

# The Economic Transformation of East Asia During the Past Thirty Years

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\*All opinions expressed herein are the author's own and do not necessarily reflect the views of any of the organizations with which the author is affiliated.

# Outline

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- ◆ Introduction
- ◆ The Shifting Center of Gravity of the World and East Asian Economies
- ◆ The Evolving Sources of East Asian Economic Growth
- ◆ Economic Development with Surplus Labor
- ◆ The Importance of Openness
- ◆ Concluding Remarks

# Introduction

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- ◆ East Asia as used here is defined as the 10 Association of Southeast Asian Nations (ASEAN)--Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam--plus 3 (China, including Hong Kong, Macao and Taiwan), Japan, and the Republic of Korea).
- ◆ The objective is to illustrate the transformations that have occurred in the East Asian economy since 1980.
- ◆ The center of gravity of the World economy has been and still is in the process of shifting from the United States and Europe towards East Asia.
- ◆ Within the East Asian economy itself, the center of gravity has also been shifting from Japan towards China.

# Introduction

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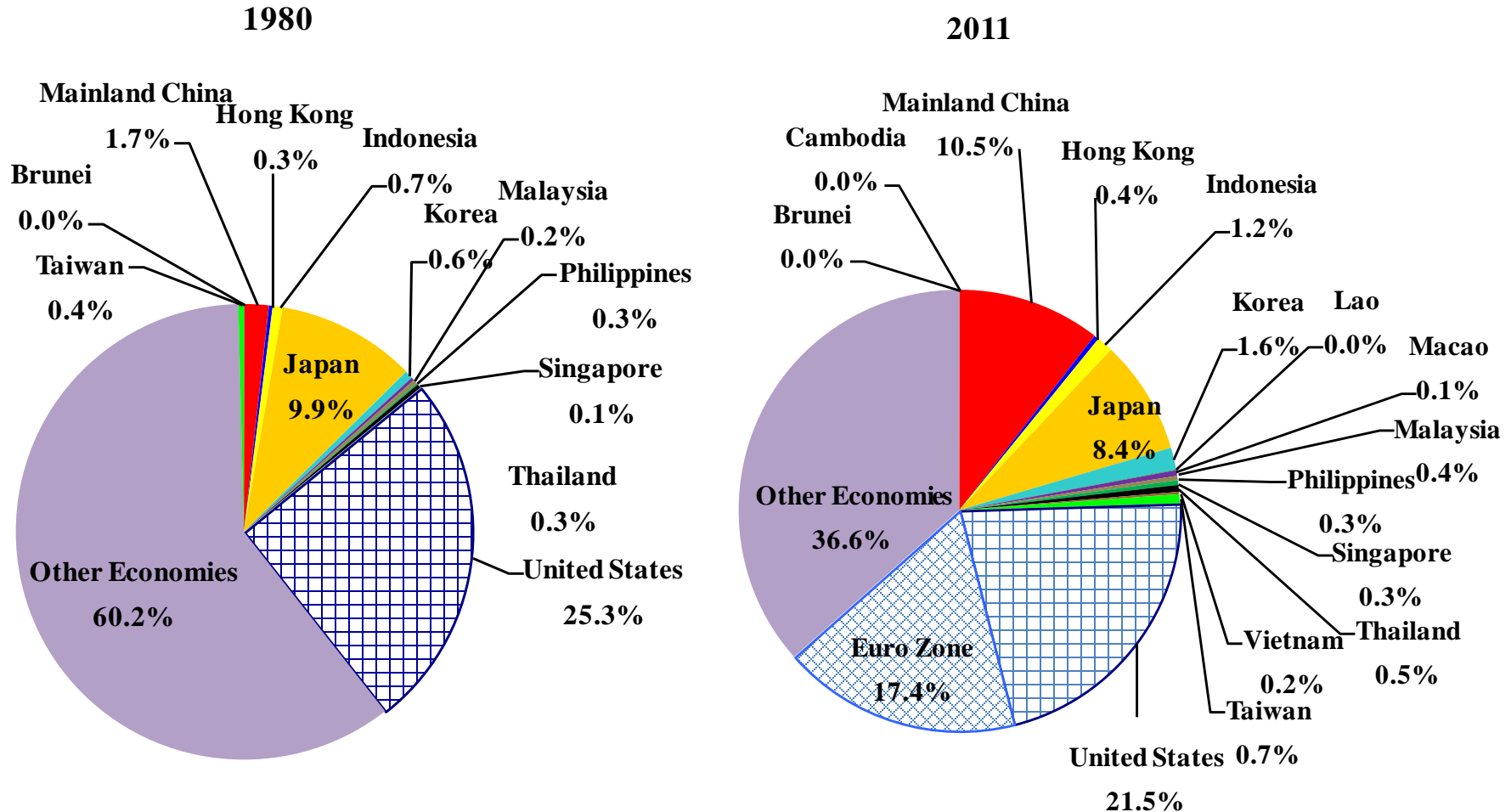
- ◆ The principal sources of East Asian economic growth have also gradually evolved from the growth of tangible inputs such as tangible capital, enabled by their high saving rates, and labor, to the growth of intangible inputs such as human capital, R&D capital, and reputational capital (goodwill and branding).
- ◆ East Asian economic development has also essentially followed the dual economy model of W. Arthur Lewis, based on the transfer of the surplus labor in the agricultural sector to be utilized more productively in the expanding non-agricultural (manufacturing, construction and service) sector.
- ◆ The openness of the East Asian economies to international trade and investment is a Lawrence J. Lau critical feature of their success. <sup>4</sup>

# The Shifting Center of Gravity of the World and East Asian Economies: GDP

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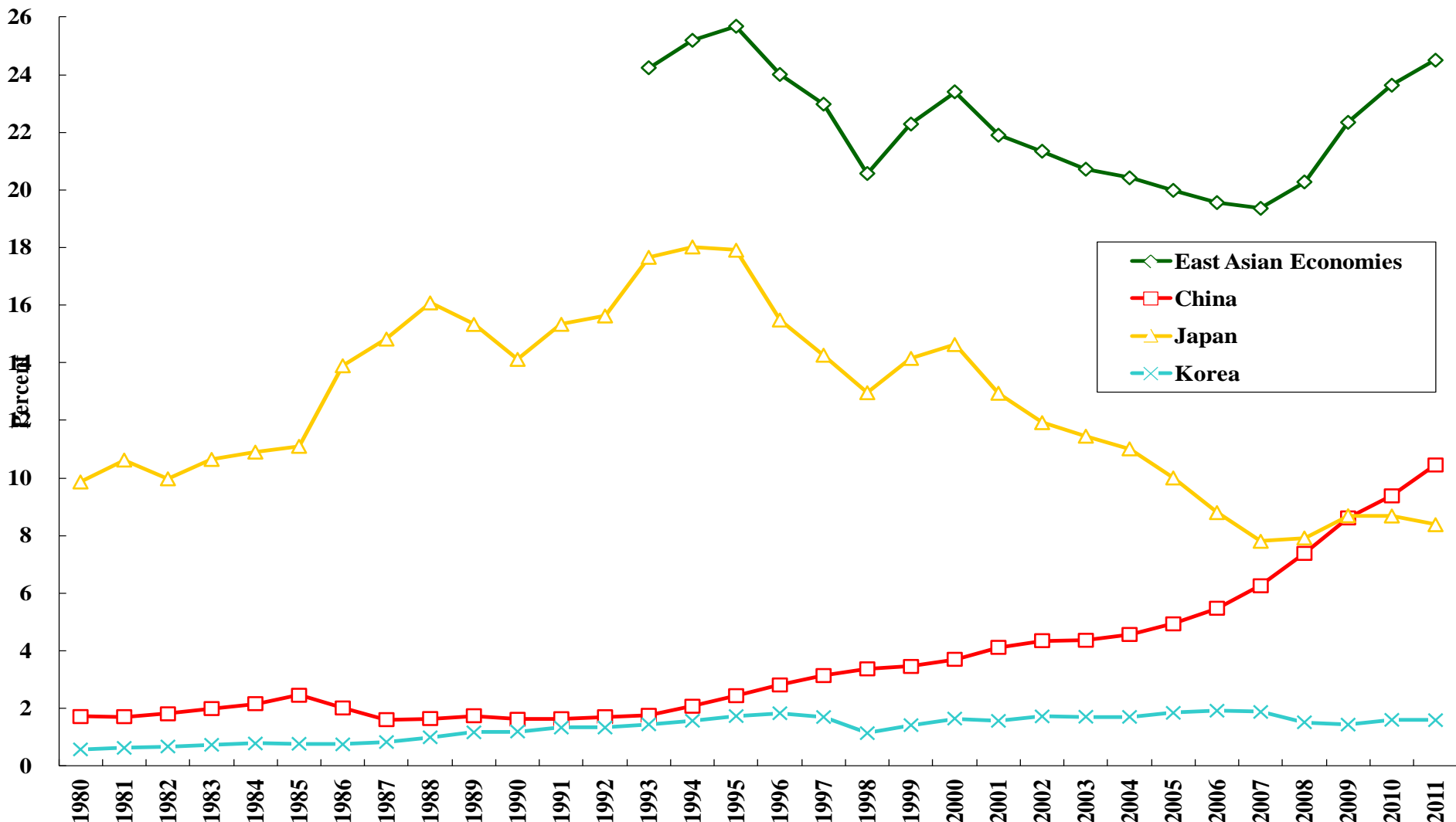
- ◆ In 1980, the United States and Western Europe together accounted for over 60% of World GDP. By comparison, East Asia accounted for less than 15% of World GDP.
- ◆ By 2012, the share of United States and the Euro Zone combined in World GDP has declined to approximately 45% whereas the share of East Asia has risen to 25%.
- ◆ The Japanese share of World GDP declined from a peak of 18% in the mid-1990s to 8% in 2012 while the Chinese share of World GDP rose from less than 2% in 1980 to over 10% in 2012.
- ◆ Since 1980, the rate of growth of the East Asian real GDP has always exceeded those of the U.S. and the Euro Zone except during the East Asian currency crisis of 1997-1998.

# The Distribution of World GDP in 1980 and 2011



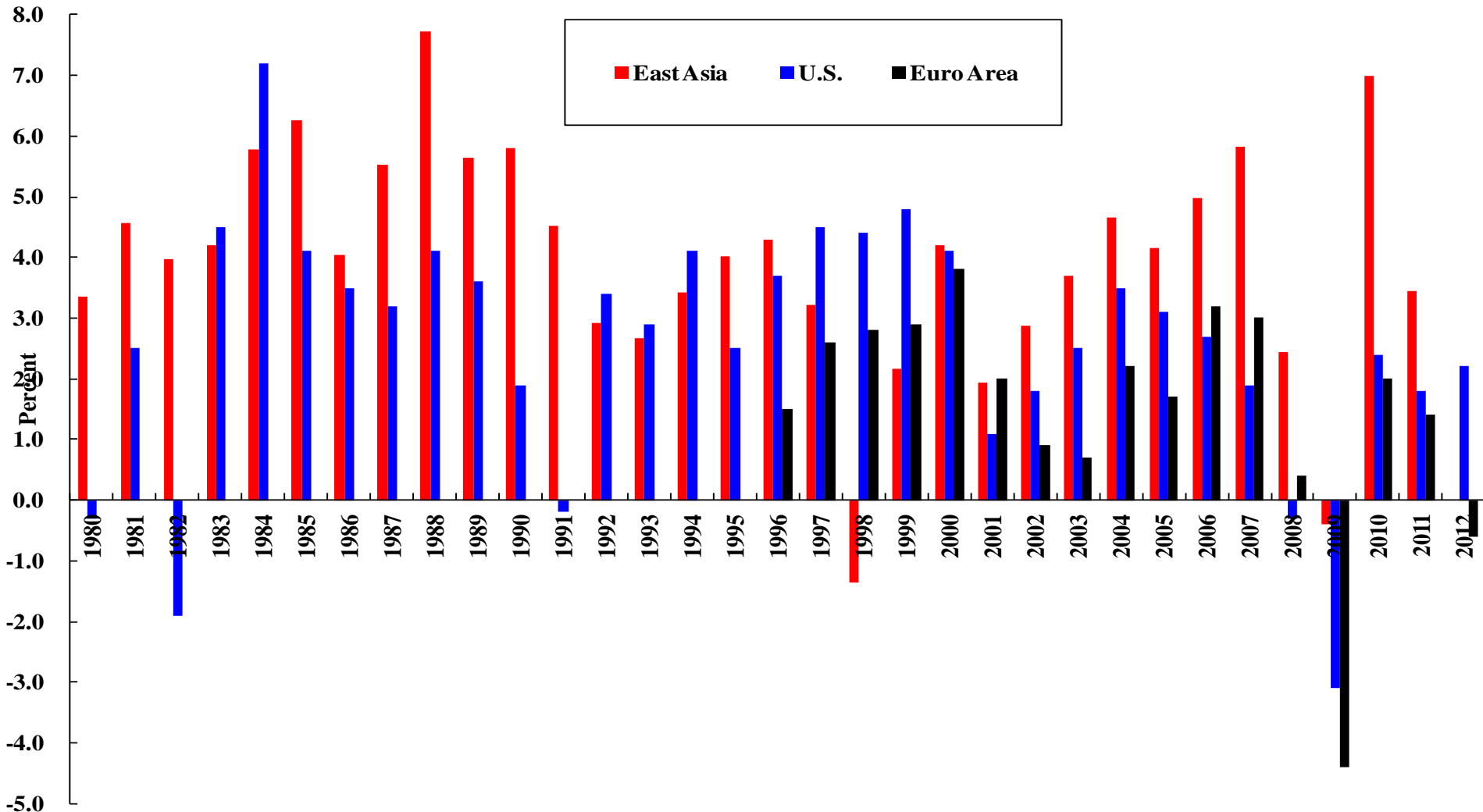
# The Shares of East Asia, China, Japan and South Korea in World GDP, 1980-present

The Shares of East Asia, China, Japan and South Korea in World GDP, 1980-present



# The Rates of Growth of Real GDP of East Asia, U.S. and the Euro Zone

The Rates of Growth of Real GDP of East Asia, U.S. and the Euro Zone





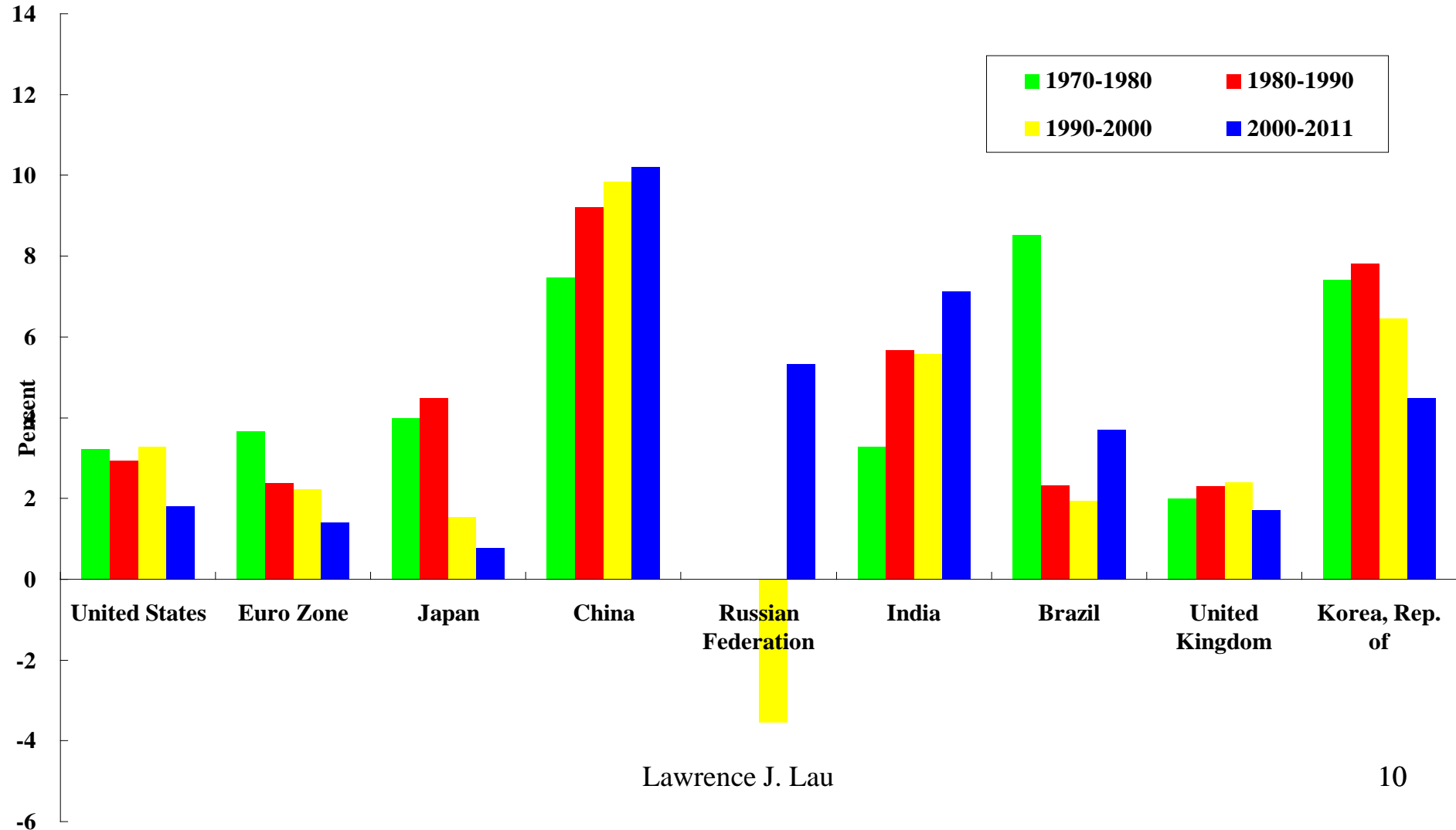
# The Shifting Economic Center of Gravity: Economic Growth

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- ◆ It is interesting to compare the average annual rates of growth of different economies decade by decade.
- ◆ China, India, and South Korea were among the fastest growing economies during the past four decades.
- ◆ Brazil grew very fast during the past decade because of the world natural resource boom.
- ◆ Russia also grew at a very high rate during the past decade because of its significant oil production and the high world price of oil.
- ◆ However, all the developed economies—the U.S., Euro Zone, Japan, and the U.K.—had relatively low and declining growth rates during the past decades.

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

Average Annual Rates of Growth of Real GDP of Selected Economies



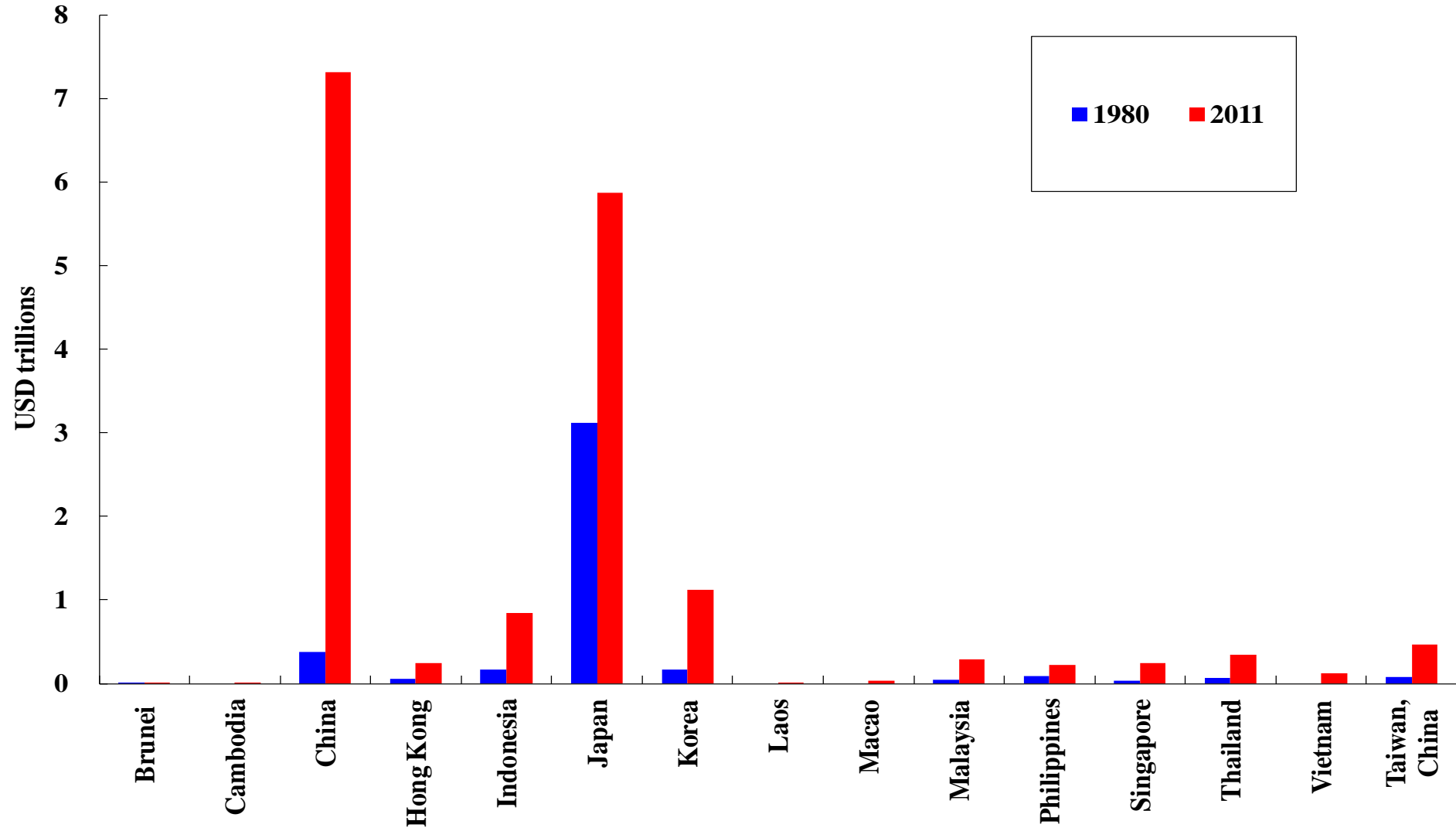
# The Shifting Economic Center of Gravity: Economic Growth

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- ◆ In the following charts, the levels of real GDP and real GDP per capita in 1980 and 2011 are compared across economies.
- ◆ As a whole, East Asia has made tremendous progress in terms of real GDP.
- ◆ Chinese real GDP has increased the most since 1980 amongst East Asian economies, whereas Brunei real GDP has increased the least, followed by Japan.
- ◆ However, in terms of real GDP per capita, Brunei has fallen when compared to 1980; the Philippines and Japan have made relatively little progress; Macau, with a population of approximately half a million, has the highest real GDP per capita. Exceeding even that of the U.S.
- ◆ Note that Chinese real GDP per capita still lags behind many East Asian economies and is ahead of only Cambodia, Indonesia, Laos, Myanmar, Philippines, Thailand and Vietnam.

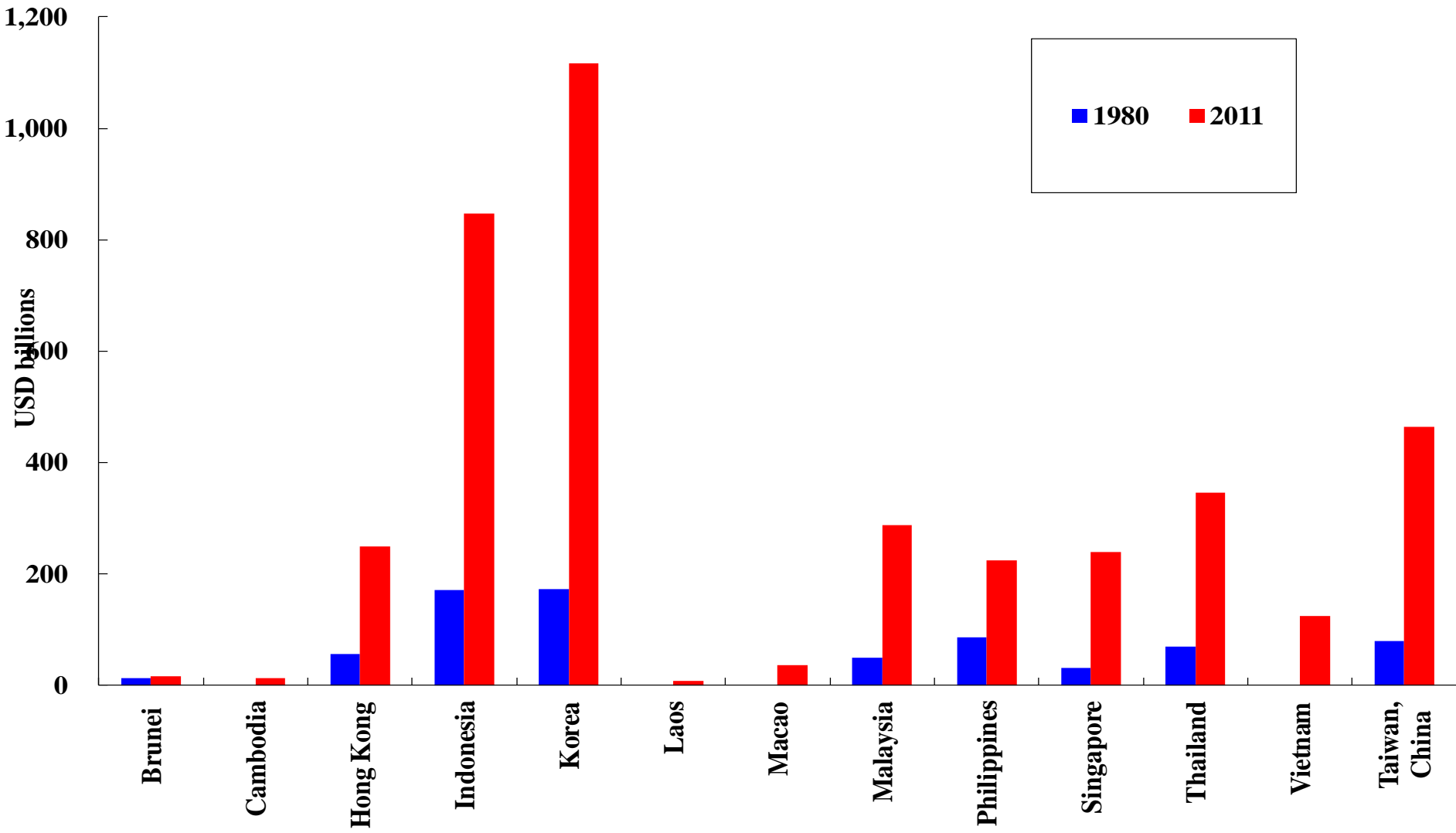
# The Growth of Real GDP in East Asian Economies, 1980-2011

Real GDP of East Asian Economies in 1980 and 2011, in 2011 USD trillions



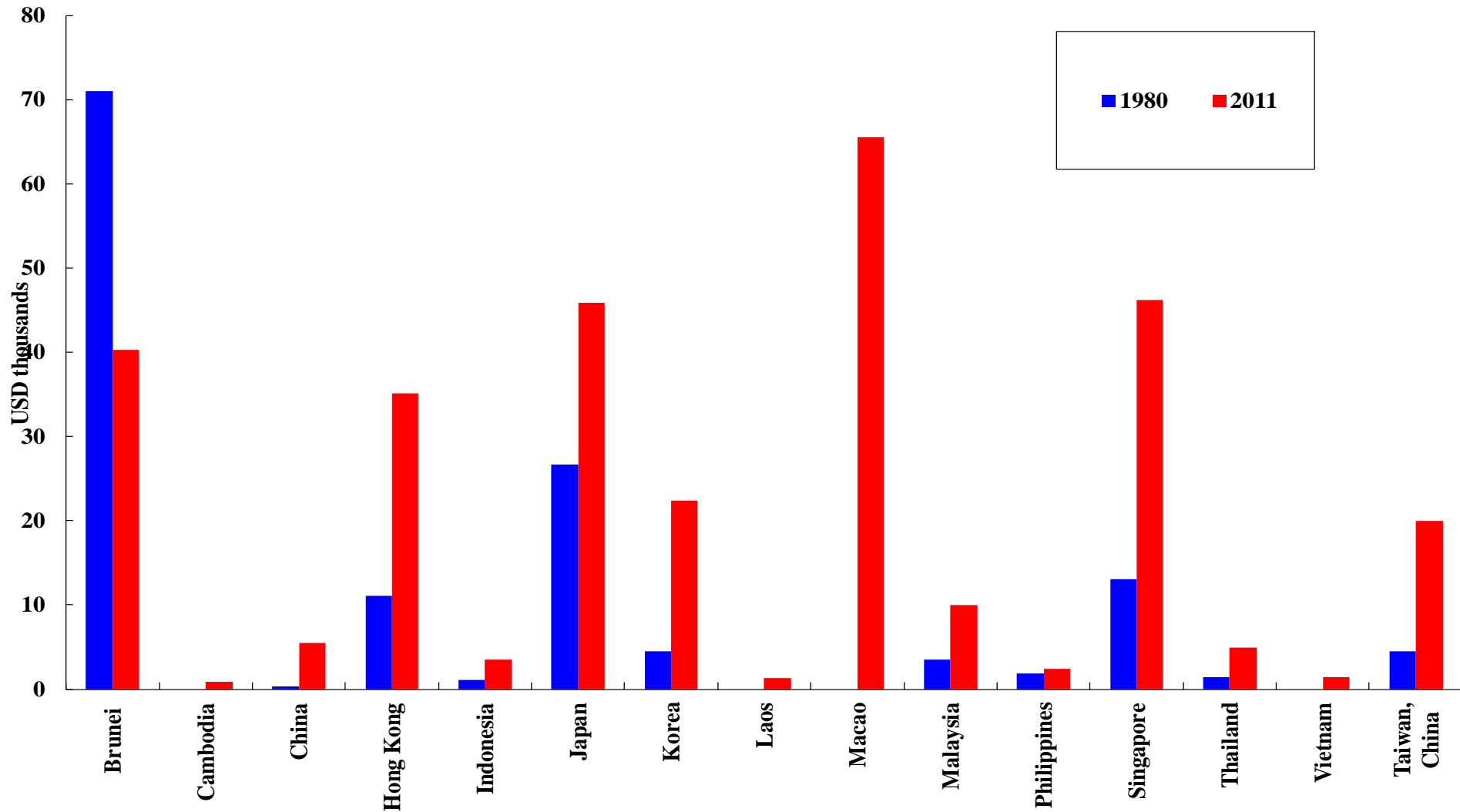
# The Growth of Real GDP in East Asian Economies, 1980-2011 (cont.)

Real GDP of East Asian Economies in 1980 and 2011, in 2011 USD billions



# The Growth of Real GDP per Capita in East Asian Economies, 1980-2011

Real GDP per Capita of East Asian Economies in 1980 and 2011, in 2011 USD thousands



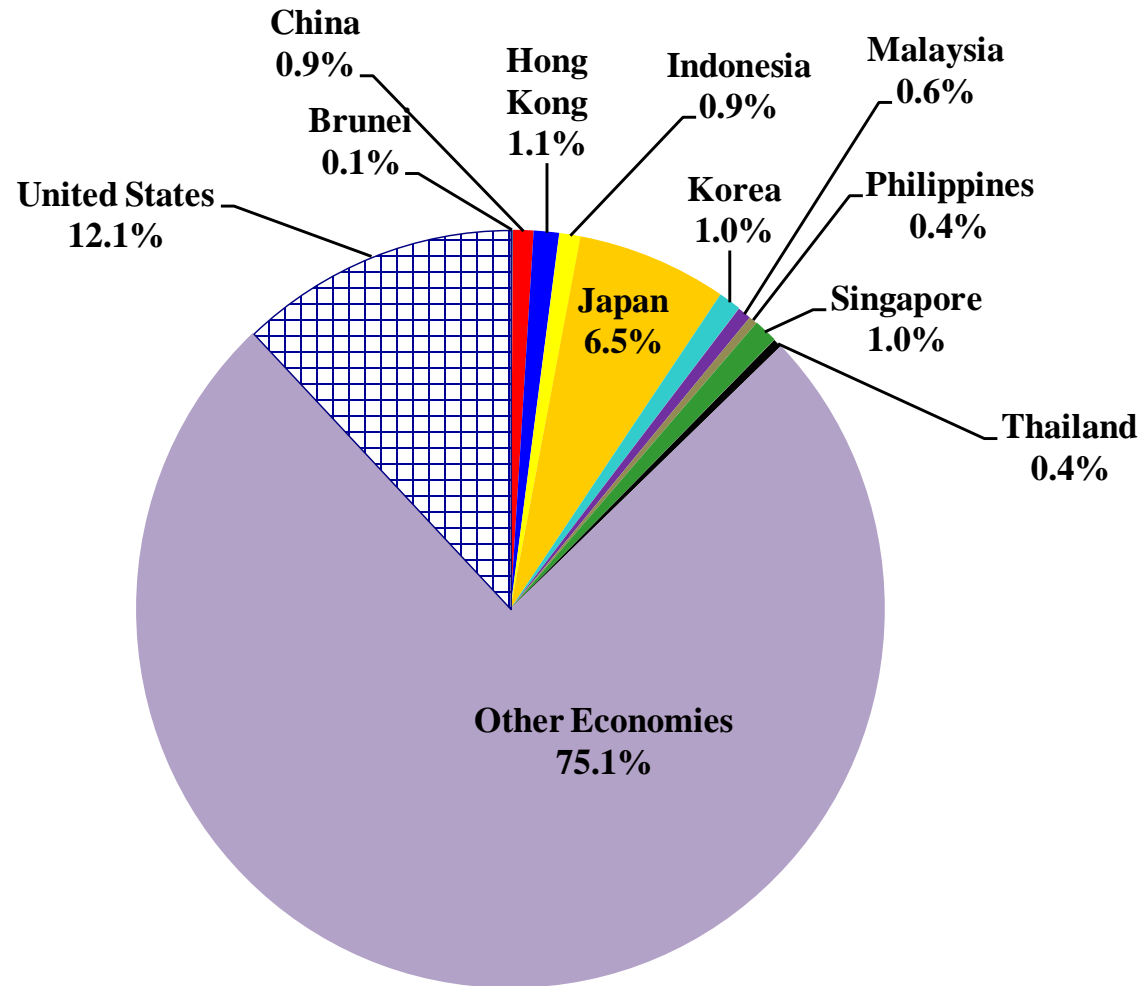
# The Shifting Economic Center of Gravity: International Trade

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- ◆ In 1980, the United States and Western Europe together accounted for over 60% of World trade. By comparison, East Asia accounted for less than 10% of World trade.
- ◆ By 2011, the share of United States and Western Europe combined in World trade has declined to below 45% whereas the share of East Asia has risen to 30%.
- ◆ The Chinese share of World trade rose from less than 1% in 1980 (in fact, it was also 1% in 1950) to 10% in 2011.
- ◆ Chinese share of East Asian international trade also arose from 5% in 1980 to 40% in 2011.

# The Distribution of Total International Trade in Goods and Services, 1980

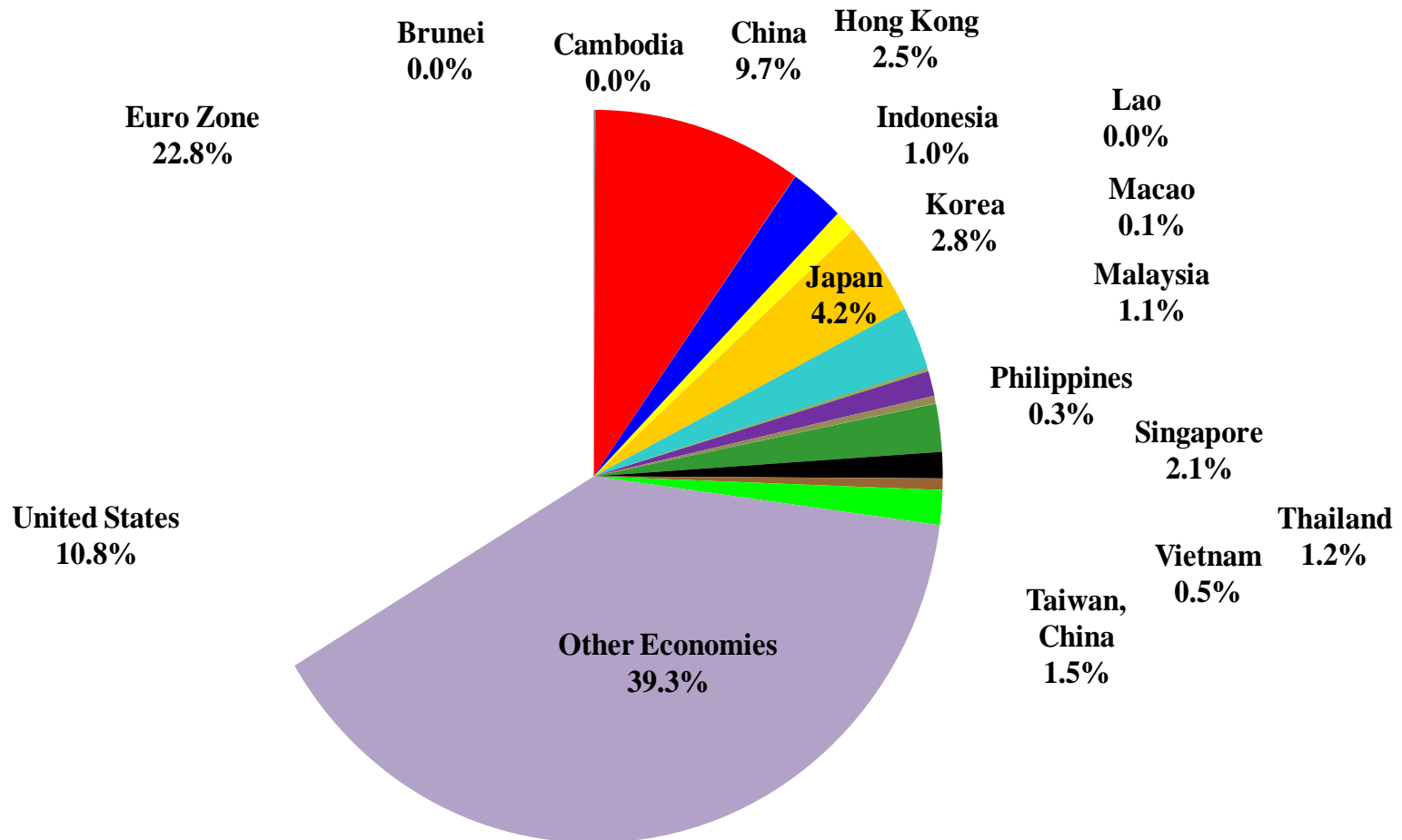
The Distribution of Total International Trade in Goods and Services in 1980





# The Distribution of Total International Trade in Goods and Services, 2011

The Distribution of Total International Trade in Goods and Services in 2011



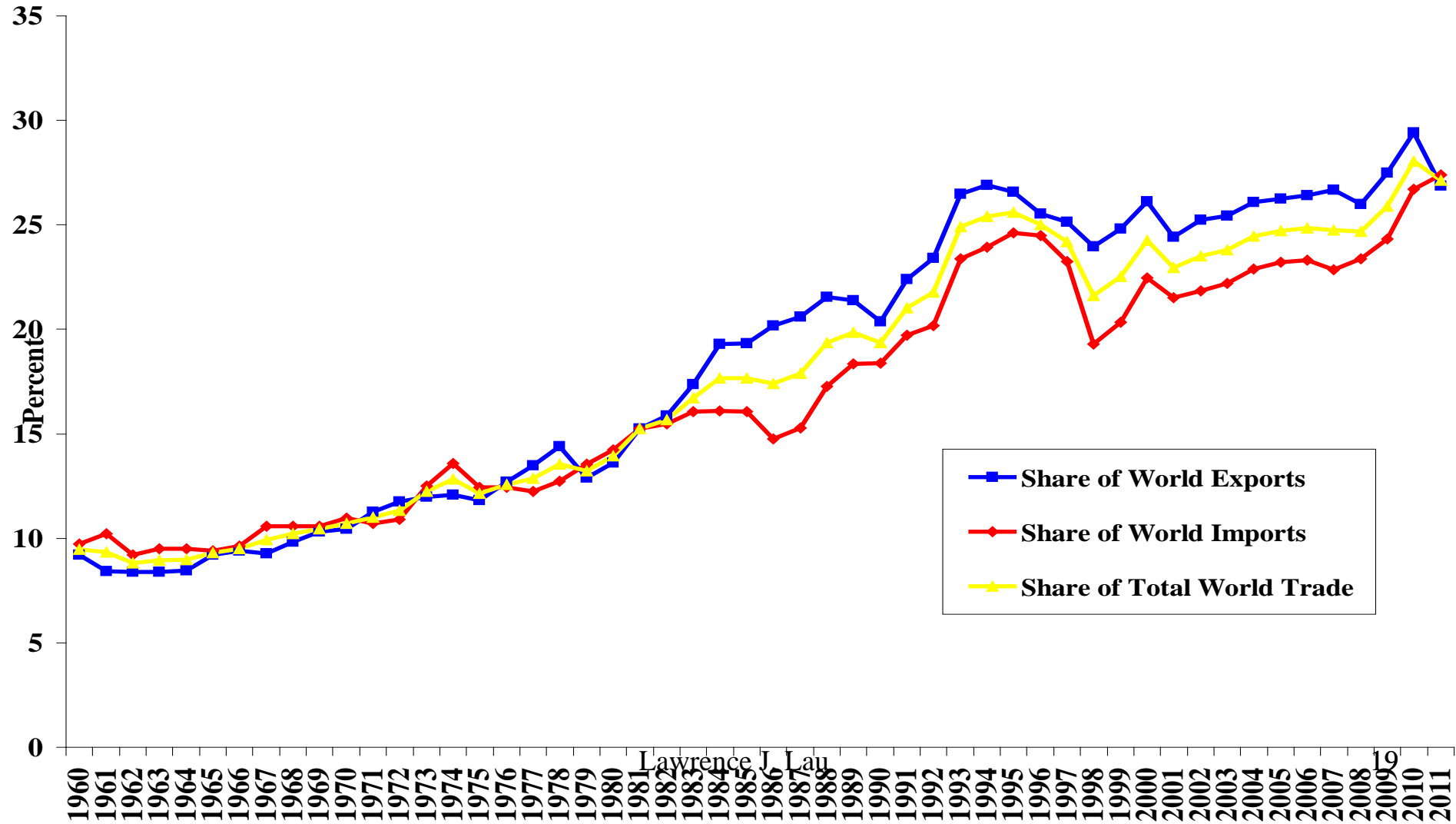
# The Shifting Economic Center of Gravity: International Trade

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- ◆ In the trade share charts, data are missing for the following East Asian economies and years:
- ◆ Brunei: 1984-1988; Cambodia: 1980-1987; Laos: 1980-1983; Macao: 1980-1981; Vietnam: 1980-1985; and Myanmar: no data.

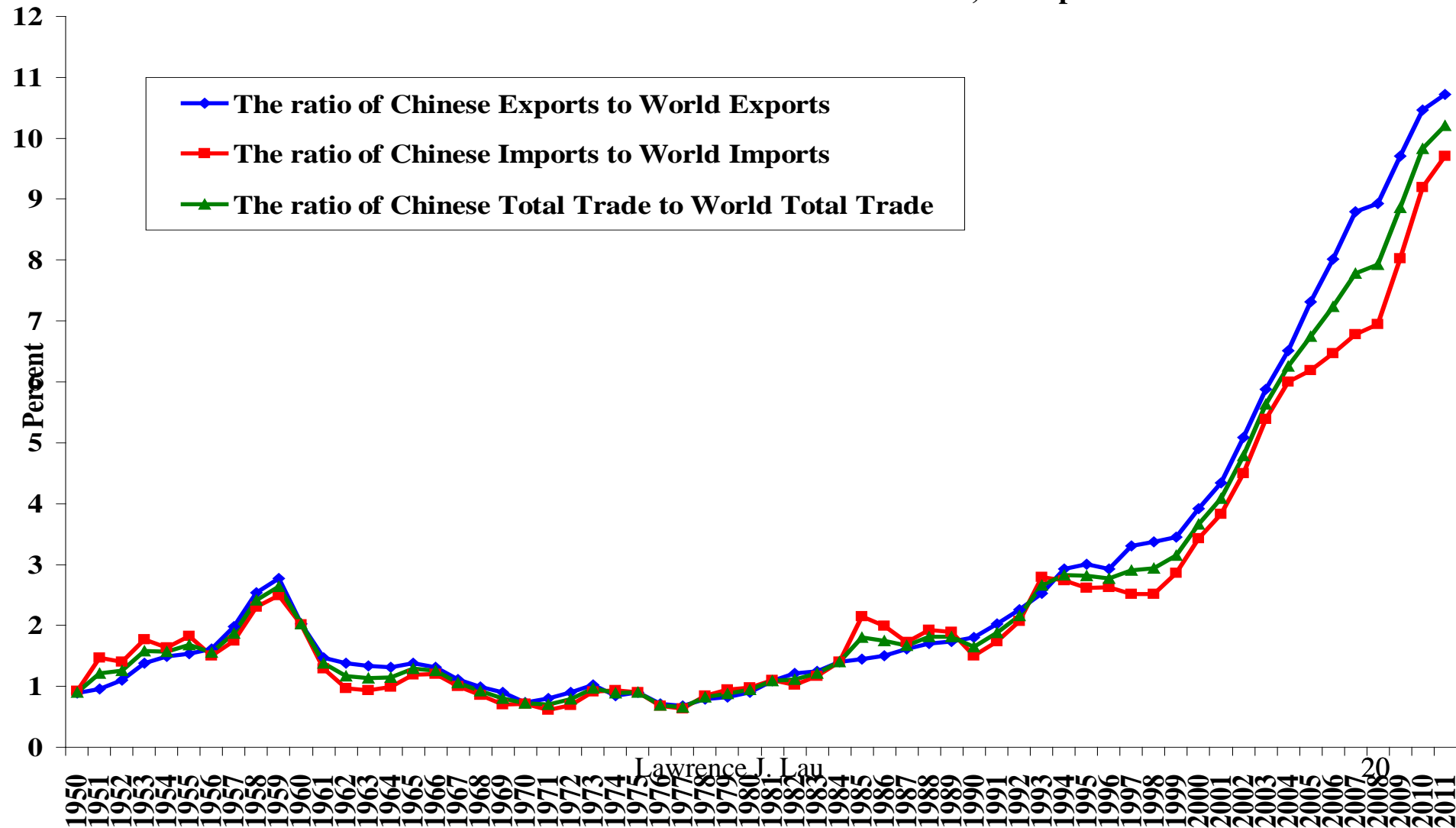
# The Rising Share of East Asian Trade in Total World Trade, 1960-present

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



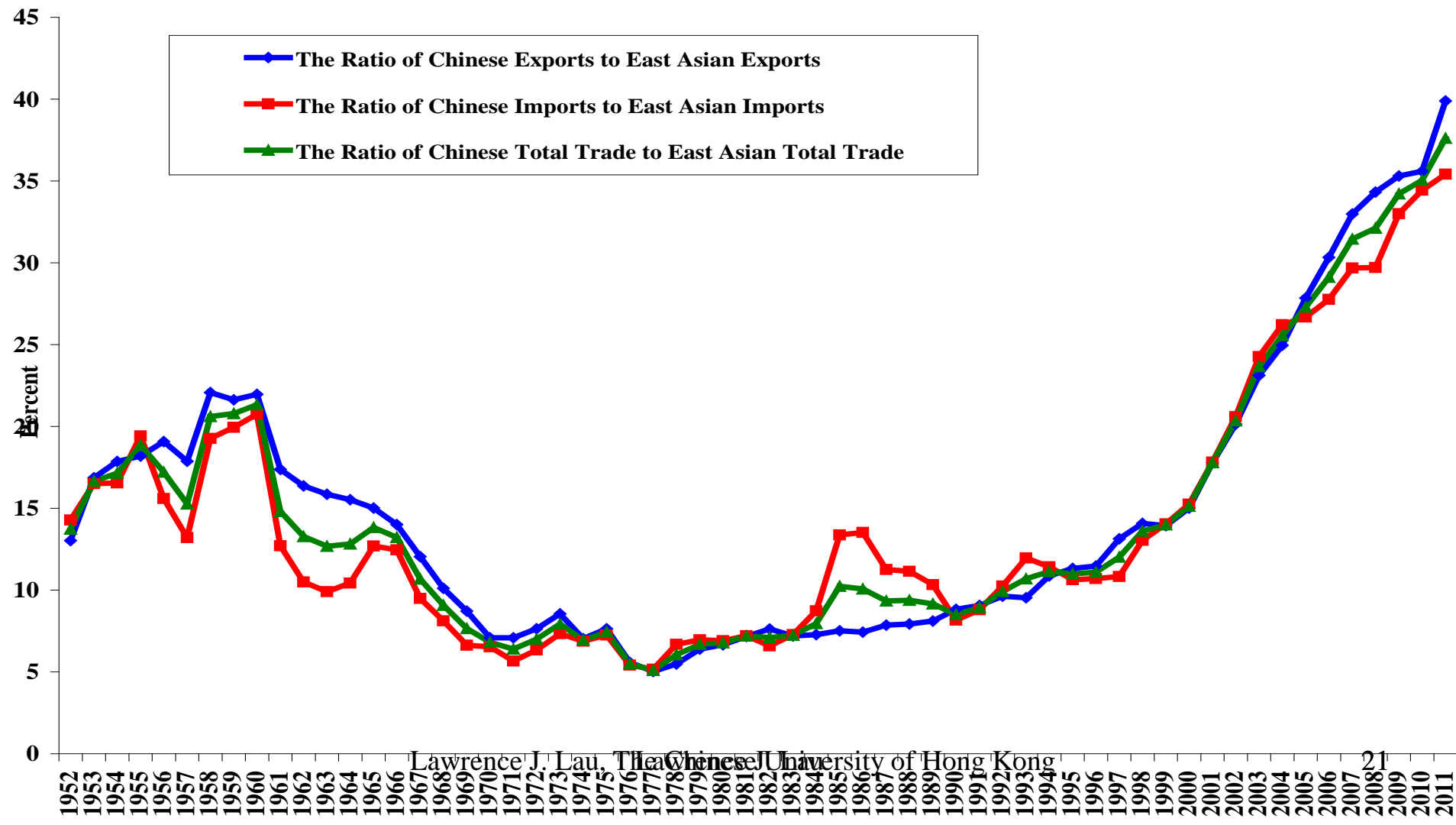
# The Share of China in Total World Trade, 1950-present

The Share of Chinese Trade in Total World Trade, 1950-present



# The Share of China in Total East Asian Trade, 1952-present

The Share of Chinese Trade in Total East Asian Trade, 1952-present



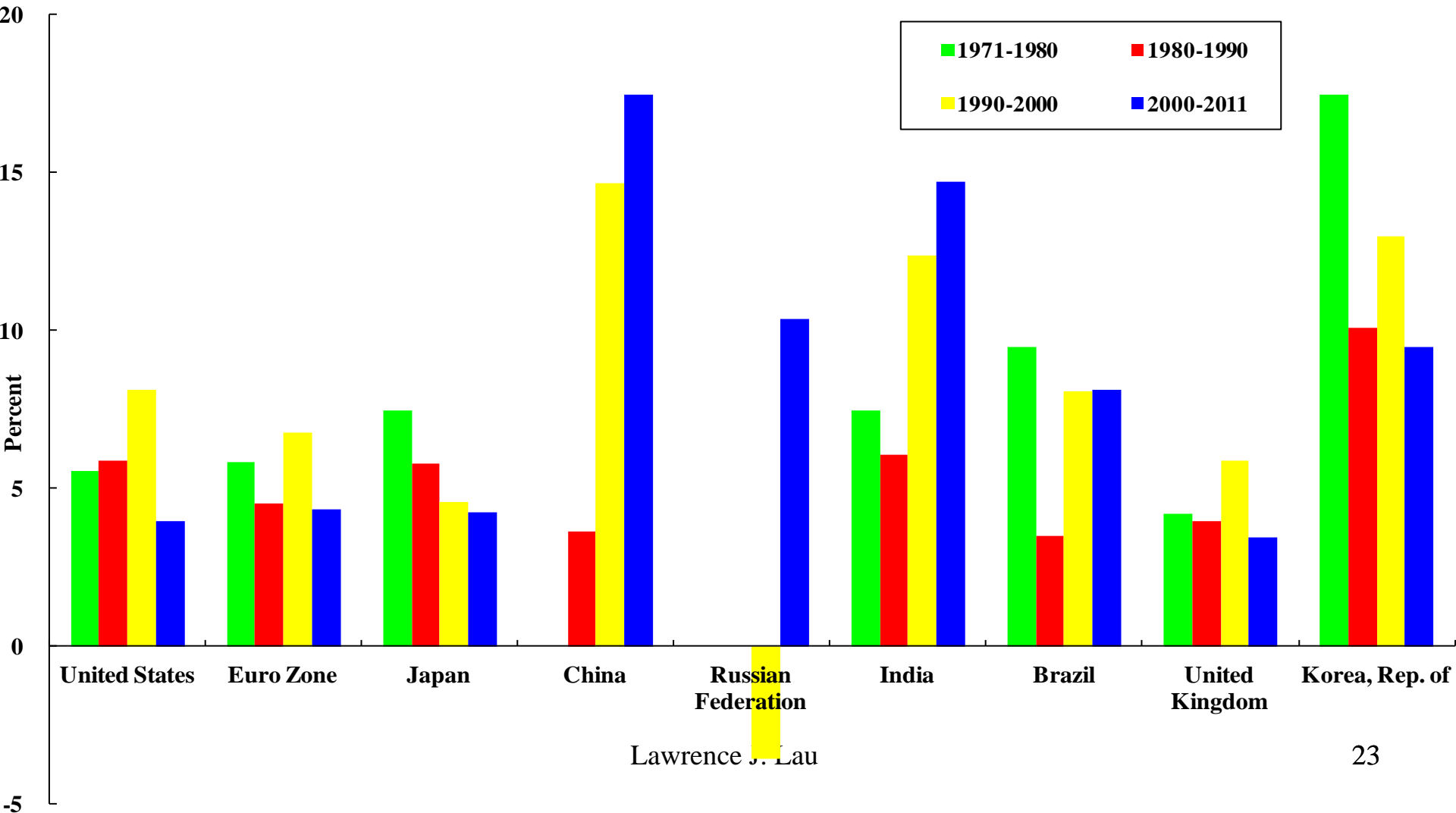
# The Shifting Economic Center of Gravity: Growth of International Trade

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- ◆ 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 was particularly rapid during the past decade because of its accession to the World Trade Organisation (WTO) in 2000 and because of the expiration of the Multi-Fibre Arrangement governing world trade in textiles in 2005.
- ◆ Brazil, Russia, and India also had exceptionally high growth in their international trade during the past decade.
- ◆ However, all the developed economies—the U.S., the 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

Average Annual Rates of Growth of Total Real Trade in Goods and Services, in 2000 USD



# The Shifting Economic Center of Gravity: Foreign Exchange Reserves

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- ◆ Today, the People's Bank of China, China's central bank, has the World's largest official foreign exchange reserves, in excess of US\$3.44 trillion, almost all of which has been acquired during the past decade, followed by Japan with US\$1.22 trillion.
- ◆ The People's Bank of China is also currently the World's largest holder of U.S. Treasury securities, with not quite US\$1.3 trillion (US\$1.26 trillion in Jan. 2013), followed by Japan as a very close second (US\$1.12 trillion in Jan. 2013).

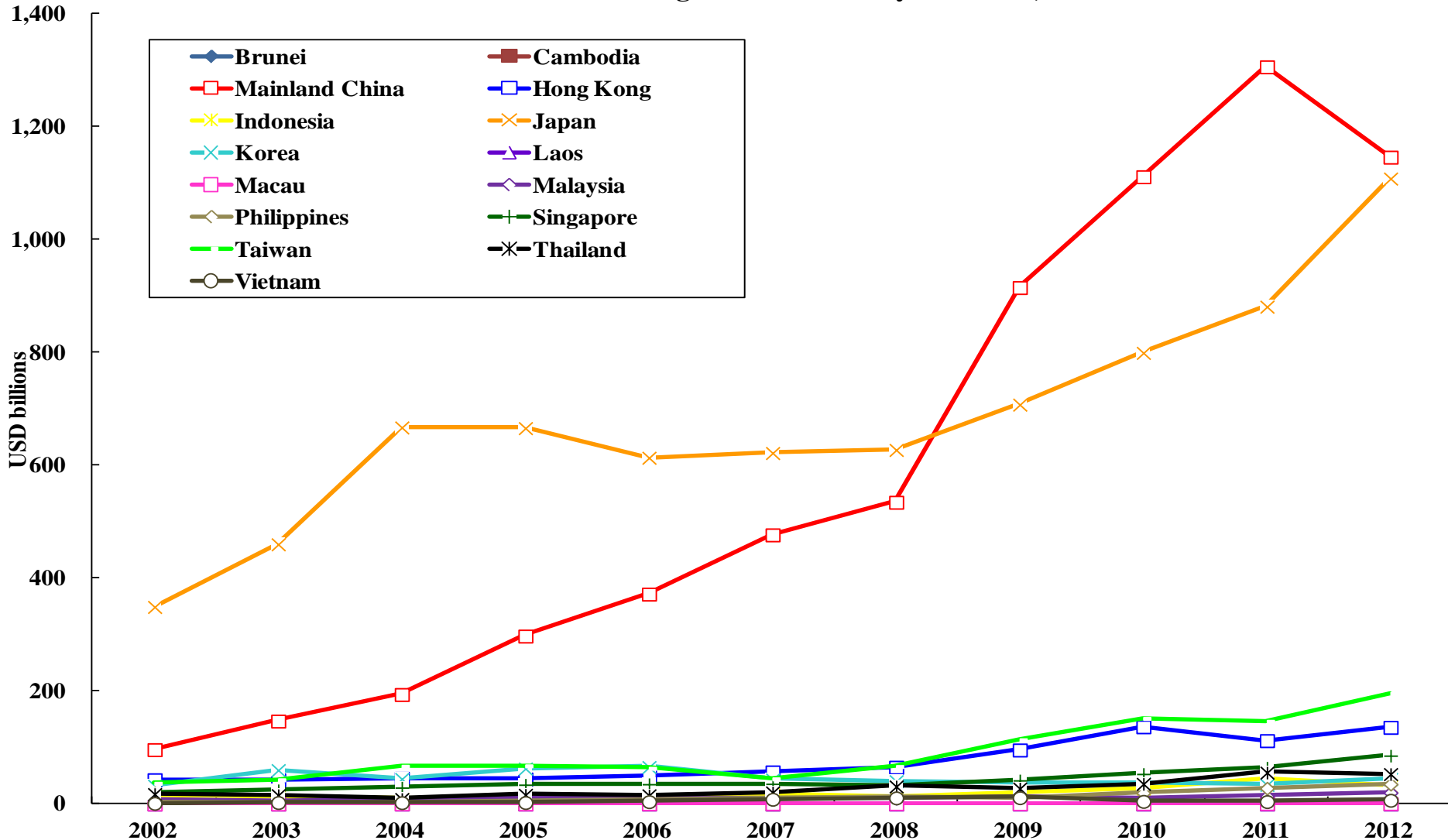






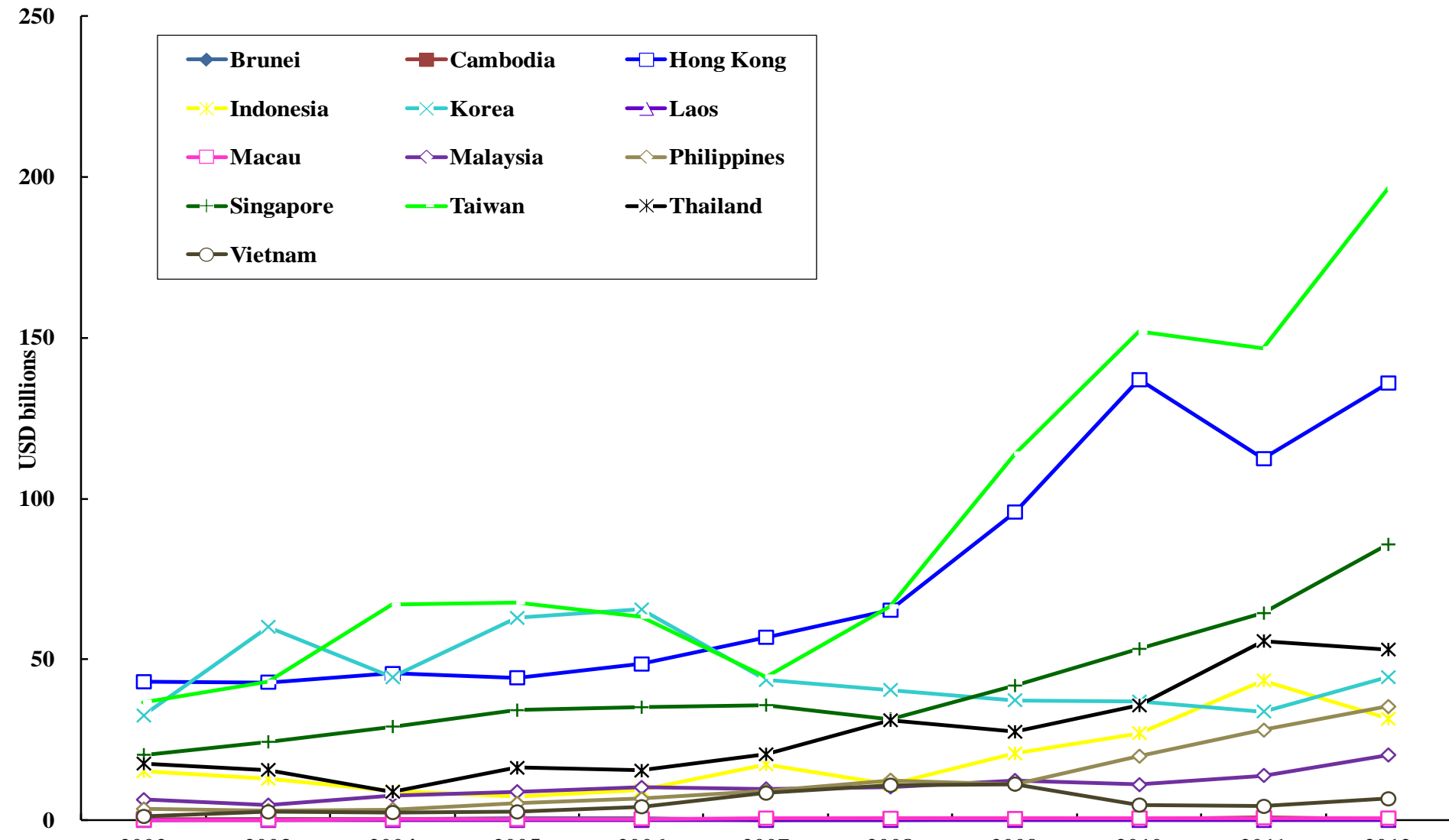
# East Asian Central Banks' Holdings of U.S. Treasury Securities

East Asian Central Bank's Holdings of U.S. Treasury Securities, USD billions



# Major Foreign Central Banks' Holdings of U.S. Treasury Securities (cont.)

East Asian Central Bank's Holdings of U.S. Treasury Securities, USD billions



# The Shifting Economic Center of Gravity: Stock Market Capitalization

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- ◆ Today, the market capitalization of all East Asian stock exchanges combined is ahead of the market capitalization of all the European stock exchanges combined and equal to approximately 70% of the market capitalization of all U.S. stock exchanges.
- ◆ The market capitalization of the Japanese stock exchanges, which used to constitute the bulk of the market capitalization of East Asian stock exchanges, is now only its 30%.
- ◆ The market capitalization of Chinese stock exchanges have caught up with that of Japanese stock exchanges.

# Market Capitalization of Stock Exchanges

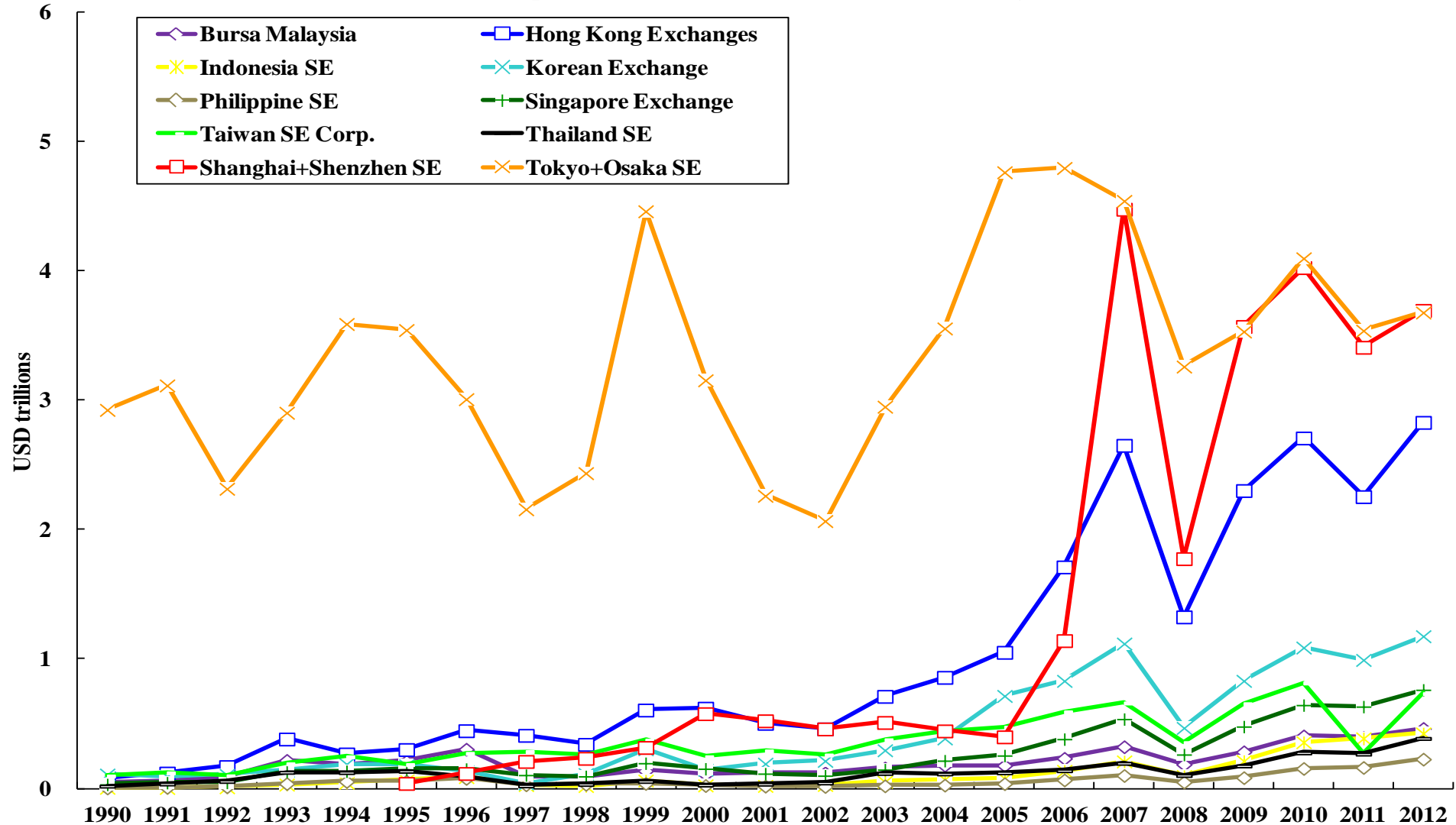
## Year End 2011 and 2012 (US\$ trillion)

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	2011	2012
◆ U.S.A.	15.6	18.7
◆ Europe	9.5	10.4
◆ East Asia	12.4	14.4
◆ 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, Osaka SE, Philippine SE, Shanghai SE, Shenzhen SE, Singapore Exchange, Taiwan SE, Thailand SE, Tokyo SE Group		
◆ Data source: World Federation of Exchanges		

# End of Year Market Capitalization of East Asian Stock Exchanges

End of Year Market Capitalisation of East Asian Stock Exchanges, USD trillions



# The Shifting Economic Center of Gravity: The Partial De-Coupling Hypothesis

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- ◆ Throughout the 2007-2009 global financial 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, was able to maintain its real rate of growth above 7.5%, lending credence to the “Partial De-Coupling Hypothesis”, that is, the Chinese and East Asian economies can continue to grow, albeit at a slower rate, even as the U.S. and European economies go into economic recession.
- ◆ This partial de-coupling can occur because of the gradual shift in the economic center of gravity of the World economy from the United States and Western Europe to Asia (including both East Asia and South Asia) over the past three decades.



# The Evolving Sources of East Asian Economic Growth

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- ◆ East Asian economic growth has been led by the industrialisation of Japan in the immediate post-World War II period, followed successively by Hong Kong, Singapore, Taiwan, South Korea and then Malaysia and Thailand and then China. Industrialisation has also begun to spread to Indonesia, Vietnam, Cambodia and even Myanmar.
- ◆ Kim and Lau (1994a, 1994b) found that the high rate of economic growth of the East Asian newly industrialized economies—Hong Kong, South Korea, Singapore and Taiwan—in the post-World War II period was mostly the result of the growth of tangible inputs--tangible capital and labor--and not technical progress or equivalently the increase in total factor productivity.

# The Evolving Sources of East Asian Economic Growth

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- ◆ By contrast, the economic growth of the developed Group-of-Five (G-5) countries—France, West Germany, Japan, the United Kingdom and the United States--was mostly attributable to technical progress.
- ◆ These empirical results, as well as those of Alwyn Young's (1994, 1995), form the basis of Paul Krugman's (1994) provocative article on the “The Myth of the East Asian Miracle”. Krugman's interpretation of these results is very pessimistic—according to Krugman, because of the absence of technical progress, economic growth in these East Asian NIEs is bound to slow down and come to a halt eventually as a result of the diminishing returns to additional capital accumulation.

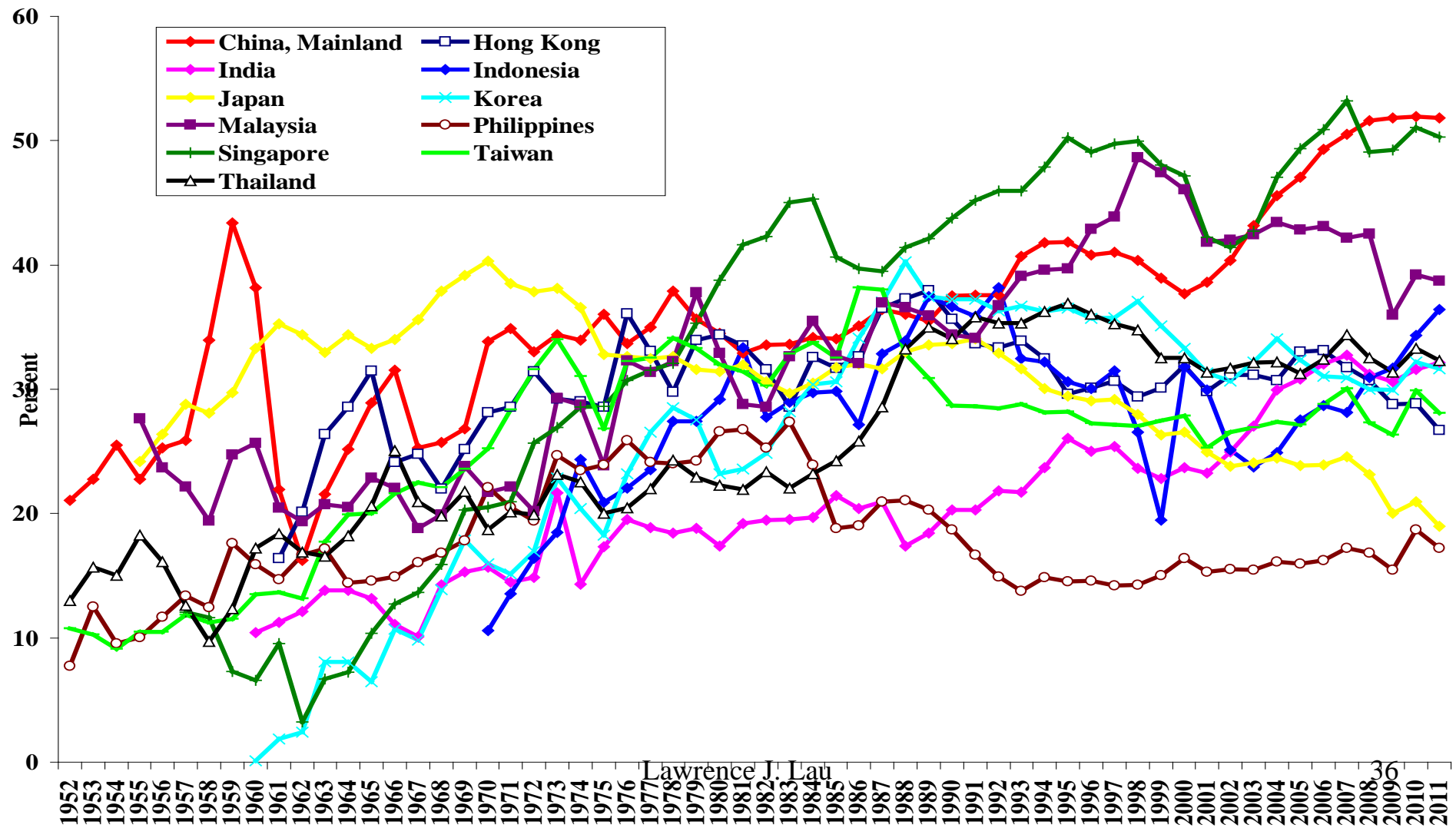
# The Evolving Sources of East Asian Economic Growth

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- ◆ And of the tangible inputs, the growth of capital was the most important source. This has been enabled by the high domestic saving rates of the East Asian economies.
- ◆ Foreign direct investment (FDI), foreign aid and foreign loans were also helpful in augmenting the domestic savings at the beginning stage of the economic development of the East Asian economies.
- ◆ The initially low national saving rates of the East Asian economies rose quickly as real GDPs per capita increased in the East Asian economies, providing the resources for continued investment in their own economies (see the following charts).

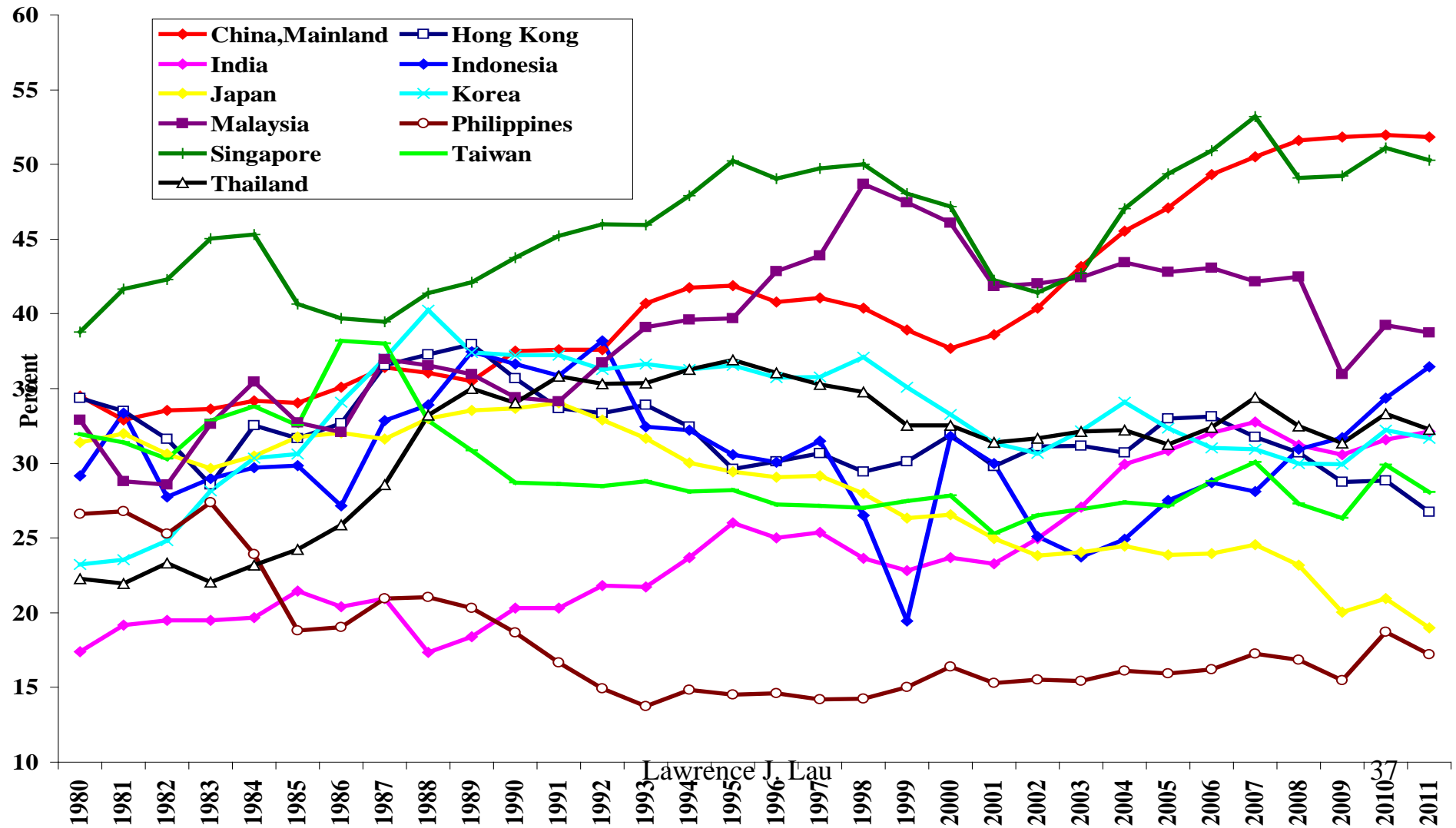
# Savings Rates of Selected Asian Economies (1952-present)

Savings Rates of Selected East Asian Economies



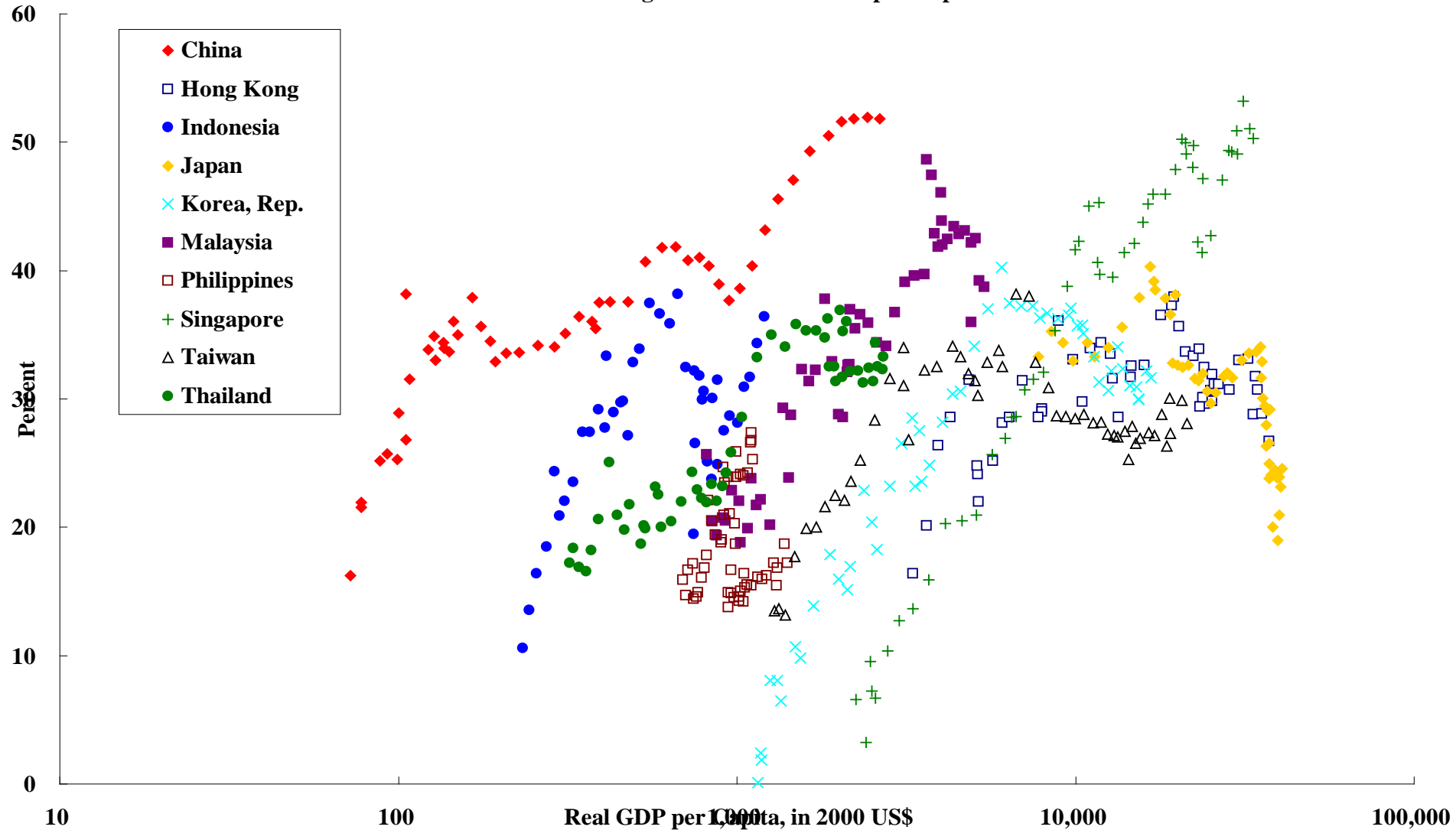
# Savings Rates of Selected Asian Economies (1980-present)

Savings Rates of Selected Asian Economies



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

National Savings Rate and Real GDP per Capita



# The Evolving Sources of East Asian Economic Growth

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- ◆ The absence of measured technical progress in the East Asian developing economies at the early stage of their development is the result of the lack of investment in intangible capital (including human capital and R&D capital).
- ◆ Since the 1980s, investment in intangible capital has risen sharply in some of the East Asian economies. This is reflected in rising enrolment rates at all levels of education as well as expenditures on R&D as a ratio of GDP.
- ◆ Beginning in the mid-1980s, evidence of positive measured technical progress can be found in the East Asian newly industrialized economies (NIEs), and that the measured technical progress can be largely attributed to the growth of stocks of human capital and R&D capital in these economies.

# The Evolving Sources of East Asian Economic Growth

Table 3.4: Growth Accounts: Contributions of the Sources of Growth  
(Two-Input Model)

	Tangible Capital	Labor	Technical Progress
(1) Full Sample : 4 NIEs and G-5			
Hong Kong	74.46	25.54	0.00
South Korea	78.20	21.80	0.00
Singapore	64.80	35.20	0.00
Taiwan	84.04	15.96	0.00
Japan	49.90	4.84	45.26
Non-Asian G-5 Countries	38.71	2.77	58.52
(2) Full Sample: 4 NIEs, 4 ASEAN, China and G-5			
Hong Kong	74.61	25.39	0.00
South Korea	82.95	17.05	0.00
Singapore	63.41	36.59	0.00
Taiwan	86.60	13.40	0.00
Indonesia	88.79	11.21	0.00
Malaysia	66.68	33.32	0.00
Philippines	66.10	33.90	0.00
Thailand	83.73	16.27	0.00
China	94.84	5.16	0.00
Japan	55.01	3.70	41.29
Non-Asian G-5 Countries	41.51	1.97	56.53



# Change from Tangible to Intangible Capital-Driven Growth

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- ◆ In the late 1980s and early 1990s, the growth of intangible capital (human capital and R&D capital) has begun to be an important source of economic growth of South Korea, Singapore and Taiwan supplanting the growth of tangible capital.

# The Evolving Sources of East Asian Economic Growth

Table 6.4 Growth Accounts: Contributions of the Sources of Growth (Percent)  
(Four-Input Model with Human Capital and R&D Capital)

	Sample Period	Tangible Capital	Labor	Human Capital	R&D Capital	Technical Progress
South Korea	67-95	60.12	14.23	1.75	23.90	0.00
Singapore	77-95	50.44	23.90	1.30	24.35	0.00
Taiwan	78-95	55.85	11.25	1.14	31.76	0.00
Japan	64-94	42.40	5.24	0.72	17.08	34.56
Non-Asian G-7 Countries	65-94	32.52	3.72	1.16	14.90	47.69

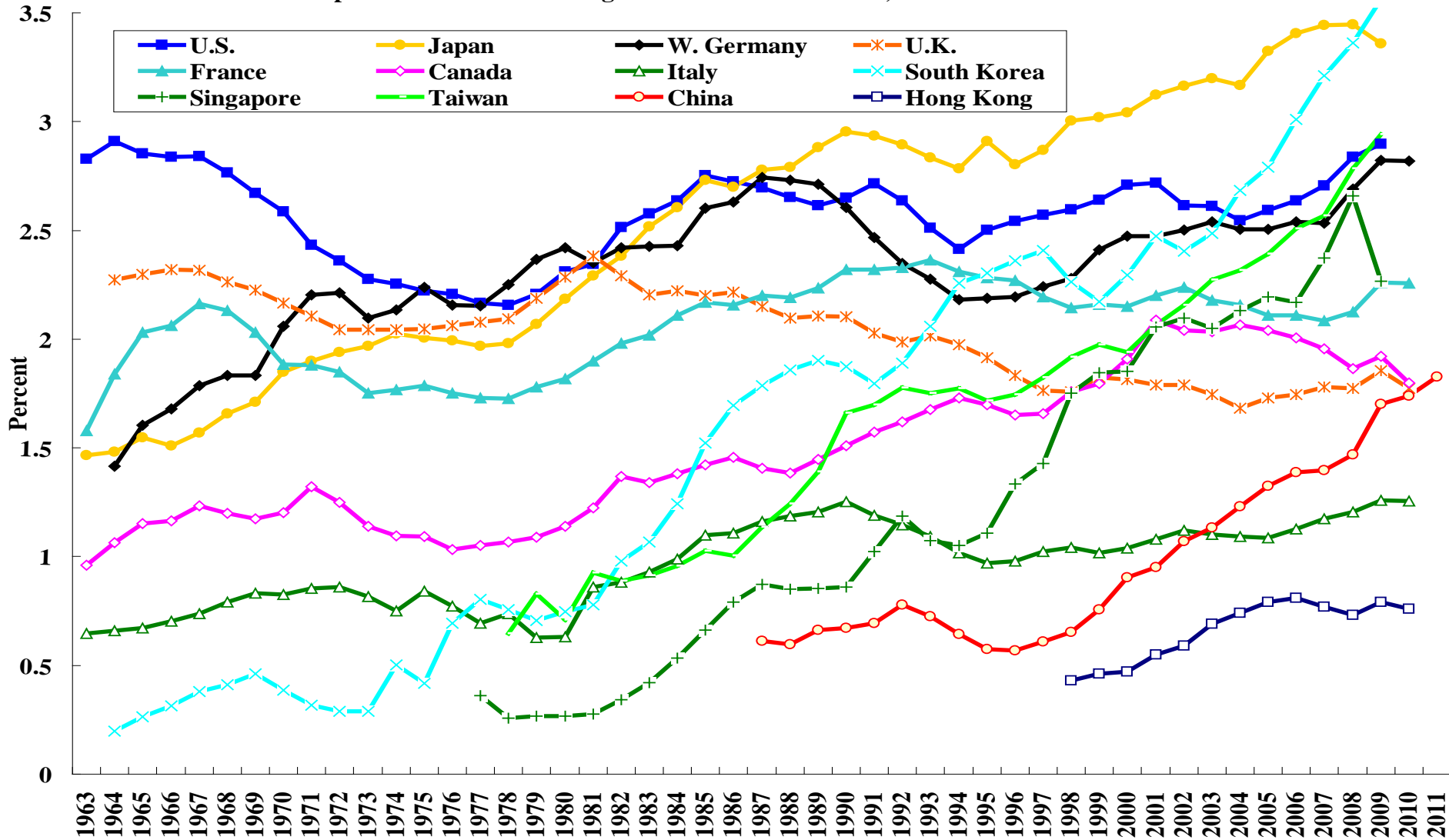
# Intangible Capital-Driven Growth

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- ◆ Sustained investment in research and development (R&D) is essential for technical progress in an economy.
- ◆ In the following chart, the ratio of R&D expenditure to GDP across economies are compared over time.
- ◆ It may be noted that the East Asian economies all started with a relatively low ratio in the early years, but these ratios have been rising over time.
- ◆ Japan, South Korea and Taiwan now invest a higher percentage of their GDP in R&D than the U.S. and other developed economies.

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

R&D Expenditures as a Percentage of GDP: G-7 Countries, 4 East Asian NIEs and China



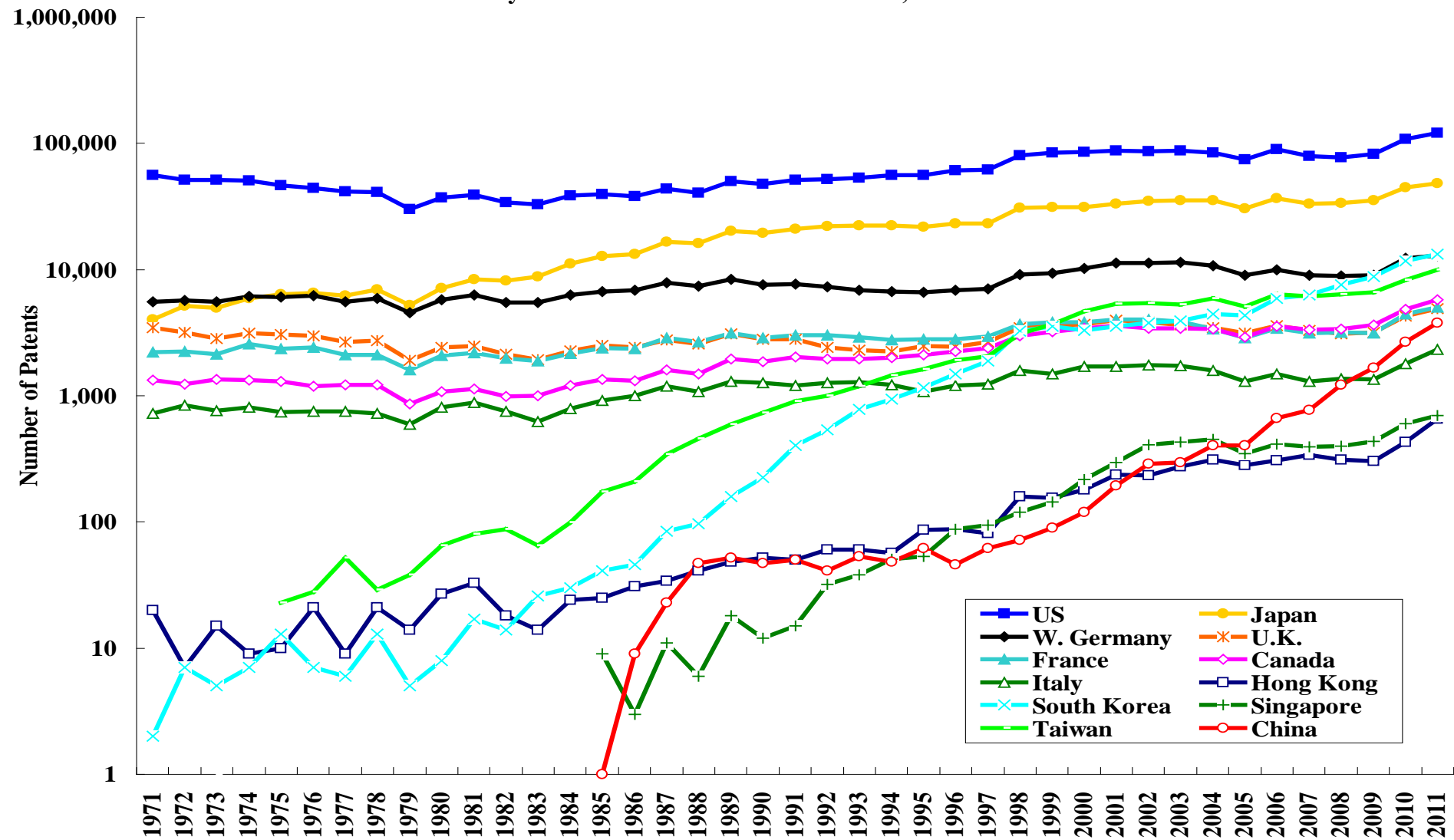
# Intangible Capital-Driven Growth

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- ◆ One indicator of the potential for technical progress (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 more than 120,000 patents granted in 2011, followed by Japan, with approximately 48,000. (Since these are patents granted in the U.S., the U.S. may have a home advantage; however, for all the other countries, the comparison across them should be fair.)

# Patents Granted in the U. S.: G-7 Countries, 4 East Asian NIEs & China

Patents Granted Annually in the United States: G7 Countries, 4 East Asian NIEs and China



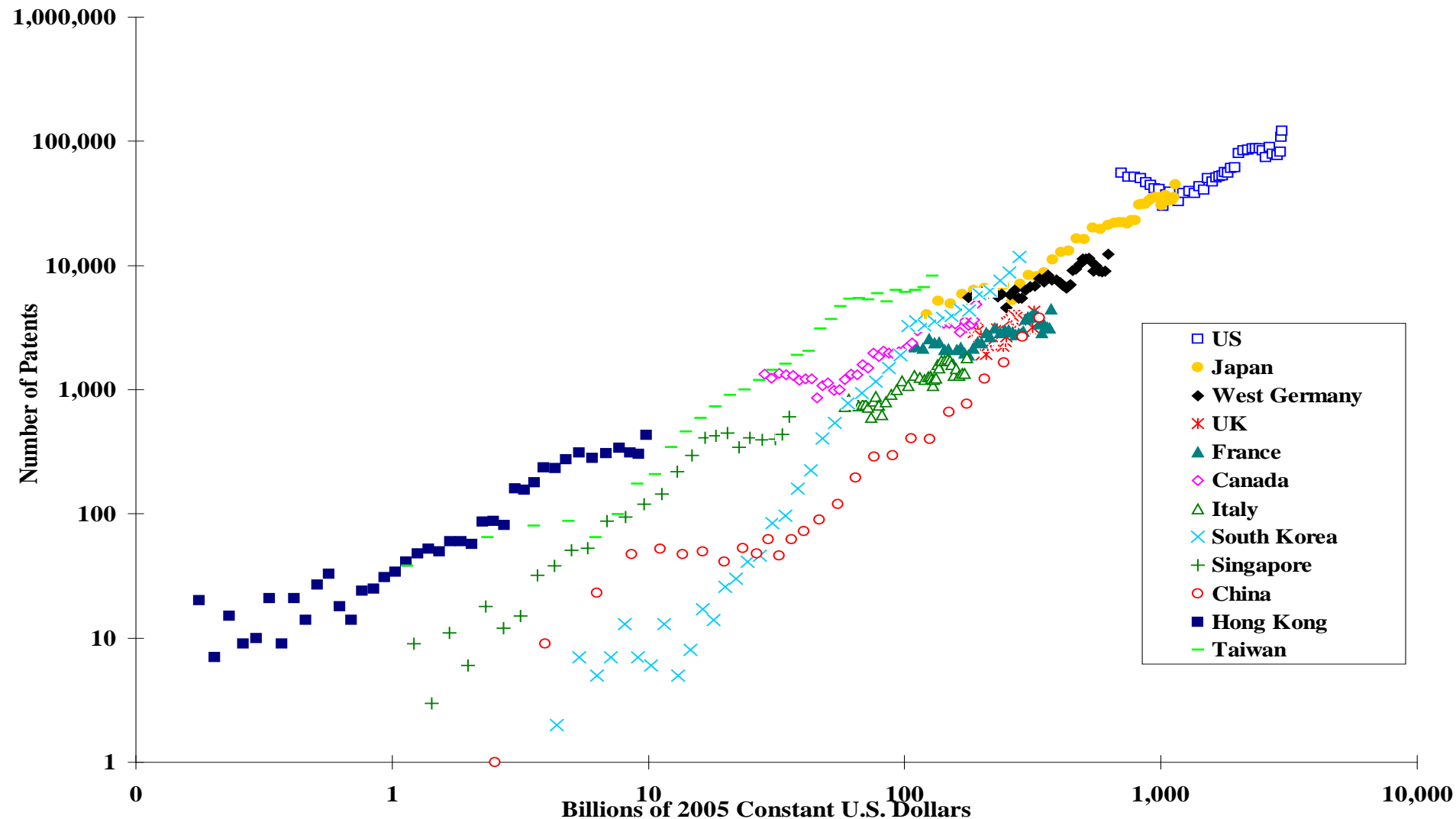
# Intangible Capital-Driven Growth

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- ◆ The stock of R&D capital, defined as the cumulative past real investment in 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 number of patents granted is plotted against the R&D capital stock for each country and each year).

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

The Number of U.S. Patents Granted Annually vs. R&D Capital Stocks





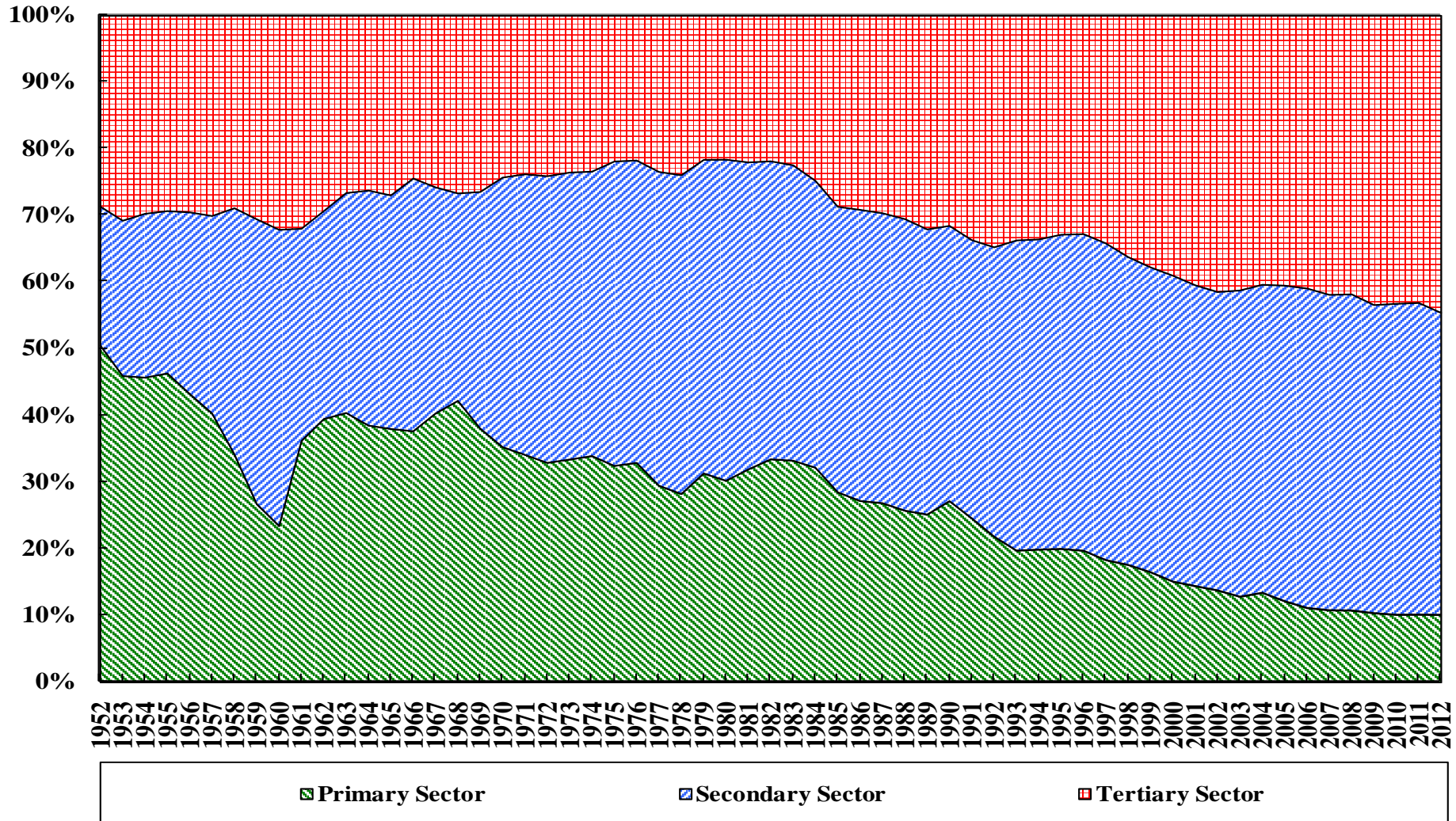
# Economic Development with Surplus

## Labor

- ◆ East Asian economic development proceeded along the lines of W. Arthur Lewis's model of surplus labor, first introduced in his 1954 article, "Economic Development with Unlimited Supplies of Labour", published in the Manchester School.
- ◆ In almost every successfully developed East Asian economy, from Japan to Hong Kong to Taiwan to South Korea to China and Southeast Asia, development began with the expanded employment of the surplus labor from the agricultural sector in the non-agricultural sectors.
- ◆ One important implication is that as the economy develops, the shares of GDP and employment originating from the non-agricultural sectors will rise and the corresponding shares of the agricultural sector will fall. And increased urbanization is likely to accompany the growth of the non-agricultural sectors. Chinese data are presented as an example below.

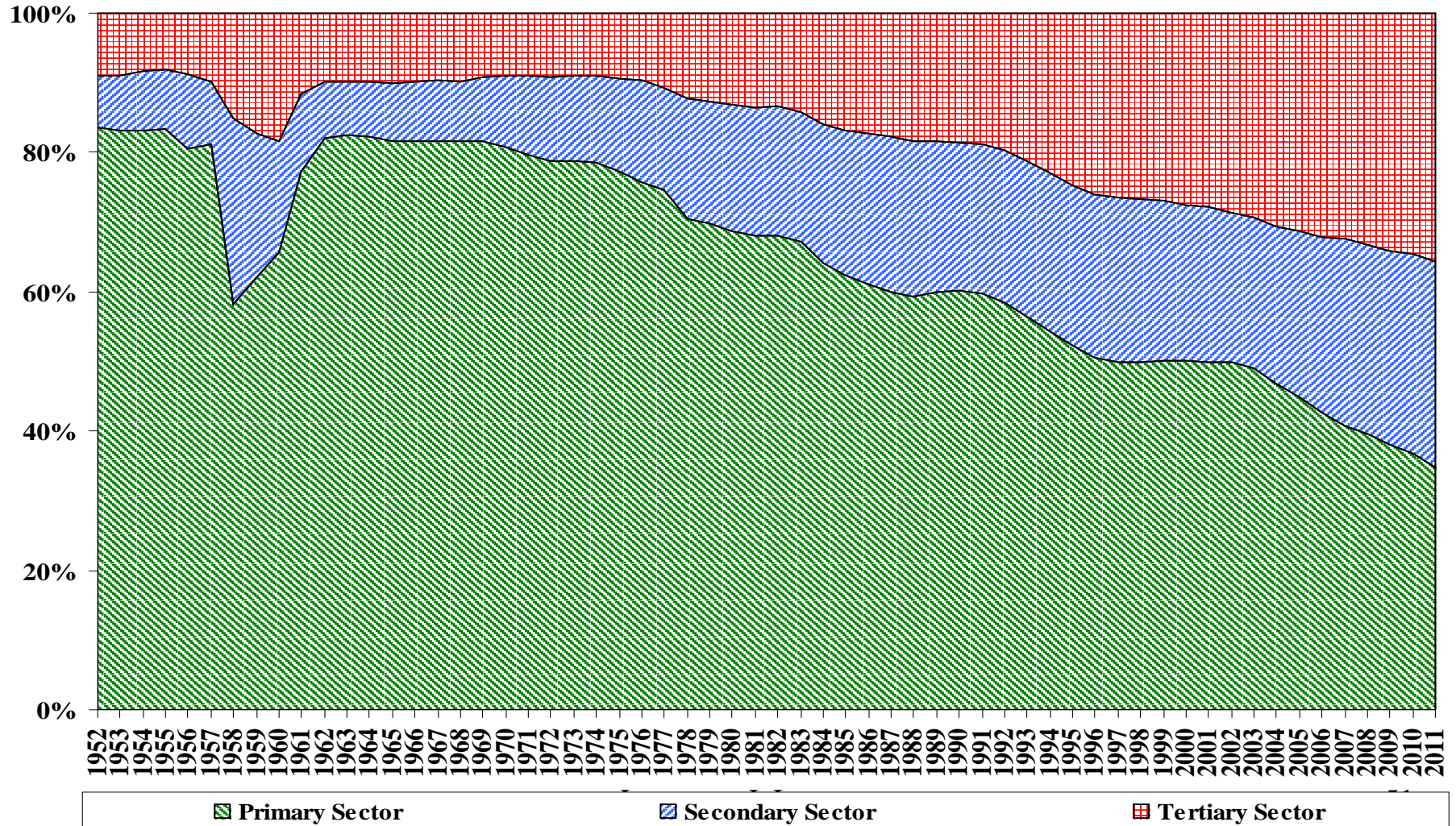
# The Distribution of Chinese GDP by Sector Since 1952

The Distribution of GDP by Sector



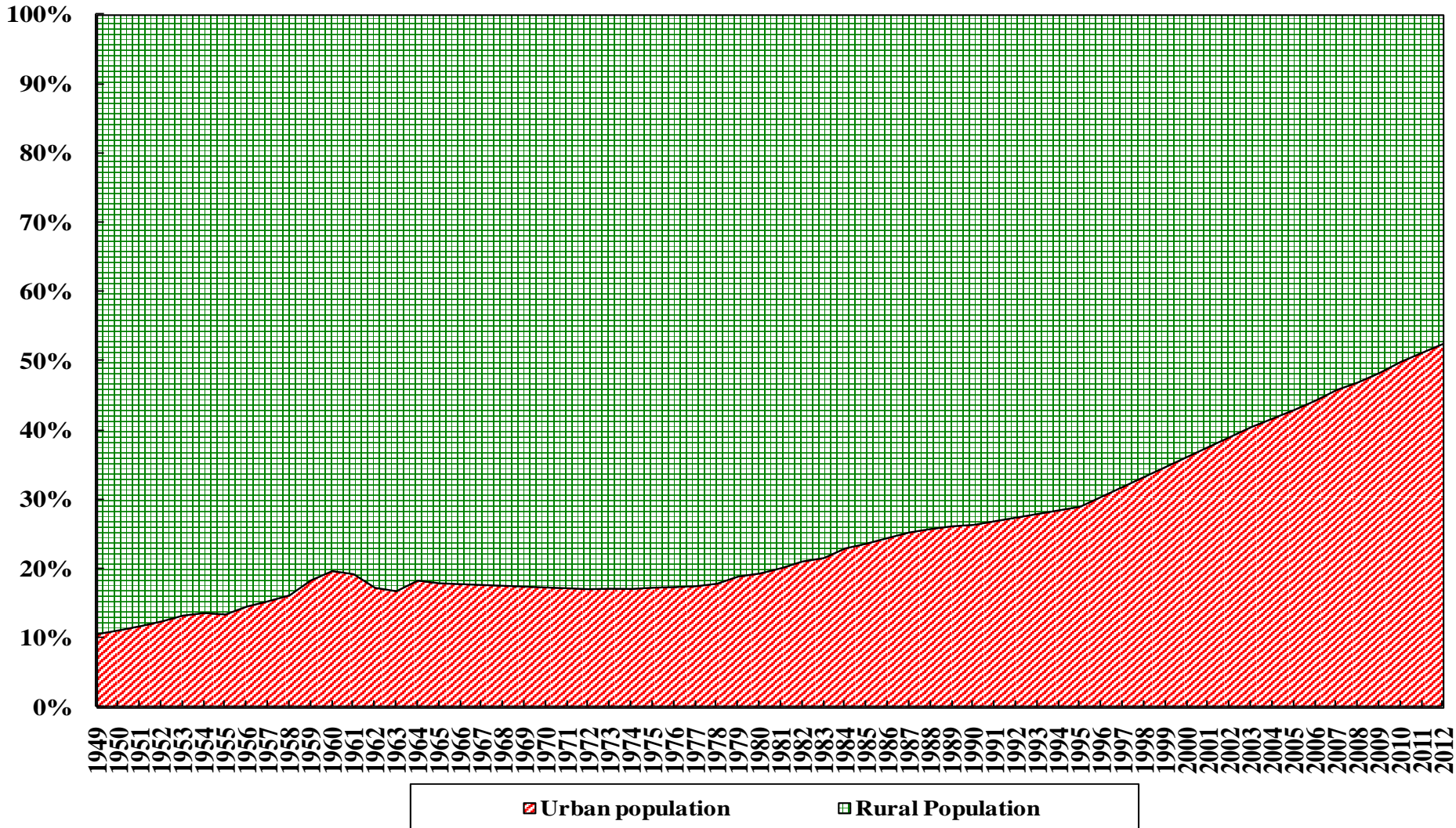
# The Distribution of Chinese Employment by Sector Since 1952

The Distribution of Employment by Sector since 1952



# The Shares of Rural and Urban Population in China, 1949-Present

The Shares of Rural and Urban Populations in China



# The Importance of Openness

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- ◆ The successfully developed East Asian economies all adopted an economic policy of openness:
  - ◆ Opening the economy to the World—promoting both exports and imports of goods and services (and shifting from a purely import substitution development strategy);
  - ◆ Rationalizing (devaluing) the exchange rate to a level that reflects relative productivities with competitors and potential competitors;
  - ◆ Removing barriers to the imports of raw materials, components and parts and equipment used in export industries, thus enabling the growth of exports (export-processing zone, pioneered by Taiwan, is an often-used device);
  - ◆ Adopting current accounts convertibility;

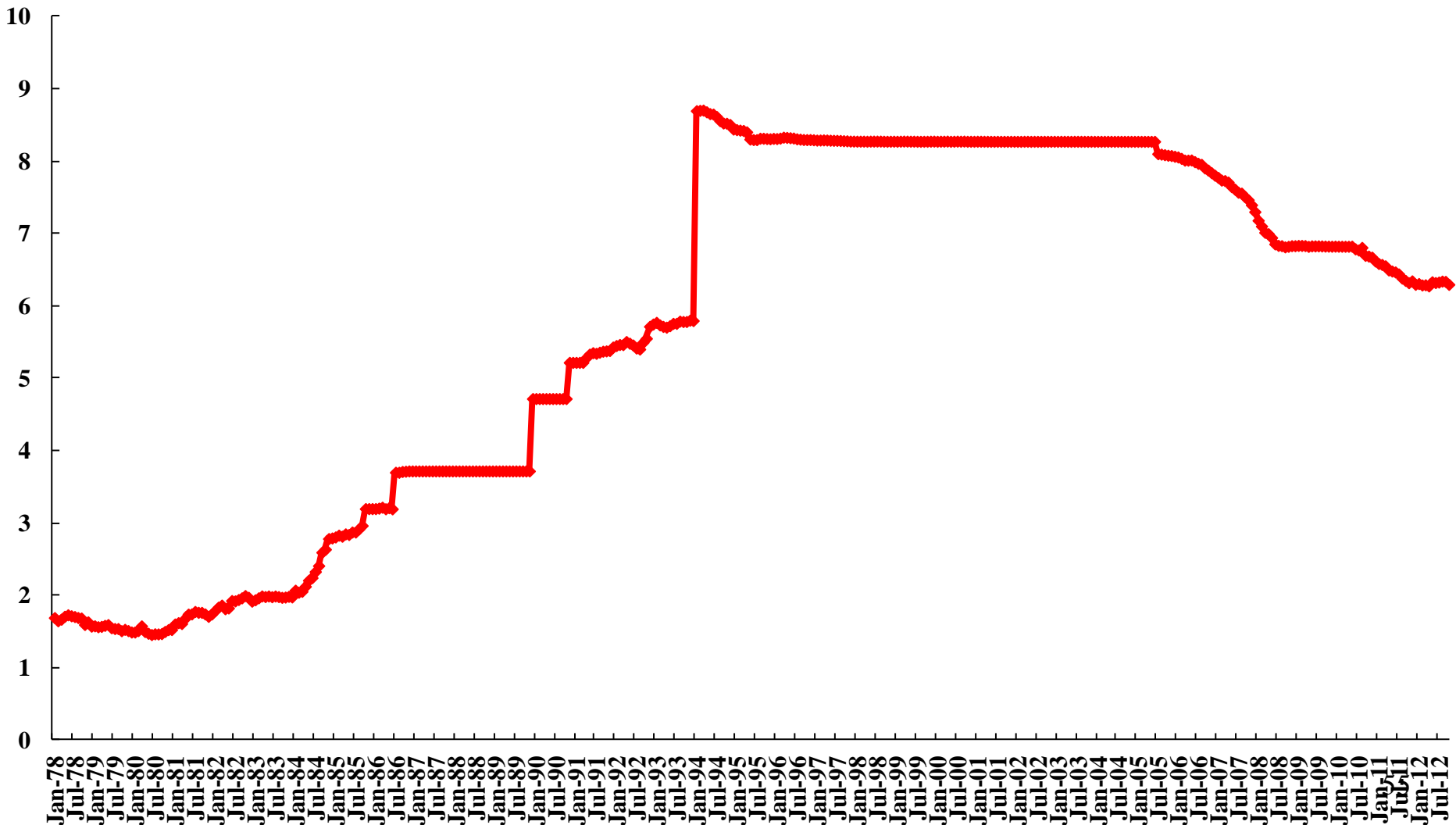
# The Importance of Openness

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- ◆ Attracting foreign direct investment (FDI), which brings with it not just capital, but also technology, markets, know-how and new business models. FDI also directly augments the initially low level of domestic savings. It can also augment aggregate demand and increase employment.
- ◆ The evolutions of exchange rates over time in Mainland China and Taiwan are presented in the charts below as illustrations of the devaluation at the beginning of the process of opening to the World.
- ◆ One implication of the adoption of the openness policy is the rising share of exports in GDP.

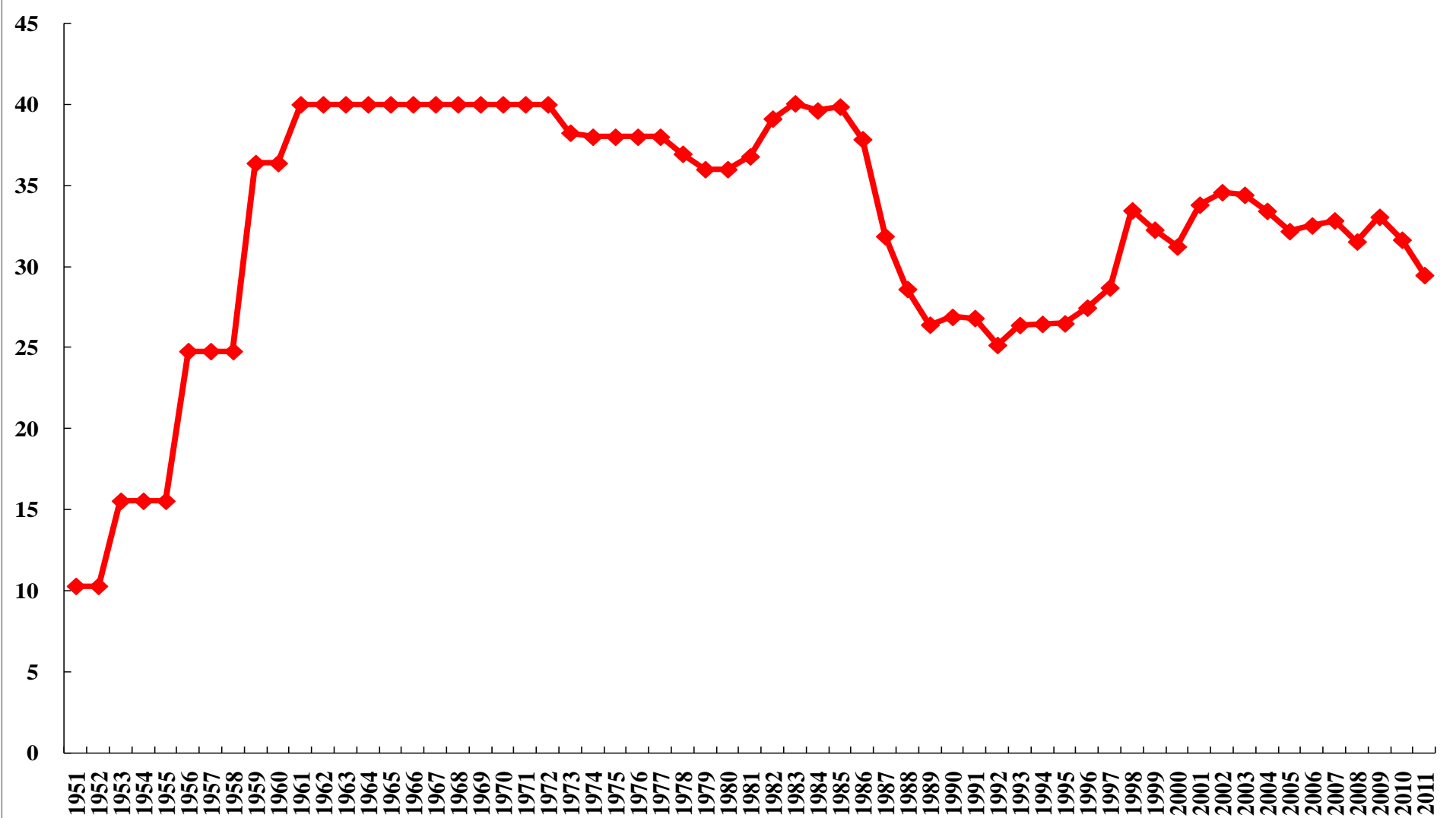
# Nominal Exchange Rate of the Renminbi, Yuan/US\$, 1978-present

Nominal Exchange Rate of the Renminbi, Yuan/US\$, 1978-present



# The New Taiwan Dollar/U.S. Dollar Nominal Exchange Rate, Annual Average

Annual Average Exchange Rate of New Taiwan Dollar versus the U.S. Dollar





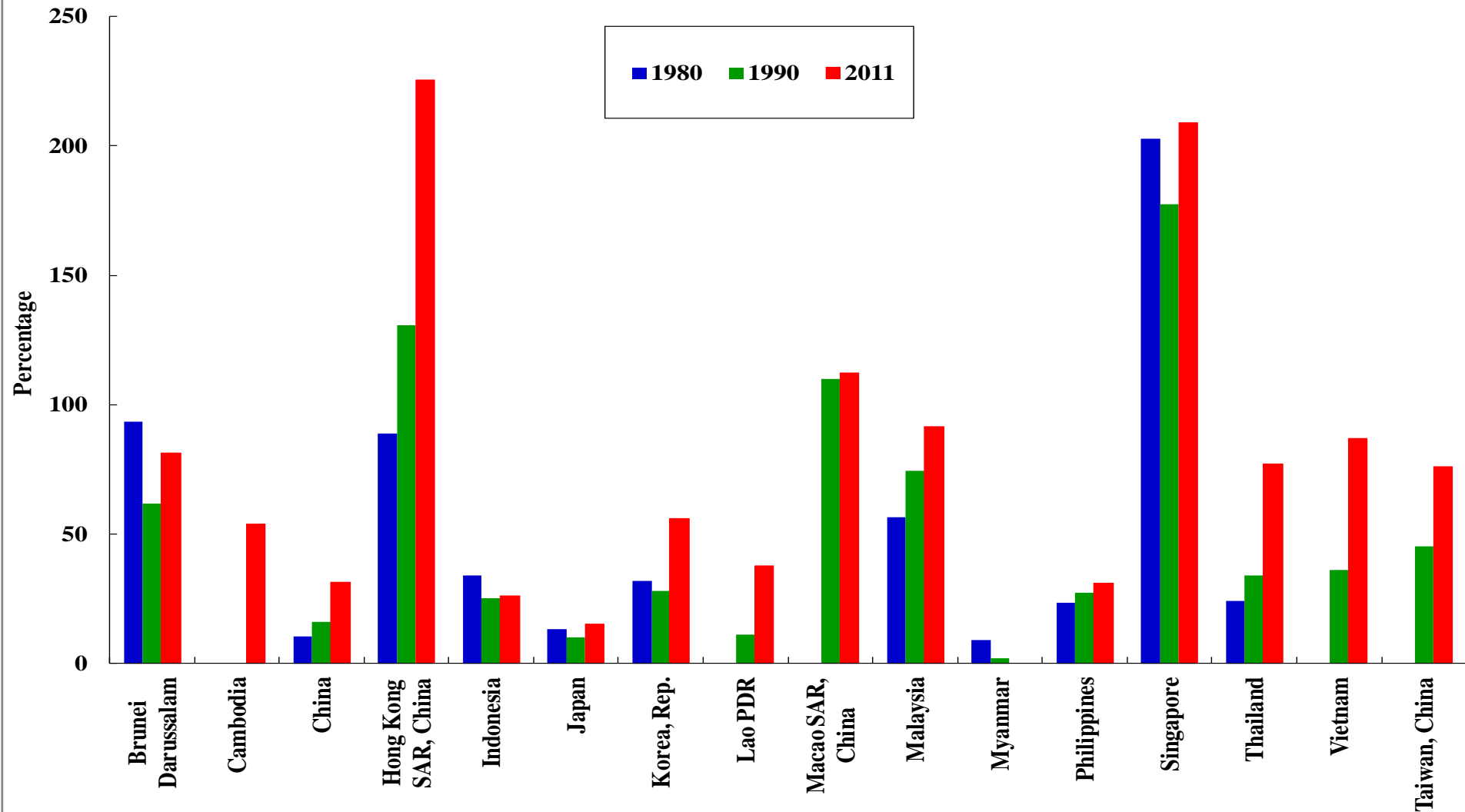
# The Importance of Openness

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- ◆ Maintaining an open economy has the following additional advantages:
  - ◆ FDI and foreign loans can augment the domestic savings.
  - ◆ Exporting also enhances the ability to attract foreign direct investment and foreign loans because the foreign exchange earnings derived from exports enables the eventual repatriation of the principal, interest and profits to the foreign direct investors and lenders.
  - ◆ Exports generate the foreign exchange revenue that can be used to import raw materials, components and parts, and equipment needed for production and investment.
  - ◆ Exports and imports can generate readily collectible revenue for the government that can be used for the construction of infrastructure and basic education.

# Exports as a Share of GDP in East Asian Economies

Exports as a Share of GDP of East Asian Economies



# Concluding Remarks

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- ◆ The center of gravity of the World economy has been shifting towards East Asia.
- ◆ The center of gravity of the East Asian economy has been shifting towards China.
- ◆ The East Asian economy has been partially de-coupled from the United States and Europe.
- ◆ Intangible capital (human capital and R&D capital) has been gradually supplanting tangible inputs (physical capital and labor) as an important source of growth in some East Asian economies such as South Korea, Singapore and Taiwan.
- ◆ Openness to international trade and investment and the continuing expansion of the non-agricultural sectors through the utilization of surplus labor are common features of the development experience of successful East Asian economies.