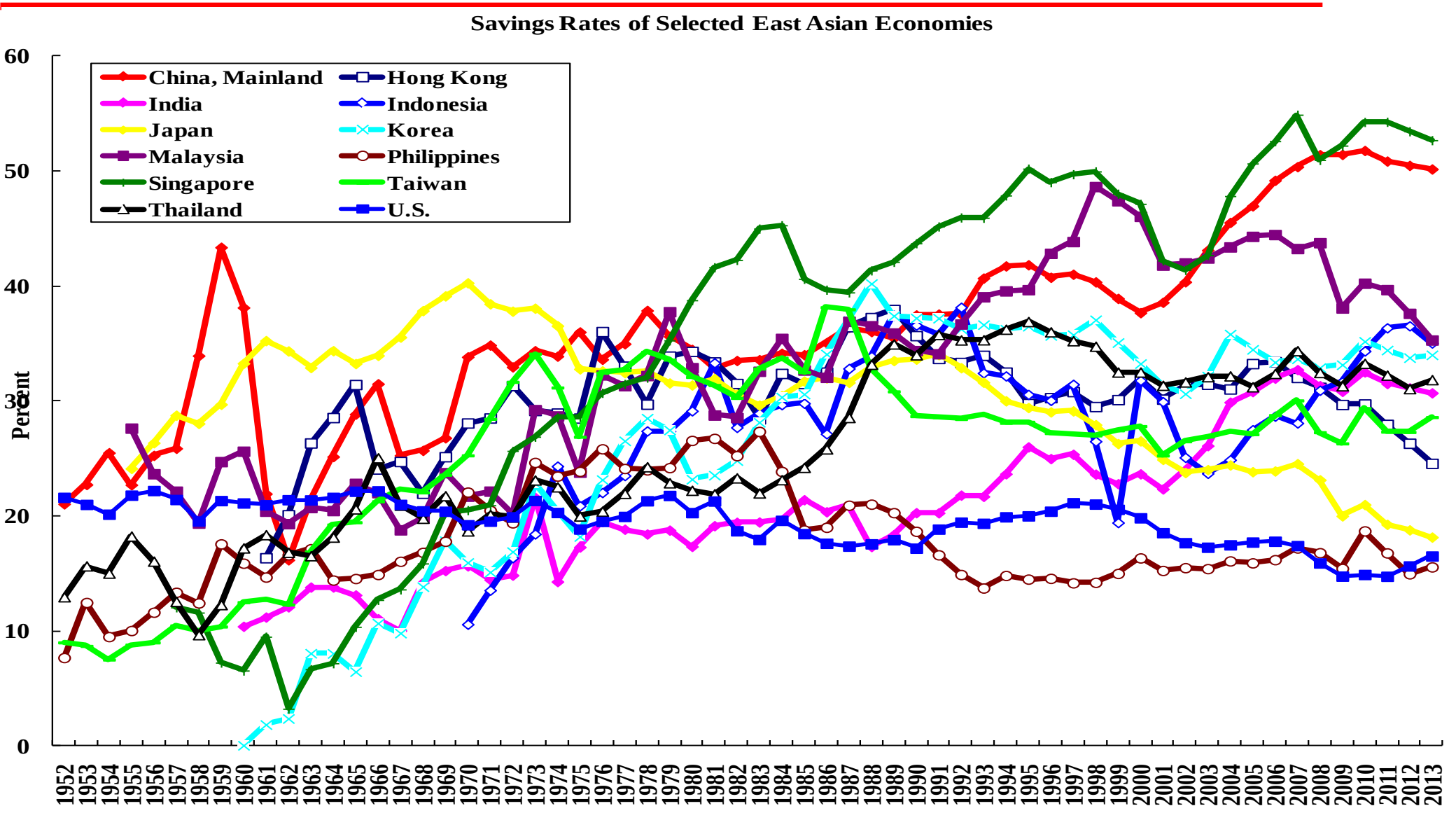
The Saving Rates of the Chinese and East Asian Economies

- Economic growth in East Asia has been under-pinned by a high domestic saving rate (see the following Charts), with the Philippines being a notable exception.
- Typically, the saving rate started low, when real GDP per capita was low, but rose rapidly as real GDP per capita rose and stabilise at a relatively high level (see the next Chart).
- A high domestic saving rate means, among other things, that most of the East Asian economies can finance all of their domestic investment needs from their own domestic savings alone. Thus, they can achieve a high rate of growth of their tangible capital stocks without having to depend on the more fickle foreign capital inflows (including foreign portfolio investment, foreign direct investment, foreign loans or foreign aid).

The Savings Rate and Real GDP per Capita: East Asian Economies



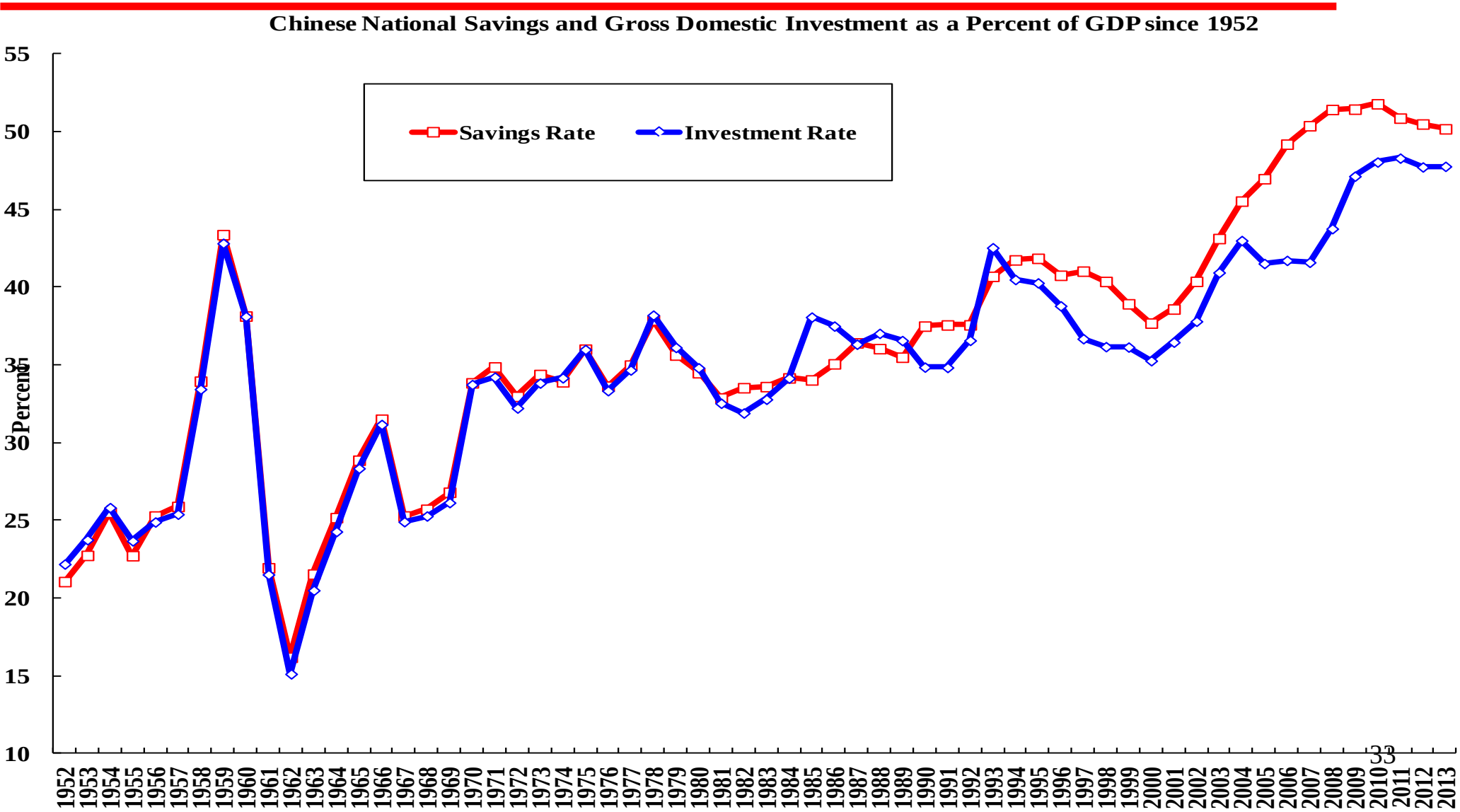
Saving Rates of Selected Economies, 1952-present



The Saving Rates of the Chinese and East Asian Economies

- Chinese economic growth since 1978 has been supported by a high domestic saving rate, on the order of 30% and above, except for a brief start-up period in the early 1950s, enabling a consistently high domestic investment rate. The Chinese saving rate has stayed around 40% since the early 1990s and has at times approached or even exceeded 50% in more recent years (see the following Chart).

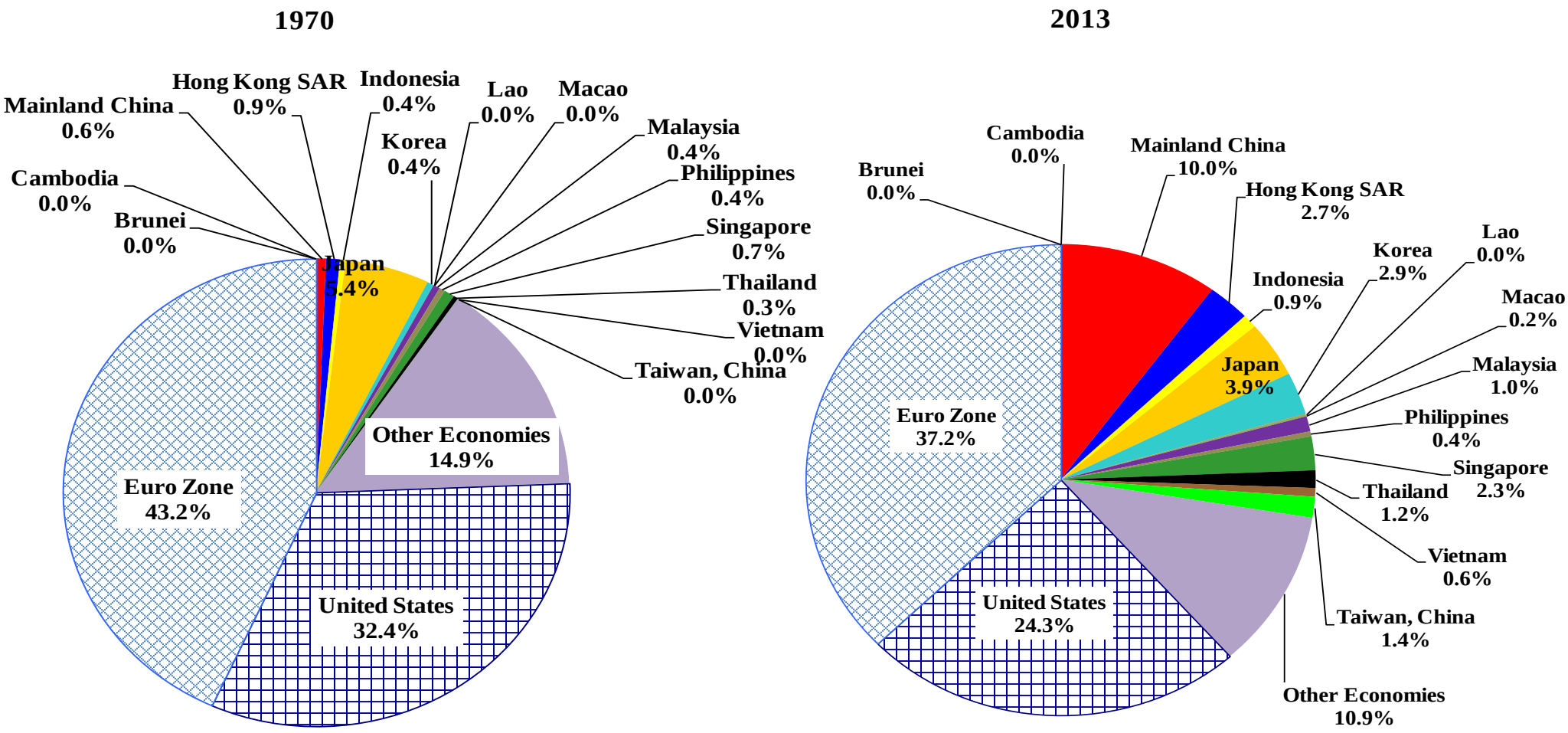
Chinese National Saving and Gross Domestic Investment as Percents of GDP



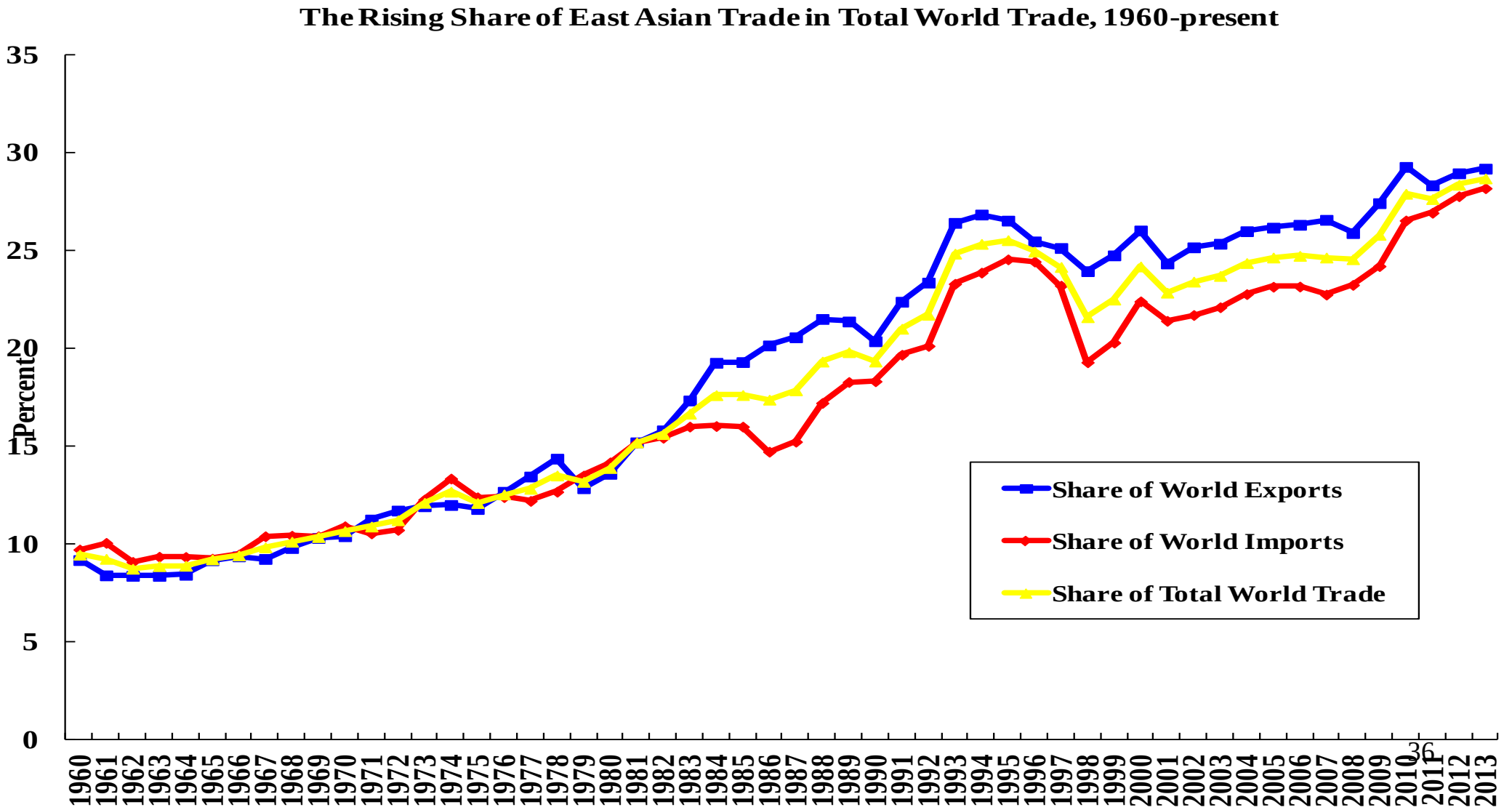
The Shifting Centre of Gravity of the Global Economy: International Trade

- In 1970, the United States and Western Europe together accounted for almost 60% of World trade in goods and services. By comparison, East Asia accounted for 9.5% of World trade.
- By 2013, the share of United States and Western Europe in World trade has declined to 41.4% whereas the share of East Asia has risen to almost 27.6%.
- The Chinese share of World trade rose from 0.63% in 1970 to 10.0% in 2013.
- Chinese international trade also accounted for 40% of East Asian international trade in 2013. China runs a trade deficit with almost every other East Asian economy.

The Distribution of Total International Trade in Goods and Services, 1970 and 2013



The Rising Share of East Asian Trade in Total World Trade, 1960-present

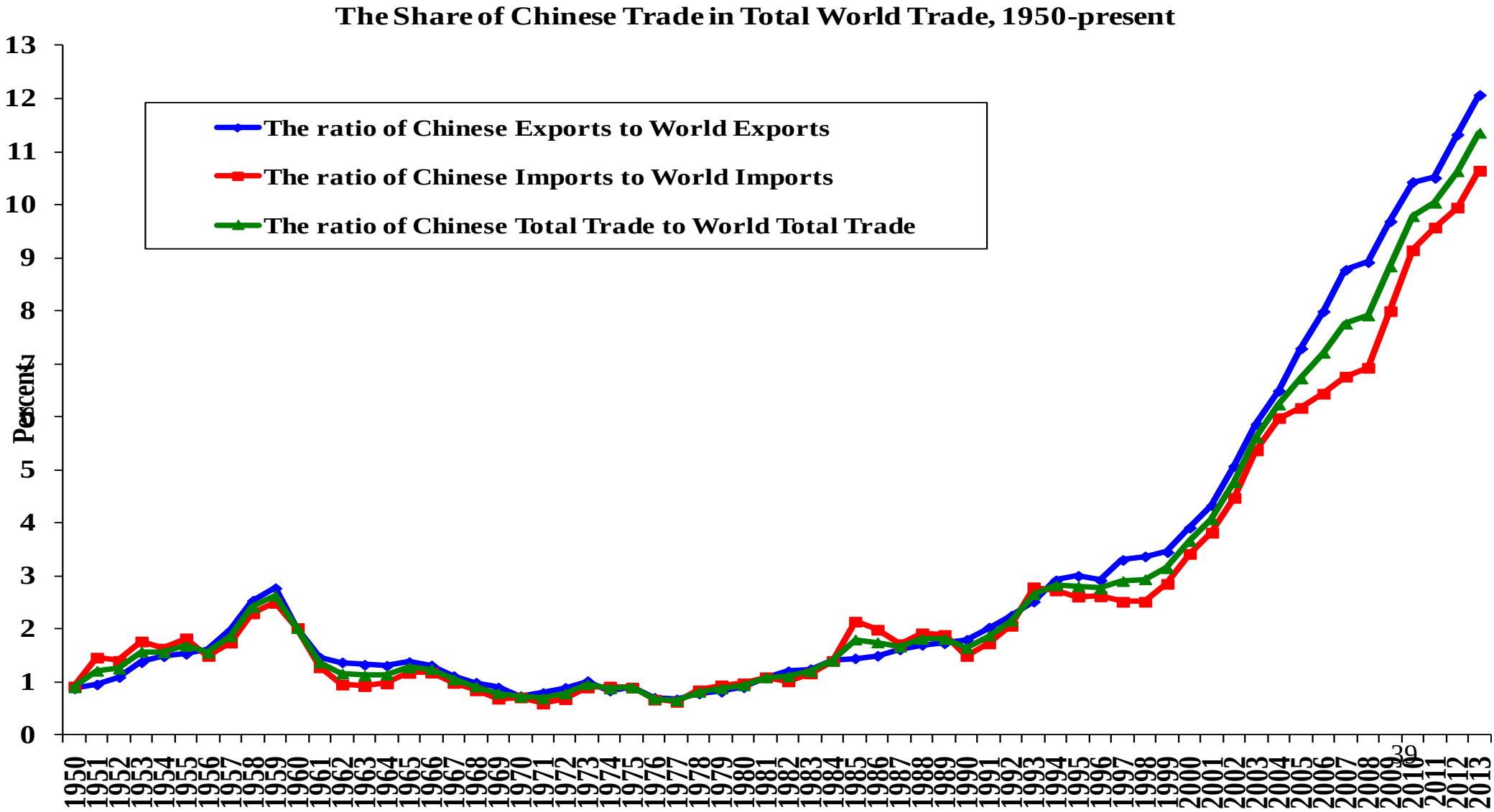


The Shifting Centre of Gravity of the Global Economy: International Trade

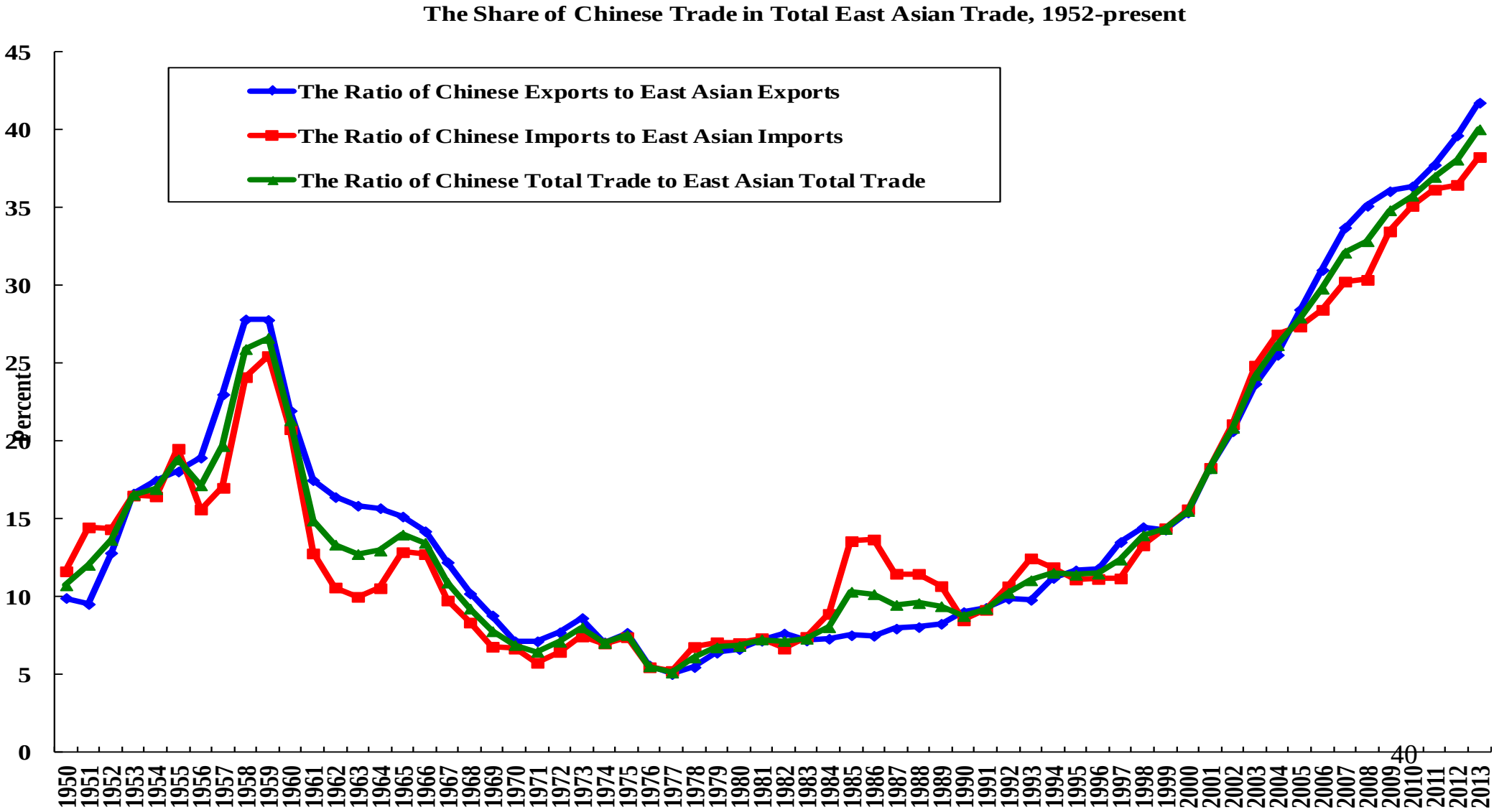
- Chinese international trade has grown very rapidly, especially after China acceded to the World Trade Organisation (WTO) in 2001. It has become the second largest trading nation in the World in terms of the total value of international trade in goods and services (US$4.61 trillion in 2013), just after the U.S. (US$5.02 trillion).
- While China is the largest exporting nation in terms of goods and services (US$ 2.425 trillion in 2013), followed by the U.S. (US$2.271 trillion), the U.S. is the largest importing nation in terms of goods and services (US$2.75 trillion), followed by China (US$2.19 trillion). China is also the largest exporting nation in terms of goods alone, followed by the U.S. The U.S. is the largest exporting as well as importing nation in terms of services, followed by respectively the United Kingdom and Germany.

International Trade & Its Rate of Growth: A Comparison of China and the U.S. since 1970

The Chinese Share of Total World Trade, 1950-present



The Chinese Share of Total East Asian Trade in Goods, 1950-present



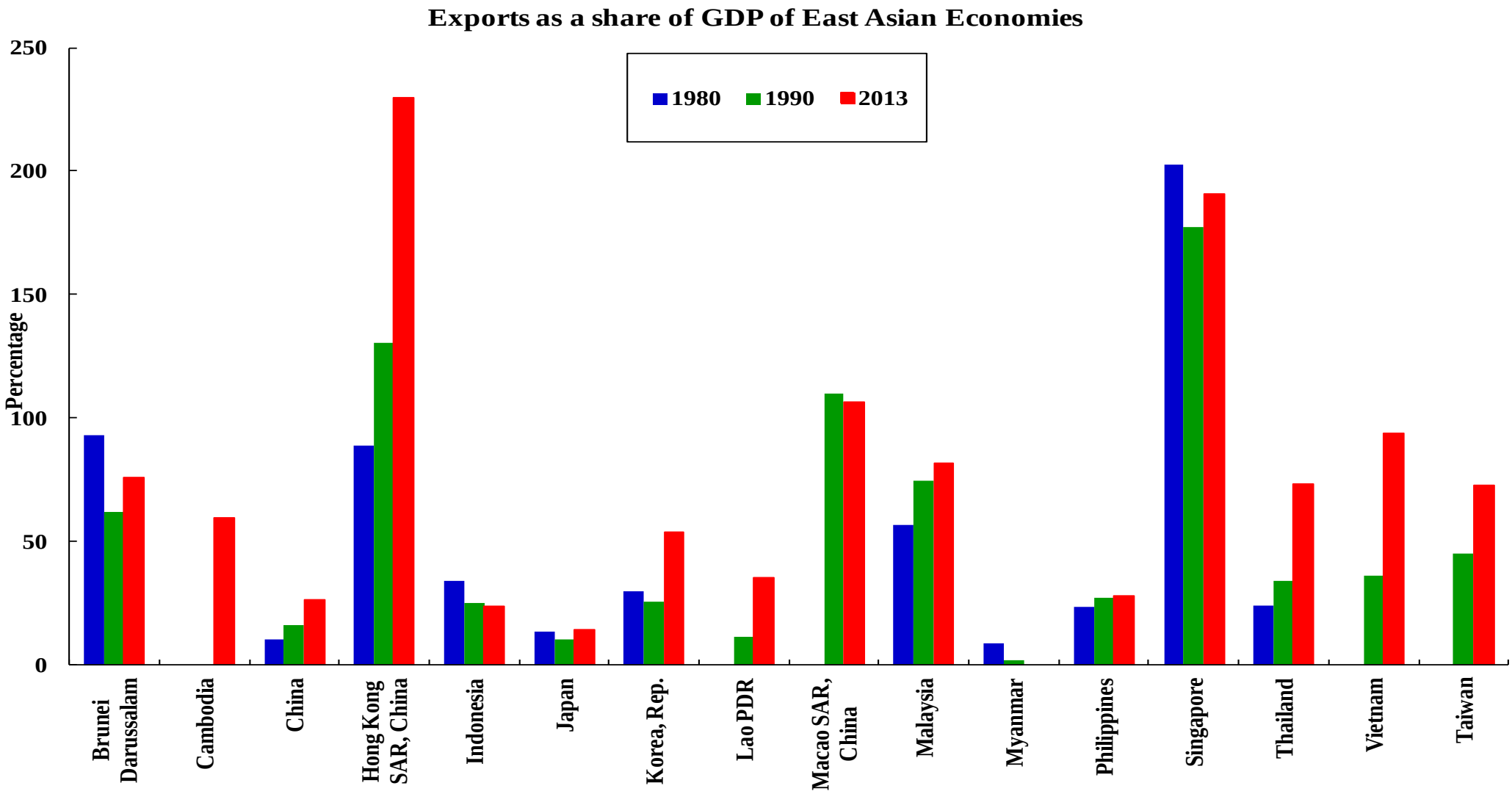
The Ranks of China as Trading Partner of Asia-Pacific Countries/Regions and Vice Versa, 2013

Country/Region	Chinese Rank as Trading Partner of Country/Region	Rank of Country/Region as Trading Partner of China
Australia	1	7
Brunei	3	104
Cambodia	1	78
Hong Kong	1	2
Indonesia	1	16
Japan	1	3
Korea	1	4
Laos	2	90
Macau	1	85
Malaysia	1	8
Myanmar	1	51
New Zealand	1	43
Philippines	2	27
Singapore	1	11
Taiwan	1	5
Thailand	1	13
United States	2	1
Vietnam	1	18

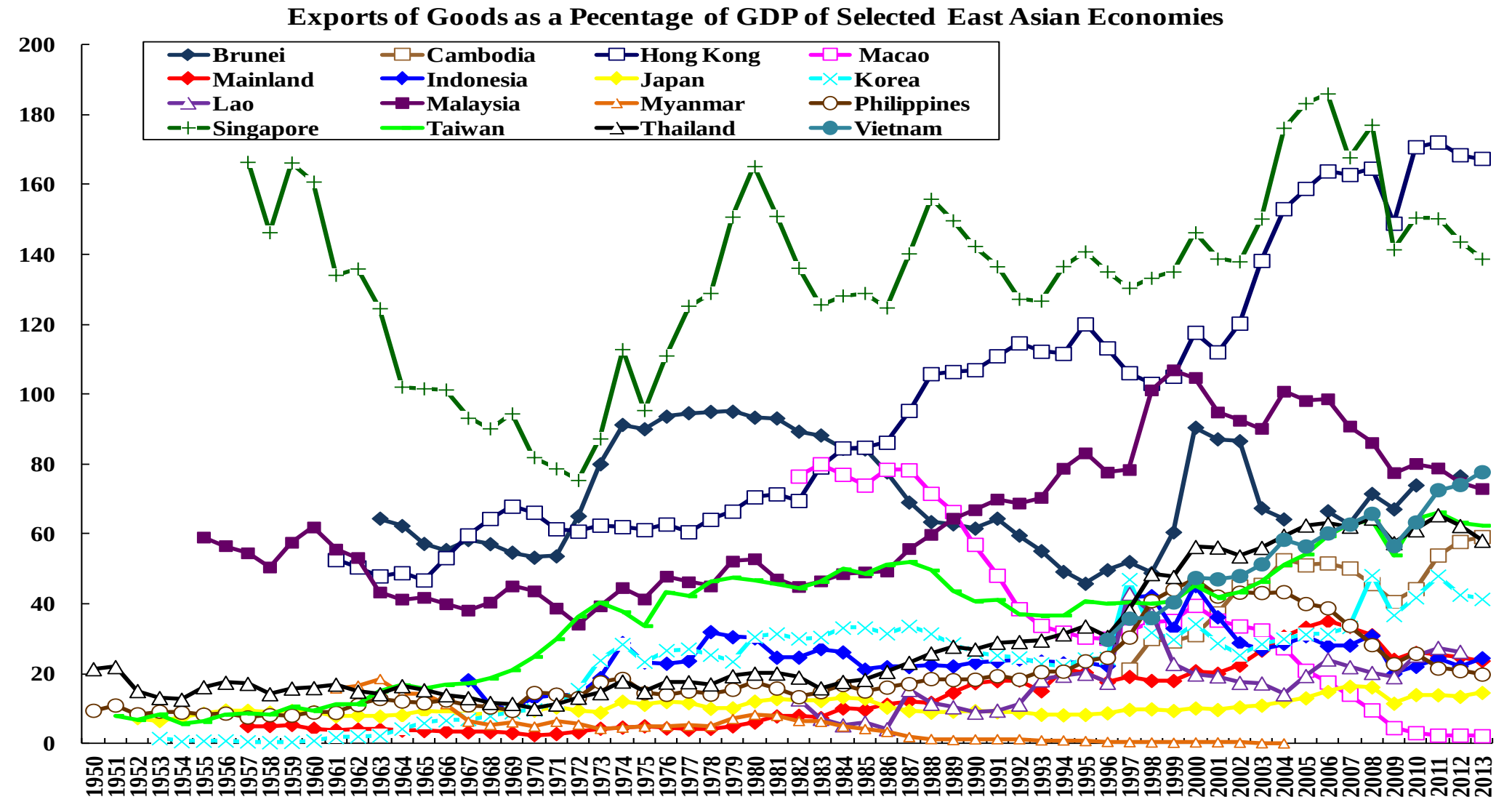
The Shifting Centre of Gravity of the Global Economy: International Trade

- Most of the East Asian economies are either export-oriented or were export-oriented as they began their processes of economic development.
- However, contrary to the public impression, the ratio of Chinese exports to GDP is actually relatively low compared to other East Asian economies (see the following Charts). This is really a reflection of the fact that China is a large continental economy, with relatively abundant natural resources and a huge domestic market. Most large economies, such as the U.S. and Japan, have relatively low exports to GDP ratios.

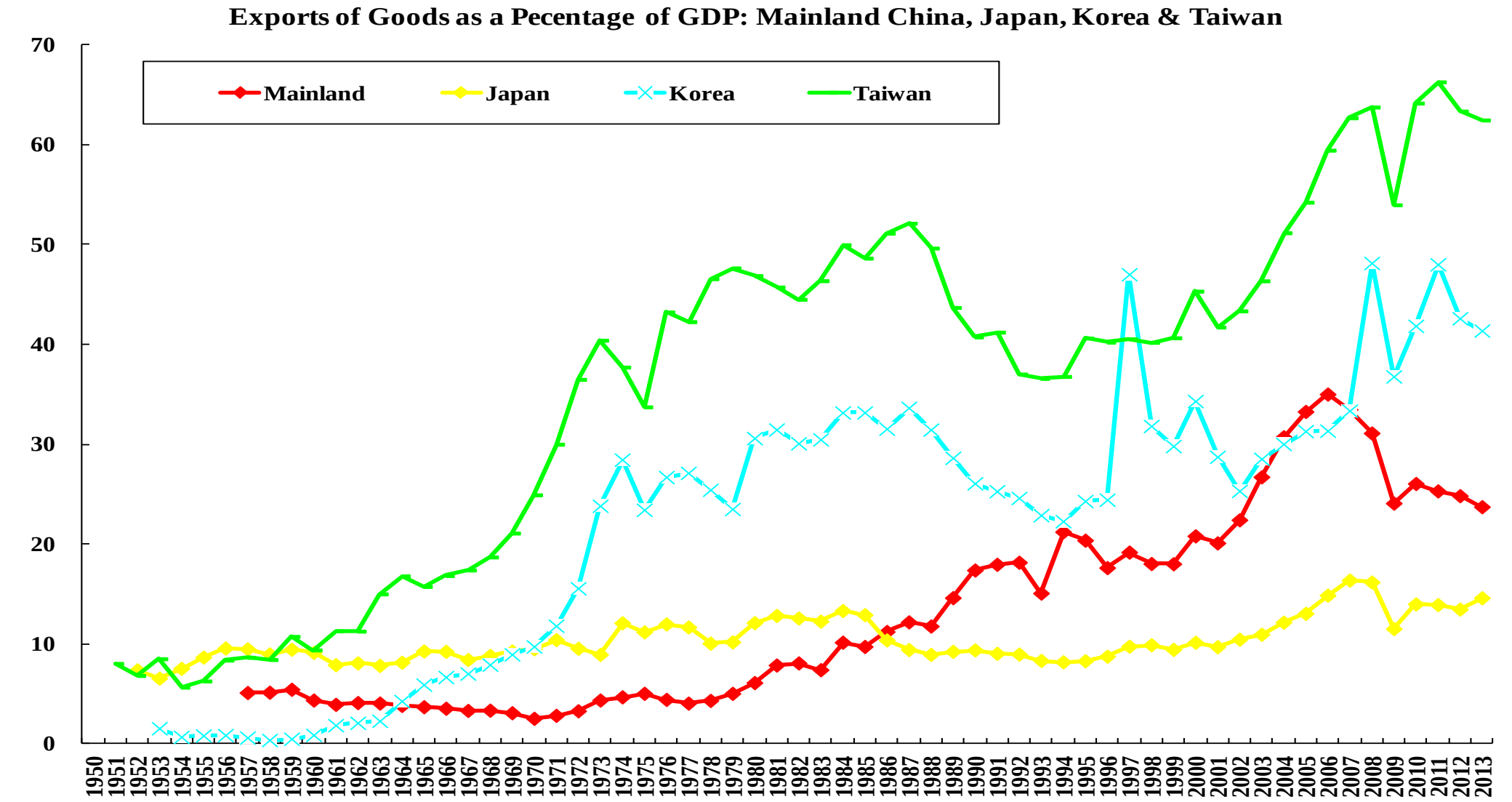
Exports of Goods and Services as a Share of GDP in East Asian Economies



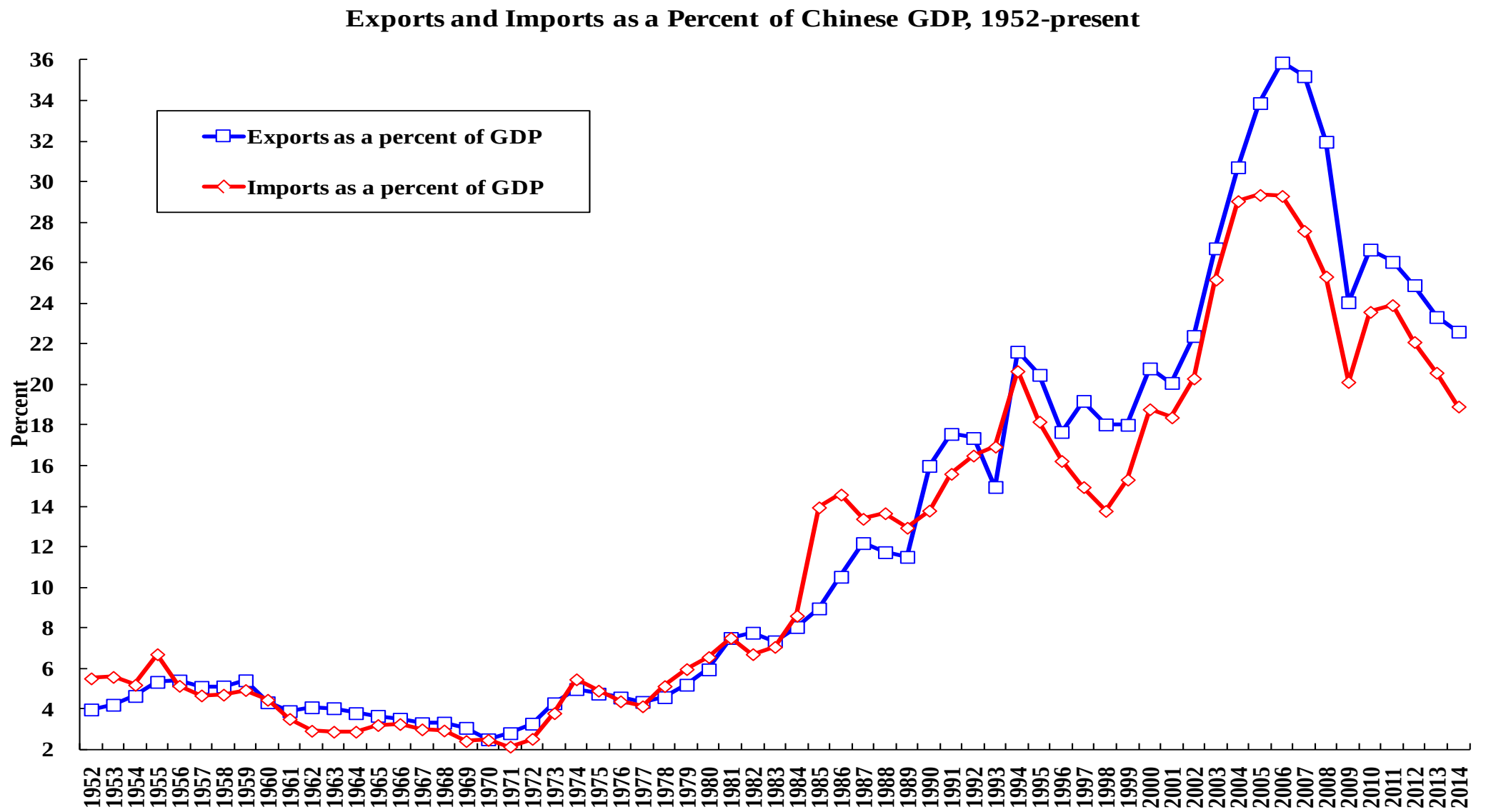
Exports of Goods as a Percent of GDP: East Asian Economies



Exports of Goods as a Percent of GDP: Mainland China, Japan, Korea & Taiwan



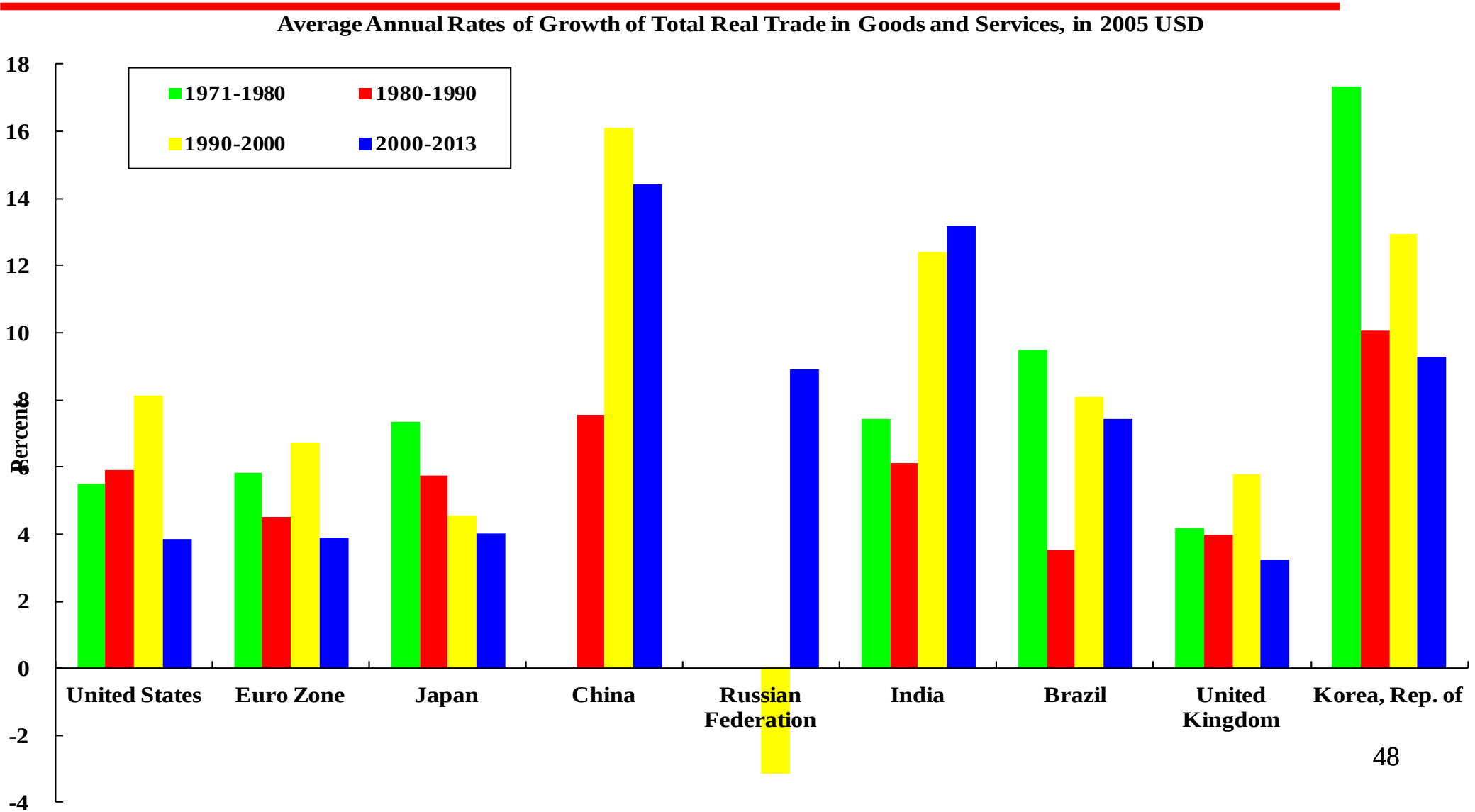
Exports and Imports as a Percent of Chinese GDP, 1952-present



The Shifting Economic Centre of Gravity: Growth in International Trade

- South Korea, and more recently, China, India, Brazil and Russia, have had the highest rates of growth in international trade.
- Growth in Chinese international trade has been particularly rapid during the decade of 2000-2010 because of its accession to the World Trade Organisation (WTO) and because of the expiration of the Multi-Fibre Agreement governing world trade in textiles.
- India, Russia and Brazil have also had exceptionally high rates of growth in their international trade during the decade of 2000-2010.
- However, all the developed economies—the U.S., Euro Zone, Japan, and the U.K.—had relatively low and declining rates of growth of international trade during the past decades.

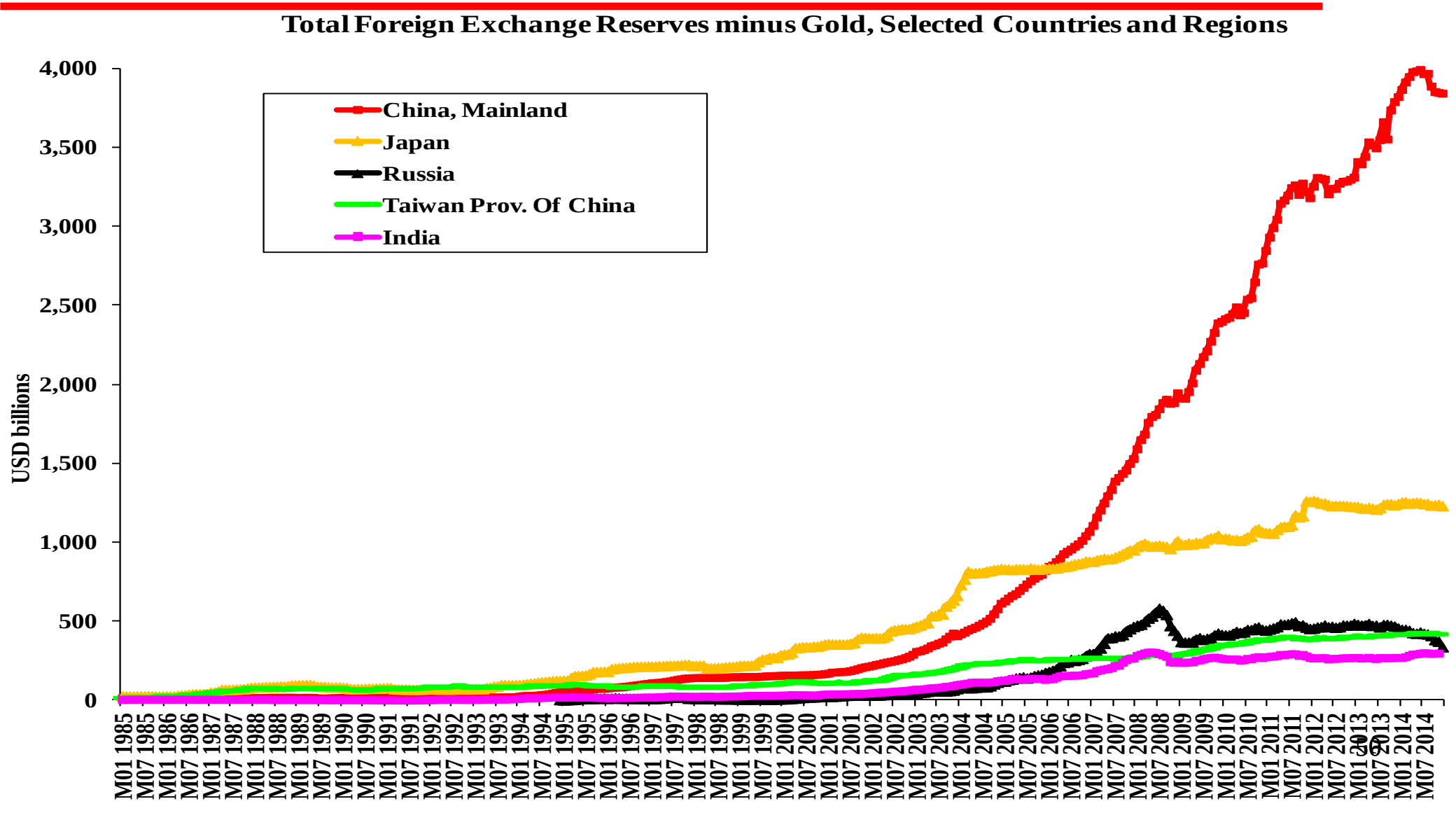
Average Annual Rate of Growth of Total International Trade in Goods and Services



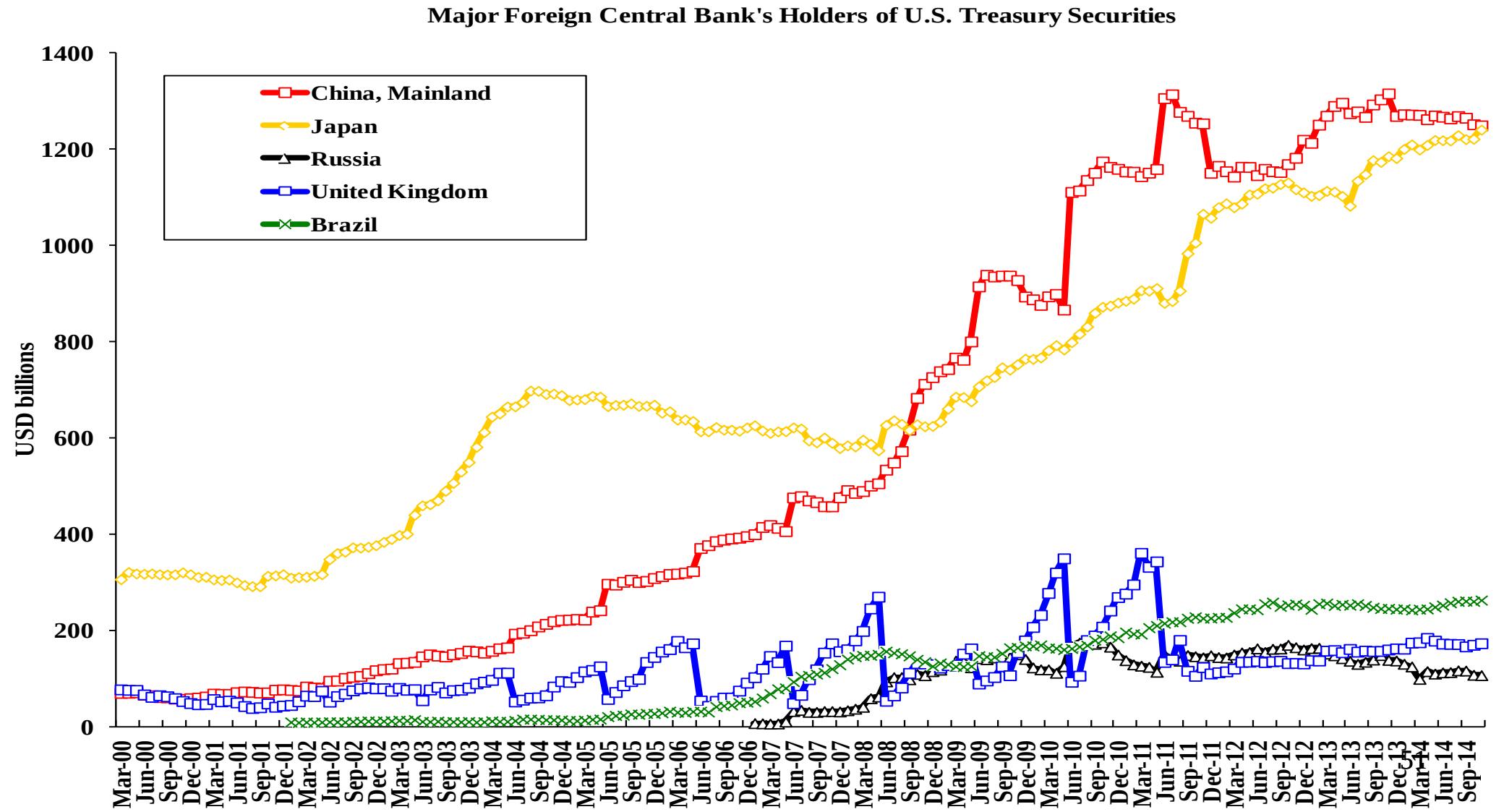
The Shifting Economic Centre of Gravity: Official Foreign Exchange Reserves

- The People's Bank of China and the Bank of Japan, respectively the central banks of China and Japan, now hold the largest and the second largest official foreign exchange reserves in the World. The central banks or monetary authorities of other East Asian economies such as Hong Kong, Singapore, South Korea and Taiwan, also hold significant amounts of official foreign exchange reserves of the order of hundreds of billions of U.S. Dollars.
- In addition, the People's Bank of China and the Bank of Japan are also the two largest holders of U.S. Treasury and agency securities in the World (see the following Charts).

Total Foreign Exchange Reserves minus Gold, Selected Countries and Regions



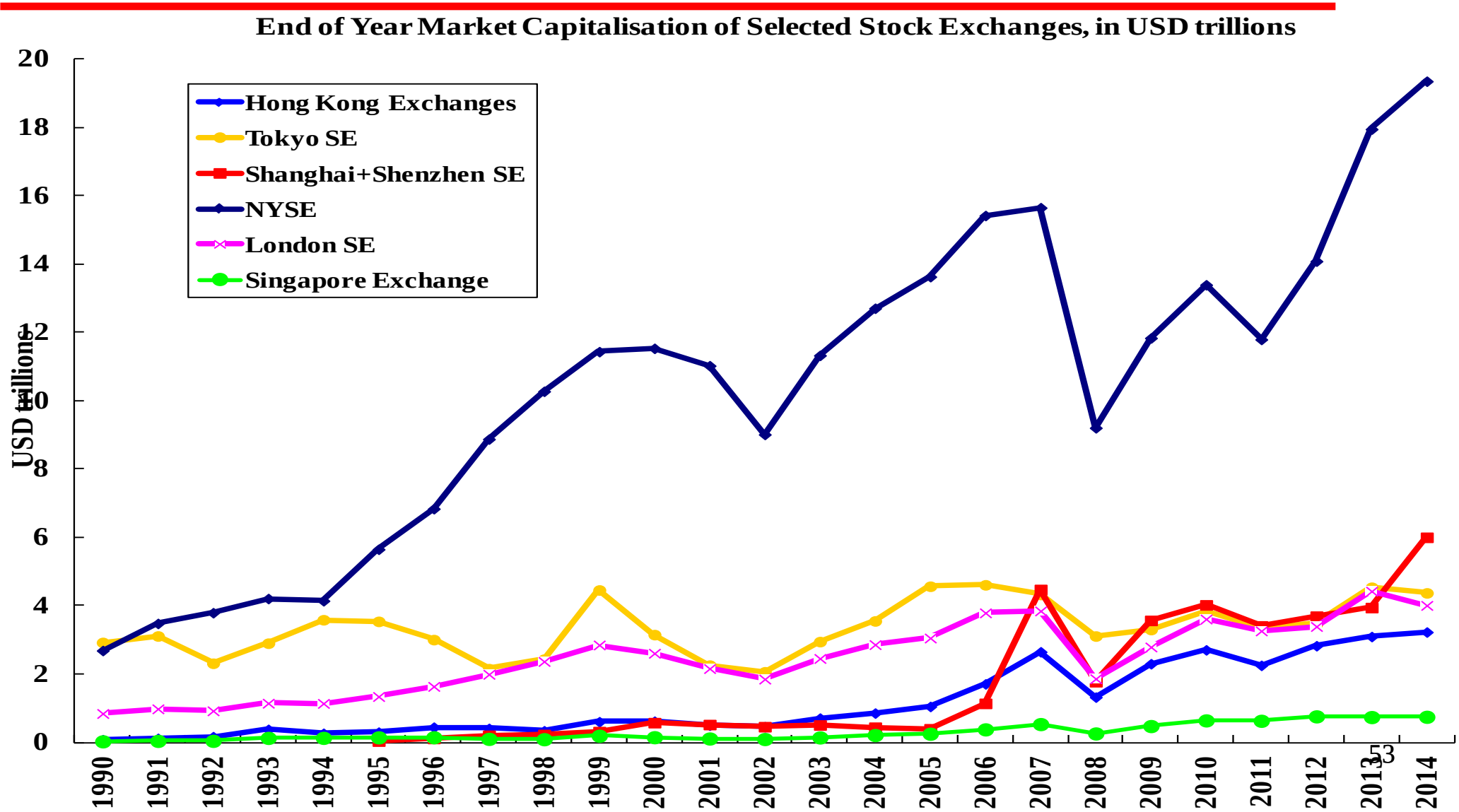
Major Foreign Central Banks' Holdings of U.S. Treasury Securities



The Shifting Centre of Gravity of the Global Economy: Capital Markets

- Over the years, the capital markets in East Asian economies have also grown rapidly. At year end 2014, the combined market capitalisation of all East Asian stock exchanges amounted to US$18.0 trillion, behind the market capitalisation of U. S. stock exchanges of US$26.3 trillion but ahead of the market capitalisation of all European stock exchanges combined of US$12.1 trillion.
- Again, this is a relatively recent phenomenon. For example, the Chinese stock exchanges at Shanghai and Shenzhen did not even get started until the mid-1990s.
- Relatively speaking, the Tokyo Stock Exchange has fallen way behind. In the early 1990s, it had a market capitalisation comparable to that of the New York Stock Exchange. At year end 2014, its market capitalisation was only approximately a quarter of that of New York Stock Exchange (see the following Chart).

End of Year Market Capitalisation of Selected Stock Exchanges



Market Capitalization of Stock Exchanges Year End 2012, 2013 and 2014 (US$ trillion)

	2012	2013	2014
U.S.A.	18.7	24.0	26.3
Europe	10.4	13.2	12.1
East Asia	14.2	15.8	18.0

- Exchanges:
  - U.S.A.: NASDAQ and NYSE
  - Europe: Athens Exchange, BME Spanish Exchanges, Budapest SE, Cyprus SE, Deutsche Borse, Irish SE, London SE group, Luxembourg SE, NYSE Euronext (Europe), Oslo Bors, SIX Swiss Exchange
  - East Asia: Bursa Malaysia, Hong Kong Exchanges, Indonesia SE, Korea Exchange, Philippine SE, Shanghai SE, Shenzhen SE, Singapore Exchange, Taiwan SE, Thailand SE, Tokyo SE Group
- Data source: World Federation of Exchanges

The Shifting Economic Centre of Gravity: The Partial De-Coupling Hypothesis

- The Chinese and East Asian economies have been steadily coming into their own and becoming less dependent on the developed economies, enabling a “partial de-coupling” of the East Asian economies from the developed economies of the West.
- The fact that the Chinese and East Asian economies have been able to continue to grow since 2008, albeit at somewhat lower rates, even as the U.S. and European economies were in recession, lends credence as well as empirical support to the “Partial De-Coupling Hypothesis”.

The Shifting Economic Centre of Gravity: The Partial De-Coupling Hypothesis

- Throughout the 2007-2009 global financial crises, as well as the subsequent European sovereign debt crisis, the East Asian economies and the economies of the BRICS countries (Brazil, Russia, India, China and South Africa) continued to do reasonably well. China, in particular, has been able to maintain its real rate of growth above 7.5% since 2007.
- This partial de-coupling can occur because of the gradual shift of the centre of gravity of the global economy from the United States and Western Europe to Asia (including both East Asia and South Asia) over the past decades.

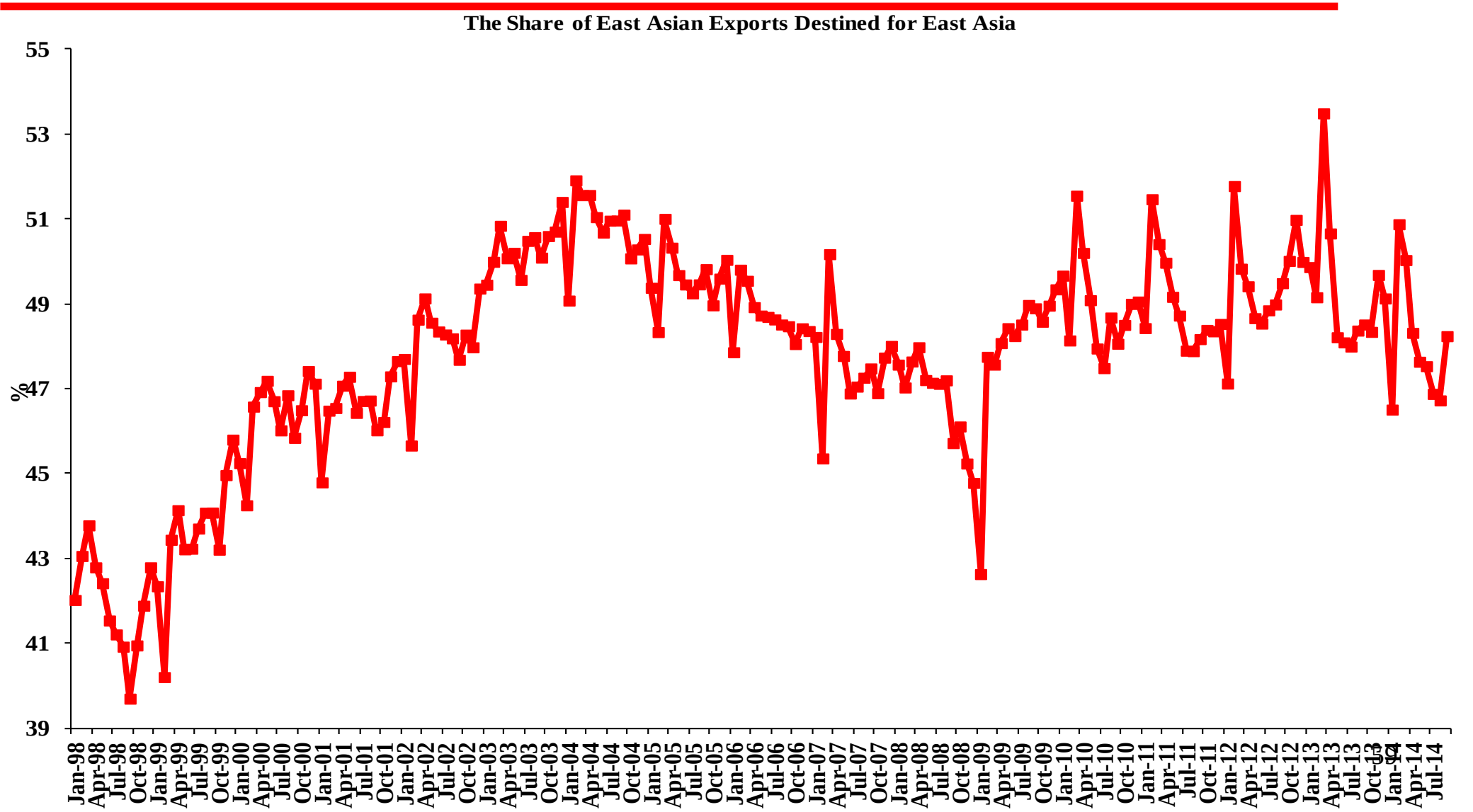
The Shifting Economic Centre of Gravity: The Partial De-Coupling Hypothesis

- A particularly interesting development is the growth of intra-East Asian international trade. The share of East Asian exports destined for East Asia has risen to over 50% in the past decade. This is a sea-change compared to 30 years ago when most of the East Asian exports was destined for either the United States or Western Europe.
- Similarly, the share of East Asian imports originated from East Asia has remained around 45%.
- China has become the most important trading partner of almost all countries/regions in East Asia.

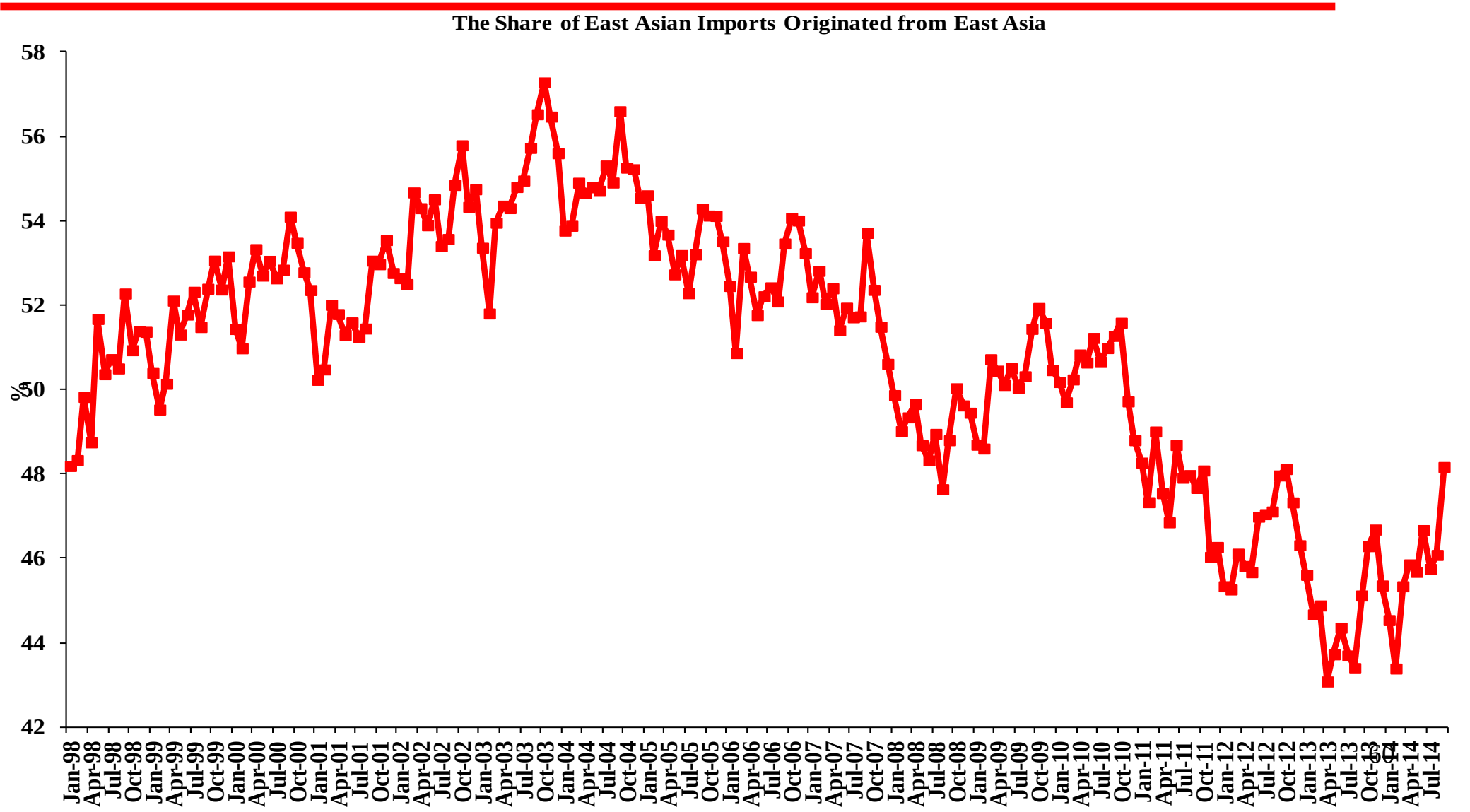
The Ranks of China as Trading Partner of Asia-Pacific Countries/Regions and Vice Versa, 2013

Country/Region	Chinese Rank as Trading Partner of Country/Region	Rank of Country/Region as Trading Partner of China
Australia	1	7
Brunei	3	104
Cambodia	1	78
Hong Kong	1	2
Indonesia	1	16
Japan	1	3
Korea	1	4
Laos	2	90
Macau	1	85
Malaysia	1	8
Myanmar	1	51
New Zealand	1	43
Philippines	2	27
Singapore	1	11
Taiwan	1	5
Thailand	1	13
United States	2	1
Vietnam	1	18

The Share of East Asian Exports Destined for East Asia



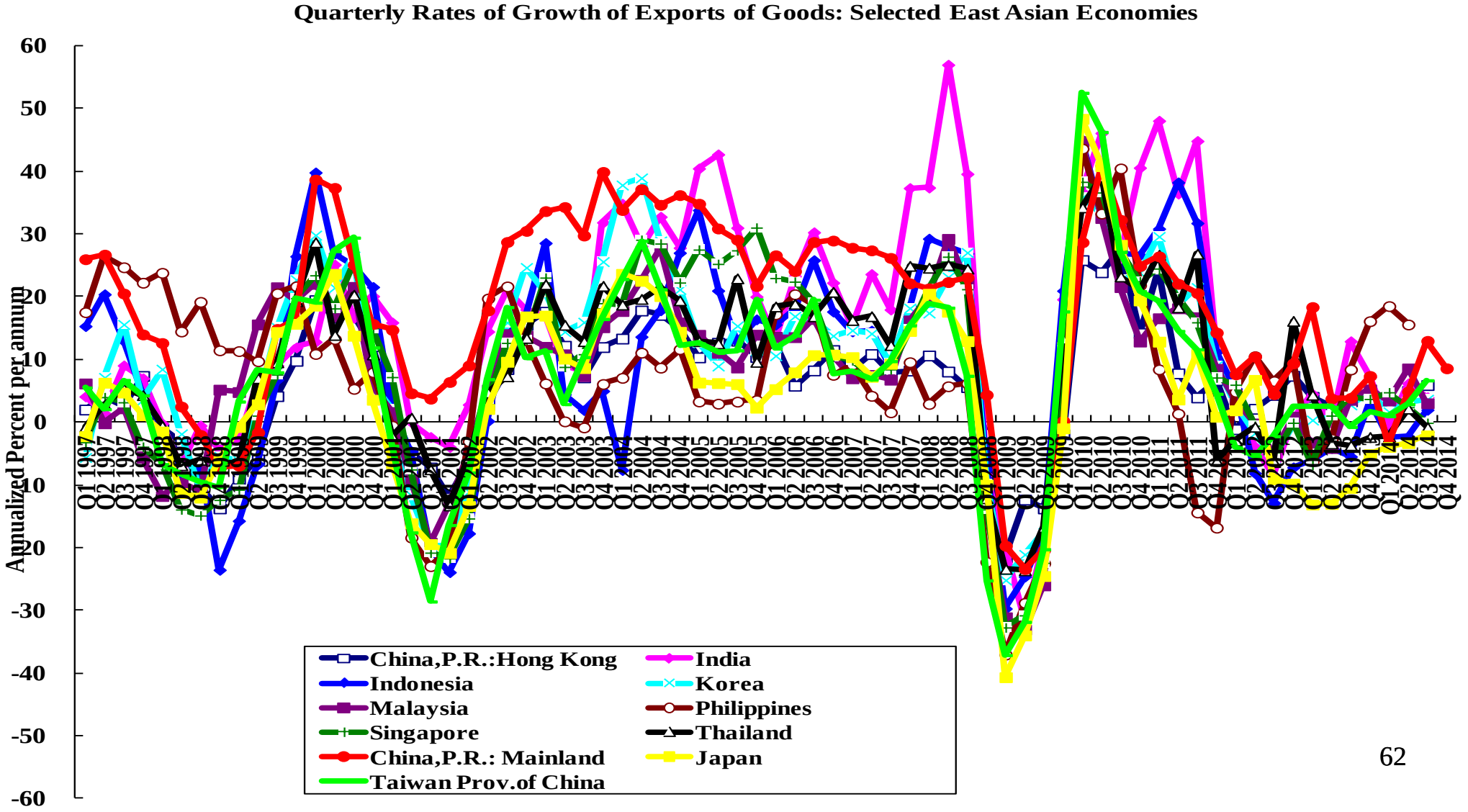
The Share of East Asian Imports Originated from East Asia



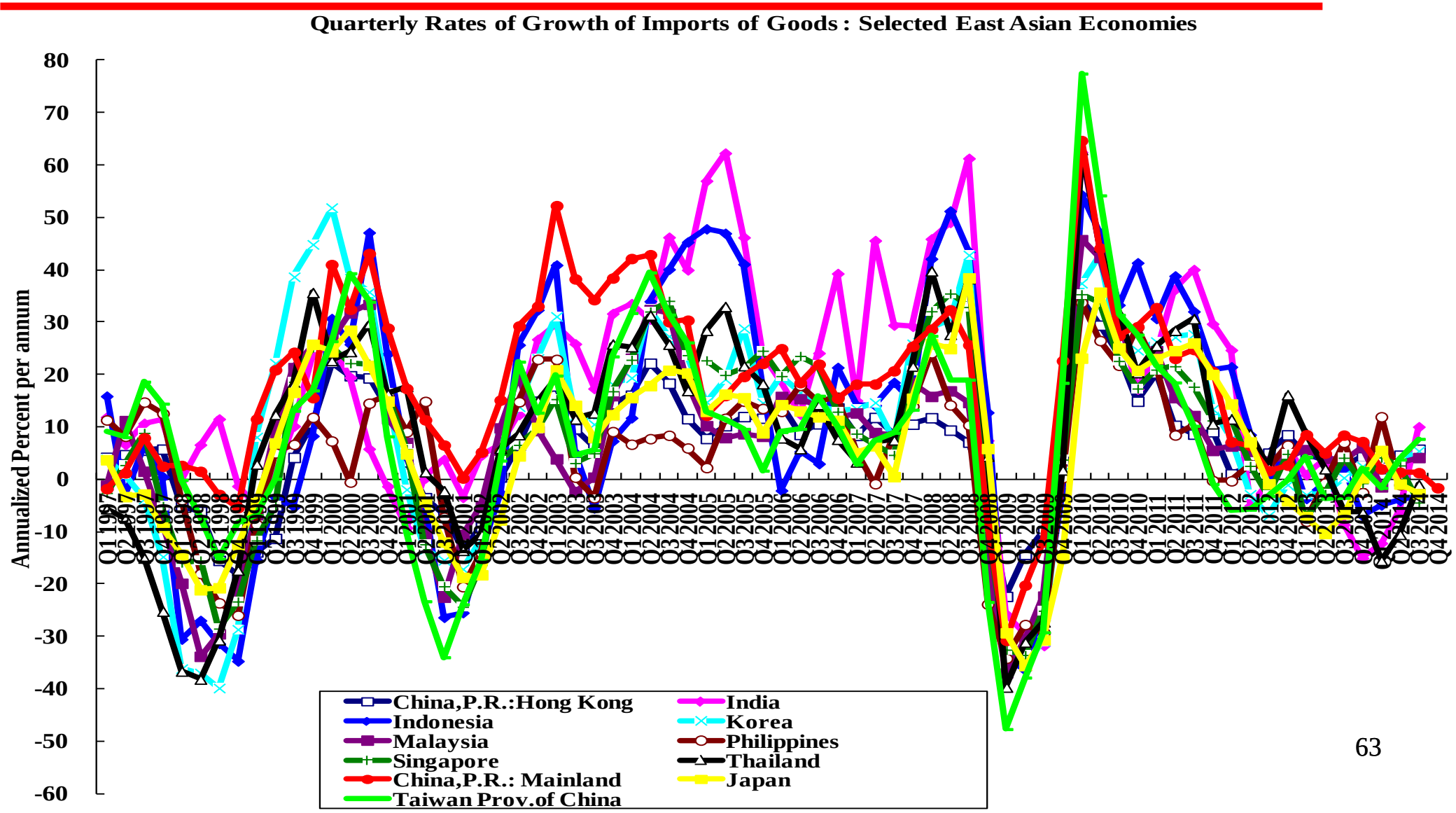
The Shifting Economic Centre of Gravity: The Partial De-Coupling Hypothesis

- Any doubt that the Chinese economy can be partially de-coupled from the World economy should be dispelled by an examination of the following three Charts on the rates of growth of exports, imports and real GDP of East Asian economies. Even though the rates of growth of Chinese exports and imports fluctuate like those of all the other East Asian economies, the rate of growth of real GDP of the Chinese economy has been relatively stable compared to those of the other East Asian economies.

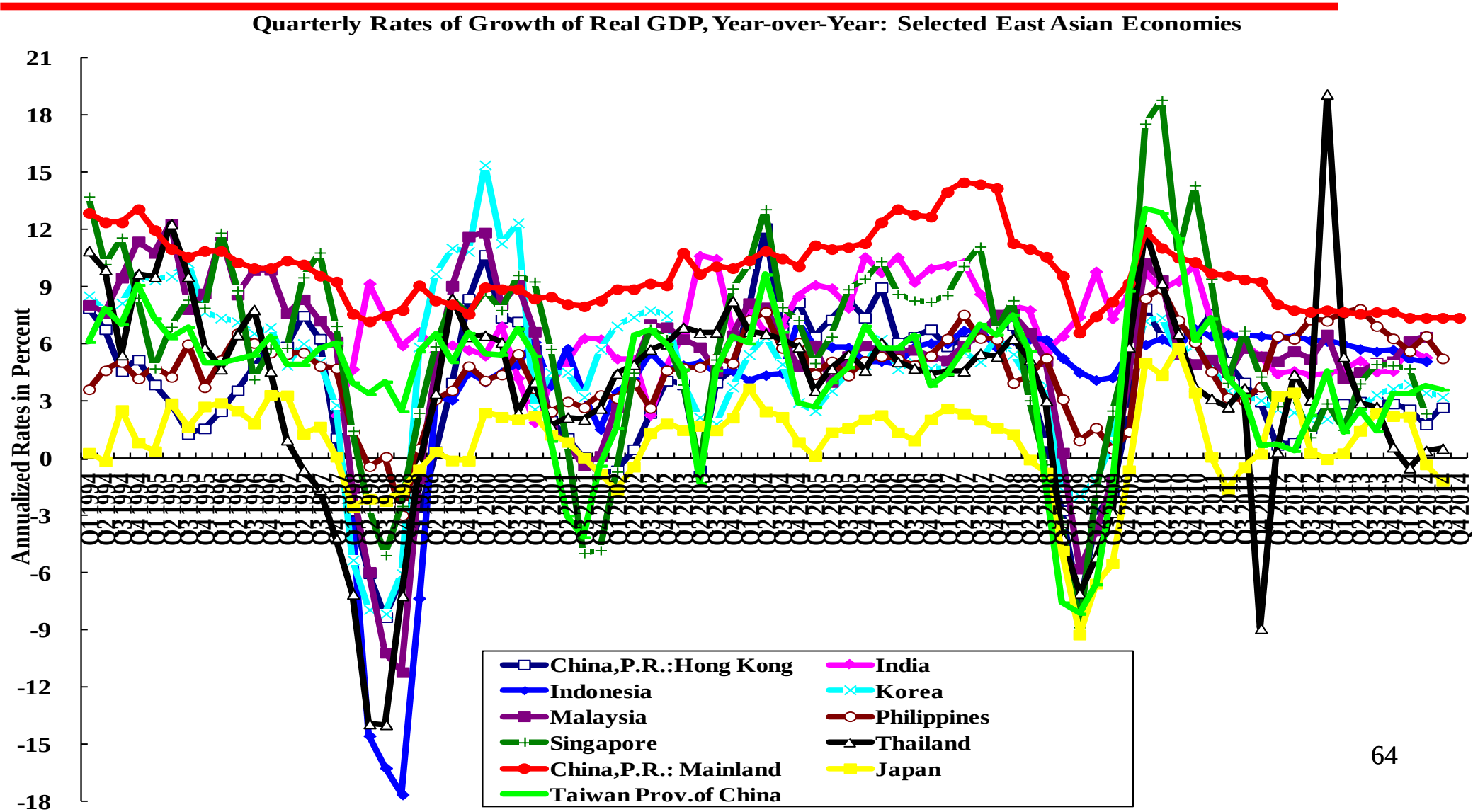
Quarterly Rates of Growth of Exports of Goods: Selected Asian Economies



Quarterly Rates of Growth of Imports of Goods: Selected Asian Economies



Quarterly Rates of Growth of Real GDP, Y-o-Y: Selected Asian Economies



The Shifting Economic Centre of Gravity: The Partial De-Coupling Hypothesis

- From a macroeconomic point of view, partial de-coupling should be considered a positive development for the global economy. It allows the risks of the global economy to be diversified—so that the entire global economy will not all go into economic recession at the same time.
- At a time of rising economic globalisation, it is important to assure that not everything is perfectly correlated or transmitted. Some "quarantine" or separation is desirable and essential from the point of view of risk diversification.
- For example, the "globally systematically important financial institutions (GSIFIs)" should be discouraged from engaging in too much business with one another so that if and when one of them fails it will not bring down all the others.

The Rise of the Internet-Based Economy

- The rise of the internet-based economy has vastly increased the extent of global division of labour by enabling and facilitating real-time, faithful information transmission and communication at a relatively low cost. It has made possible the "fragmentation" of production, that is, the division and sub-division of a manufacturing process for a single final product among different and geographically dispersed contractors and sub-contractors, allowing the use of the best and lowest cost alternatives. This accounts for the rapid growth of cross-border supply chains and the significant rise in the level of economic globalisation as well as economic interdependence.
- The rise of the internet-based economy has also enabled many real transactions to be initiated and consummated through the cyber-space, transactions that otherwise might not have taken place.

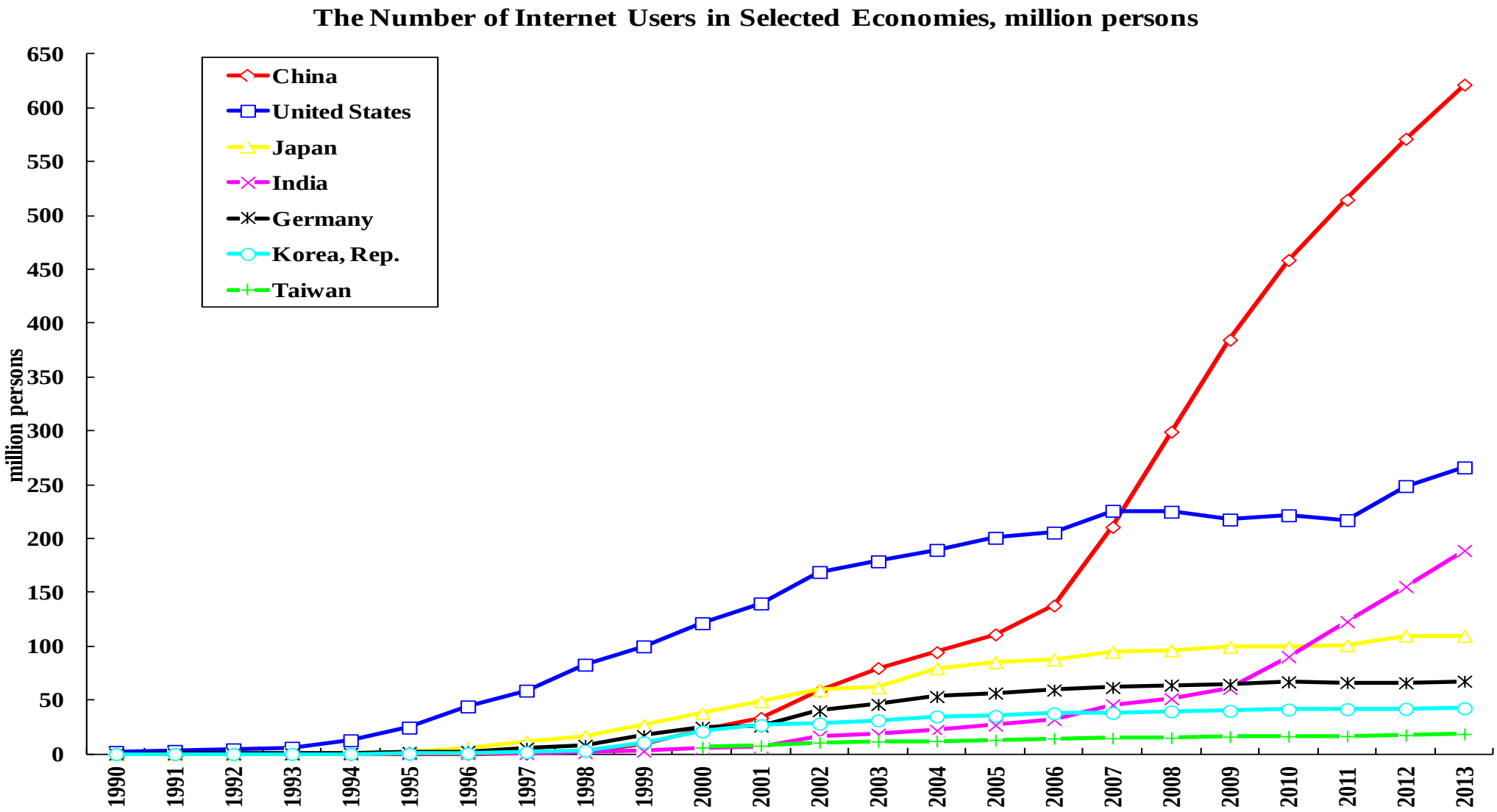
The Rise of the Internet-Based Economy

- The rise of the internet-based economy has also made possible the cross-border supply of services, for example, the export of software services to the rest of the World by Indian software firms. Educational and medical services can also be delivered at long distance and across borders through the internet.
- However, as mentioned earlier, for an internet-based economy, any job that can be moved away to a lower-cost location either has been or will be moved away.
- The rise of the internet-based economy has also created demands for new skill requirements and spurred innovation. It has increased the rates of return to investment in intangible capital such as human capital and R&D capital, and in so doing has also increased the degree of income disparity.

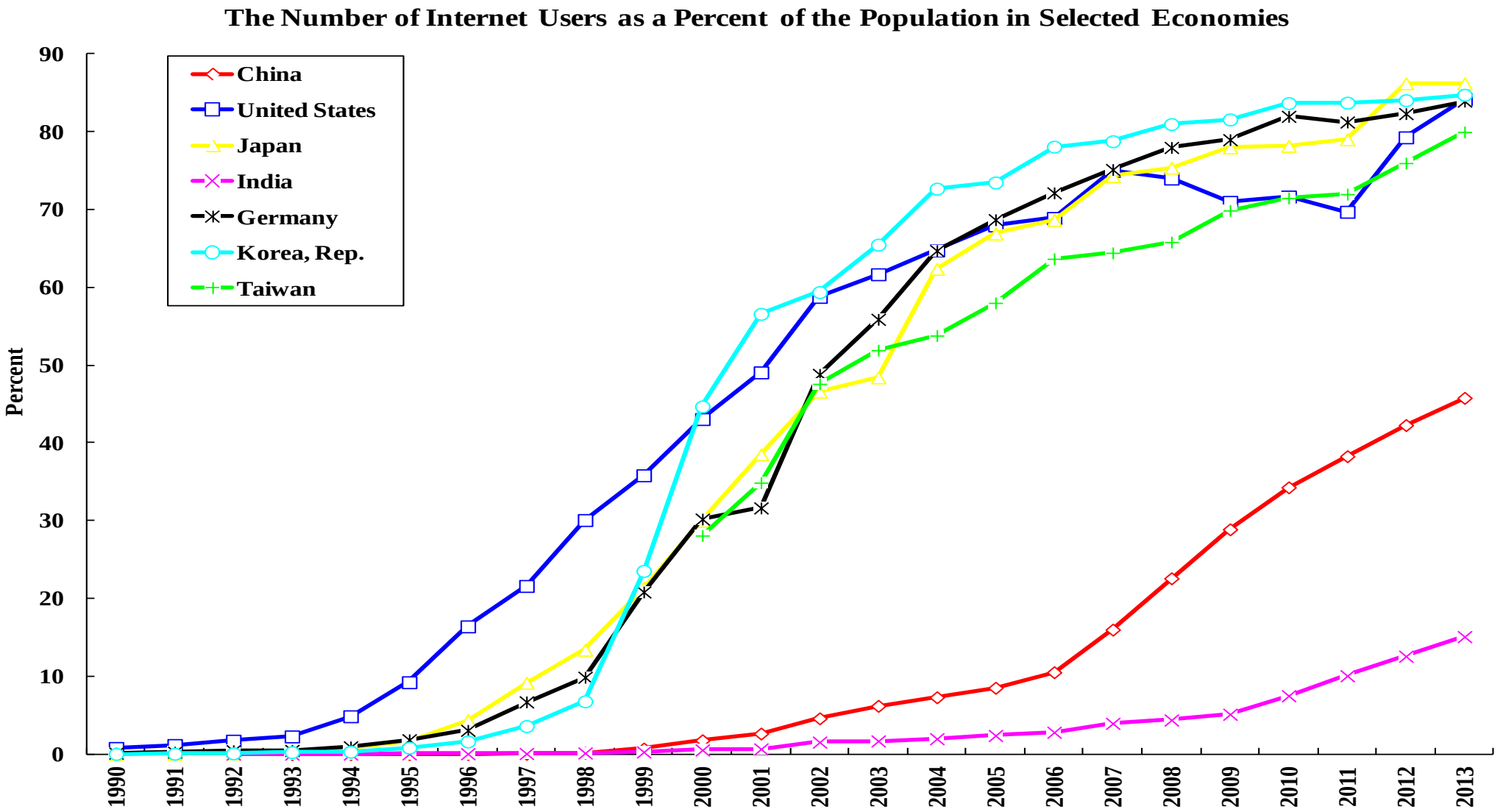
The Rise of the Internet-Based Economy

- The number of internet users has increased rapidly worldwide. This has also been facilitated by the introduction of smart phones and other devices such as the i-phone and tablets, and 4G (4th generation) telecommunication services.
- In the following Charts we present the growth of the number of internet users in selected economies over time, both in terms of absolute numbers and as percentages of the total population.
- China at the present time has the largest number of users, followed by the U.S. and India.
- However, in terms of the proportion of the population who are internet users, China at approximately 50% and India at approximately 20% still lag far behind the developed economies of the U.S. and Germany and of the newly industrialised economies of South Korea and Taiwan.

The Number of Internet Users in Selected Economies



The Number of Internet Users as a Percent of the Population in Selected Economies



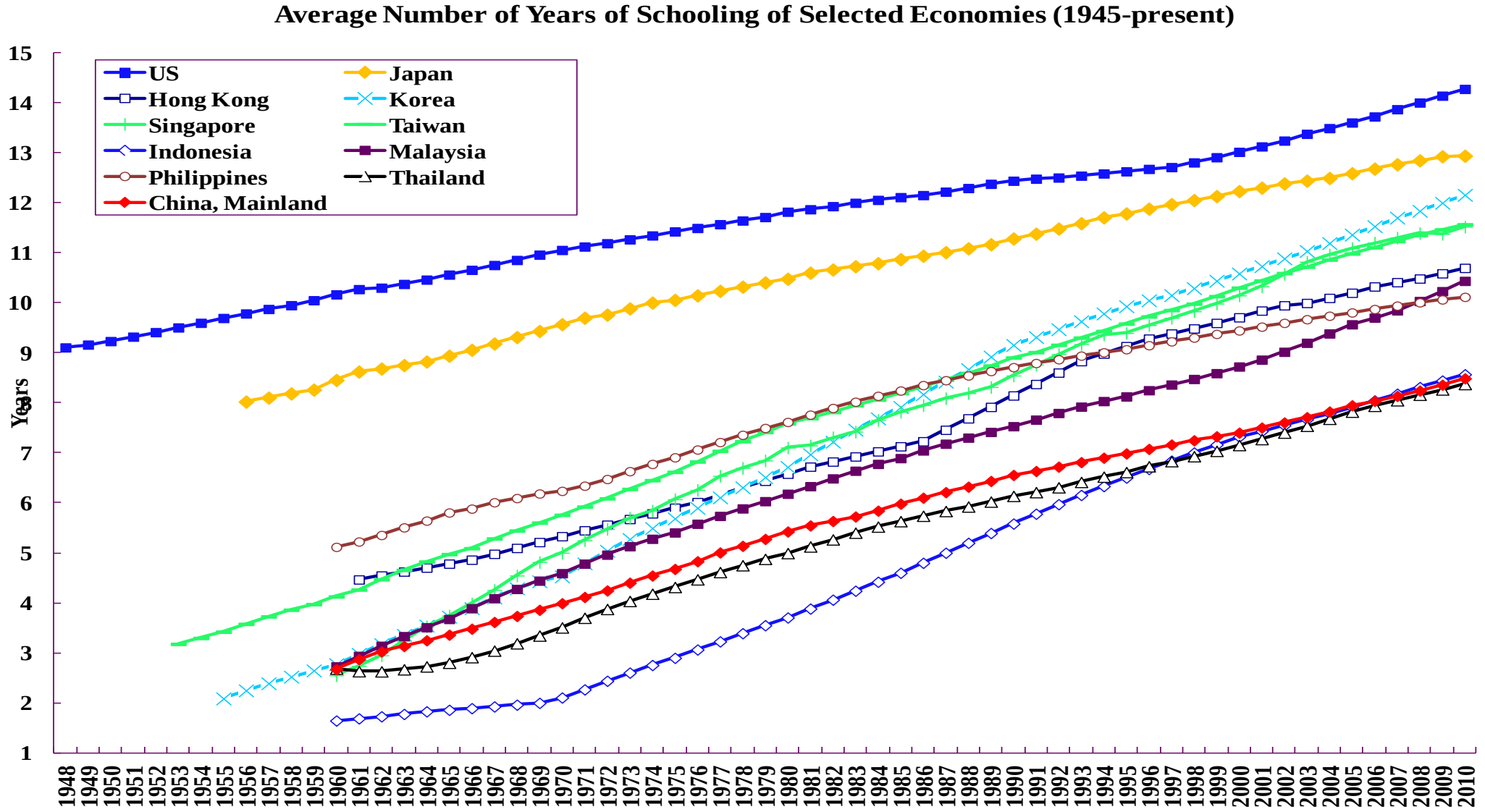
The Importance of Investment in Intangible Capital: Human Capital and R&D Capital

- The principal sources of economic growth of East Asian economies in the past have been the growth of their tangible inputs--tangible capital (structure and equipment) and labour.
- However, they will gradually evolve to the growth of intangible inputs such as human capital, R&D (research and development) capital, and reputational capital (branding and goodwill).
- Sustained investment in human capital and R&D capital is essential for the occurrence of innovation (technical progress or growth in total factor productivity) in an economy. They are also essential for taking full advantage of an internet-based economy.
- This is true of the experience of developed economies such as the U.S.

The Importance of Investment in Intangible Capital: Human Capital

- One indicator of the level of human capital in an economy is the average number of years of schooling per person in the working-age population. In the following Chart, the average number of years of schooling is compared across selected economies.
- By this measure, the United States and Japan are the clear global leaders. South Korea has been catching up fast. Most of the other East Asian economies also have quite rapidly increasing levels of human capital but it will take a while before they can catch up with the levels of human capital in the developed economies. China, Indonesia and Thailand have lagged behind in terms of investment in human capital.

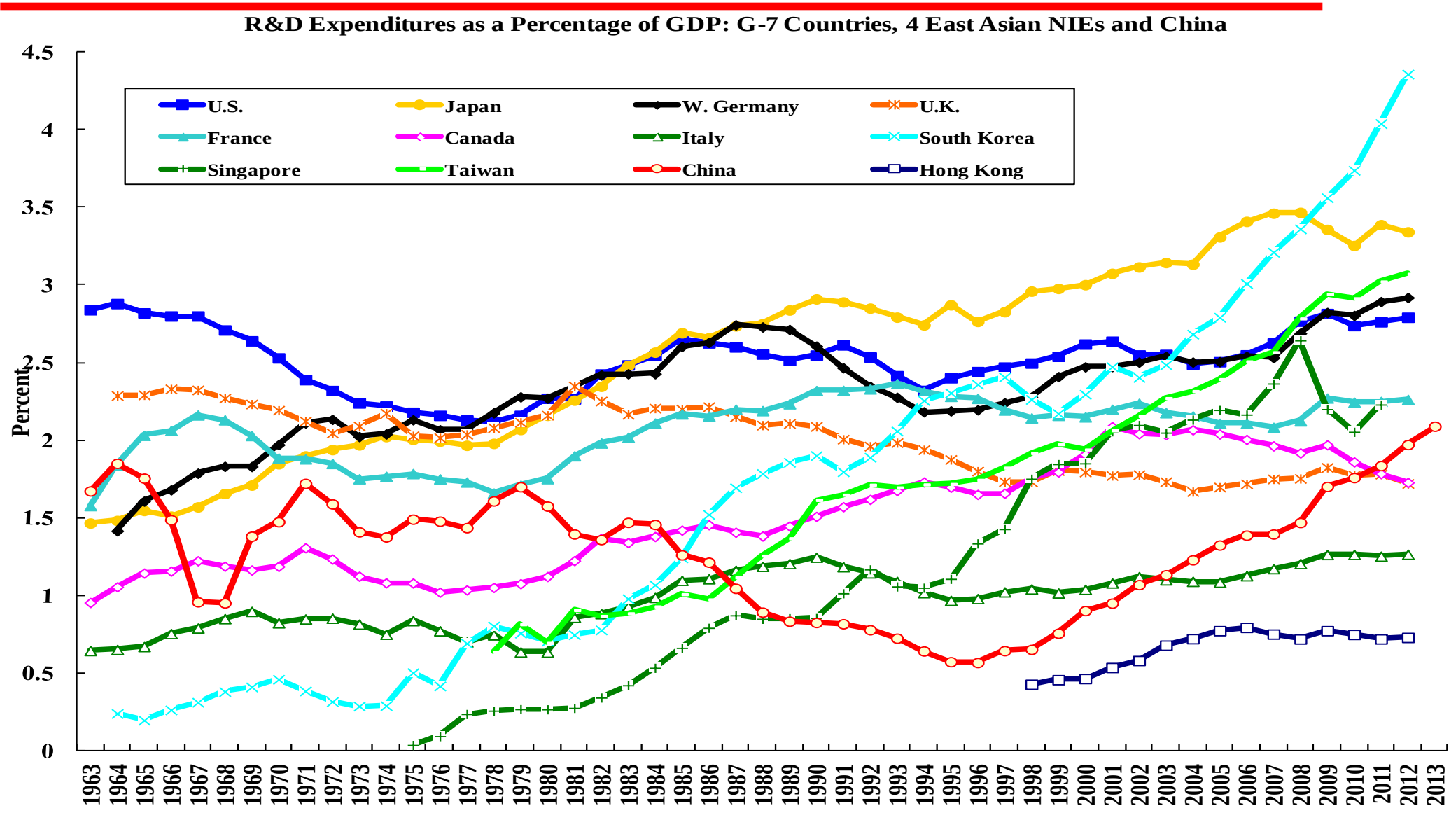
Average Number of Years of Schooling of Selected Economies (1945-present)



The Importance of Investment in Intangible Capital: R&D Capital

- Investment in R&D capital is also important for promoting innovation (technical progress or growth in total factor productivity).
- China has also begun to invest heavily in R&D in recent years—its R&D expenditure has been rising rapidly, both in absolute value, and as a percentage of GDP; but it still lags behind the developed economies as well as the newly industrialised economies of East Asia. (The Chinese R&D Expenditure/GDP ratio is targeted to reach 2.2% in 2015, still below the historical average of 2.5% for the U.S.)
- The Republic of Korea currently leads the World with the percentage of its GDP expended on R&D exceeding 4%.

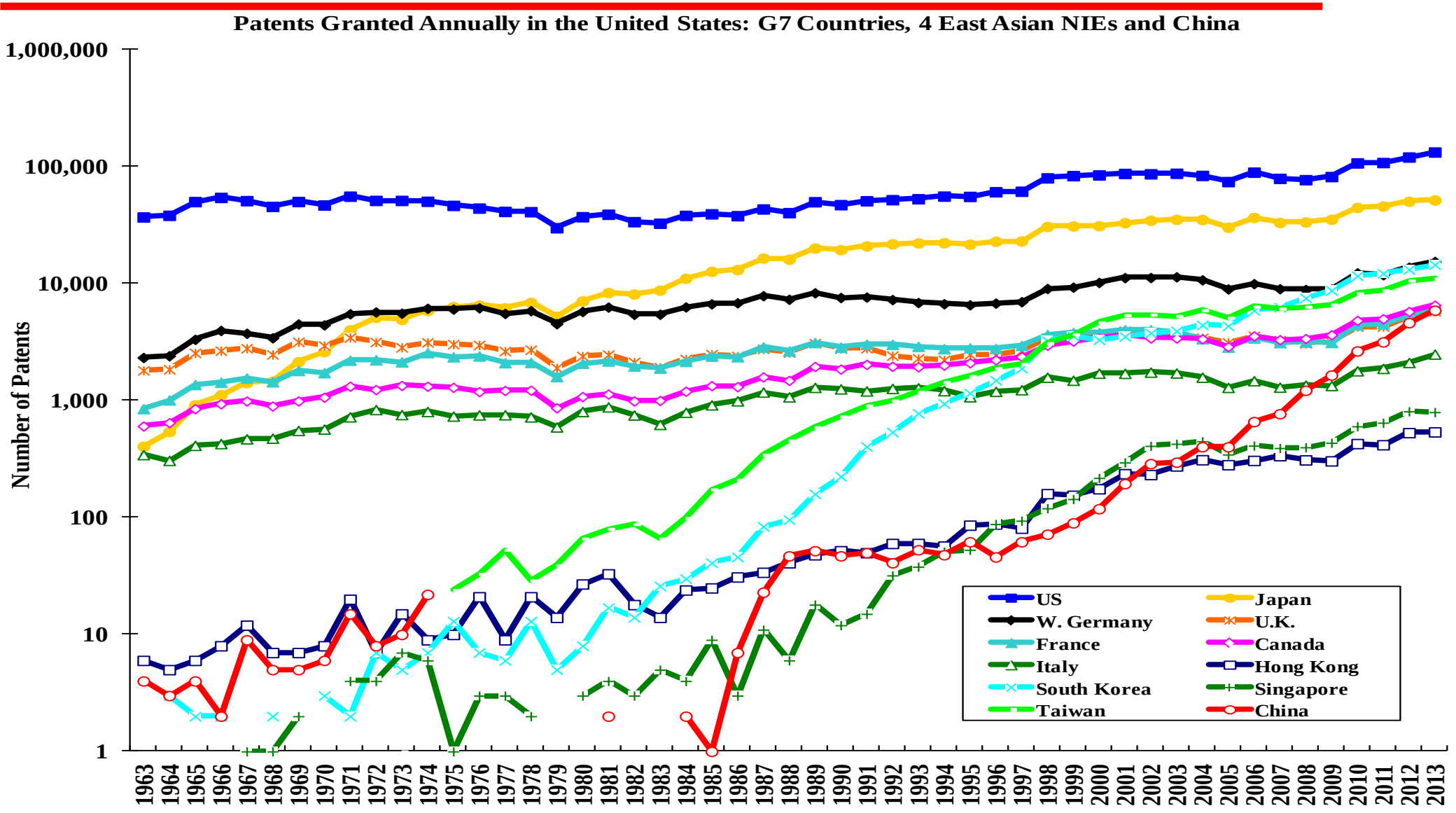
R&D Expenditures as a Ratio of GDP: G-7 Countries, 4 East Asian NIES & China



The Importance of Investment in Intangible Capital: R&D Capital

- One indicator of the potential for innovation (national innovative capacity) is the number of patents created each year. In the following Chart, the number of patents granted in the United States each year to the nationals of different countries, including the U.S. itself, over time is presented.
- The U.S. is the undisputed champion over the past forty years, with 133,593 patents granted in 2013, followed by Japan, with 51,919. (Since these are patents granted in the U.S., the U.S. may have a home advantage; however, for all the other countries and regions, the comparison across them should be fair.)

Patents Granted in the United States: G-7 Countries, 4 East Asian NIEs & China



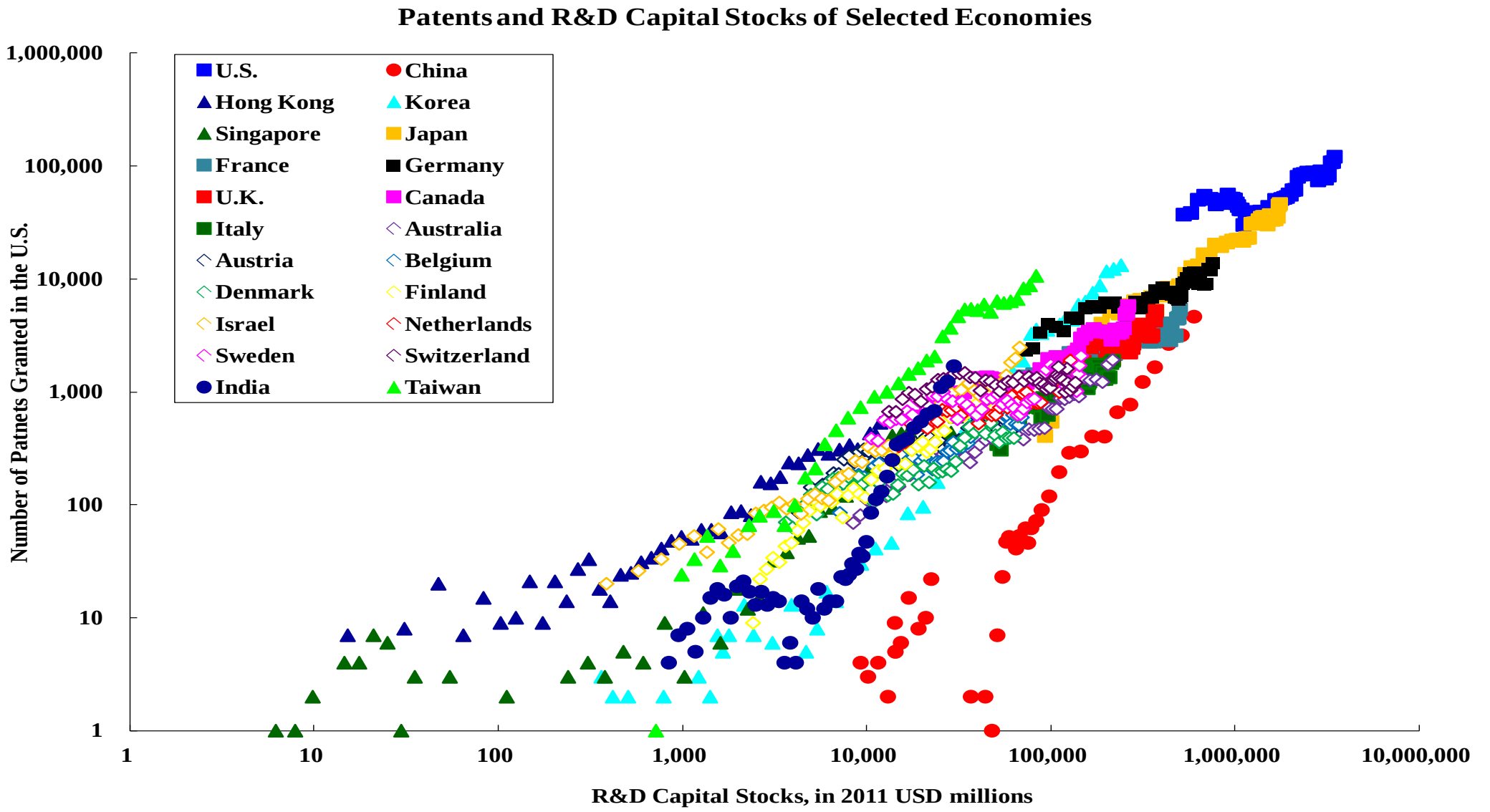
The Importance of Investment in Intangible Capital: R&D Capital

- The number of patents granted to Chinese applicants each year has increased from the single-digit levels prior to the mid-1980s to 5,928 in 2013.
- The economies of South Korea and Taiwan, granted 14,548 and 11,071 U.S. patents respectively in 2013, are still far ahead of Mainland China—they have been averaging more than 10,000 patents a year each.

The Importance of Investment in Intangible Capital: R&D Capital

- The stock of R&D capital, defined as the cumulative past real expenditure on R&D less depreciation of 10% per year, can be shown to have a direct causal relationship to the number of patents granted. (See the following Chart, in which the annual number of U.S. patents granted is plotted against the R&D capital stock of that year for each economy).
- The Chart shows clearly that the higher the stock of R&D capital of an economy, the higher is the number of patents granted to it by the U.S.
- Since China has had both a much lower R&D expenditure to GDP ratio and a much lower GDP than the United States and other developed economies in the past, it will take more than a couple of decades before the Chinese R&D capital stock can catch up to the level of U.S. R&D capital stock (and hence to the number of U.S. patents granted each year).

Patents Granted in the United States and R&D Capital Stocks, Selected Economies



The Global Financial Crises Since 2007 & the Aftermath

- The sub-prime mortgage loan crisis in the United States in 2007, the collapse of Lehman Brothers in the U. S. in September 2008, and the European sovereign debt crisis since late 2009, were caused in whole or in part and exacerbated by financial "over-engineering". These crises have also proven to be drags on the growth of the global economy.
- The global economy is still suffering from the negative effects of these global financial crises. While the Volcker Rule, designed to avoid a repetition of the financial crisis in the U.S., was embodied in the Dodd-Frank Wall Street Reform and Consumer Protection Act, the final regulations did not become effective until 1st April 2014 and financial institutions are not required to fully conform with the regulations until 21st July 2015. Moreover, Wall Street banks have been lobbying the U.S. Congress to weaken many of the provisions.
- It remains to be seen whether these regulations are effective in preventing the next crisis as they have been considerably watered down through intensive lobbying by Wall Street.

The Global Financial Crises Since 2007 & the Aftermath

- One cause of the financial over-engineering that occurred is the desire for market liquidity. Another is the desire for risk diversification. These provide the motivation for the invention of all sorts of financial derivatives. However, the importance of liquidity is really over-rated. And instruments designed for the reduction of risk, such as “credit default swaps”, turn out to increase the overall risk because of the moral hazard that they engender.
- In addition, the critical principle of risk diversification through maintaining independence (non-correlation) and separability is often overlooked. That was why when Lehman Brothers collapsed in September 2008, almost every financial institution was in trouble. When everyone shares the same risks, there is no risk diversification, and everyone will go down together.

The Global Financial Crises Since 2007 & the Aftermath: The Objectives of the QEs

- QE1 was launched essentially to restore liquidity to the financial system and to take the mortgage-backed securities off the balance sheets of the major U.S. financial institutions so as to prevent a complete financial meltdown.
- QE2 and QE3 were meant to stimulate the real economy by lowering the real rate of interest so that more domestic investment would be forthcoming.
- QE2 and QE3 also had the effect of enabling the U.S. Dollar to devalue significantly with respect to almost all of the major currencies in the World, with the possible exception of the Euro. This has helped to increase U.S. exports and decrease U.S. imports, other things being equal.

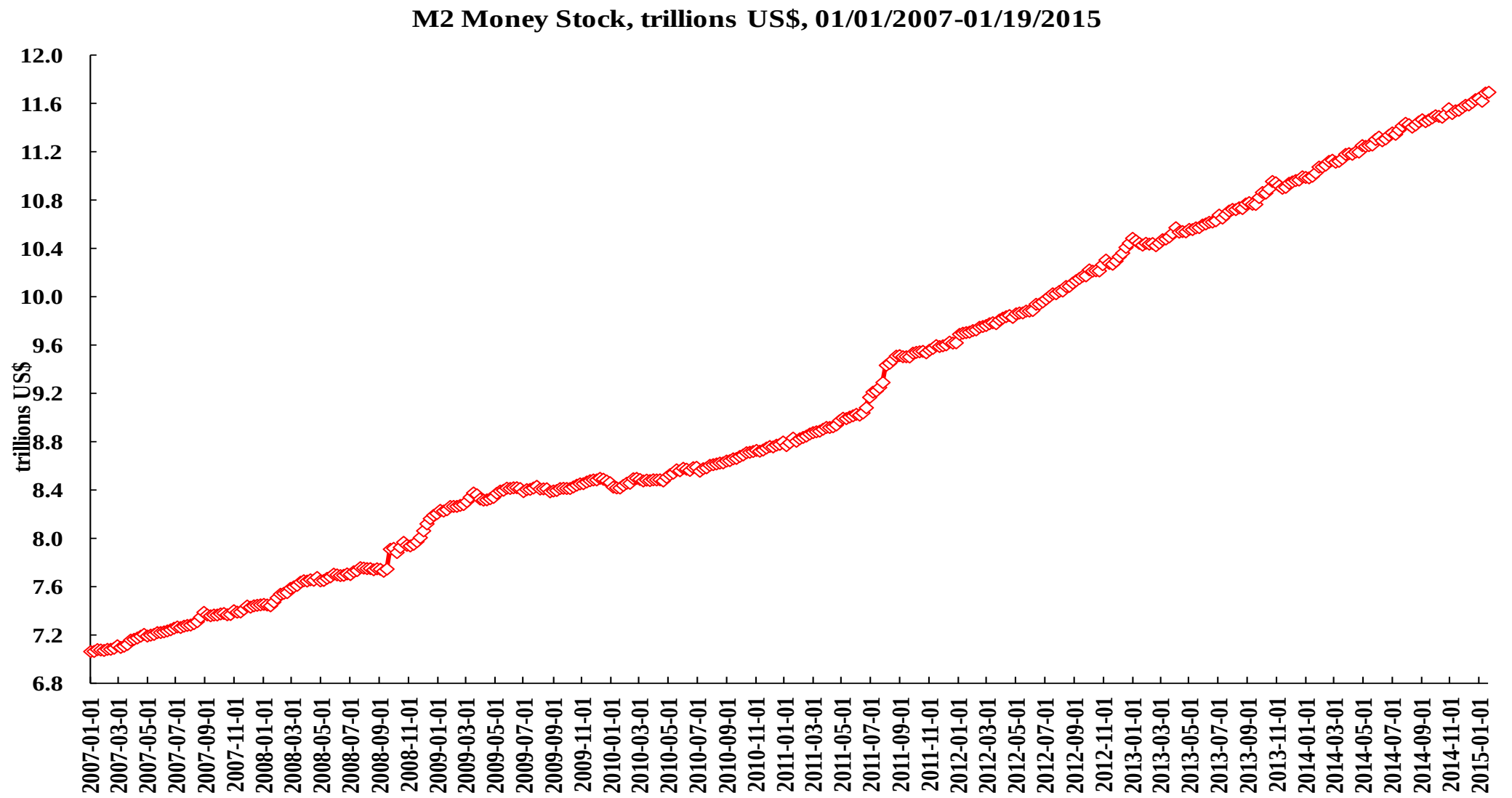
The Global Financial Crises Since 2007 & the Aftermath: The Objectives of the QEs

- The QEs can be viewed as a form of currency manipulation as given the already low domestic rates of interest in the U.S., the excess liquidity created by the QEs was bound to leave the U.S. en masse to seek higher yields elsewhere in the absence of U.S. capital control, thus driving up the exchange rates of the other currencies relative to the U.S. Dollar.
- As the U.S. is ideologically incapable of intervening directly in foreign exchange markets, the QEs are one of the very few feasible options for engineering a devaluation. "Jawboning" is another feasible, but probably less effective, option.

The Effects of Quantitative Easing: The U.S. Economy

- With QE1, the U.S. money supply was increased quickly and the short-term interest rate was also driven quickly to almost zero, and it has stayed there since.
- However the long-term interest rate remained relatively high until the introduction of “Operation Twist” under QE2.
- QE3 was quite effective in keeping the long-term interest rate low, until the possibility of “tapering” was introduced to the market in May 2013, which led to a jump in the long-term interest rate.
- Successive QEs have also led to large increases in the U.S. money supply (M2).

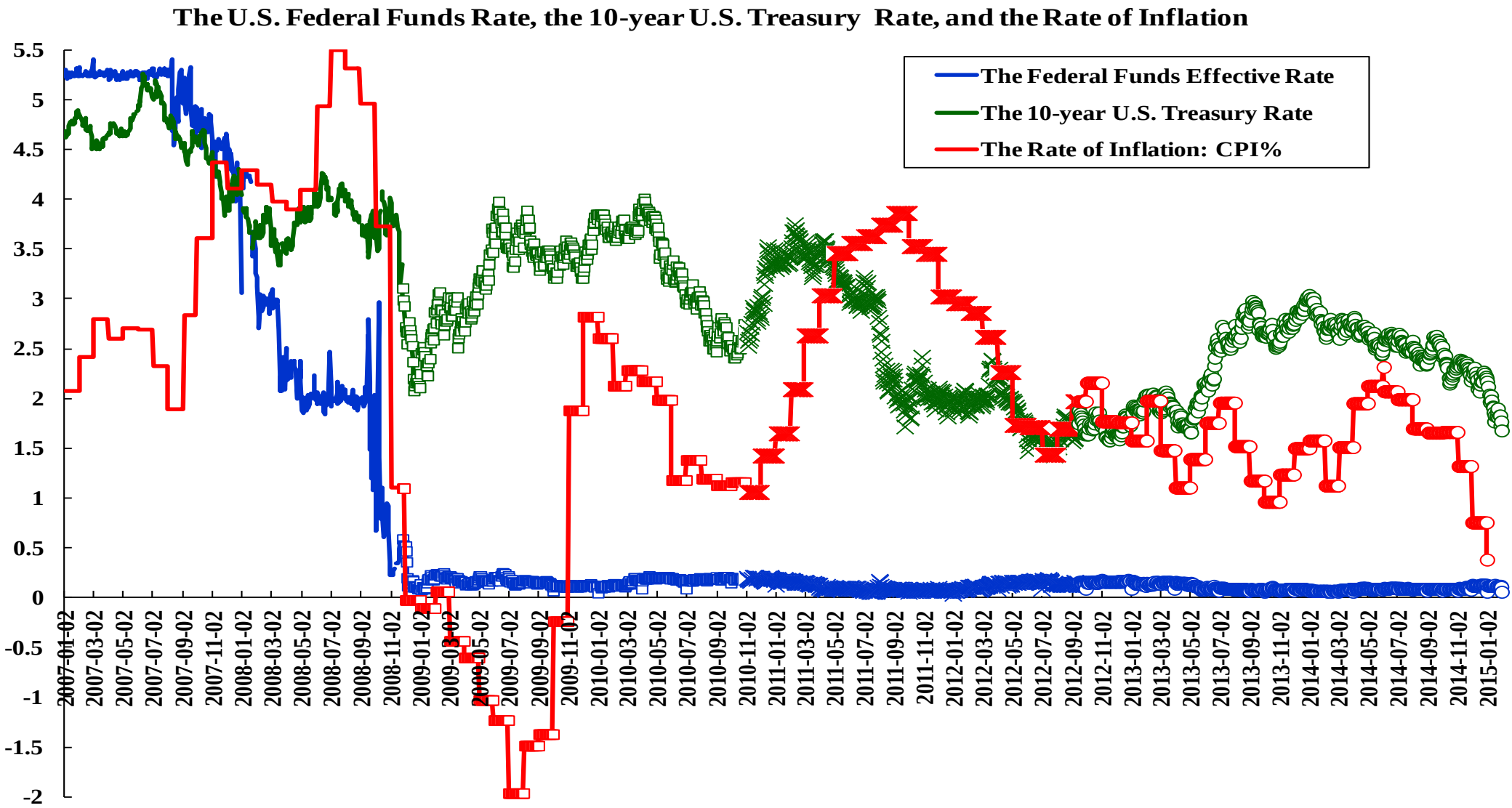
U.S. Money Supply (M2), trillions US$, 01/01/2007-01/19/2015



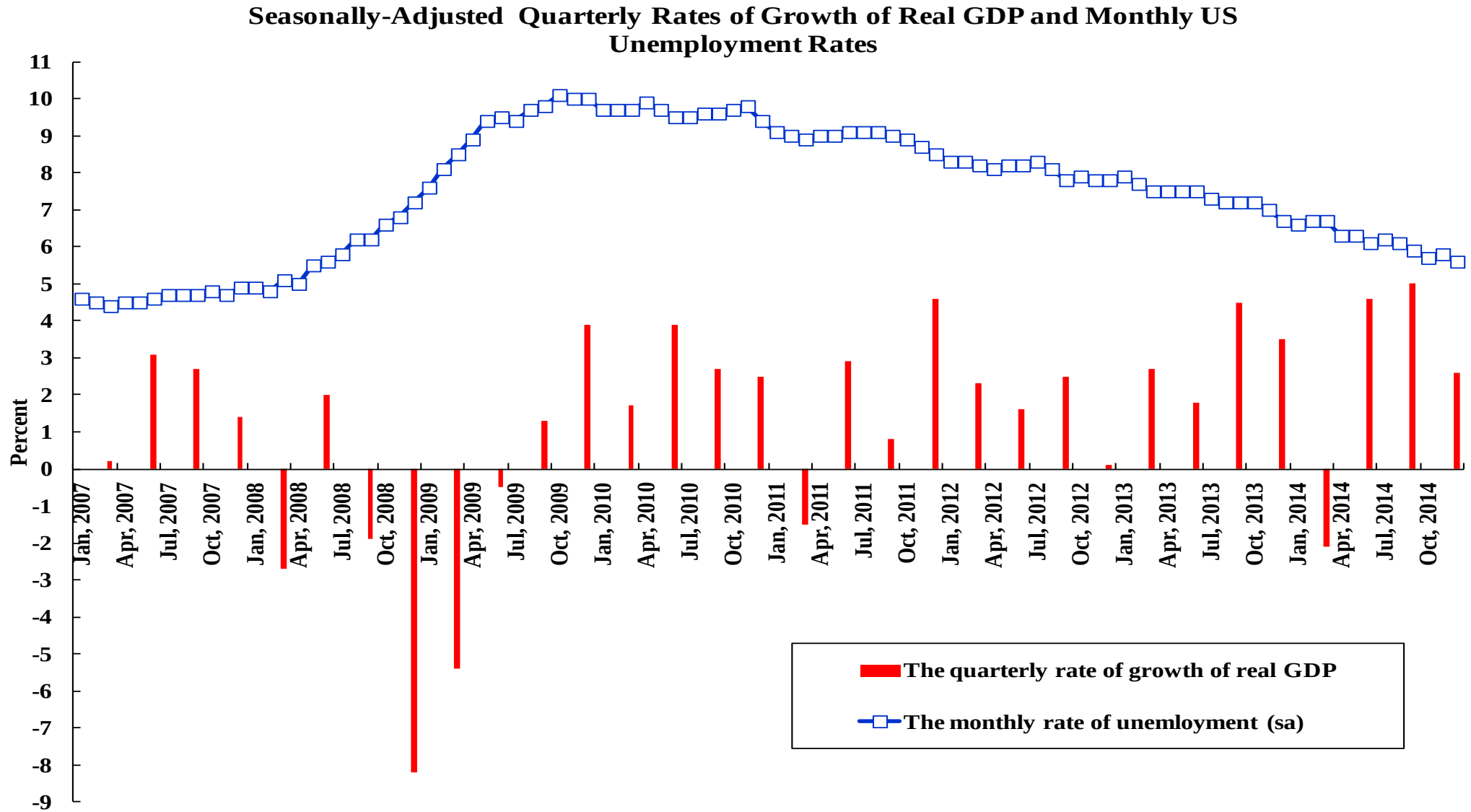
The Effects of Quantitative Easing: The U.S. Economy

- As is well known, one can pull on a string but not push on a string. Lowering the rate of interest to effectively zero and massive release of liquidity in the U.S. have not increased U.S. gross domestic investment significantly, casting serious doubt on the effectiveness of an easy monetary policy.
- In fact, the real rate of interest, the difference between the nominal rate of interest and the rate of inflation (measured by the consumer price index (CPI)), in the U.S. has been negative since November 2009 (see the following Chart). The U.S. economy is in a classical "liquidity trap" situation.
- The U.S. unemployment rate took a long time to come down, in part because of disappointed job-seekers leaving the labour force, but it finally reached a low of 5.6% (and very recently went back up to 5.7%). The rate of growth of U.S. real GDP, which reasonably robust, remained low relative to the experience of past economic recoveries.

U.S. Federal Funds Rate, the 10-year U.S. Treasury Rate, and the Rate of Inflation



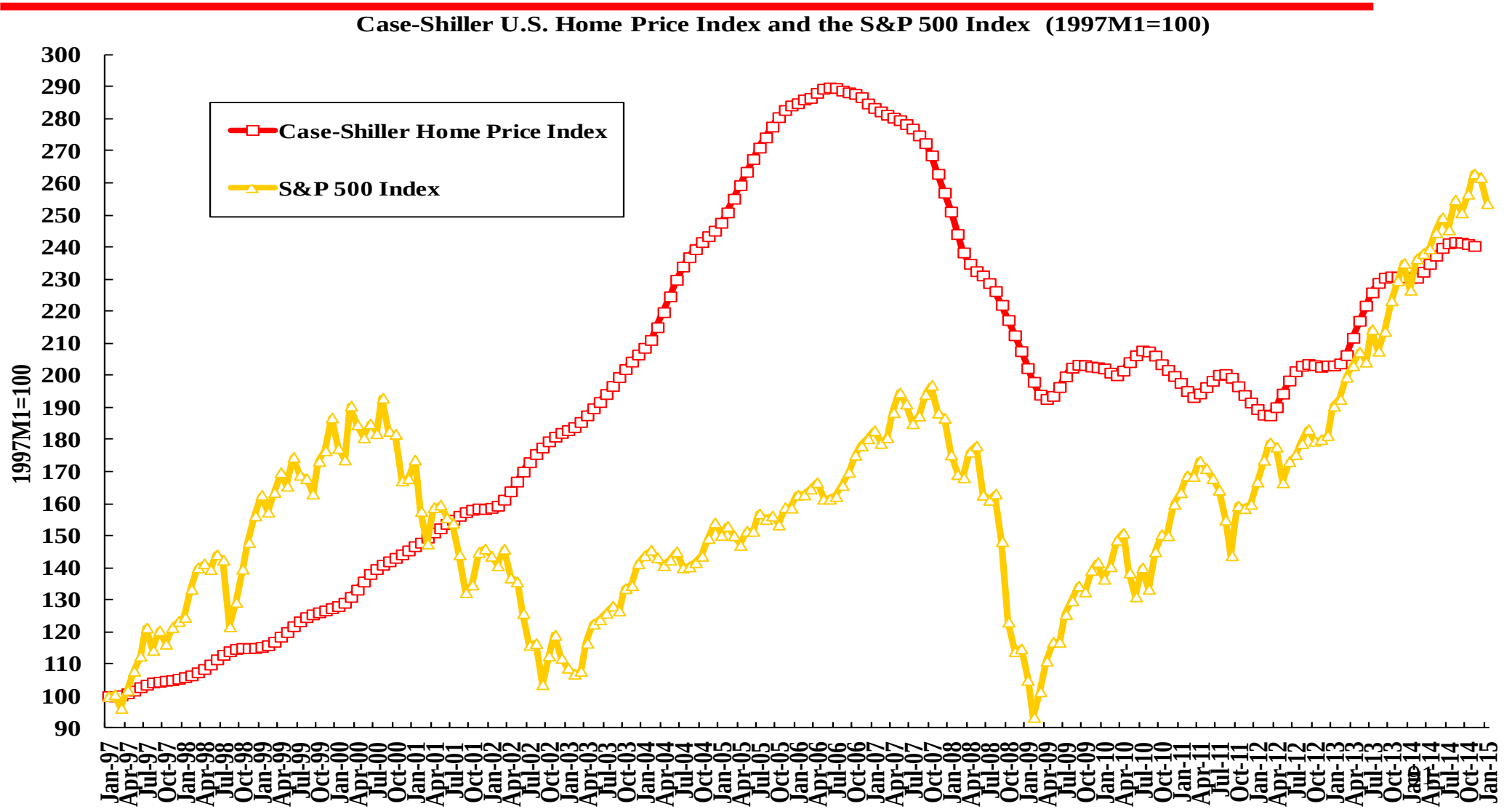
Seasonally-Adjusted Quarterly Rates of Growth of US Real GDP & Monthly US Unemployment Rates



The Effects of Quantitative Easing: The U.S. Economy

- The ultra-low interest rates in the U.S. drove up the U.S. stock market as evidenced by the S&P 500 stock price index.
- However, it took the decline in the long-term interest rates to push the price of housing back up moderately, at a level still far short of its peak in 2006.

Case-Shiller U.S. Home Price Index and the S&P 500 Index (1997M1=100)



Comparison of Case-Shiller U.S. Home Price Index and S&P 500 Index (1/3/2007=100)