

# How the East Grew Rich

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

# Outline

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- ◆ Introduction
- ◆ The Commonalities among East Asian Economies
- ◆ The Evolving Sources of East Asian Economic Growth
- ◆ The Rising Importance of Intangible Capital
- ◆ The Partial De-Coupling Hypothesis
- ◆ Concluding Remarks

# Introduction

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- ◆ How did the East grow rich? The East is taken here to mean East Asia (defined as the 10 Association of Southeast Asian Nations (ASEAN) countries--Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam--plus 3-- China (including Hong Kong, Macau and Taiwan), Japan and the Republic of Korea.
- ◆ The focus here is on the period since World War II. As Professor Angus Maddison pointed out, back in the 18th Century, the Chinese economy was the largest economy in the World, accounting for 30% of the then World GDP.
- ◆ The East Asian economies have been among the fastest-growing economies in the World since the end of World War II, even though some of them, such as the Japanese economy, have already begun to slow down.

# Introduction

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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, Taiwan and Singapore in the late 1950s and early 1960s, South Korea in the early 1970s, and then Malaysia, Thailand and Indonesia, and then Mainland China in the early 1980s. Industrialisation has also spread to Vietnam, Cambodia, Laos and even Myanmar since then.
- ◆ The centre of gravity of the World economy has been and still is in the process of gradually shifting from the United States and Europe towards East and South Asia.
- ◆ Within East Asia itself, the economic centre of gravity has also been shifting gradually from Japan towards China, which overtook Japan to become the second largest economy in the World in 2011. East Asia is now home to both the second and the third largest economies in the World.

# Introduction

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- ◆ East Asian economic development has essentially followed the dual economy model of Professor W. Arthur Lewis, Nobel Laureate in Economic Sciences, based on the effective utilization of the surplus labour in the agricultural sector in an expanding non-agricultural (manufacturing, construction and service) sector.
- ◆ The openness of the East Asian economies to international trade and investment and their active participation in the World economy are also critical factors in their success.

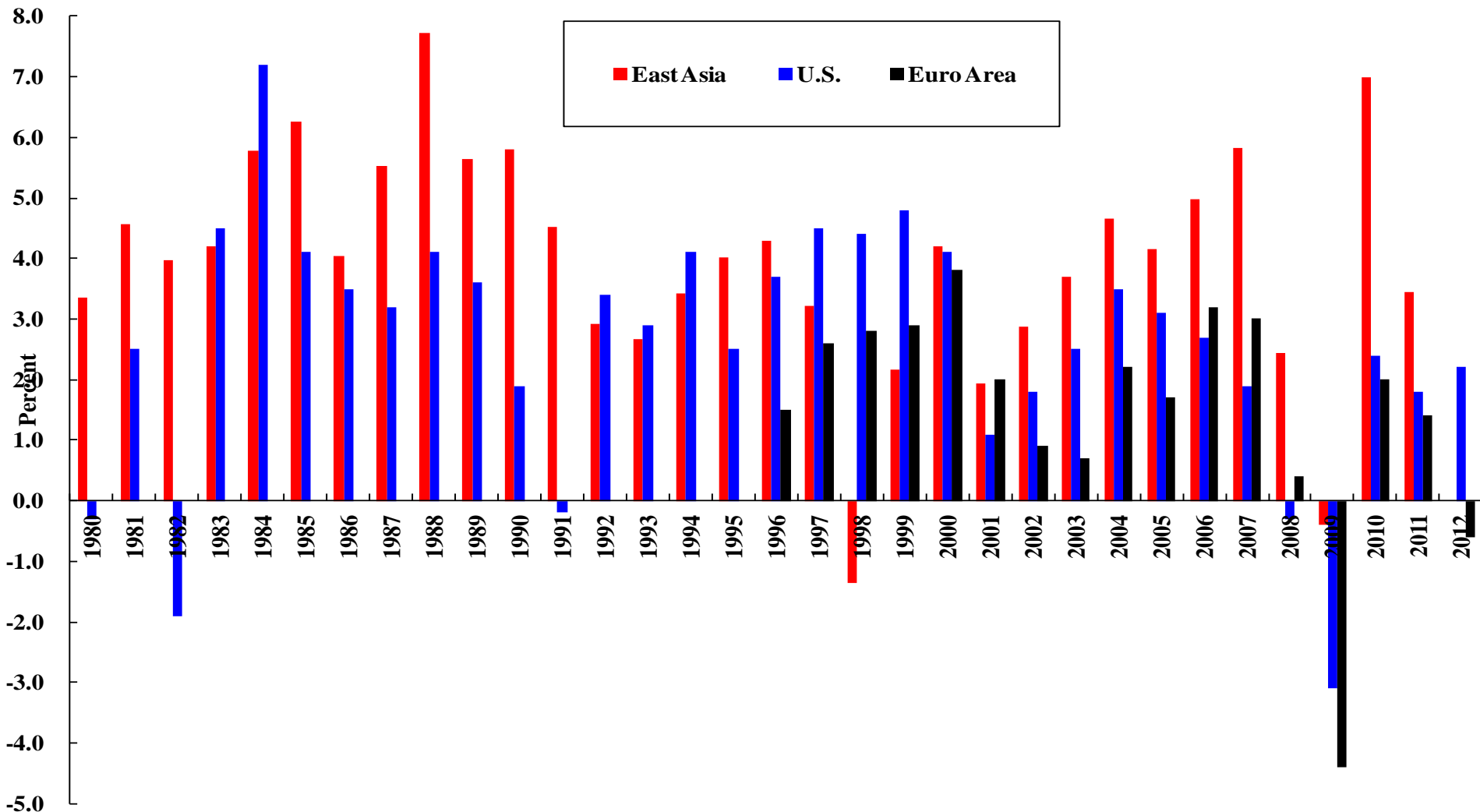
# Introduction

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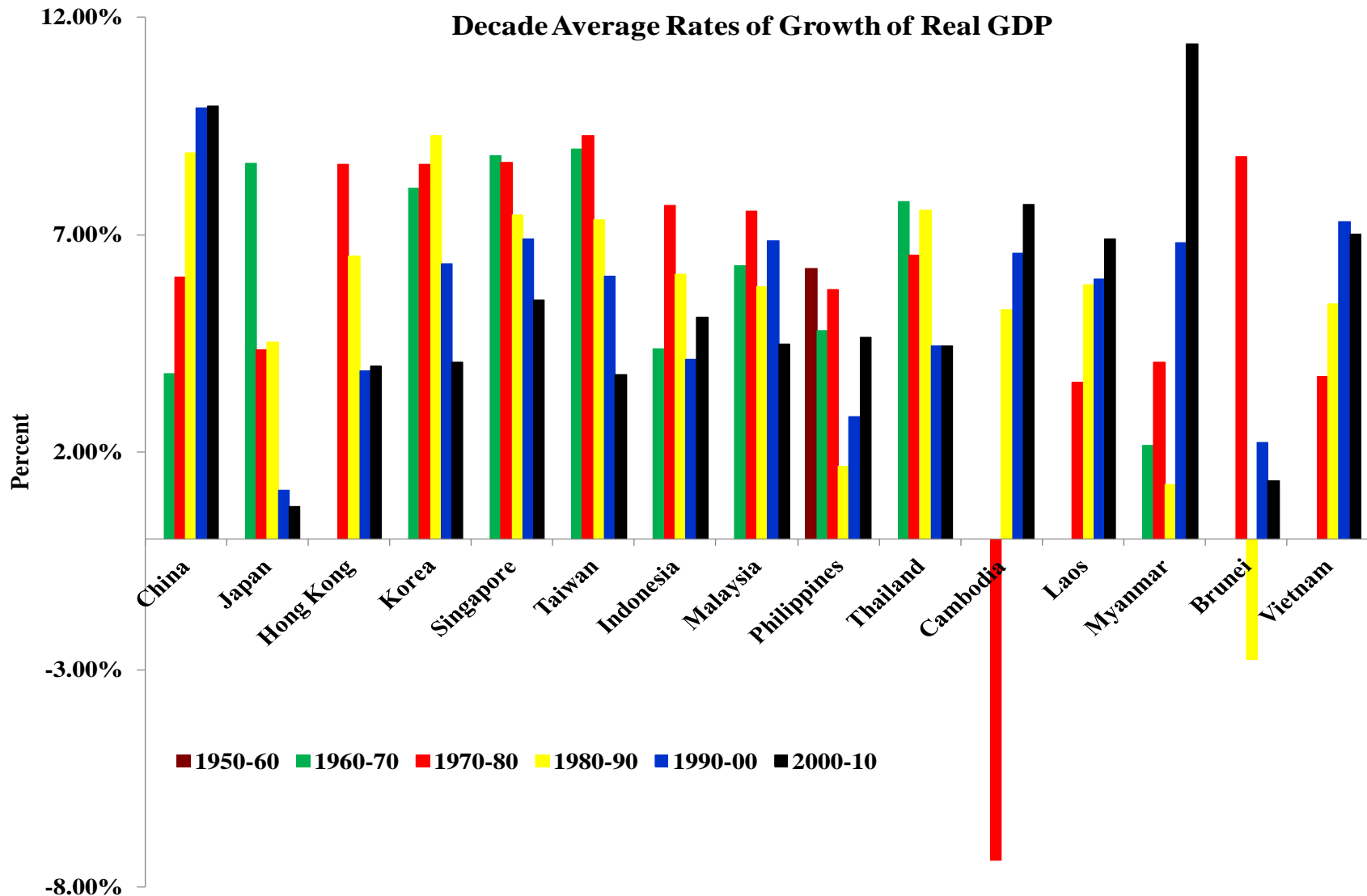
- ◆ As a whole, East Asia has made tremendous progress in terms of real GDP. Since 1980, the rate of growth of the East Asian real GDP has almost always exceeded those of the U.S. and the Euro Zone except during the East Asian currency crisis of 1997-1998.
- ◆ Note that the rates of growth of Japan and the other four newly industrialised economies (Hong Kong, South Korea, Singapore and Taiwan), which have begun their economic development processes relatively earlier, have gradually declined over time, and those of the newly emerging economies of Cambodia, Laos, Myanmar and Vietnam are on an upward trend.

# 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



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





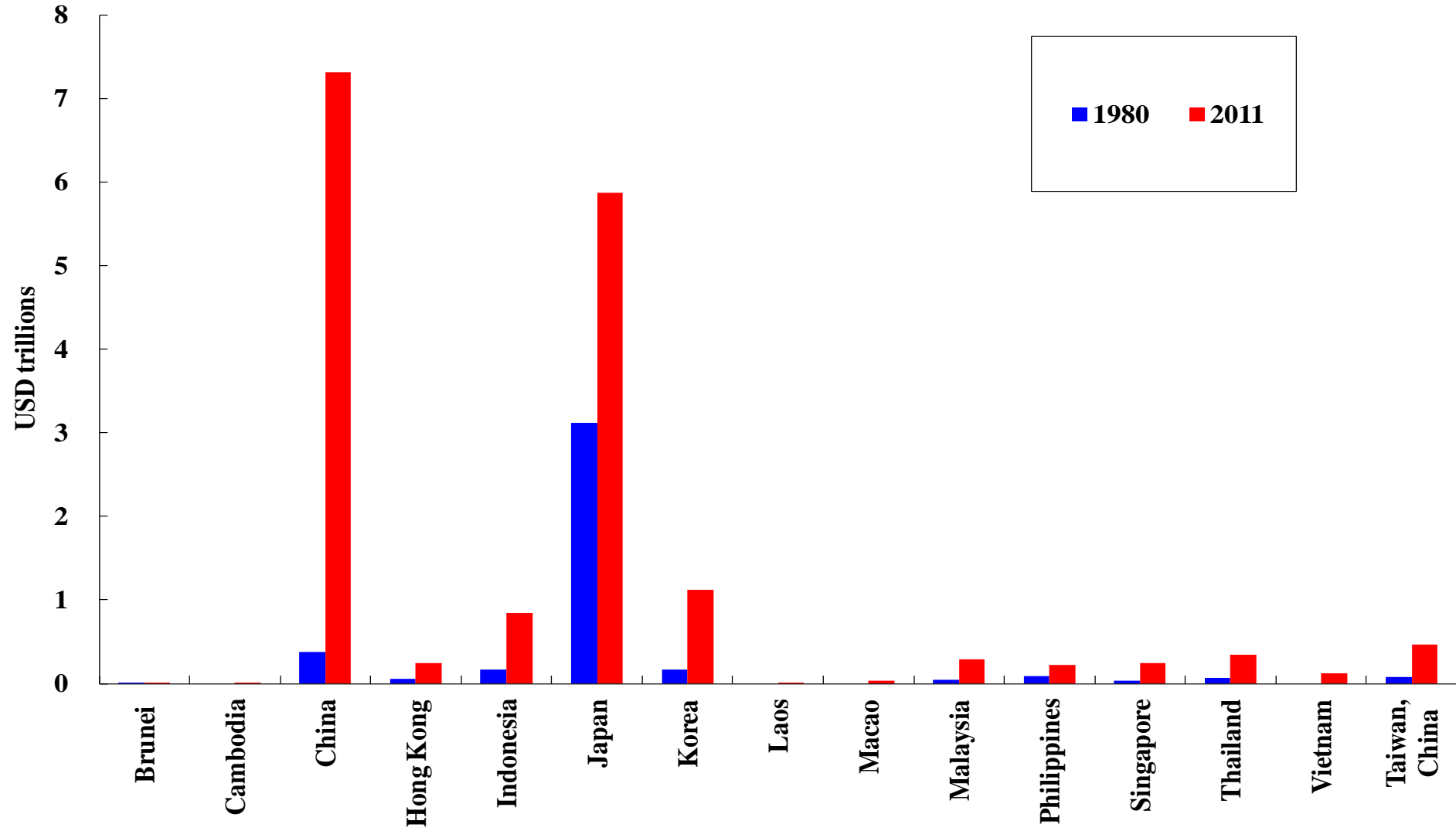
# Introduction

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- ◆ 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.
- ◆ 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.

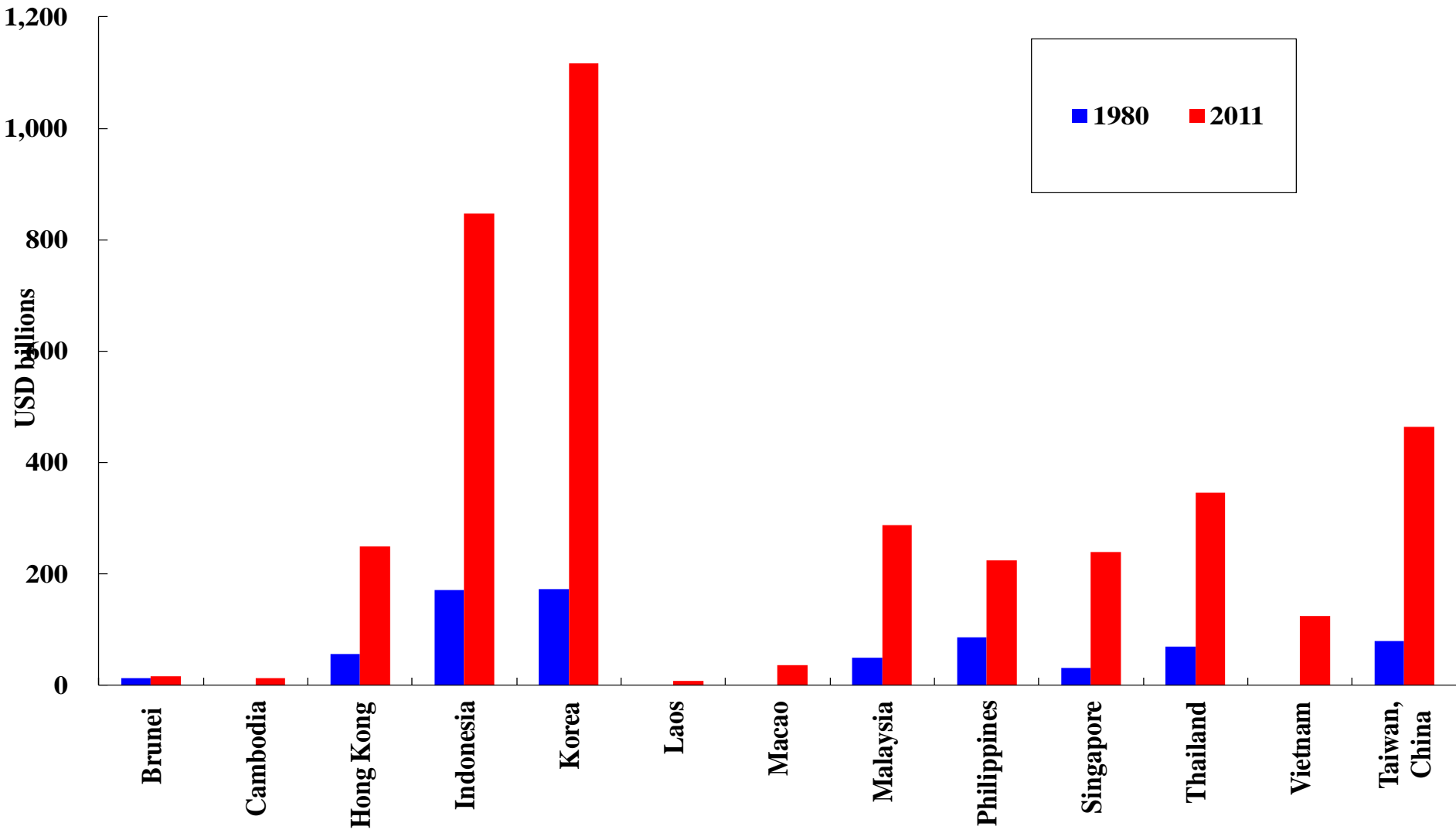
# The Growth of Real GDP in East Asian Economies, 1980-2011

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



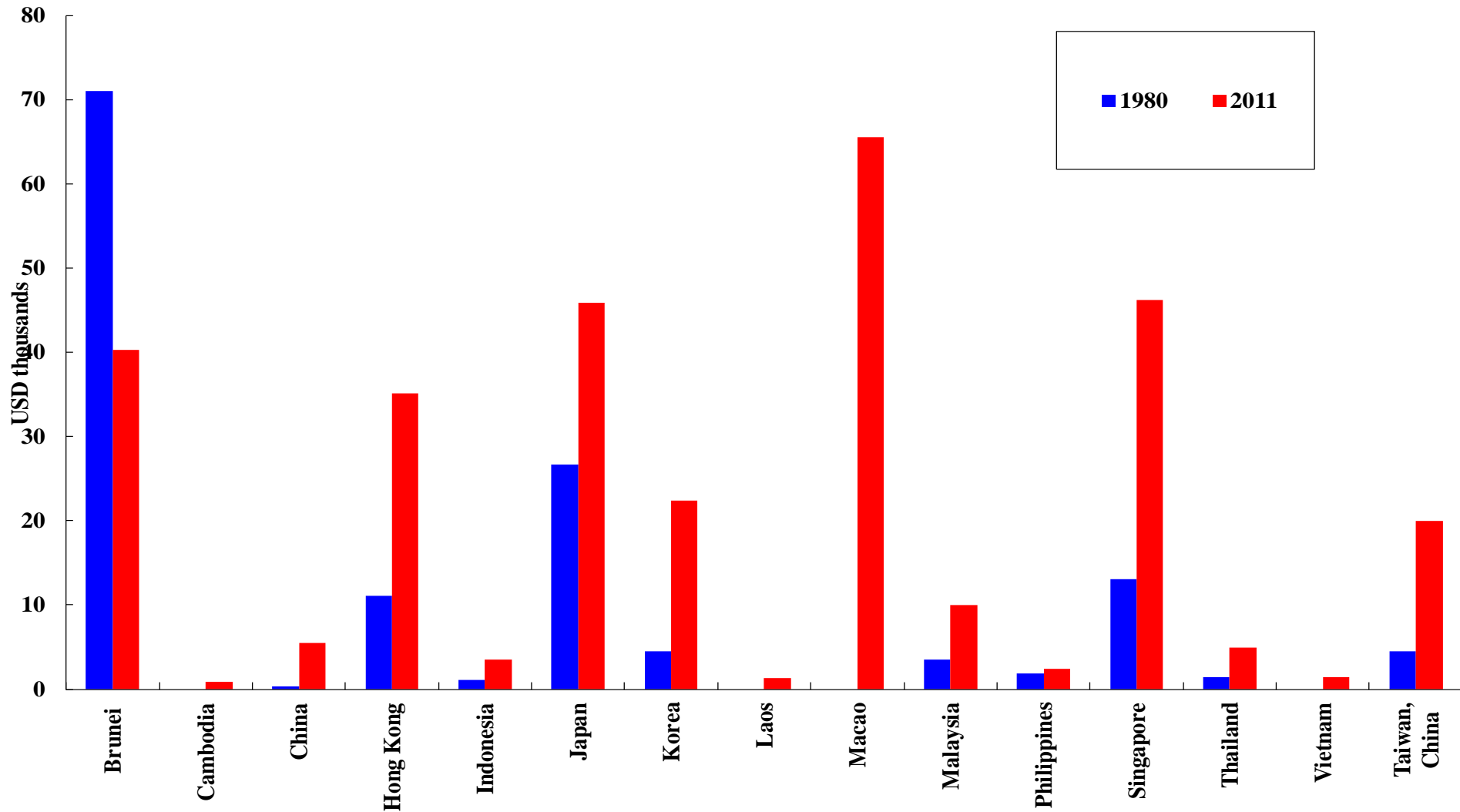
# The Growth of Real GDP in East Asian Economies, 1980-2011 (cont.)

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



# Introduction

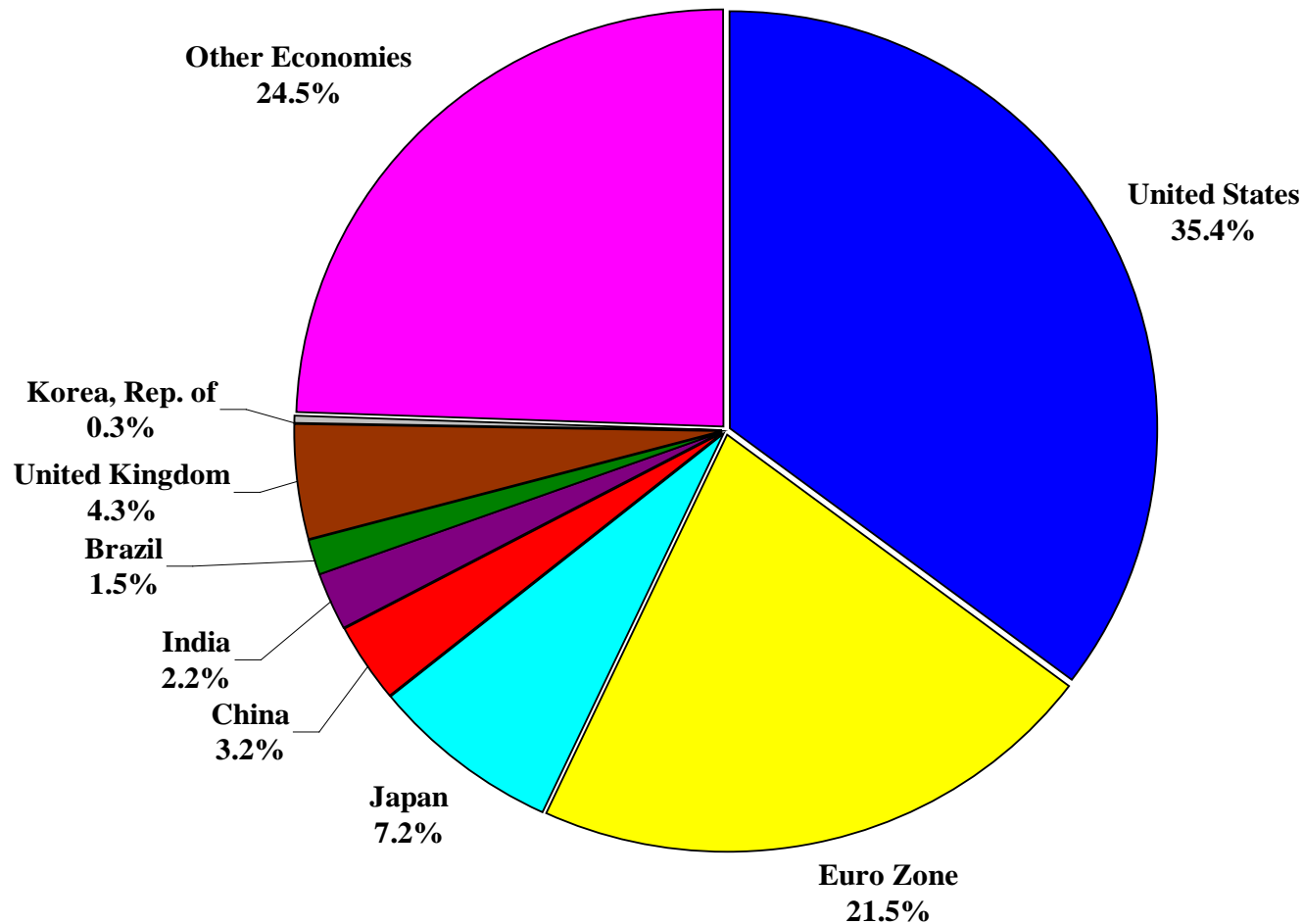
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- ◆ In 1970, the United States and Western Europe together accounted for over 60% of World GDP. By comparison, East Asia accounted for just above 10% of World GDP.
- ◆ By 2012, the share of United States and Western Europe in World GDP has declined to approximately 45% whereas the share of East Asia has risen to approximately 25%.
- ◆ The Japanese share of World GDP declined from a peak of 18% in the mid-1990s to 8% in 2012 while the Mainland Chinese share of World GDP rose from less than 2% in 1970 to over 11% in 2012.

# The Distribution of World GDP, 1970, US\$

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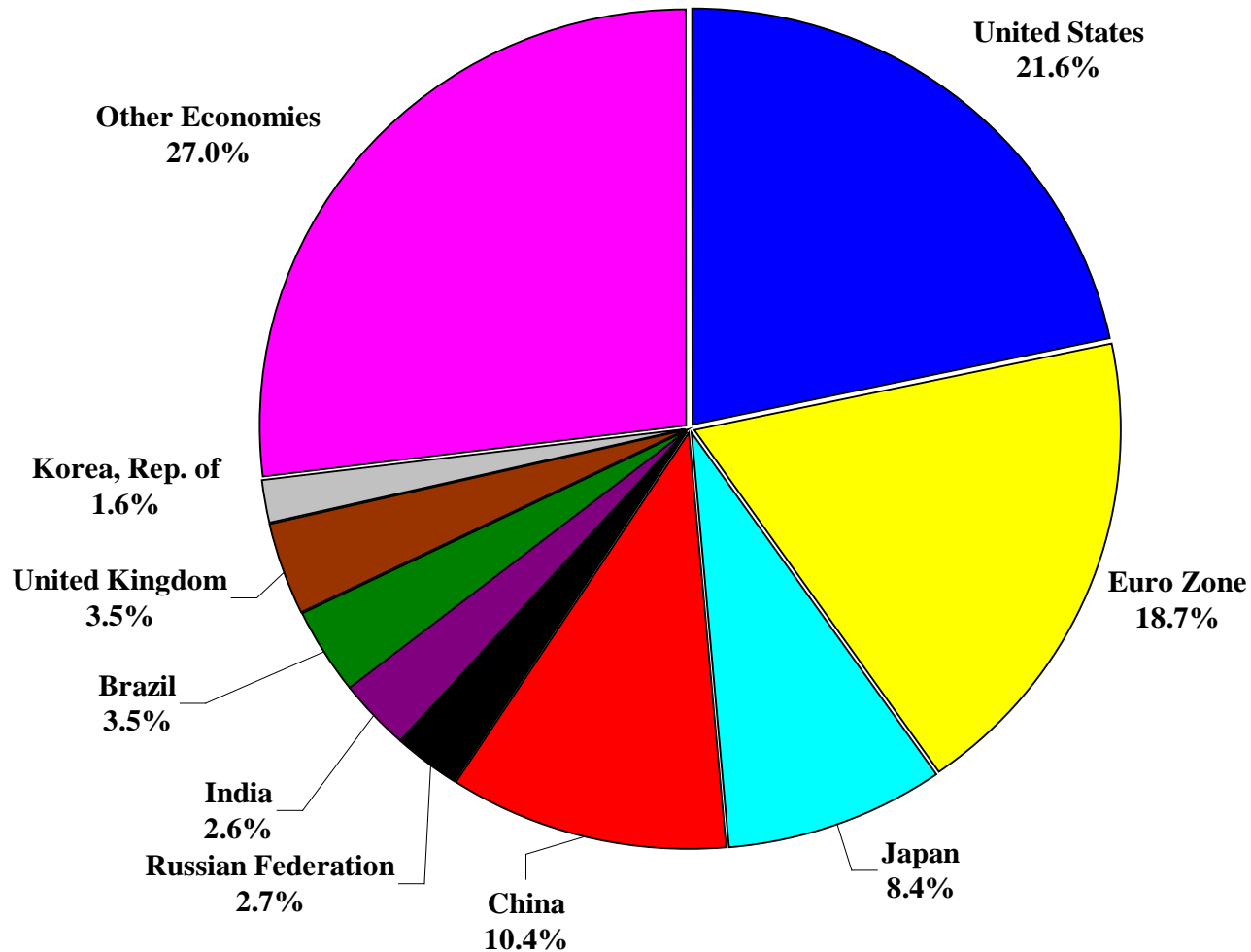
The Distribution of World GDP in 1970, in USD



# The Distribution of World GDP, 2012, US\$

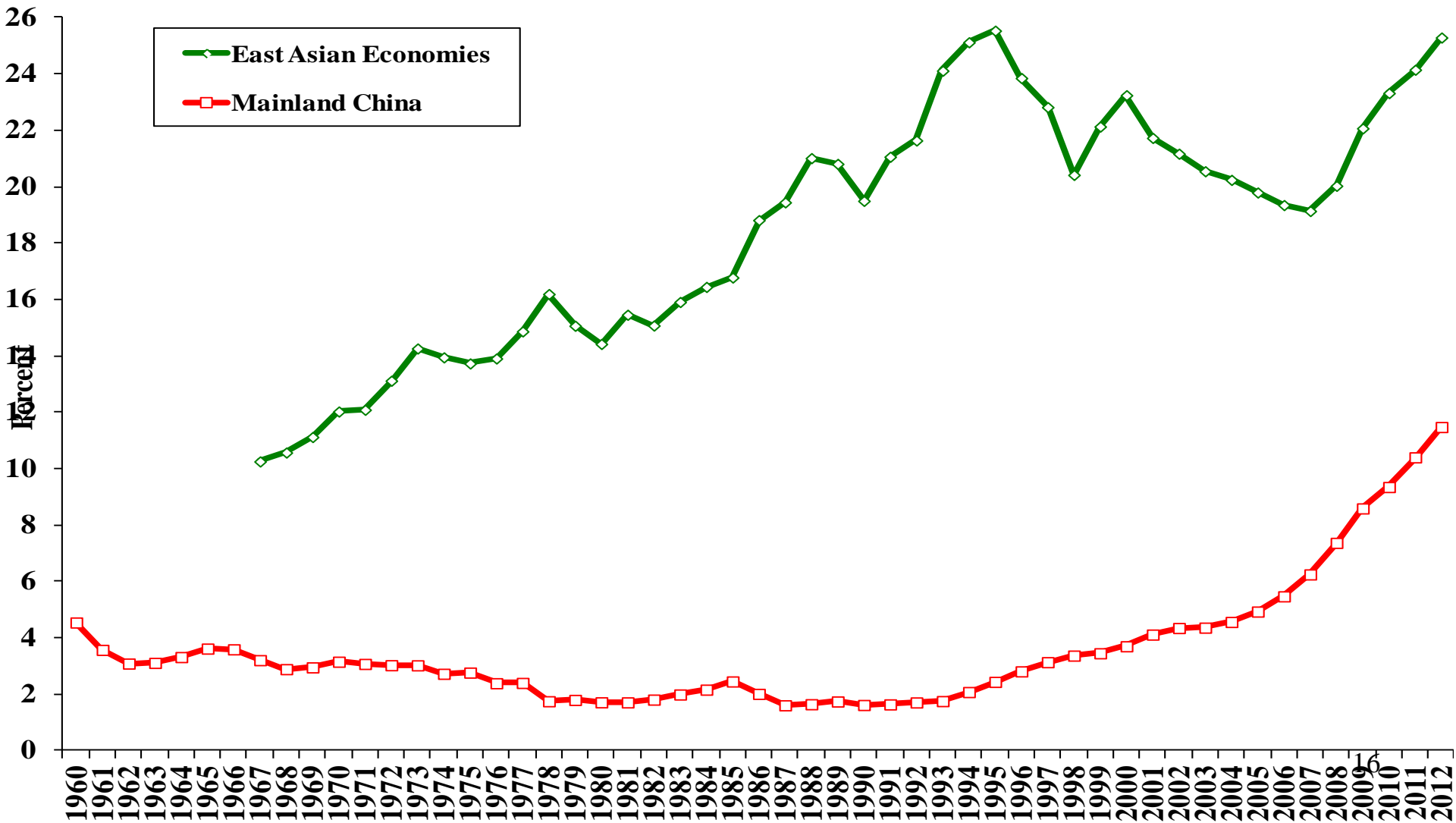
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The Distribution of World GDP in 2011, in USD



# China and East Asia's Share of World GDP, 1960-present (Current Prices)

China's and East Asia's Share of World GDP, 1960-present





# Introduction

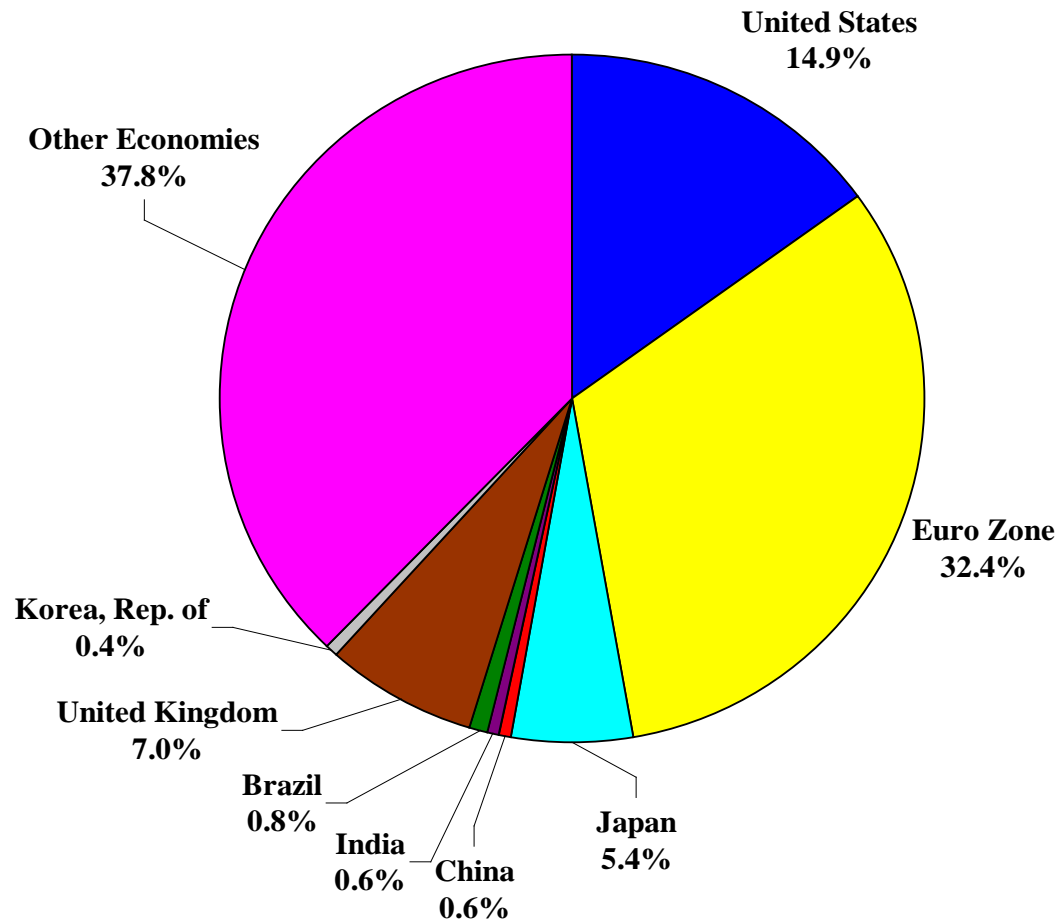
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- ◆ In 1970, the United States and Western Europe together accounted for over 60% of World trade. By comparison, East Asia and South Asia combined accounted for less than 10% of World trade.
- ◆ In 1990, the United States and Western Europe together still accounted for approximately 55% of World trade while East Asia and South Asia combined accounted for just over 10% of World trade.
- ◆ By 2011, the share of United States and Western Europe in World trade has declined to below 45% whereas the share of East Asia and South Asia has risen to 30%.

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

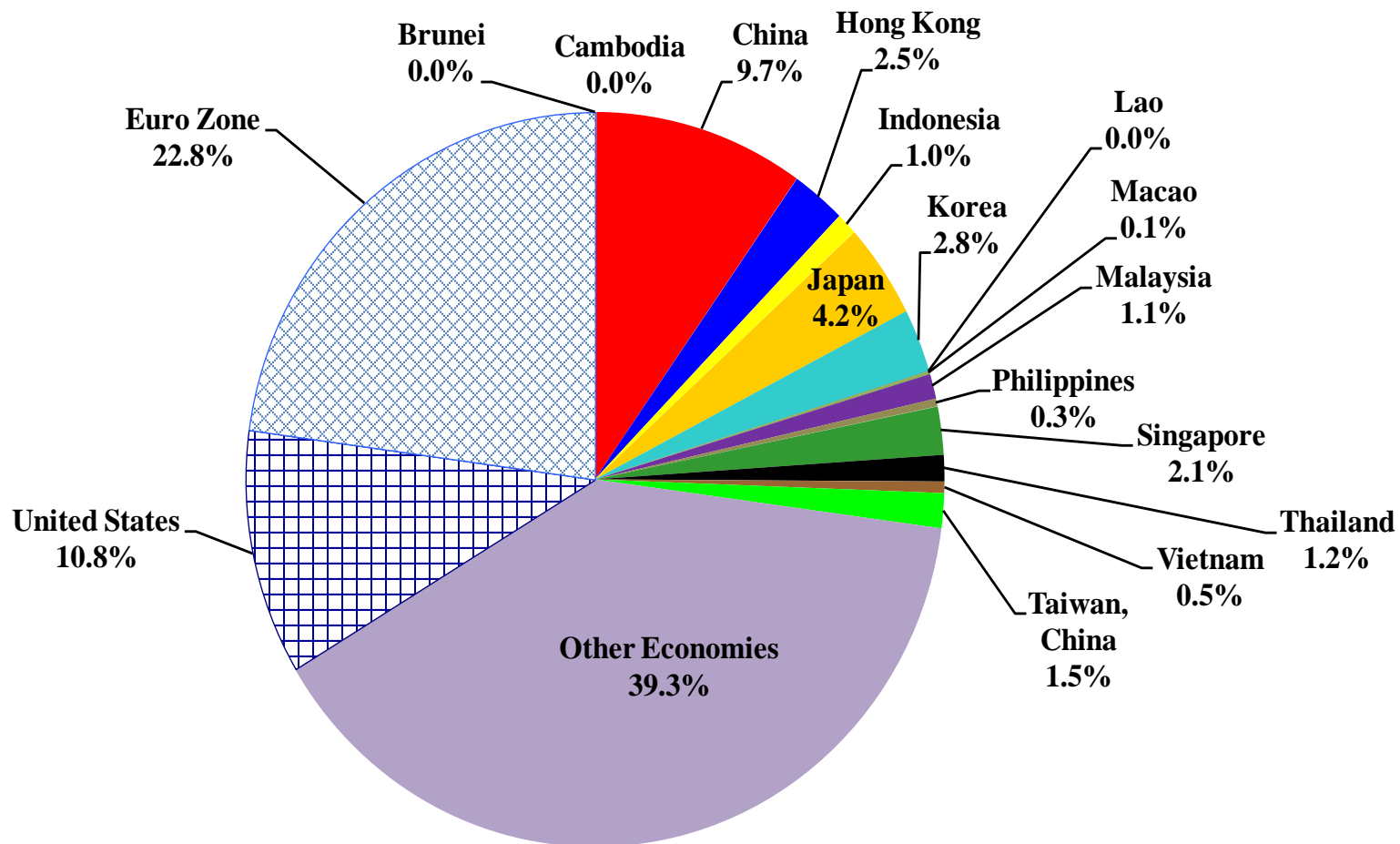
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The Distribution of Total International Trade in Goods and Services in 1970



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

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



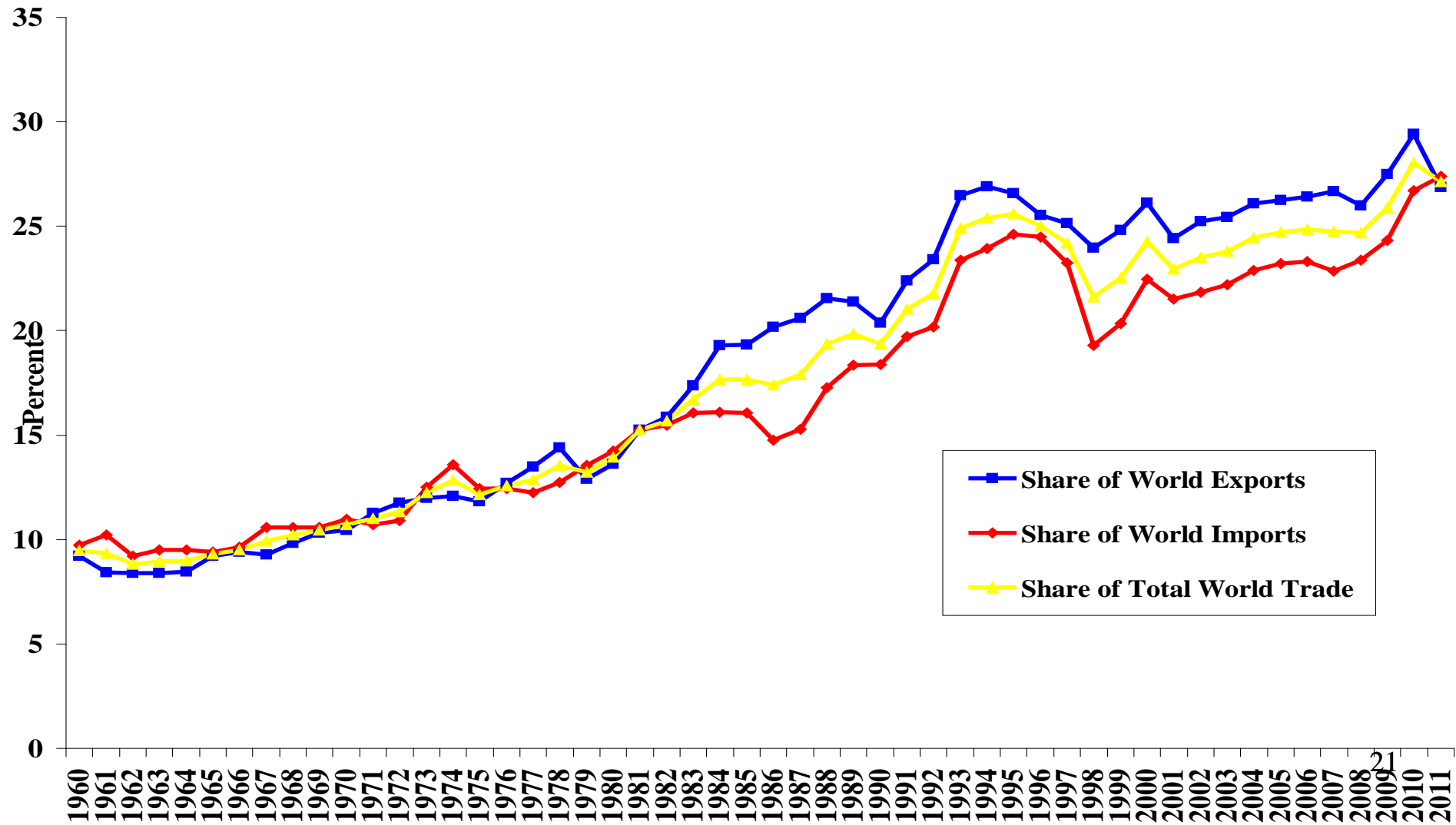
# Introduction

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- ◆ The East Asian share of World trade rose from 10% in 1970 to just below 25% in 2011.
- ◆ The Mainland Chinese share of World trade rose from 1% in 1970 to 10% in 2011.
- ◆ Mainland Chinese international trade accounted for more than 40% of East Asian international trade in 2011.

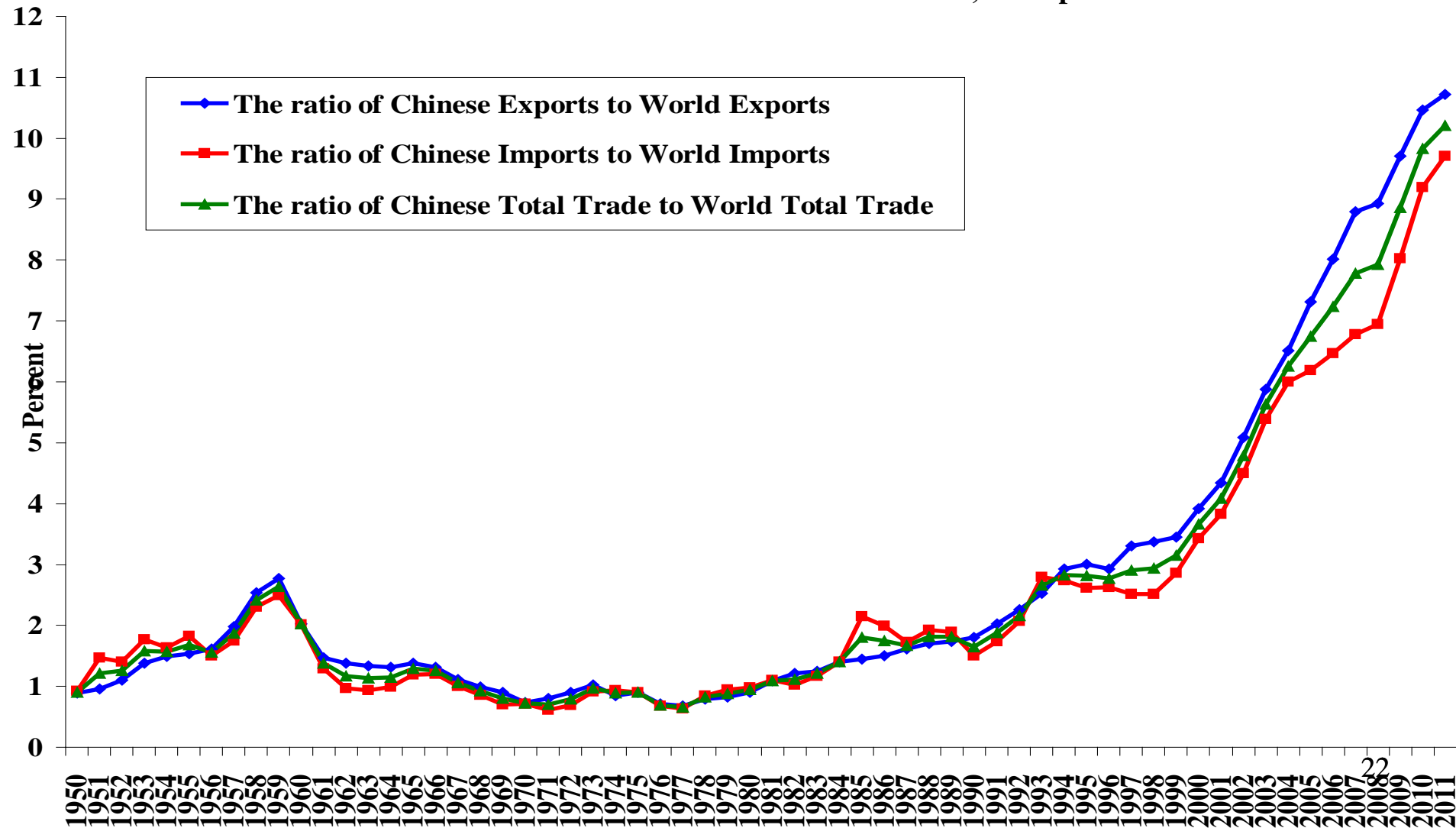
# The Rising Share of East Asian Trade in Total World Trade, 1960-present

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



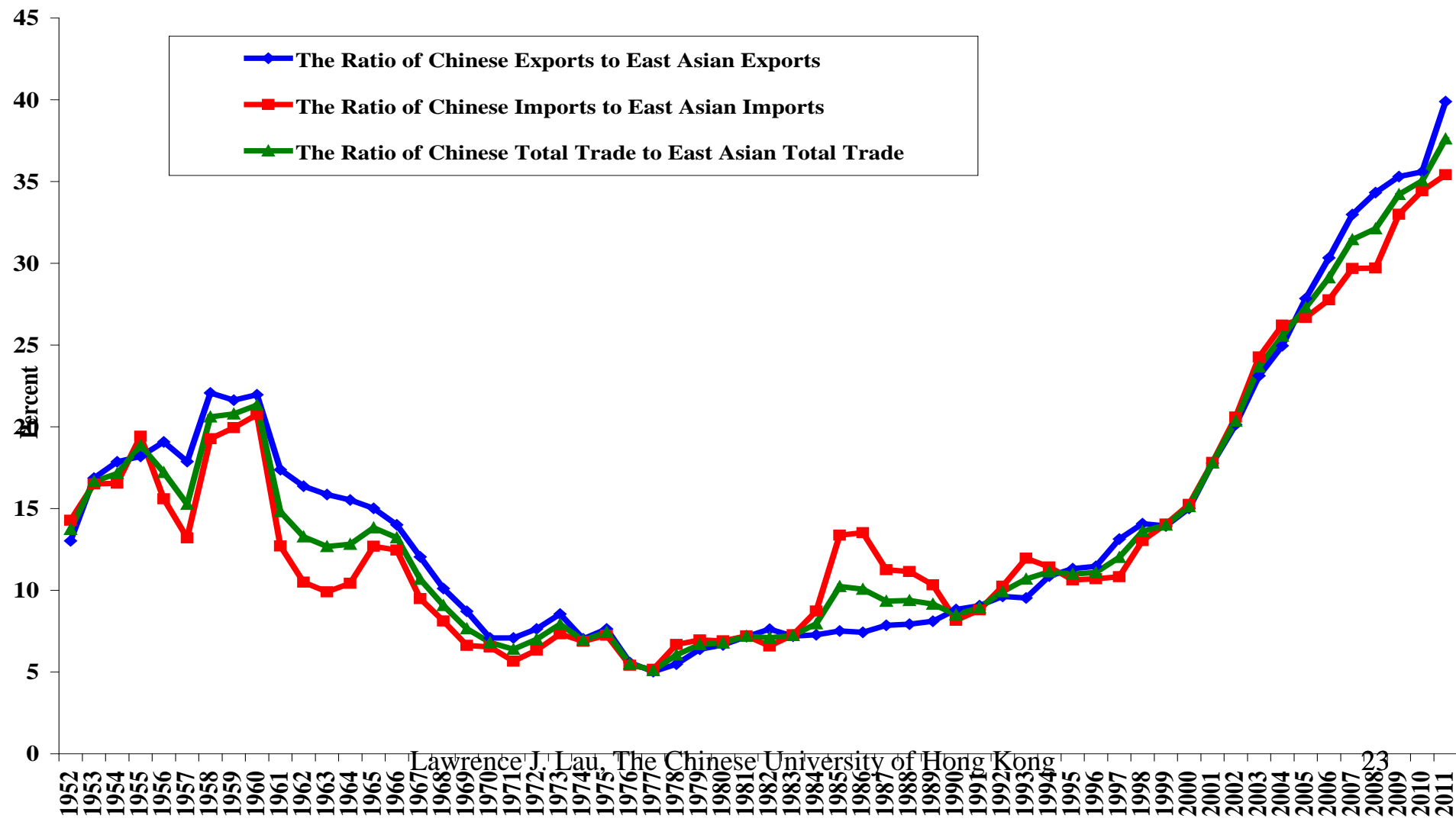
# The Share of China in Total World Trade, 1950-present

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 Commonalities among East Asian Economies

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What do the fast-growing East Asian economies have in common?

- ◆ A high domestic saving rate
- ◆ The existence of surplus labour
- ◆ The active participation in the World economy
- ◆ Investment in basic education



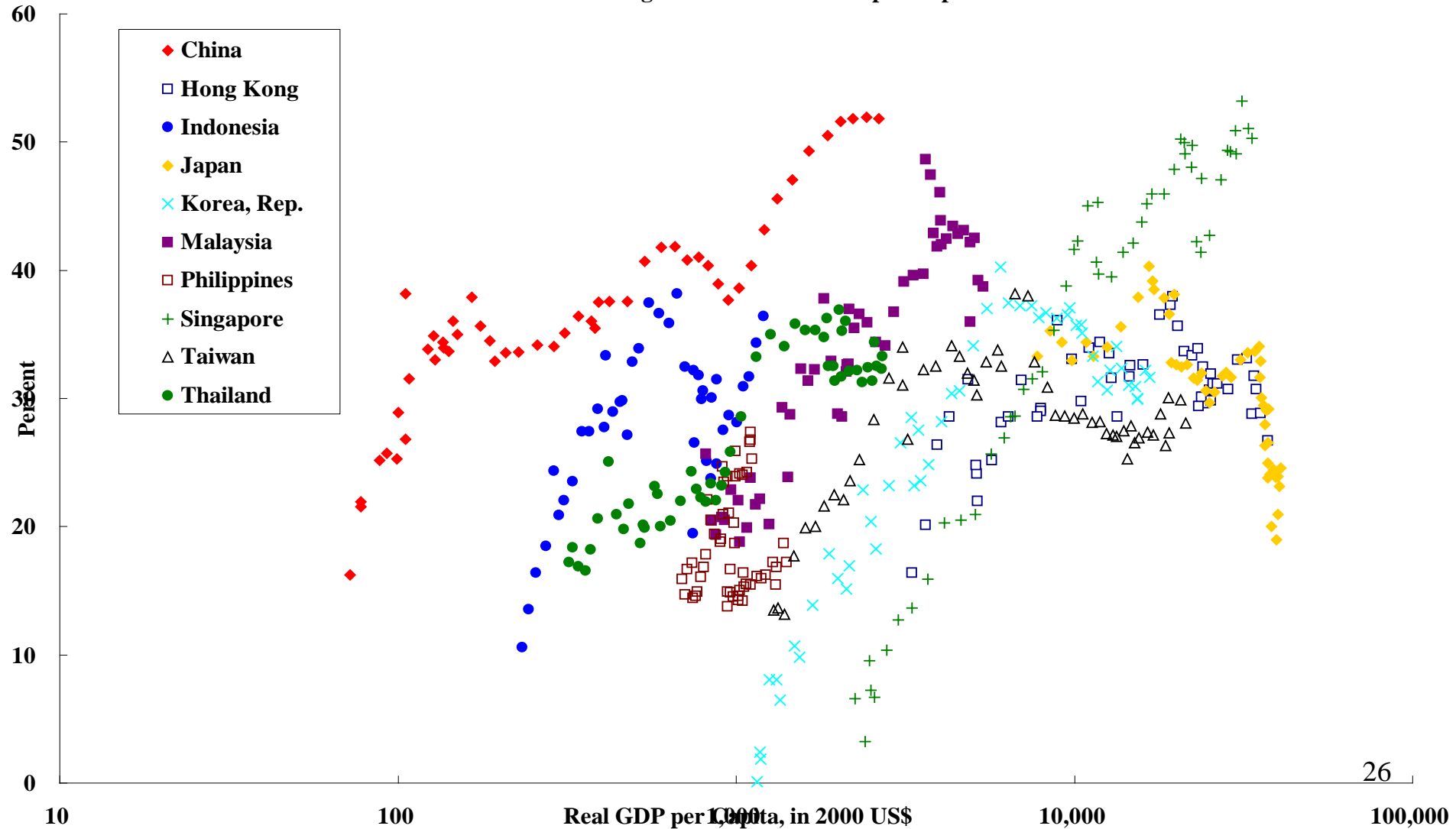
# A High Domestic Saving Rate

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- ◆ The saving rate of an East Asian economy typically started out low when its GDP per capita was low and near the subsistence level. However, the saving rate rose quickly as GDP per capita rose (see the following chart).
- ◆ It is, however, sometimes necessary to have a jump start with an initial supply of savings to support the initial investment—from, for example, a good agricultural harvest, land reform, foreign aid, credit or investment, and in Mainland China's case, the agricultural reform and the introduction of special economic zones to attract foreign direct investment.

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

National Savings Rate and Real GDP per Capita



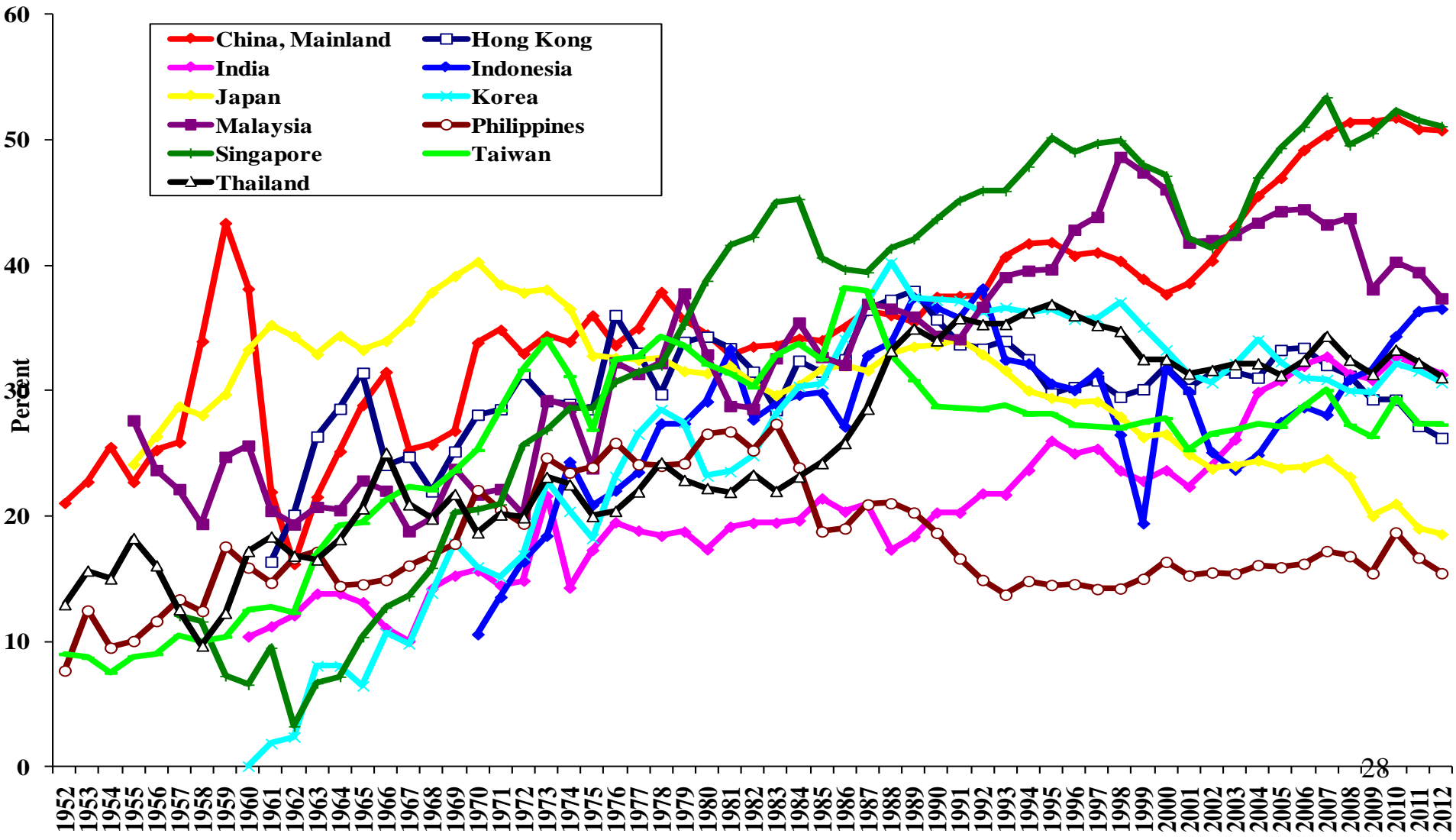
# A High Domestic Saving Rate

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- ◆ With the possible exception of the Philippines, the saving rates of East Asian economies have been consistently high once their real GDP per capita's exceed the subsistence threshold. This is in contrast to Latin American economies, where the saving rates are typically low.
- ◆ The recent saving rates of Japan, Korea and Taiwan may appear low because of the statistical practice of expensing of educational and R&D expenditures, which properly speaking should have been recognised as investment expenditures rather than current expenditures.
- ◆ These investments should be recognised as accumulations of intangible capital such as human capital and R&D capital.

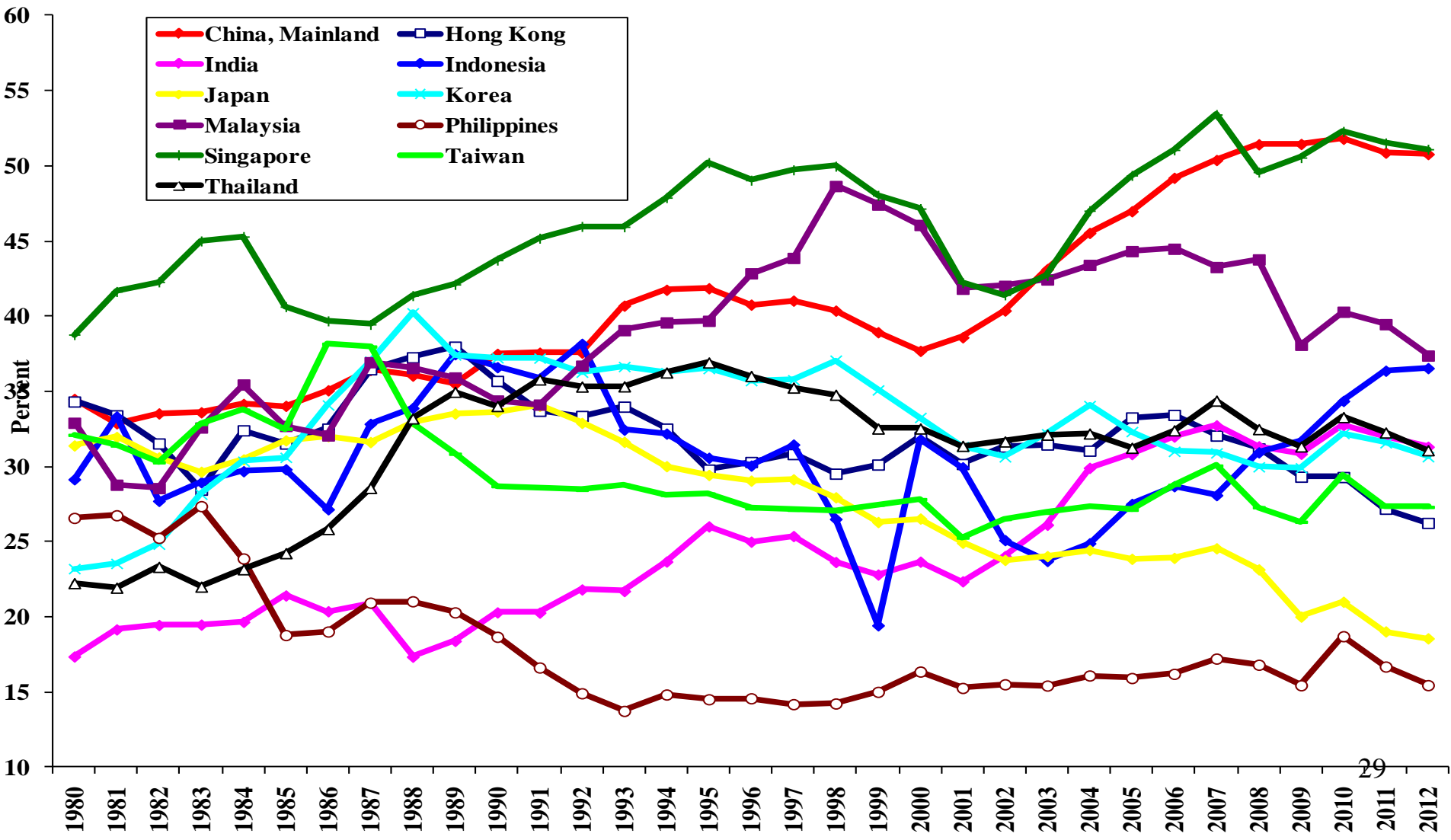
# Saving Rates of Selected Asian Economies (1952-present)

Savings Rates of Selected East Asian Economies



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

Savings Rates of Selected Asian Economies



# A High Domestic Saving Rate

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- ◆ A high domestic saving rate means that the economy can maintain and sustain a high domestic investment rate without depending on the more fickle inflows of foreign aid, credits, loans and direct and portfolio investment, enabling the tangible capital stock of the economy to grow continuously.

# The Existence of Surplus Labour

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- ◆ East Asian economic development has proceeded along the lines of Professor W. Arthur Lewis's celebrated model of surplus labour, 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 Mainland China and Southeast Asia, development began with the expanded employment of the surplus labour from the agricultural sector in the non-agricultural sector, enabled by the continuing investment in tangible capital in the non-agricultural sector.

# The Existence of Surplus Labour

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- ◆ During this surplus labour phase, tangible capital was accumulated in the non-agricultural sector and surplus labour moved from the agricultural sector to the non-agricultural sector as complementary tangible capital became available in the non-agricultural sector. For such movement of labour to be sustainable, a relatively high domestic saving rate would be needed, both as a source of wage goods (food) and as a source of investable funds in the non-agricultural sector, unless they could be supplemented by imports and inflows of foreign capital.
- ◆ It is important to realise that the principal source of economic growth during this phase is not the surplus labour itself, but the accumulation of tangible capital in the non-agricultural sector, which made it possible for the surplus labour to move from the agricultural to the non-agricultural sector to be productively employed.



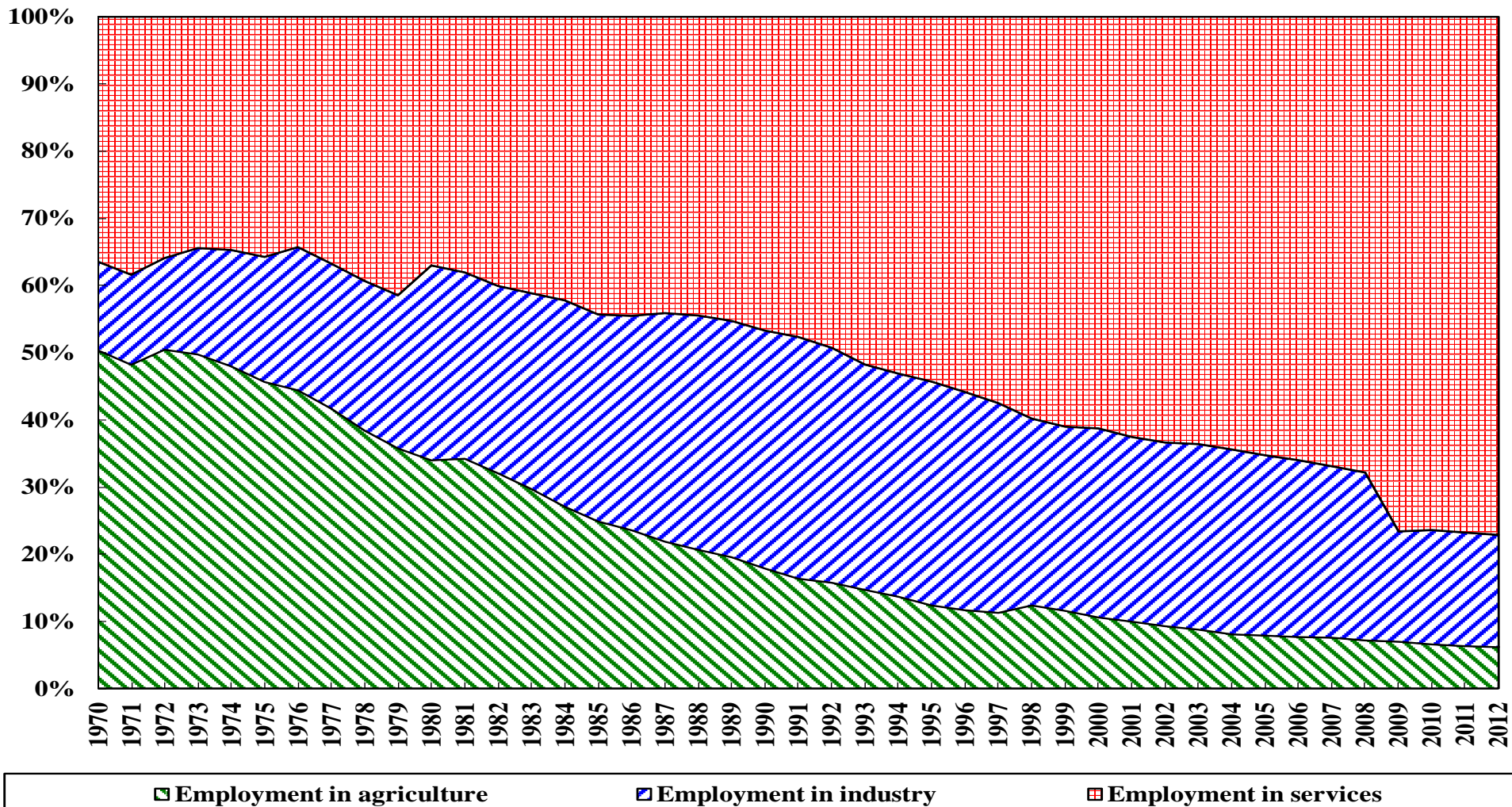
# The Existence of Surplus Labour

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- ◆ One important implication of economic development with surplus labour 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 urbanisation is likely to accompany the growth of the non-agricultural sectors.
- ◆ Of course, eventually the surplus labour in the economy will run out and continuing economic growth will have to be driven by a rising tangible capital per unit labour ratio in the economy and also eventually by investment in intangible capital such as human capital and R&D capital. A high domestic saving rate continues to be important in providing dependably the resources necessary for these investments.<sup>33</sup>

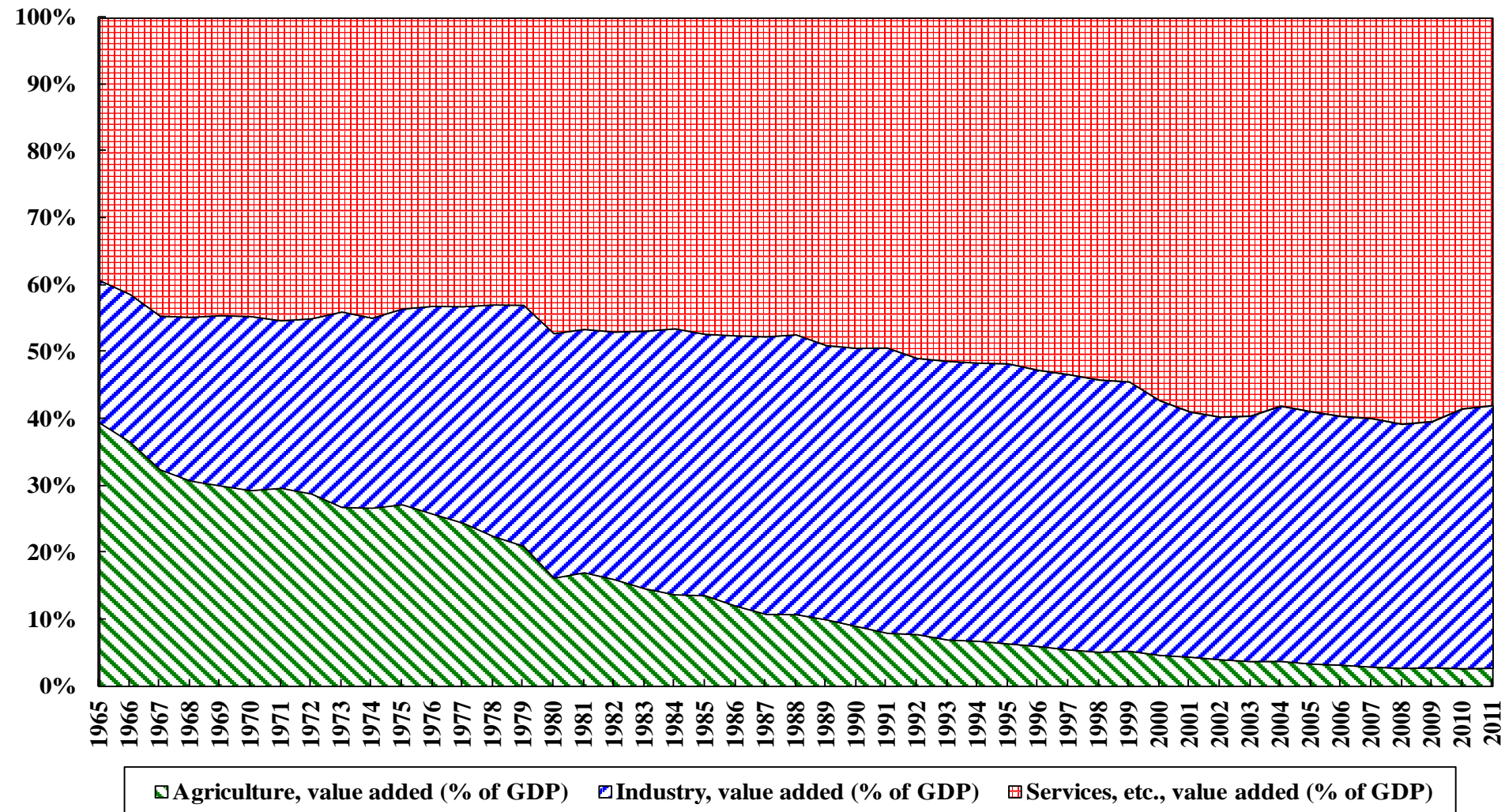
# The Distribution of Korean Employment by Sector Since 1970

The Distribution of Korean Employment by Sector



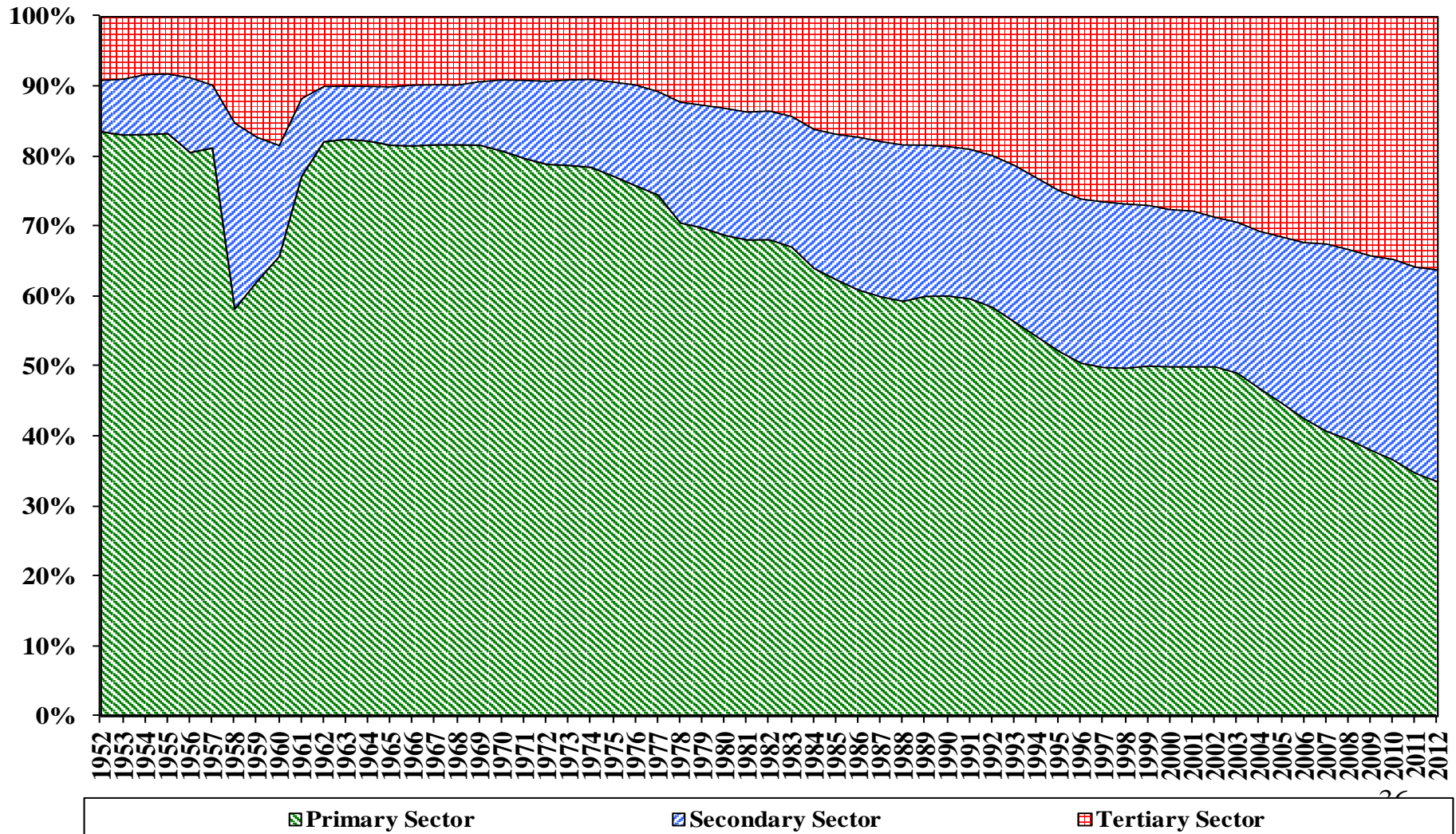
# The Distribution of Korean GDP by Sector Since 1965

The Distribution of Korean GDP by Sector



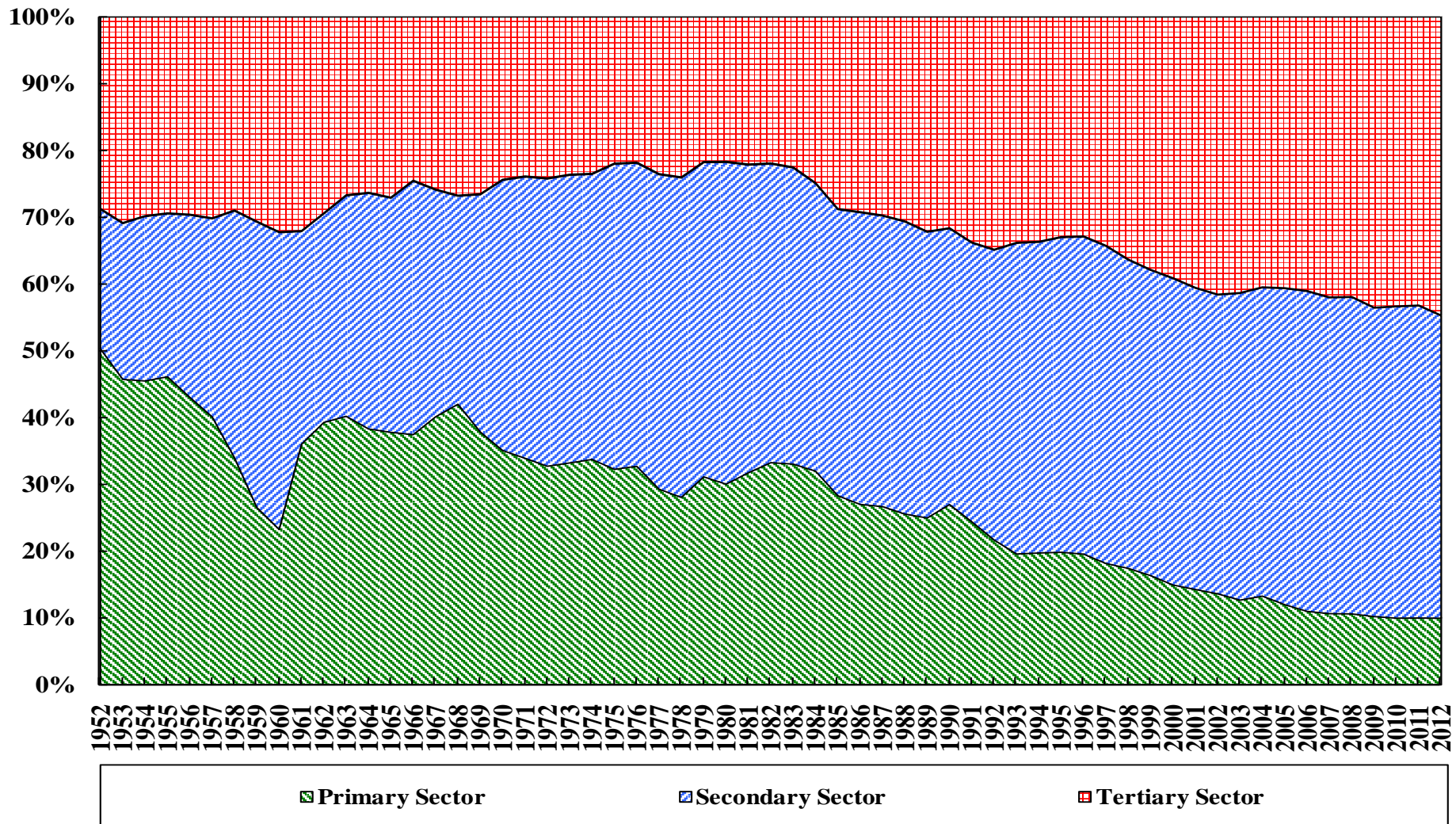
# The Distribution of Chinese Employment by Sector Since 1952

The Distribution of Employment by Sector since 1952



# The Distribution of Chinese GDP by Sector Since 1952

The Distribution of GDP by Sector



# The Active Participation in the World Economy

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- ◆ Economic growth in a typical East Asian economy is also accompanied by its increasing active participation in the World economy.
- ◆ Active participation in the World economy implies opening the domestic economy to foreign direct investment (FDI), foreign loans and often foreign portfolio investment as well.
- ◆ It also implies the promotion of exports which often requires the relaxation of import restrictions so that the necessary equipment, raw materials, components and parts and other intermediate production inputs can be imported.
- ◆ Finally, it also implies the rationalisation of the exchange rate so that it properly reflects the productivity of the domestic export sector compared to competitors and potential competitors in the rest of the World.

# The Active Participation in the World Economy: Foreign Investments and Loans

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- ◆ Foreign aid, foreign investment and foreign loans can augment the domestic savings. They are sometimes essential to jump-start the economic development process because the initial level of GDP per capita may be too low to provide sufficient domestic savings to finance the necessary investment.
- ◆ FDI brings with it not just capital, but also technology, know-how, markets, new business models and methods. FDI also directly augments aggregate demand and increases domestic employment.
- ◆ However, FDI and foreign loans are not sustainable as foreign direct investors and lenders must eventually repatriate their capital and profits, if any.

# The Active Participation in the World Economy: Export Promotion

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- ◆ Most of the East Asian economies switched from a purely import substitution development strategy to an export promotion development strategy (but with ensuring the sufficiency of the domestic food supply a priority) at the start of their successful economic development drive.
- ◆ Barriers to the imports of equipment, raw materials, components and parts and other intermediate inputs used in the export industries were removed, thus enabling the growth of exports.
- ◆ The export-processing zone, pioneered by Taiwan, is an often-used device to facilitate the imports of inputs critical to the export industries through bypassing the customs formalities and hence also making unnecessary the rebating of customs duties and value-added taxes paid on the imported contents of goods that are subsequently exported.
- ◆ A trade surplus augments the domestic aggregate demand and increases domestic employment.



# The Active Participation in the World Economy: Export Promotion

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- ◆ Exports also allow the expansion of the scale of production beyond the domestic market and thus the realisation of the economies of scale in manufacturing. The scale of the potential market is also essential for the maximisation of the benefits of investment in intangible capital such as R&D capital and reputational capital (branding and goodwill).
- ◆ Exports can generate the foreign exchange revenue that can be used to import equipment, raw materials, components and parts, and other intermediate inputs needed for production that are not available in the domestic economy.
- ◆ Exports and imports can generate readily collectible government revenue through export taxes and import duties that can be used to finance the construction of infrastructure and basic education.

# The Active Participation in the World Economy: Export Promotion

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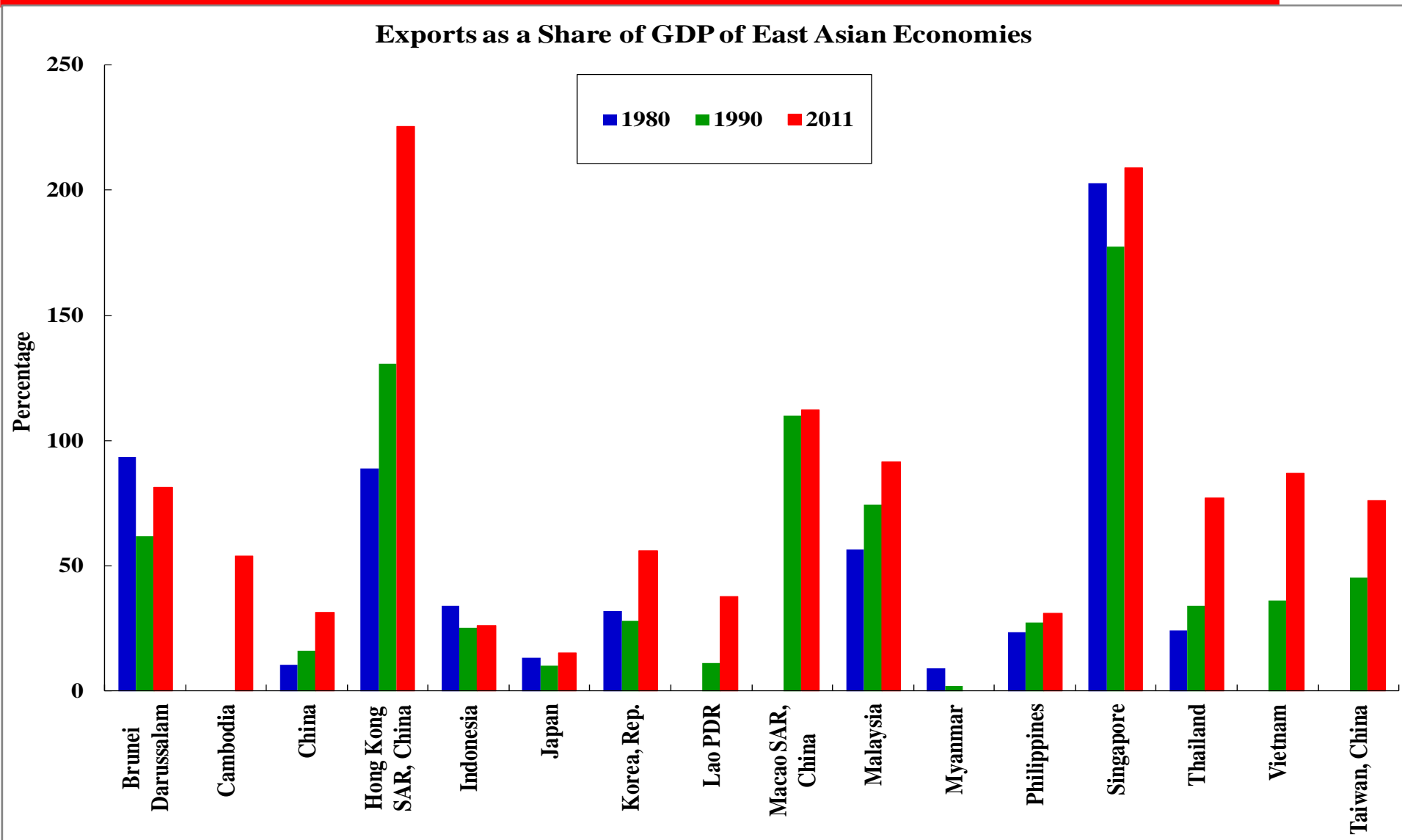
- ◆ Exports can also generate the foreign exchange needed by the foreign direct investors and lenders to repatriate their capital and profits eventually (the transfer problem). Thus, exports can enhance the ability of an economy to attract foreign direct investment and foreign loans.
- ◆ However, the macroeconomic benefits of international trade go beyond the stimulative effects of export surpluses. Even if international trade is balanced or in deficit, it still brings significant benefits, some of which are not adequately reflected in the conventional measurements of the Gross Domestic Product (GDP).

# The Active Participation in the World Economy: Export Promotion

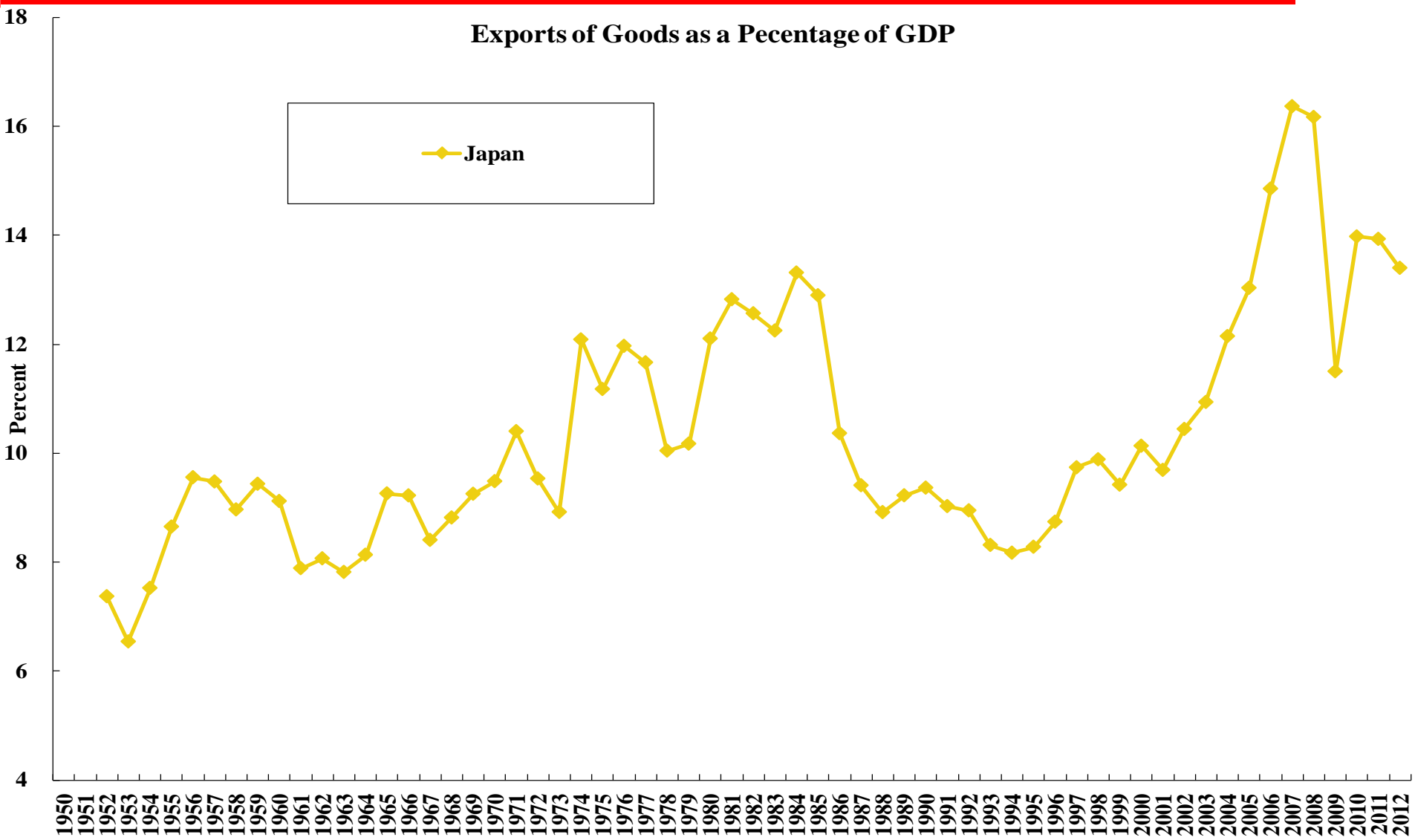
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- ◆ It is therefore not an accident that the share of exports to GDP would rise significantly at the start of the economic development process of almost every East Asian economy.
- ◆ In most of the East Asian economies, the share of exports in GDP rose significantly, especially after the rationalisation of the exchange rate. (However, the export share is smaller the larger the size of the economy.)
- ◆ In addition, for East Asian economies that do not have a natural resource base (oil, minerals, cash crops such as palm oil and rubber), there would be significant trade deficits in the first few years after the adoption of an export promotion policy, reflecting the need to import equipment as well as raw materials, components and parts, and other intermediate inputs not produced domestically.

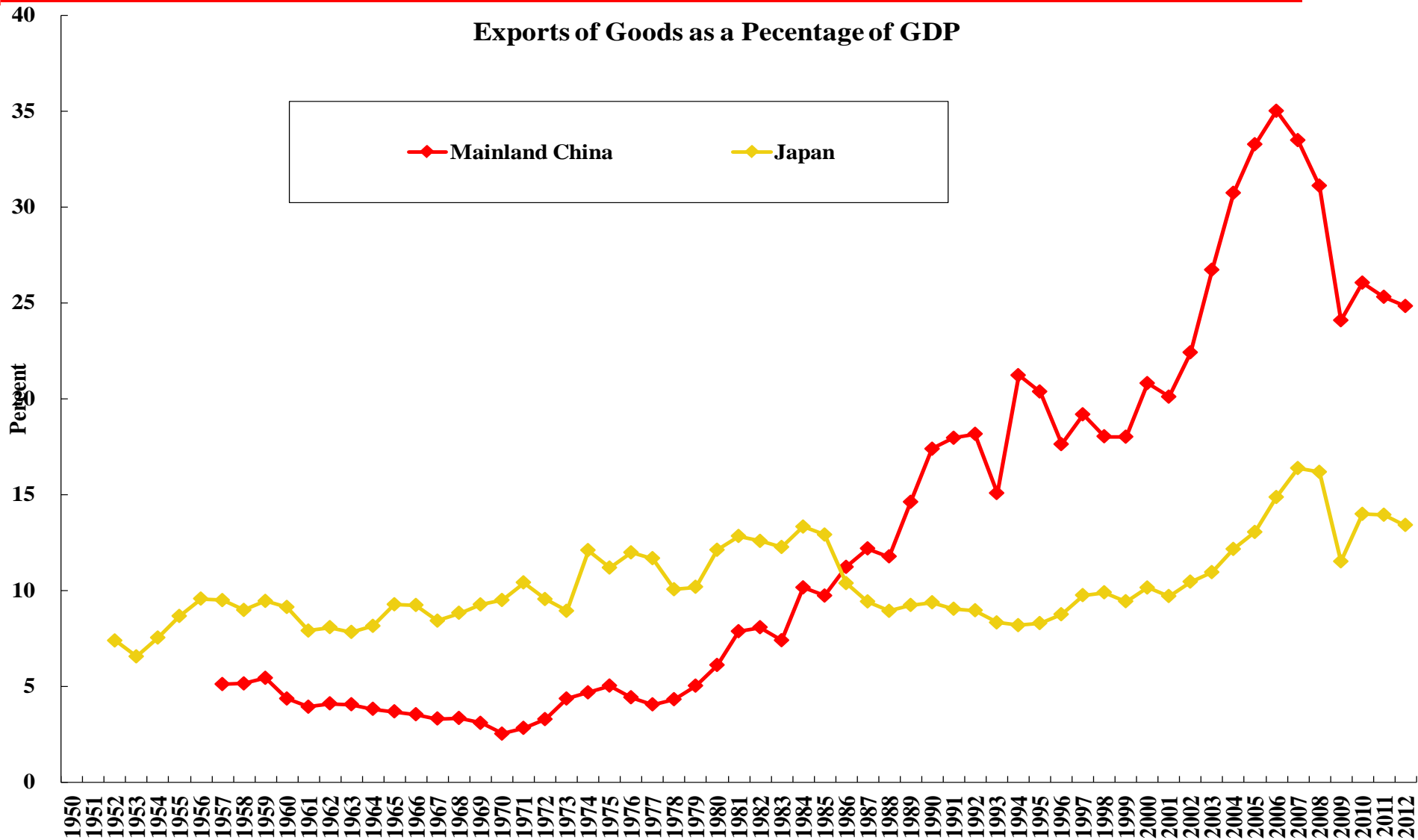
# Exports of Goods and Services as a Share of GDP in East Asian Economies



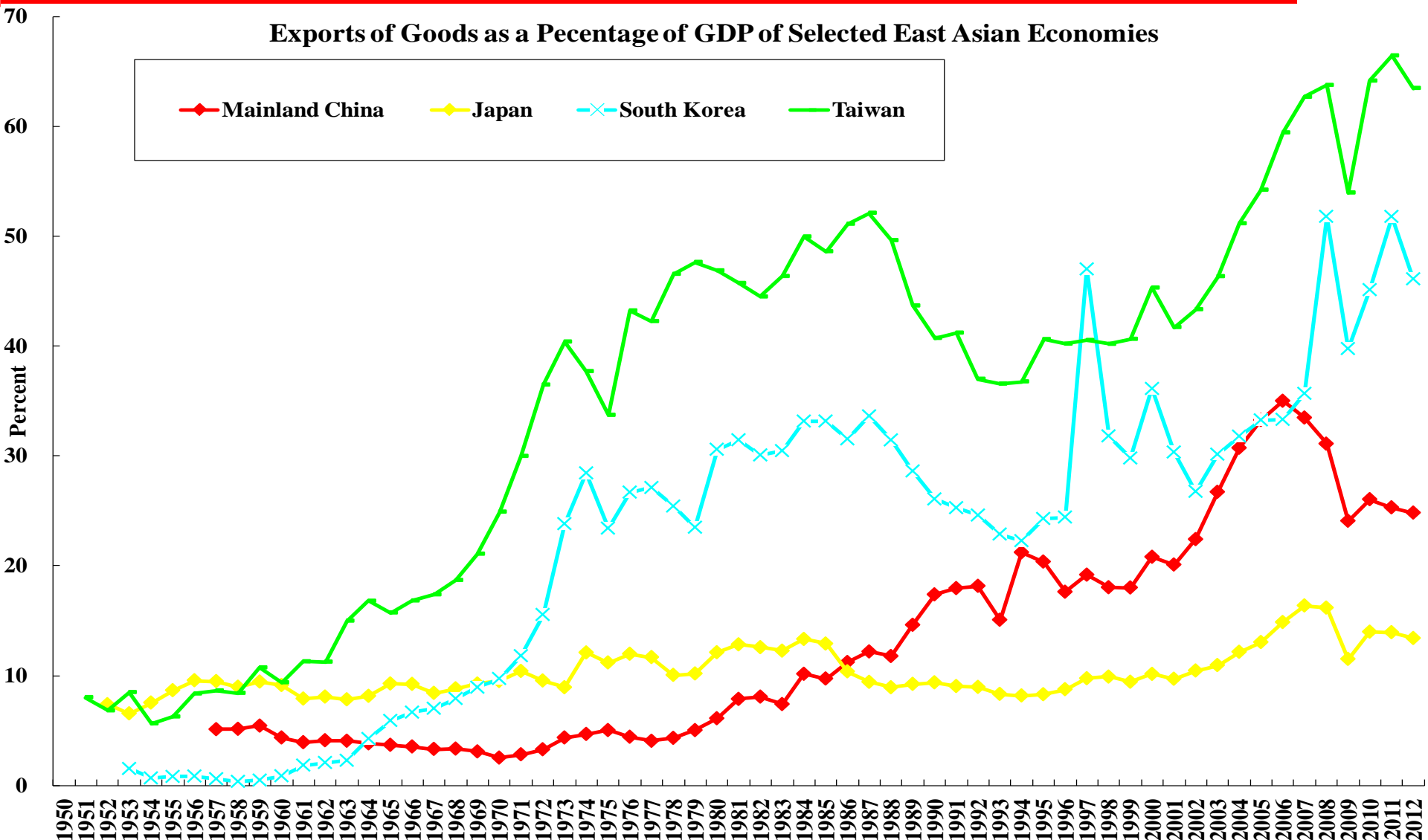
# Exports of Goods as a Percentage of Japanese GDP since 1950



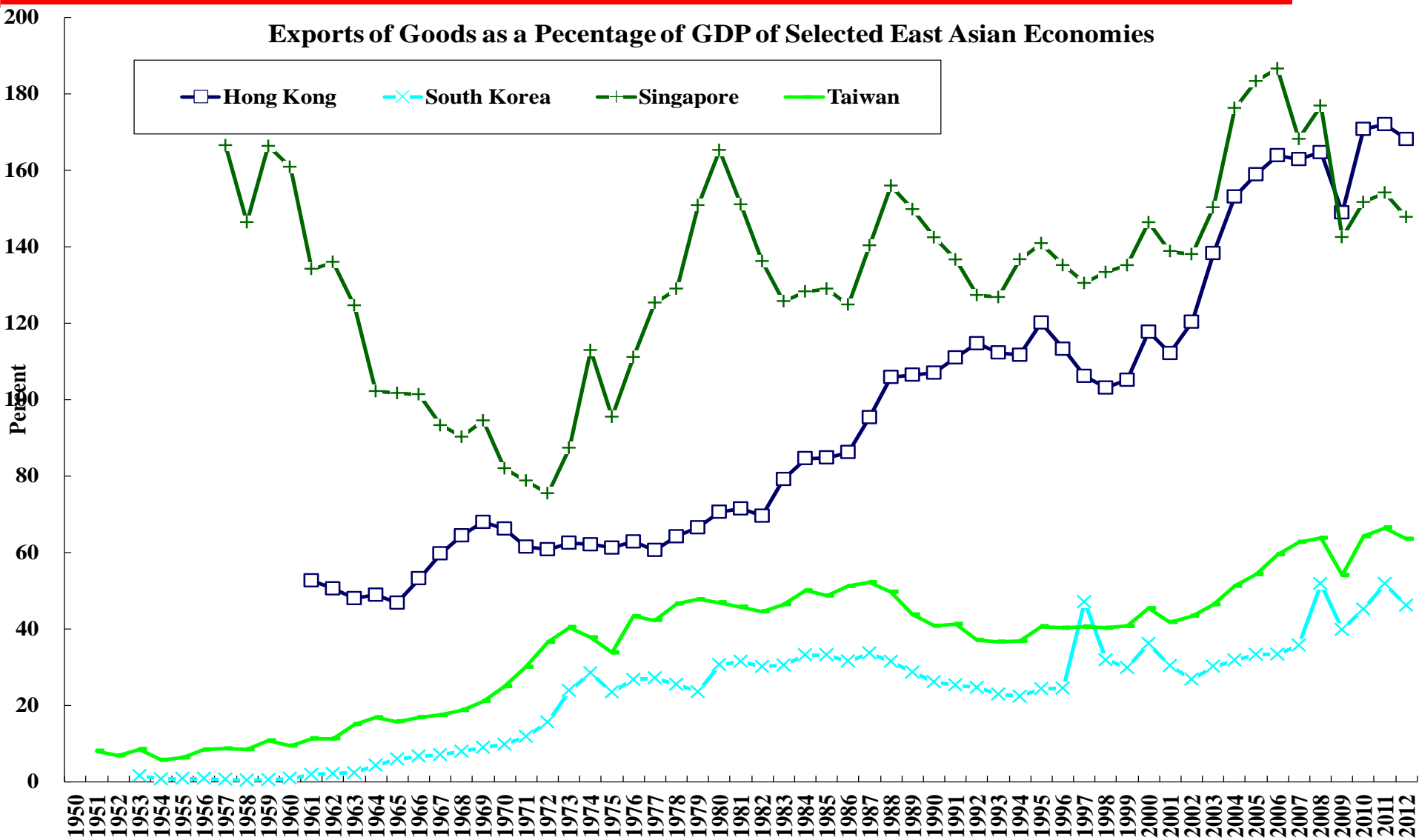
# Exports of Goods as a Percentage of GDP: Mainland China and Japan



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

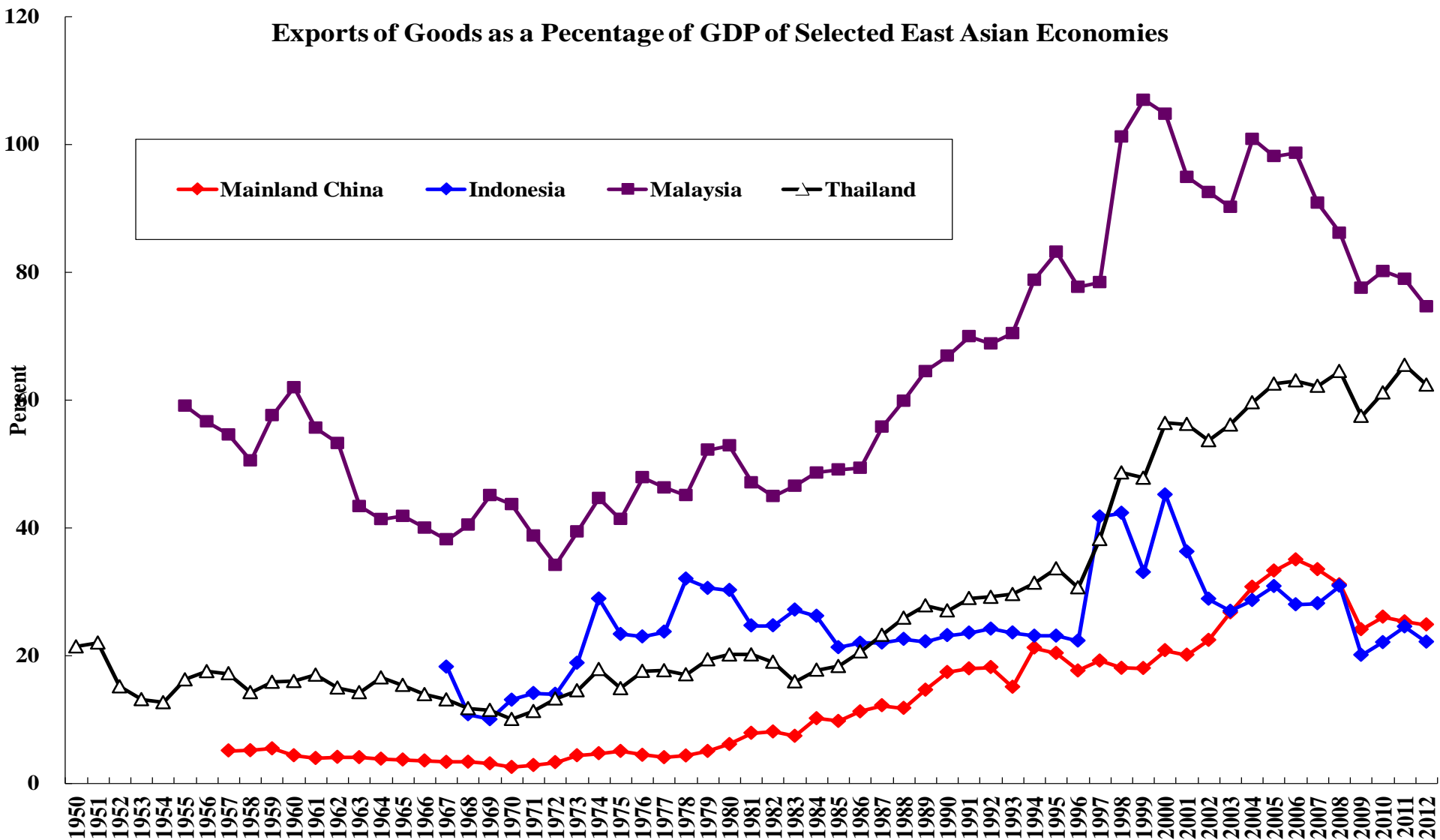


# Exports of Goods as a Percent of GDP: 4 Newly Industrialised Economies

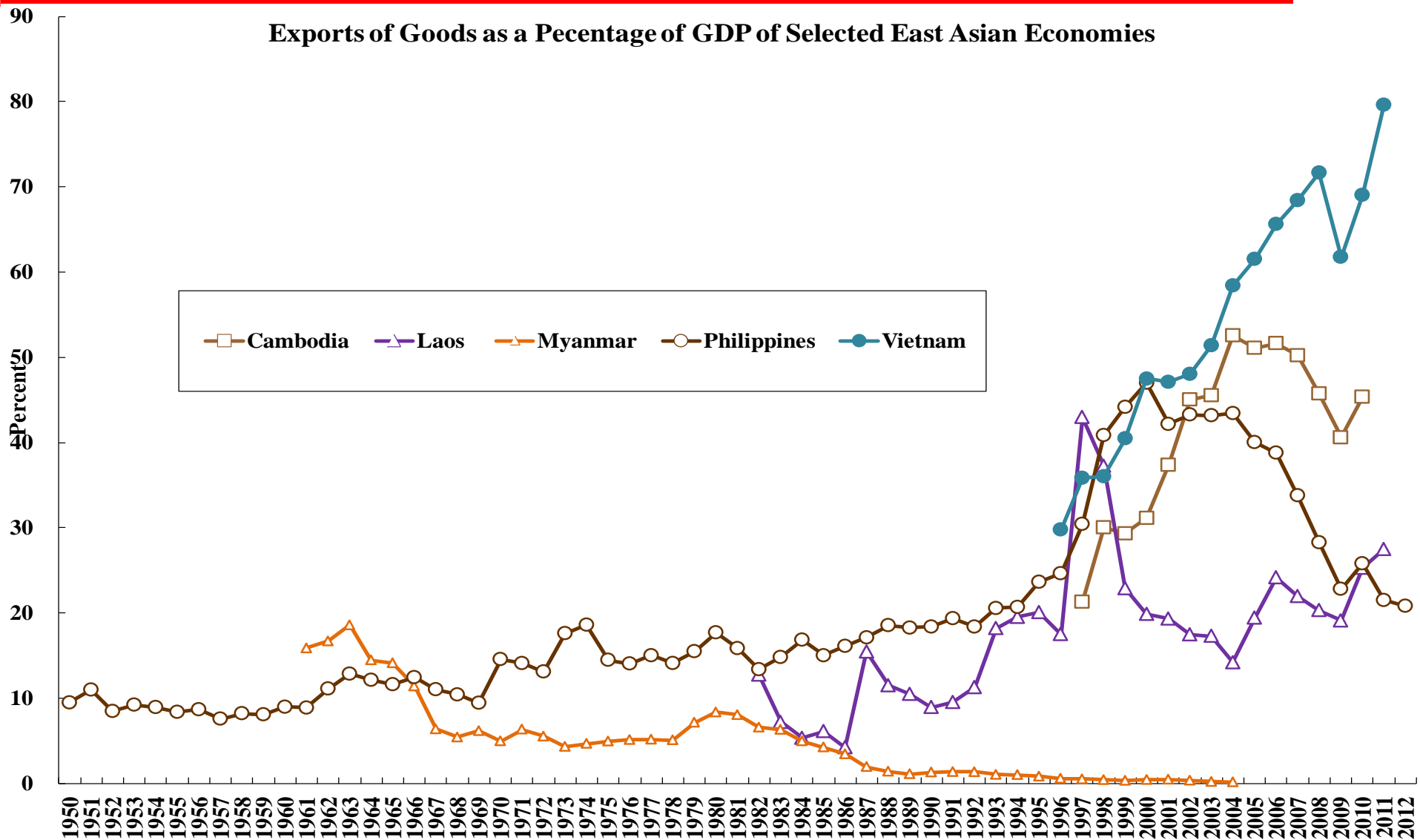




# Exports of Goods as a Percent of GDP: China, Indonesia, Malaysia and Thailand

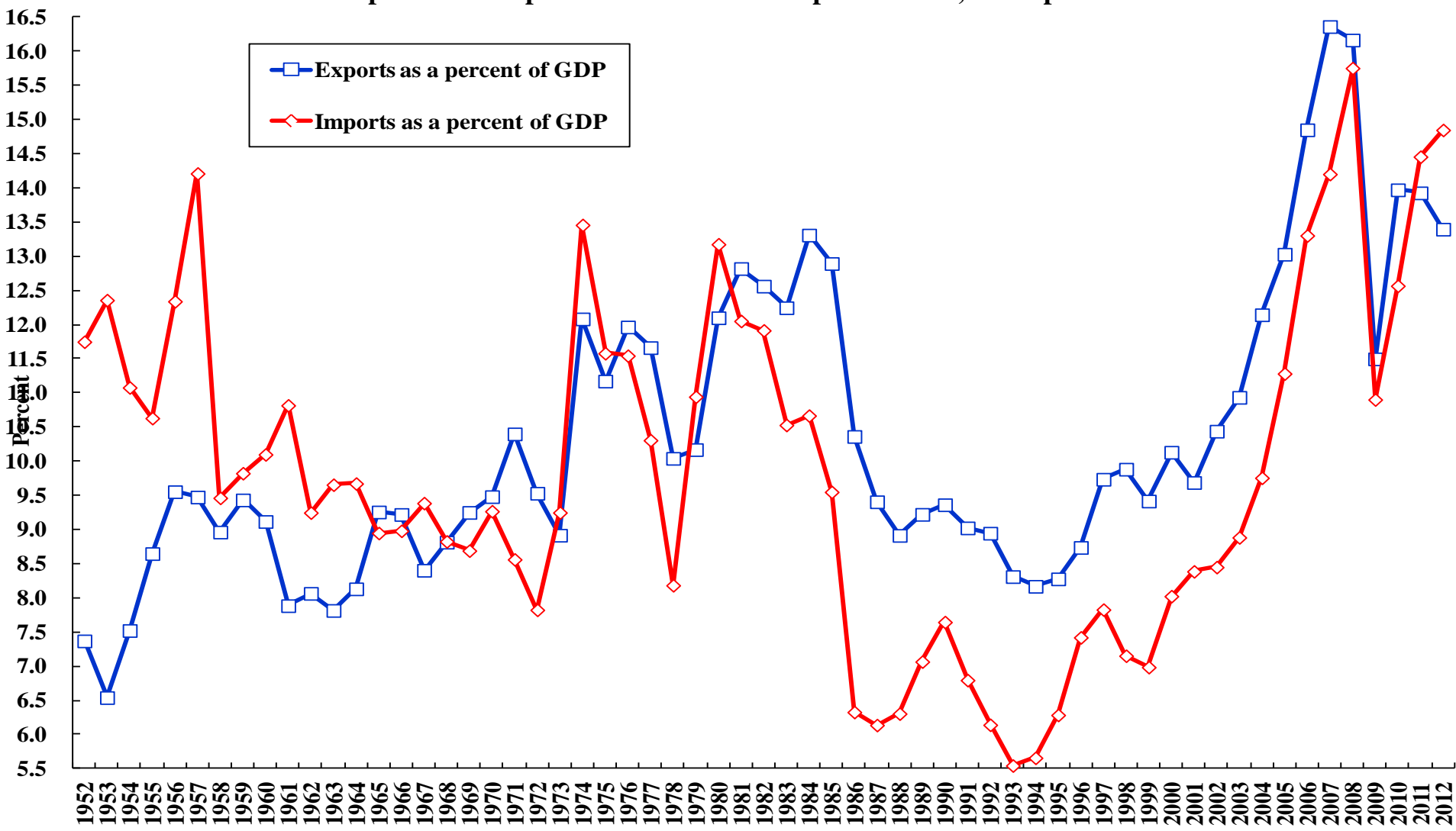


# Exports of Goods as a Percent of GDP: Selected ASEAN Economies



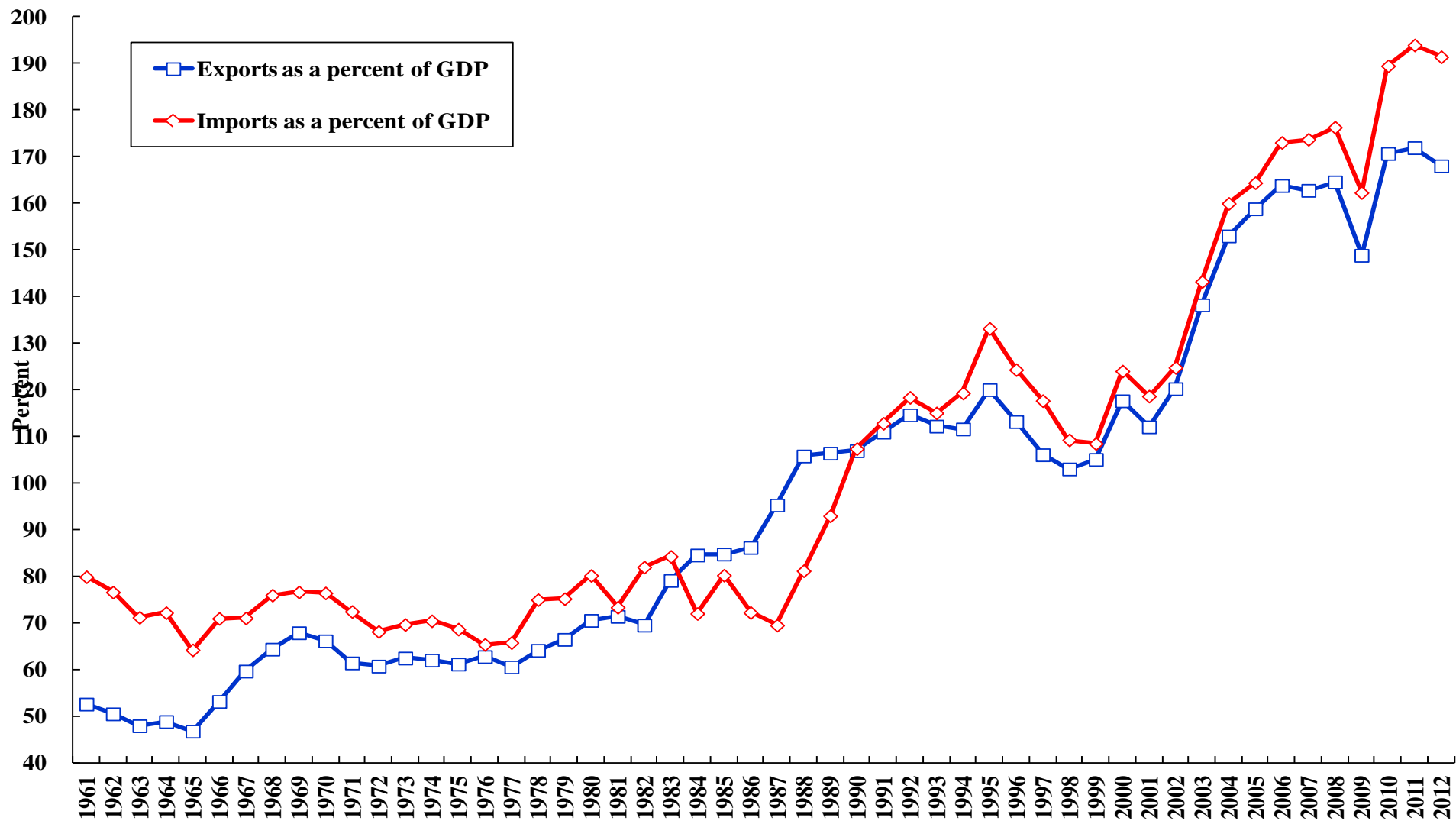
# Exports and Imports as a Percent of Japanese GDP, 1952-present

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



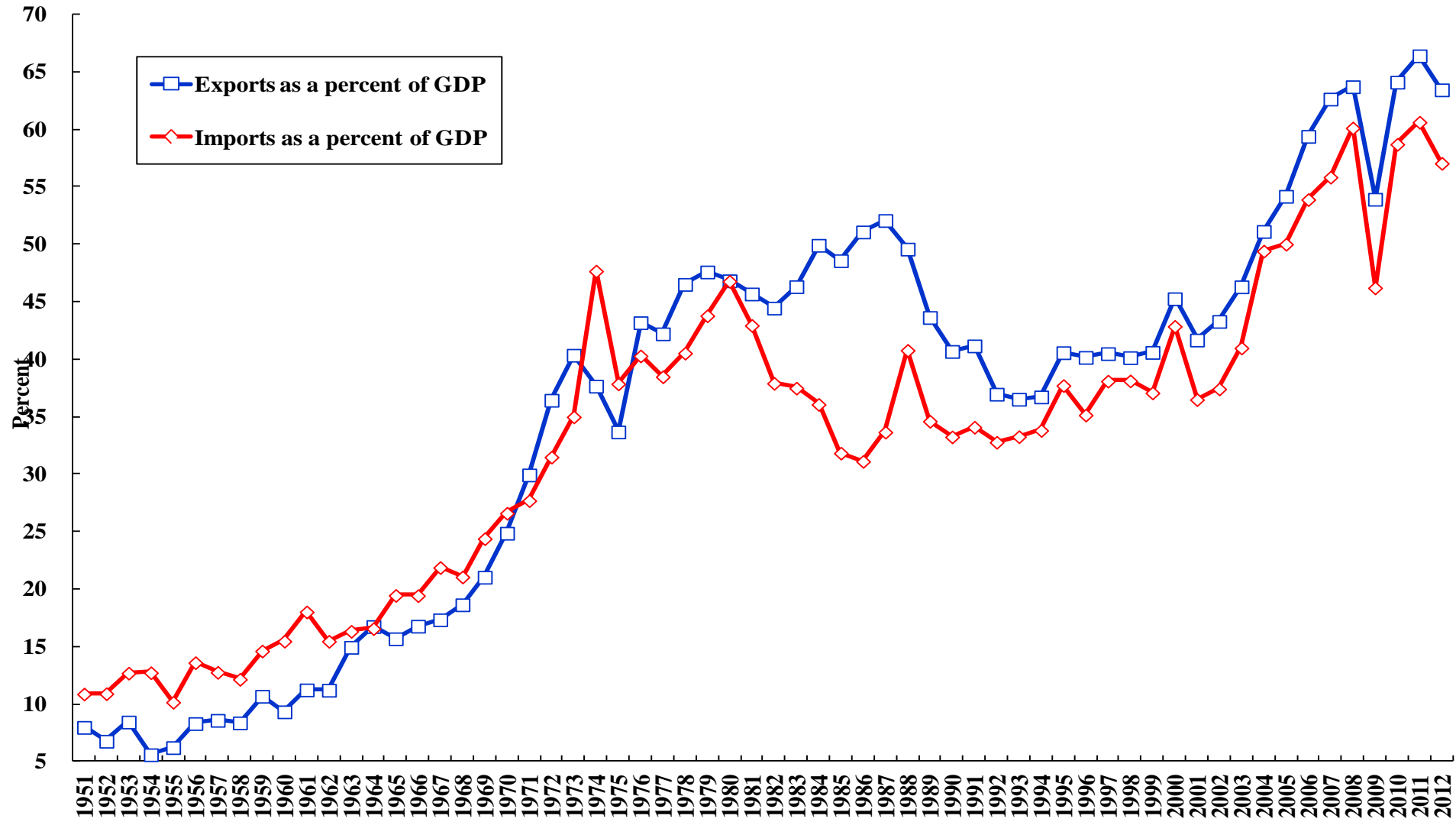
# Exports and Imports as a Percent of Hong Kong GDP

Exports and Imports as a Percent of Hong Kong GDP, 1961-present



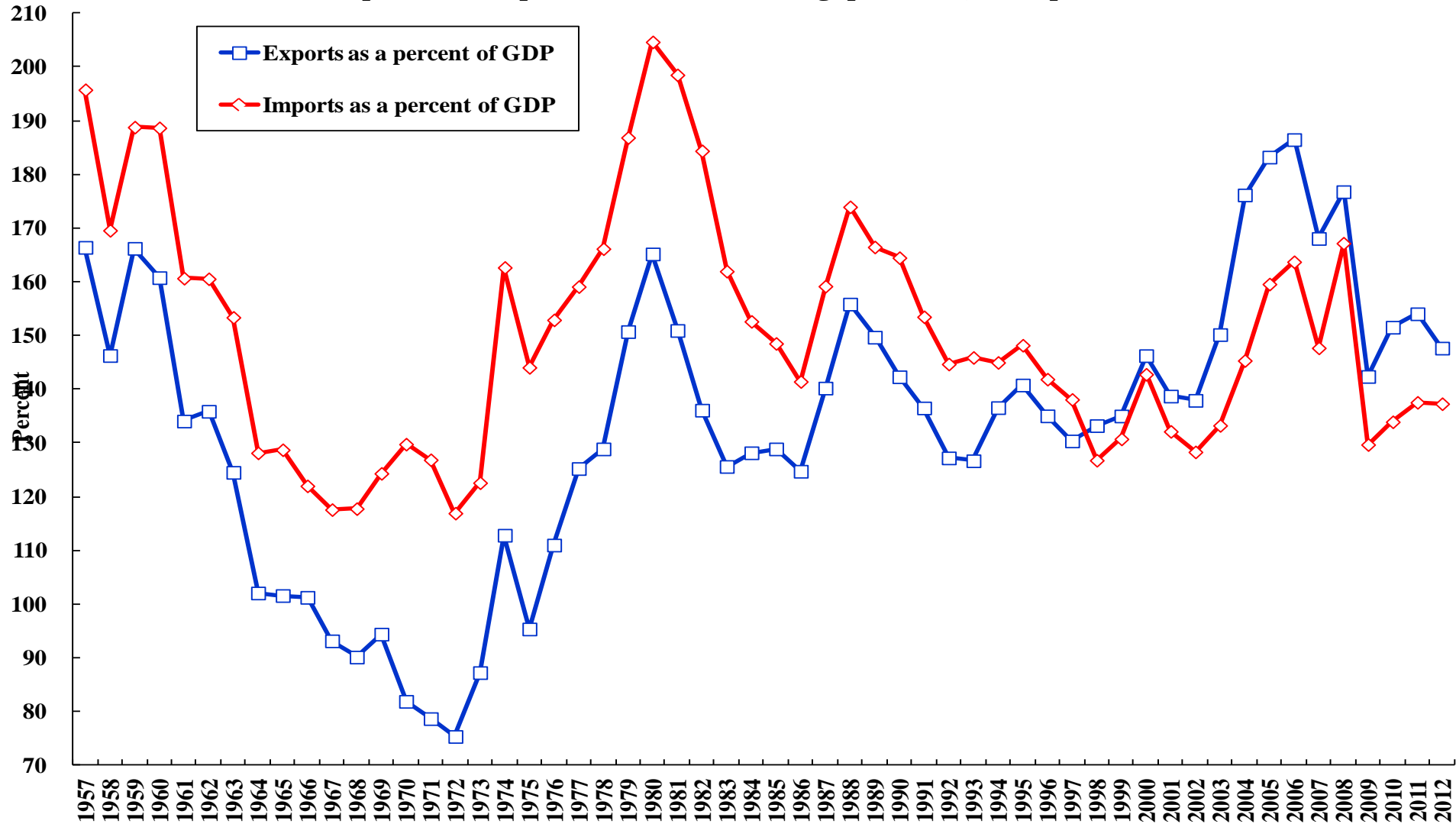
# Exports and Imports as a Percent of Taiwan GDP, 1951-present

Exports and Imports as a Percent of Taiwan GDP, 1951-present



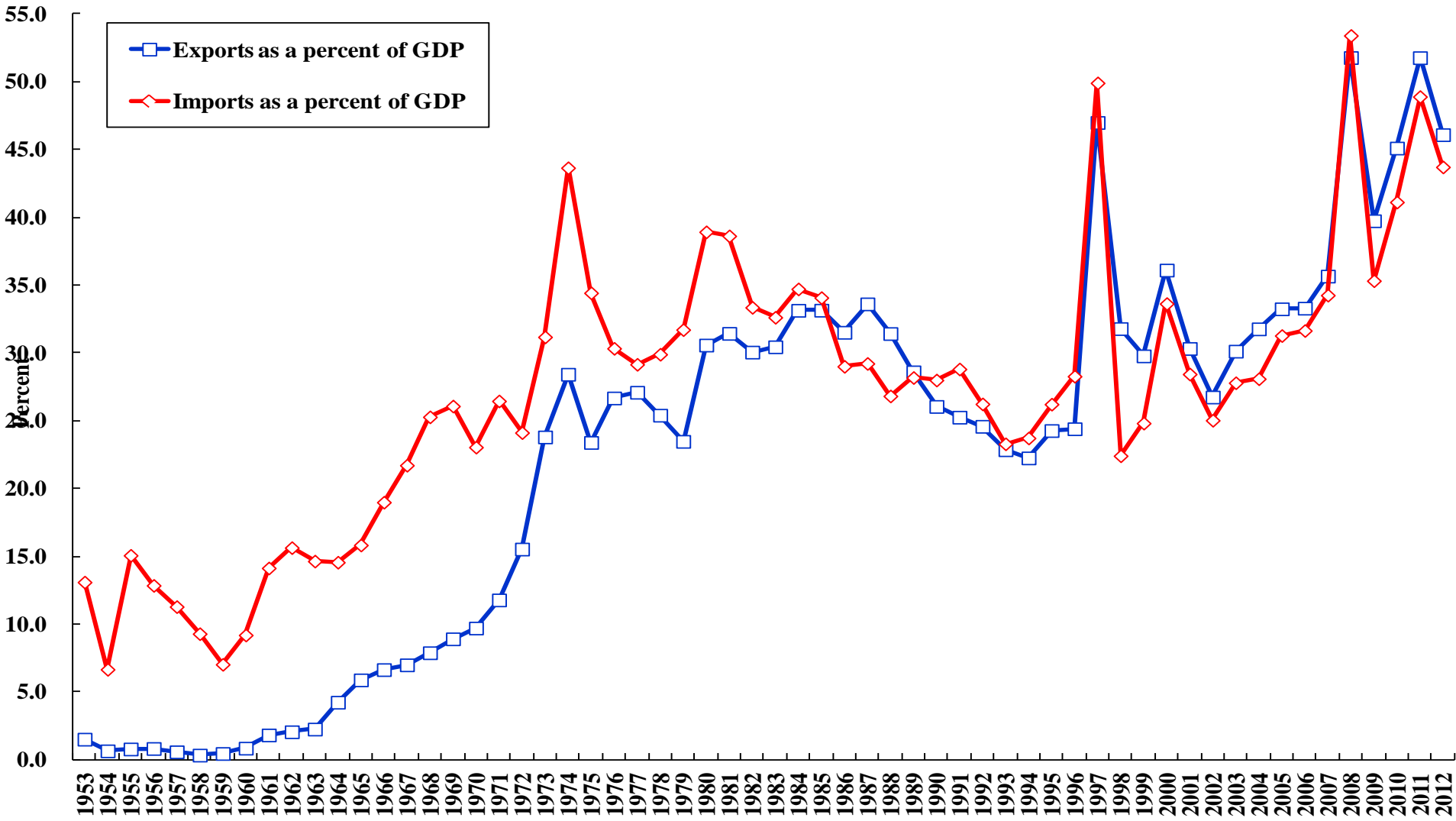
# Exports and Imports as a Percent of Singapore GDP, 1957-present

Exports and Imports as a Percent of Singapore GDP, 1957-present



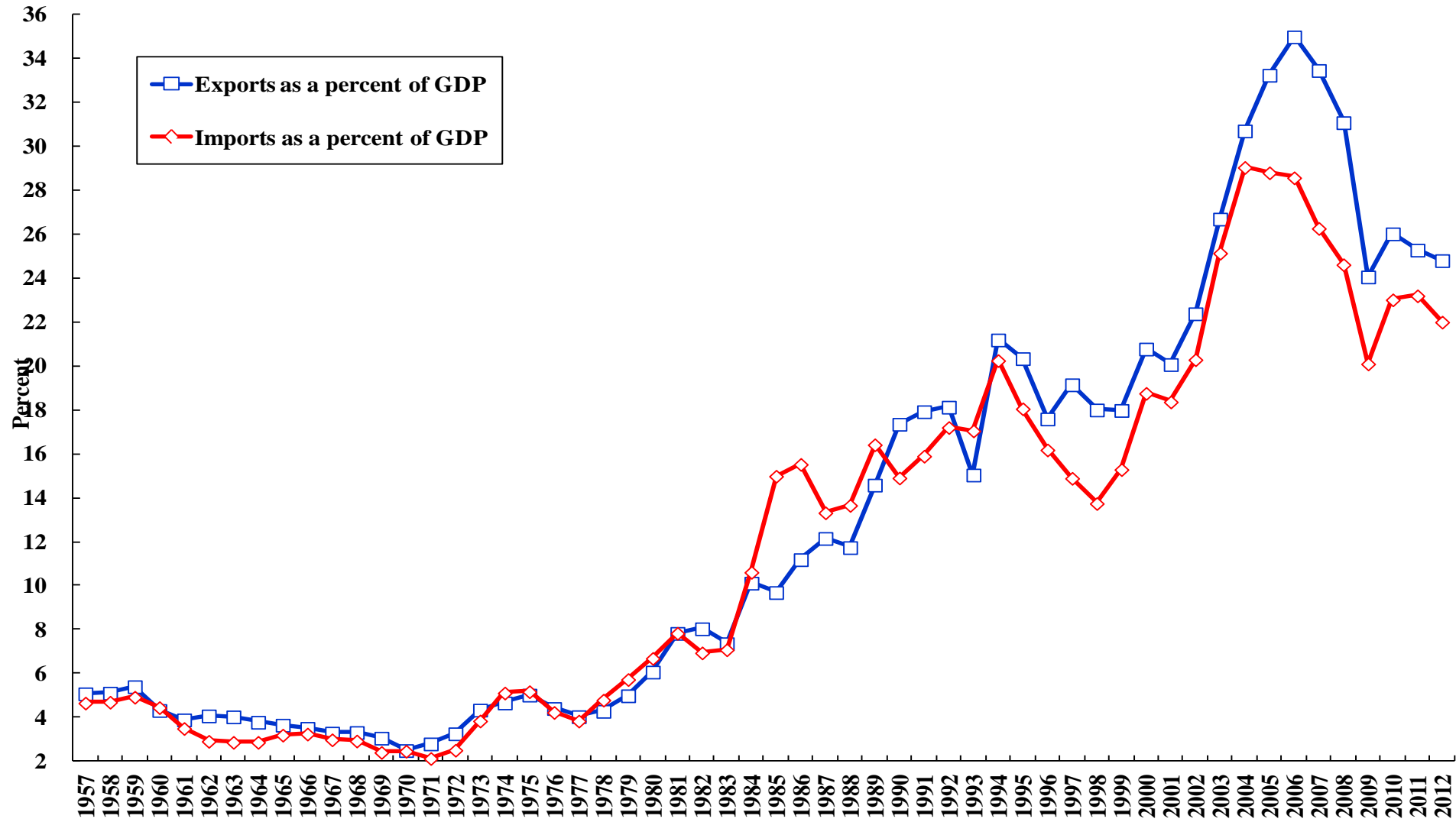
# Exports and Imports as a Percent of Korean GDP

Exports and Imports as a Percent of Korean GDP, 1950-present



# Exports and Imports as a Percent of Chinese GDP, 1957-present

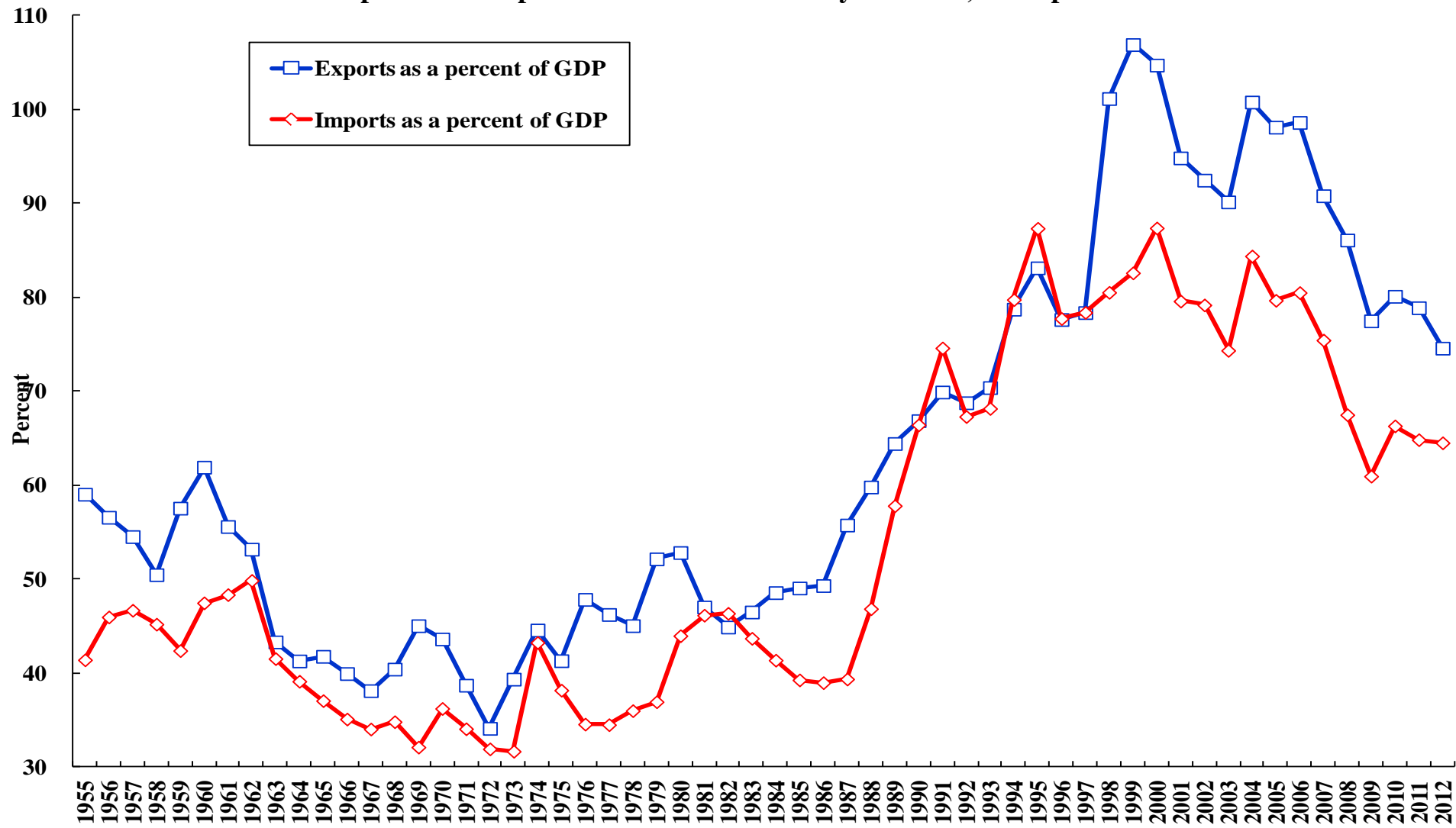
Exports and Imports as a Percent of Chinese GDP, 1957-present





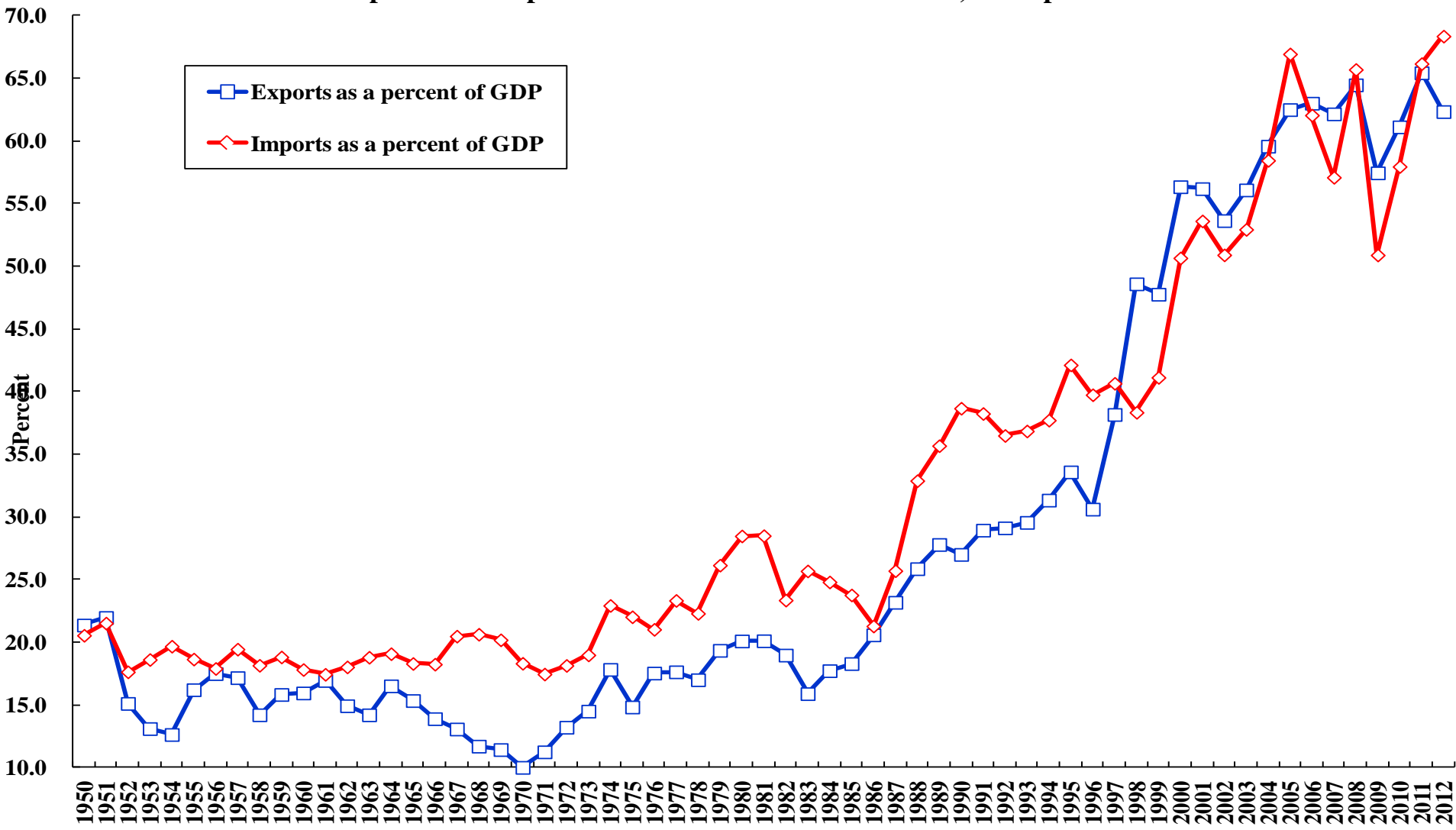
# Exports and Imports as a Percent of Malaysian GDP, 1955-present

Exports and Imports as a Percent of Malaysian GDP, 1955-present



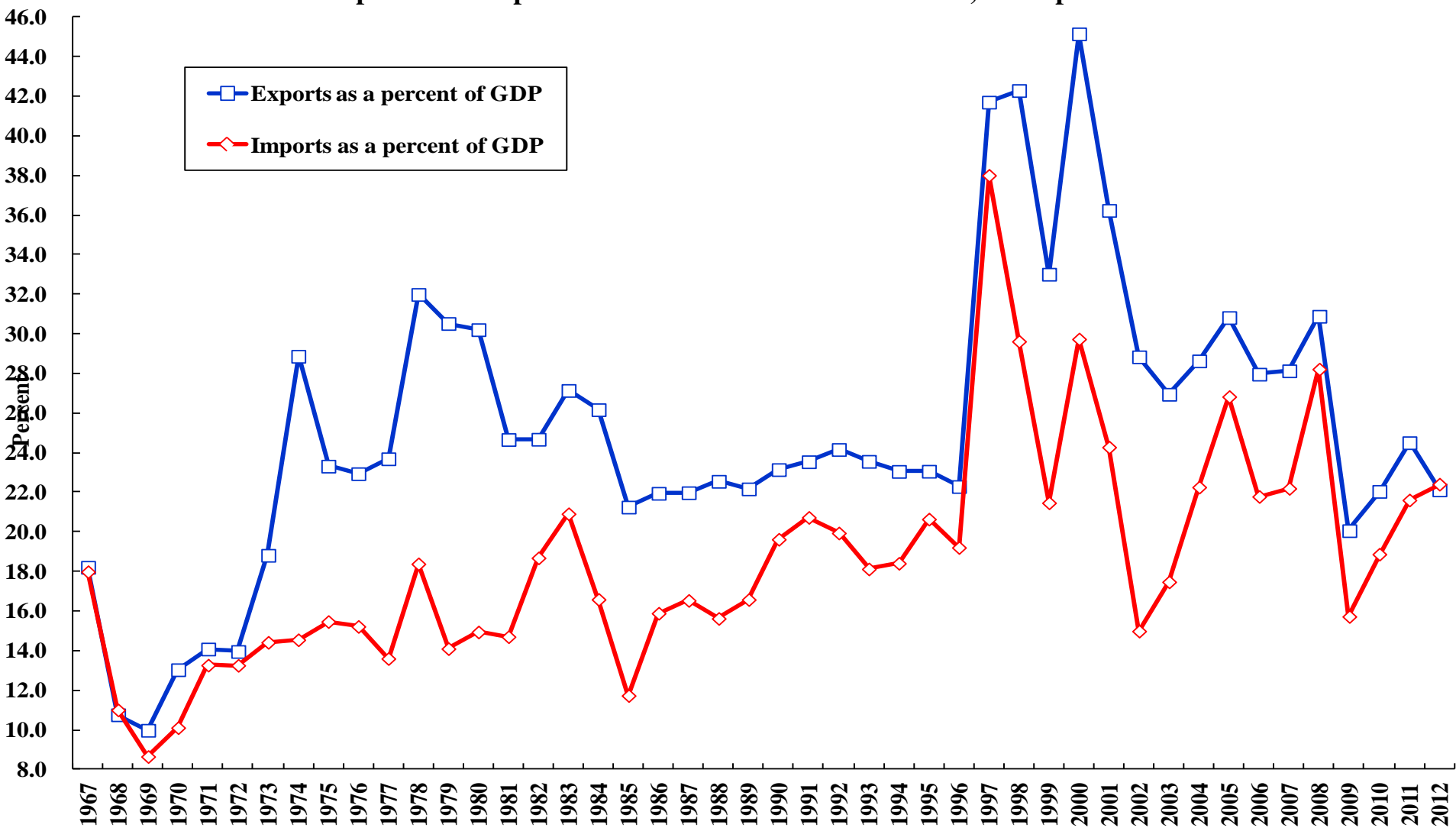
# Exports and Imports as a Percent of Thai GDP, 1950-present

Exports and Imports as a Percent of Thailand GDP, 1950-present



# Exports and Imports as a Percent of Indonesian GDP, 1967-present

Exports and Imports as a Percent of Indonesian GDP, 1967-present



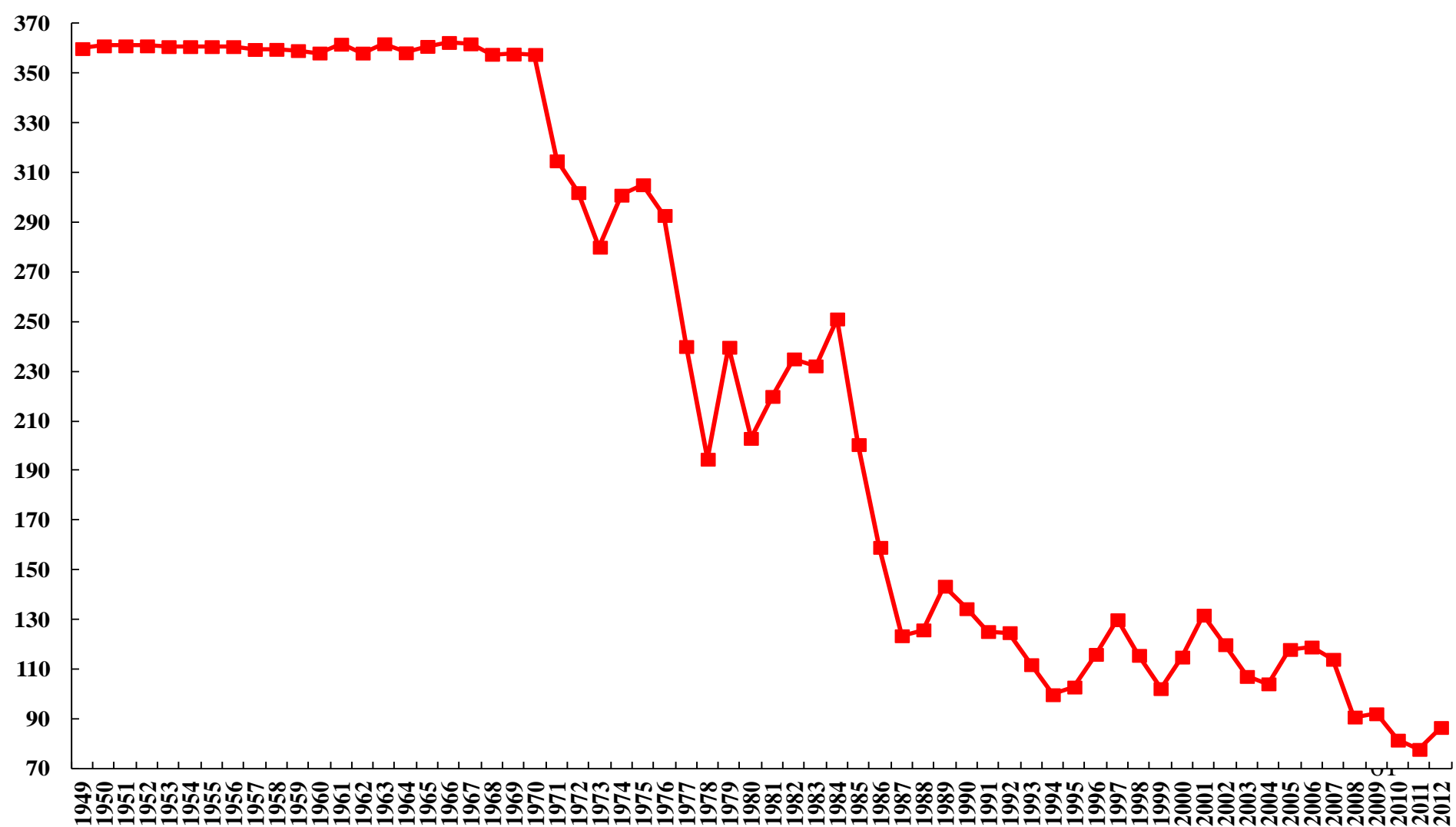
# The Active Participation in the World

## Economy: Exchange Rate Rationalisation

- ◆ Rationalisation of the exchange rate means setting it at a level that reflects the relative productivity of the export sector when compared with competitors and potential competitors in the rest of the World.
- ◆ This often requires a devaluation of the domestic currency at the initial stage of the economic development drive. Such devaluations are common to almost all East Asian economies.
- ◆ It also involves the unification of pre-existing multiple exchange rates, if any, and the adoption of current accounts convertibility.
- ◆ The devaluations made possible the export promotion policy that also turned out to be attractive to foreign direct investors and lenders.
- ◆ In the following charts examples of the devaluations undertaken by selected East Asian economies in the early phases of their respective economic development processes are presented.

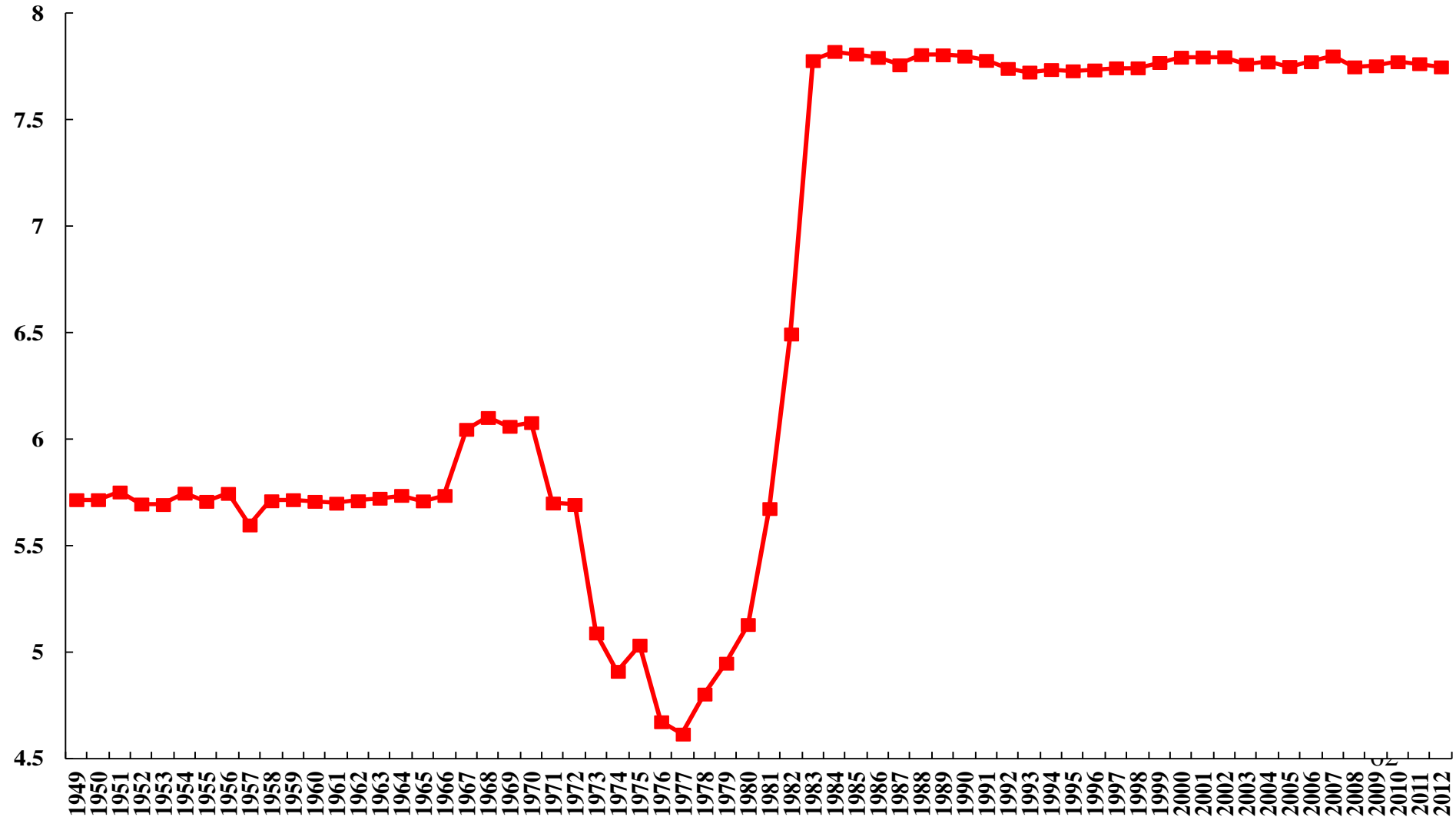
# Nominal Exchange Rate of the Japanese Yen, Yen/US\$, 1946-present

Nominal Exchange Rate of the Japanese Yen, Yen/US\$, 1949-present



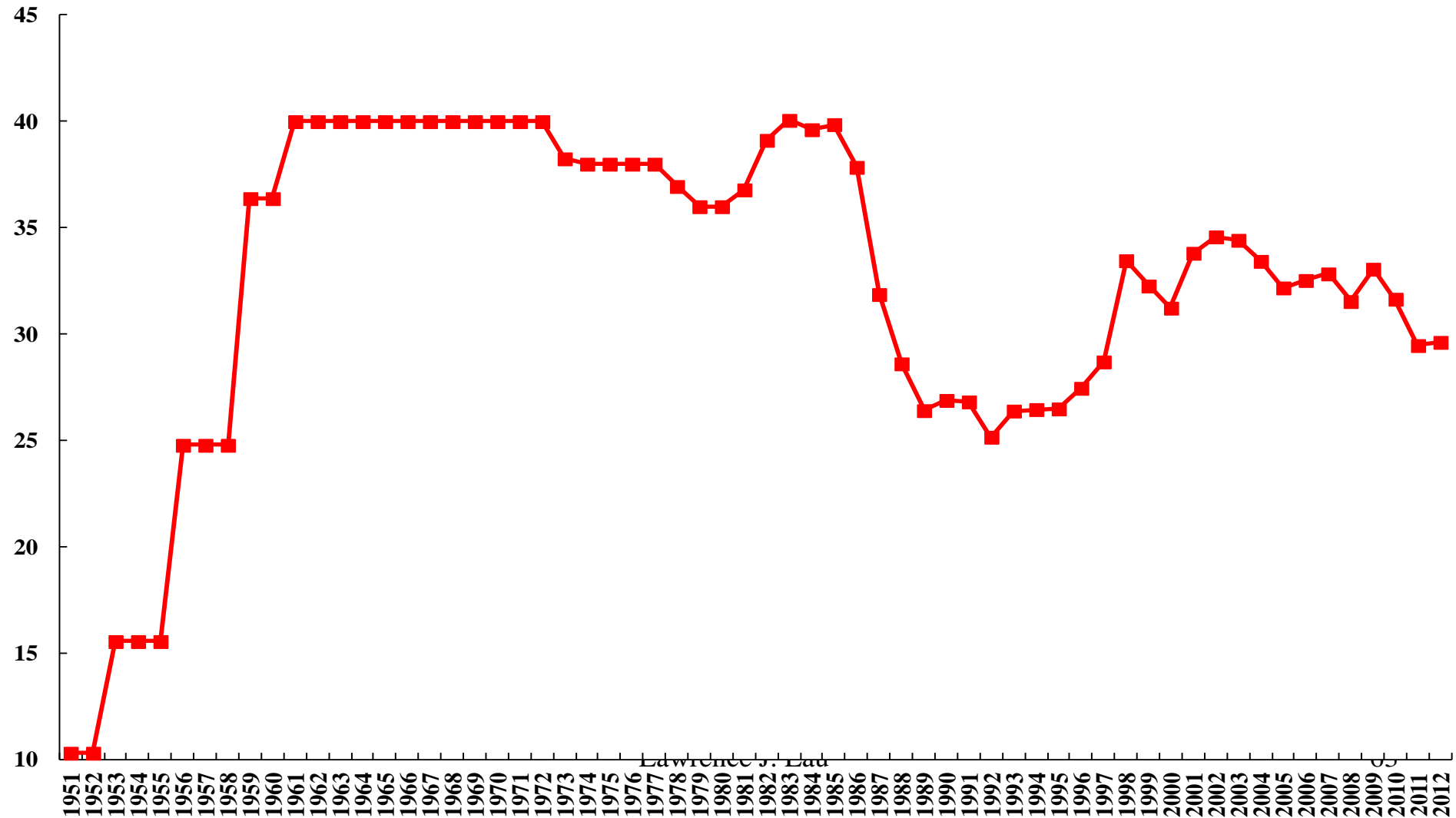
# Nominal Exchange Rate of the Hong Kong Dollar, HK\$/US\$, 1949-present

Nominal Exchange Rate of the Hong Kong Dollar, HK\$/US\$, 1949-present



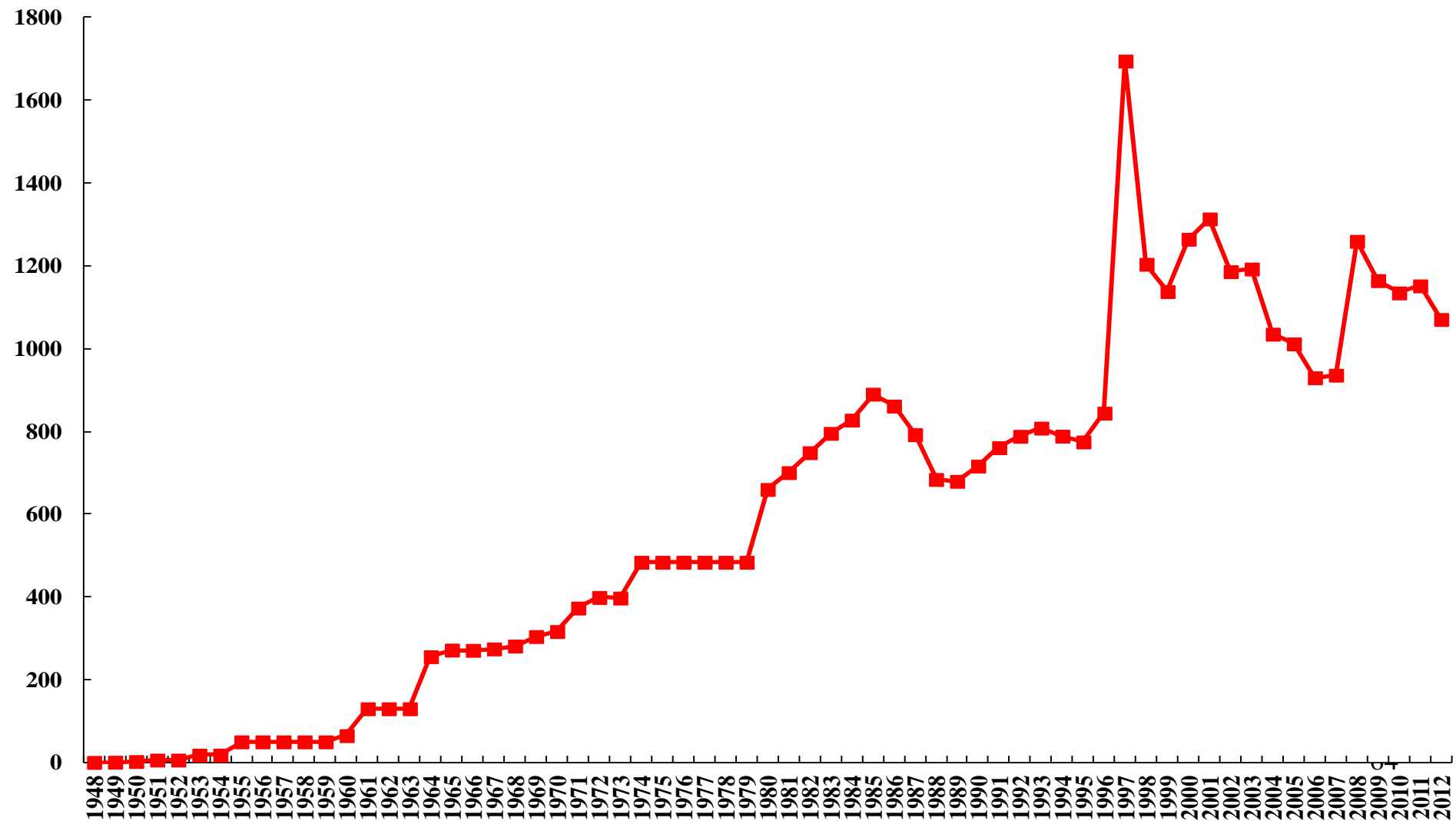
# The New Taiwan Dollar/U.S. Dollar Nominal Exchange Rate, Annual Average

Nominal Exchange Rate of the New Taiwan Dollar, New TW\$/US\$, 1951-present



# Nominal Exchange Rate of the Korean Won, Won/US\$, 1948-present

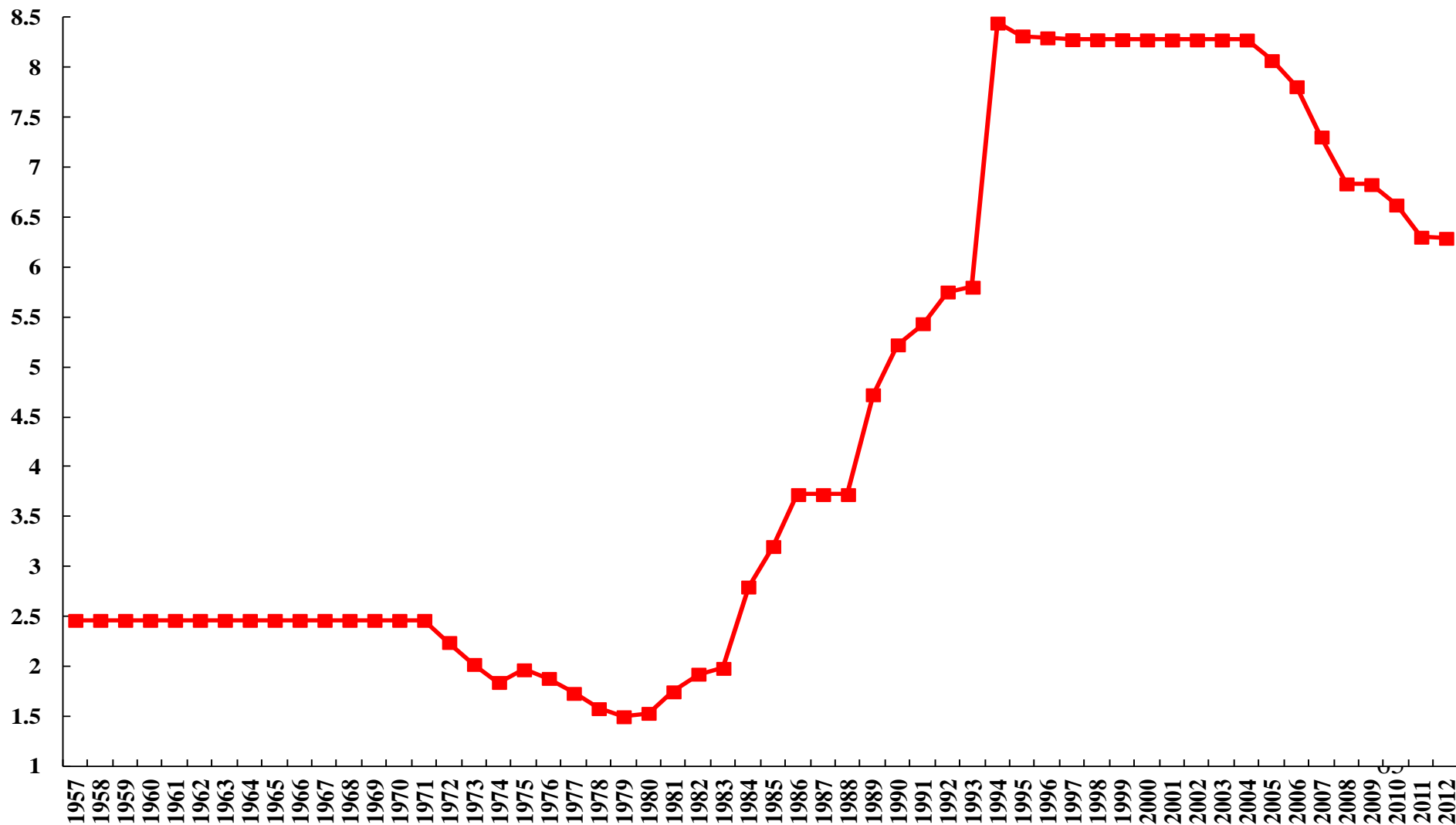
Nominal Exchange Rate of the Korean Won, Won/US\$, 1948-present





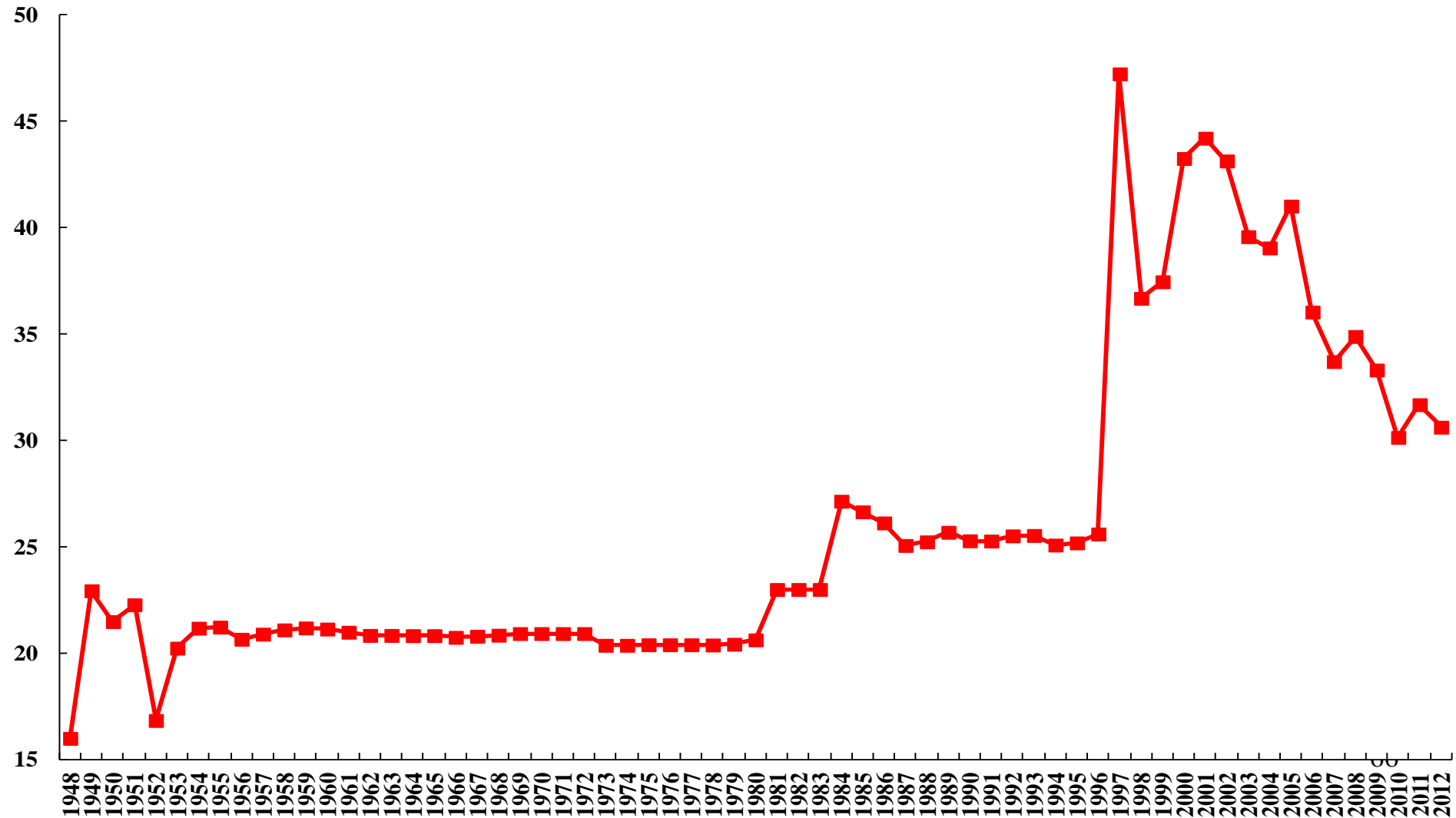
# Nominal Exchange Rate of the Renminbi, Yuan/US\$, 1957-present

Nominal Exchange Rate of the Renminbi, Yuan/US\$, 1957-present



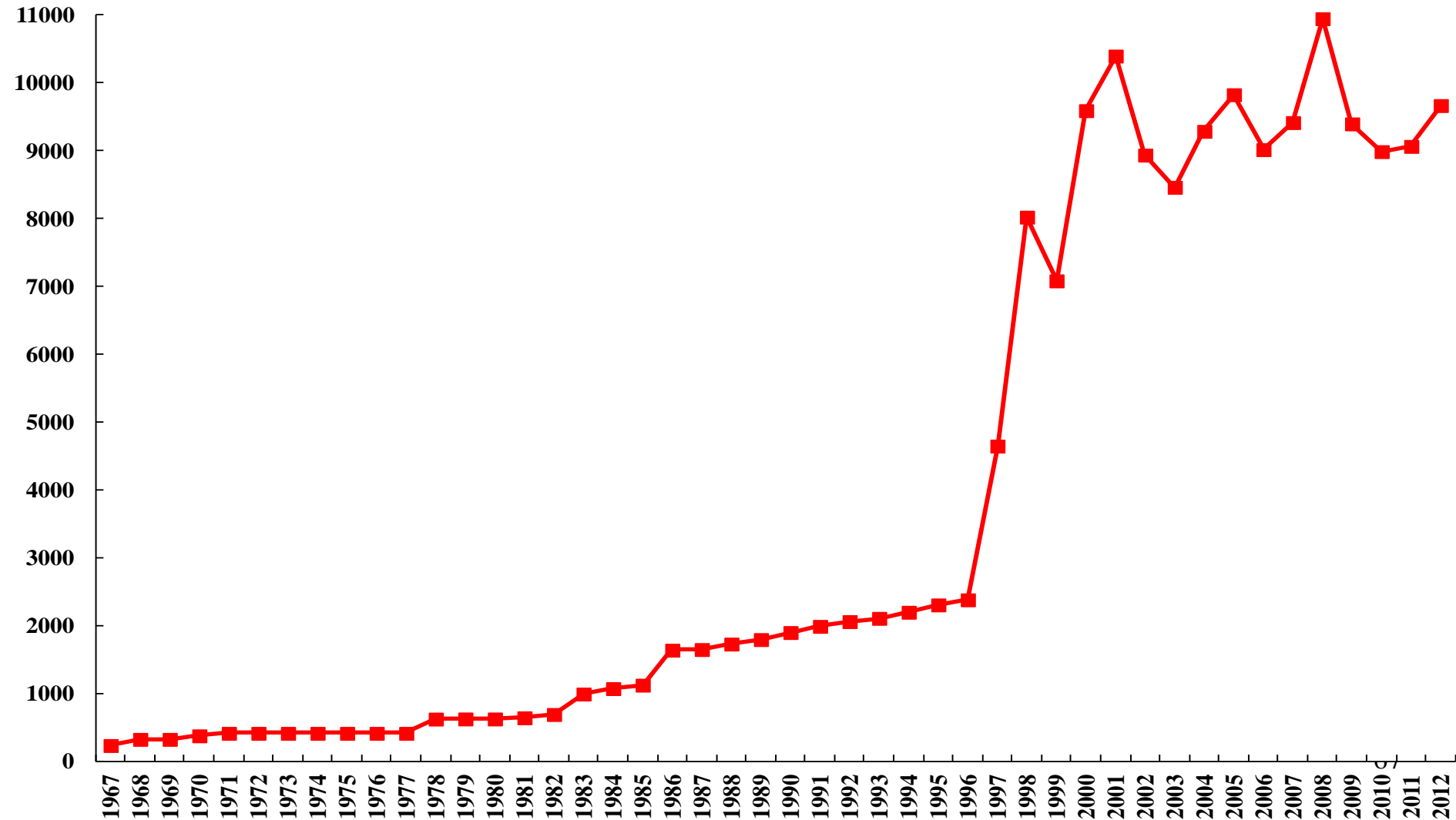
# Nominal Exchange Rate of the Thai Baht, Baht/US\$

Nominal Exchange Rate of the Thai Baht, Baht/US\$, 1948-present



# Nominal Exchange Rate of the Indonesian Rupiah, Rupiah/US\$, 1967-present

Nominal Exchange Rate of the Indonesian Rupiah, Rupiah/US\$, 1948-present



# The Active Participation in the World Economy: Exchange Rate Rationalisation

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- ◆ The exchange rate adjustments triggered significant increases in the shares of exports in GDP in the respective economies.

# Investment in Basic Education

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- ◆ In almost all of the East Asian economies, compulsory basic education (Kindergarten through 6th grade) became the norm quite early in the process of economic development.
- ◆ Over time, compulsory education expanded first to nine years and then to twelve years.
- ◆ Tertiary education has become almost universal in the more developed East Asian economies such as South Korea and Taiwan.

# The Evolving Sources of East Asian Economic Growth

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- ◆ Professors Jong-Il Kim and Lawrence J. Lau (1994a, 1994b) found that the high rates of economic growth of the East Asian newly industrialised economies—Hong Kong, South Korea, Singapore and Taiwan—in the post-World War II period up to 1990 were mostly the results of the growth of tangible inputs--tangible capital and labour--and not technical progress or equivalently the increase in total factor productivity.
- ◆ 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—during the same period was mostly attributable to technical progress.

# The Evolving Sources of East Asian Economic Growth

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- ◆ These empirical results, as well as those of Alwyn Young's (1994, 1995), form the basis of Professor Paul Krugman's (1994) provocative article on the "The Myth of the East Asian Miracle". Professor Krugman's interpretation of these results is very pessimistic—according to him, 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 tangible capital accumulation.

# The Evolving Sources of East Asian Economic Growth

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- ◆ And among the tangible inputs, the growth of tangible or physical capital was the most important source. This has been enabled by the high domestic saving rates of the East Asian economies.
- ◆ Foreign aid, foreign direct investment (FDI) 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 domestic saving rates of the East Asian economies rose quickly as real GDP per capita's increased, providing the resources for continued investment in their respective own economies.



# The Evolving Sources of East Asian Economic Growth

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- ◆ The absence of measured technical progress in the East Asian developing economies is the result of the lack of investment in intangible capital (including human capital and R&D capital).
- ◆ 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 the ratios of expenditures on R&D to GDP.
- ◆ Beginning in the mid-1980s, evidence of positive measured technical progress can be found in the East Asian newly industrialised economies (NIEs), and that the measured technical progress can be largely attributed to the growth of the 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.
- ◆ After taking into account the effects of human capital and R&D capital, no additional technical progress or increase in total factor productivity can be found in South Korea, Singapore and Taiwan, in contrast to the G-5 economies, including Japan.

# 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

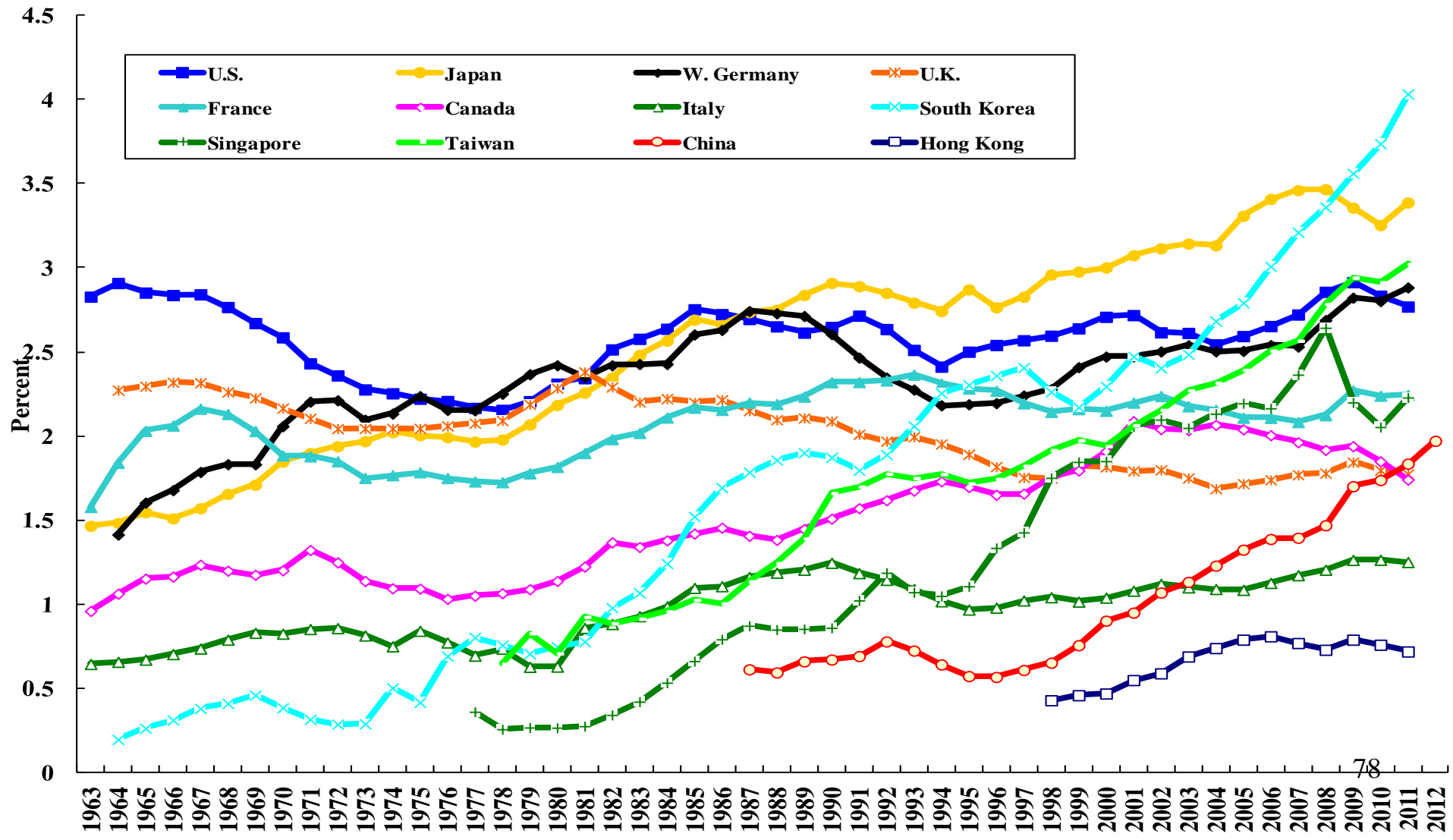
# The Rising Importance of Intangible Capital

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- ◆ The principal sources of East Asian economic growth have therefore gradually evolved from the growth of tangible inputs such as tangible capital, enabled by the high saving rates in the East Asian economies, and labour, to the growth of intangible inputs such as human capital, R&D capital, and reputational capital (branding and goodwill) especially in the more developed East Asian economies.
- ◆ Sustained investment in human capital and research and development (R&D) is essential for the occurrence of technical progress or growth in total factor productivity in an economy.
- ◆ The East Asian economies have been stepping up their respective investments in R&D as a percent of their GDPs.

# 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



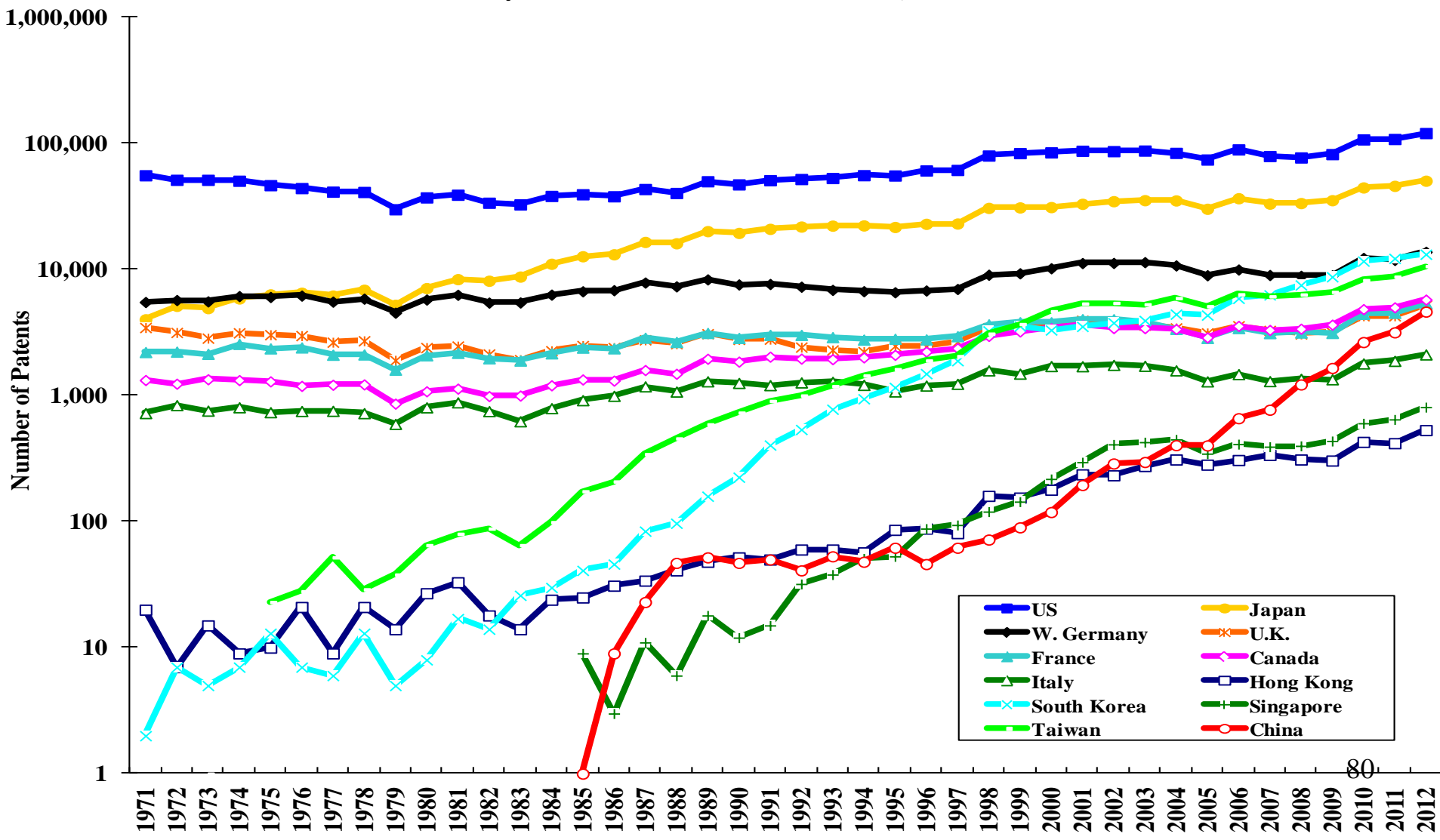
# The Rising Importance of Intangible Capital

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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 121,026 patents granted in 2012, followed by Japan, with 50,677 patents. (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.)
- ◆ The number of patents granted to Mainland Chinese applicants each year has increased from 1 in 1985 to 4,637 in 2012. The economies of South Korea and Taiwan, were granted 13,233 and 10,646 U.S. patents respectively in 2012—they have been averaging approximately 10,000 patents a year each.

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

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





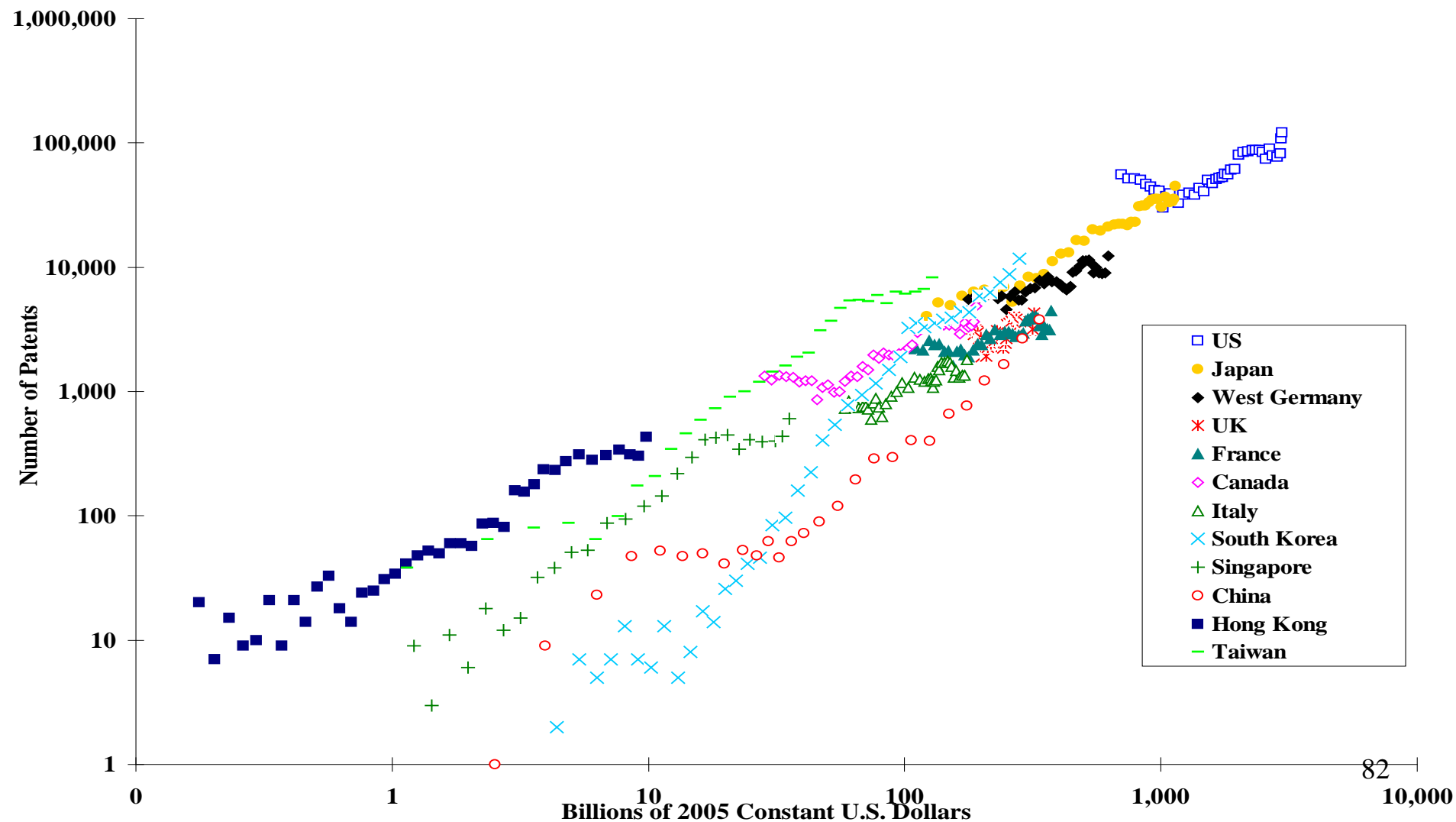
# The Rising Importance of Intangible Capital

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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 annual number of patents granted is plotted against the R&D capital stock of that year for each country or region).
- ◆ The chart shows 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.

# 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



# The Partial De-Coupling Hypothesis

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- ◆ Throughout the 2007-2009 global financial crisis, 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, lending credence to the “Partial De-Coupling Hypothesis”, that is, the Chinese and East Asian economies can continue to grow, albeit at slower rates, even as the U.S. and European economies go into economic recession.
- ◆ This partial de-coupling can occur because of the gradual shift of the economic centre of gravity of the World from the United States and Western Europe to Asia (including both East Asia and South Asia) over the past three decades.

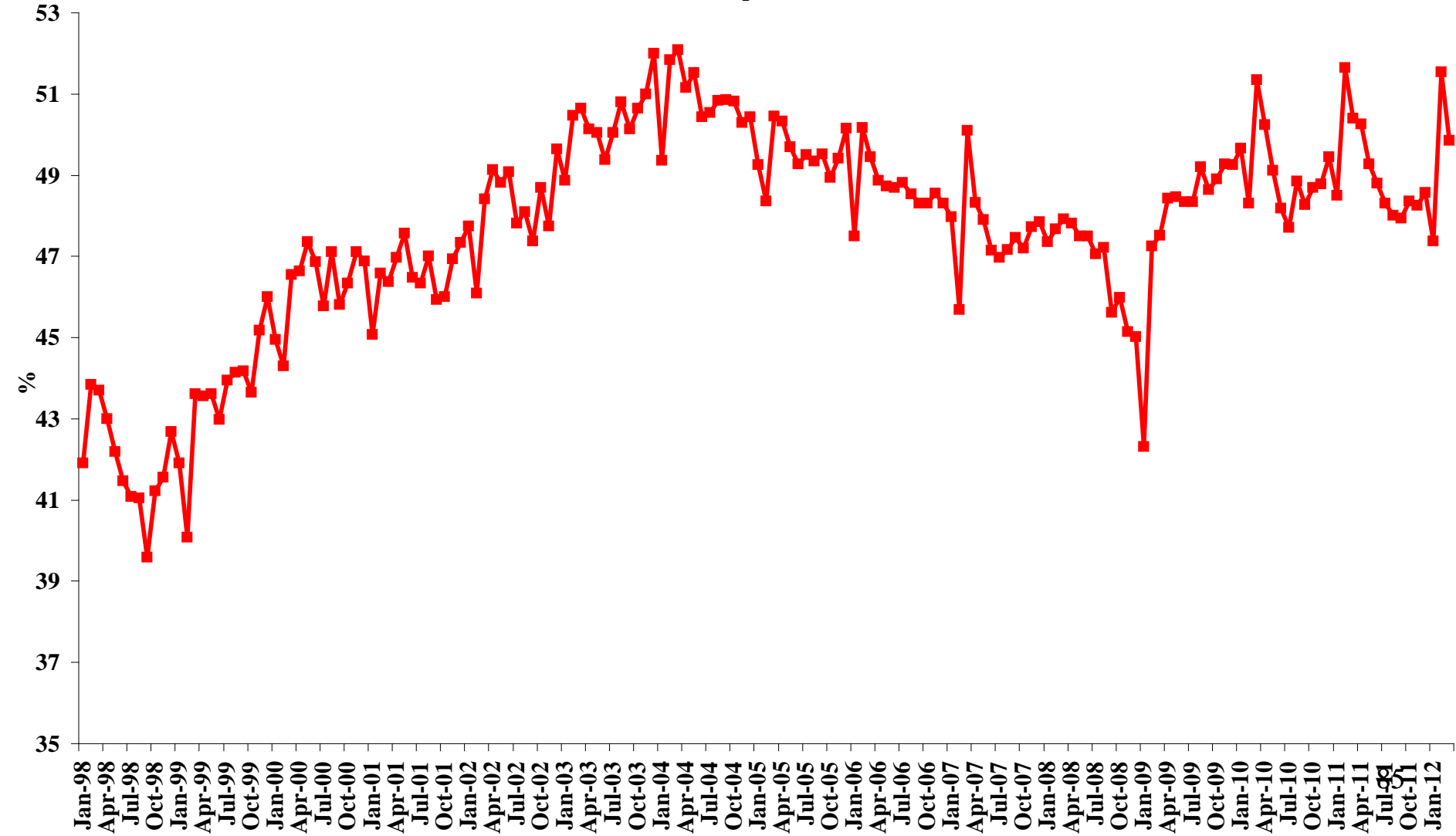
# The Partial De-Coupling Hypothesis

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- ◆ A particularly interesting development is the rise in intra-East Asian international trade. The share of East Asian trade 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 above 45%.

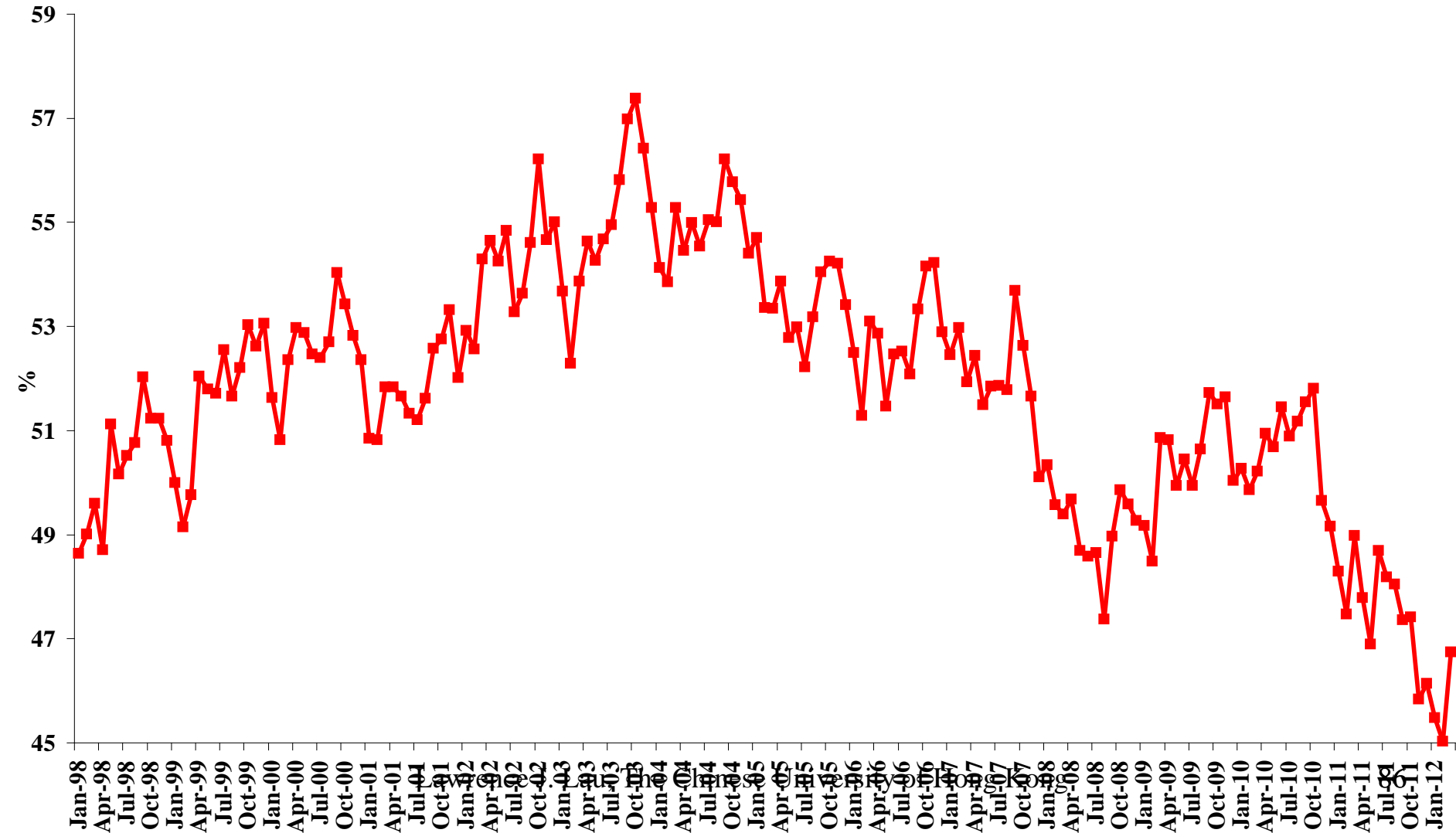
# The Share of East Asian Exports Destined for East Asia

The Share of East Asian Exports Destined for East Asia



# The Share of East Asian Imports Originated from East Asia

The Share of East Asian Imports Originated from East Asia



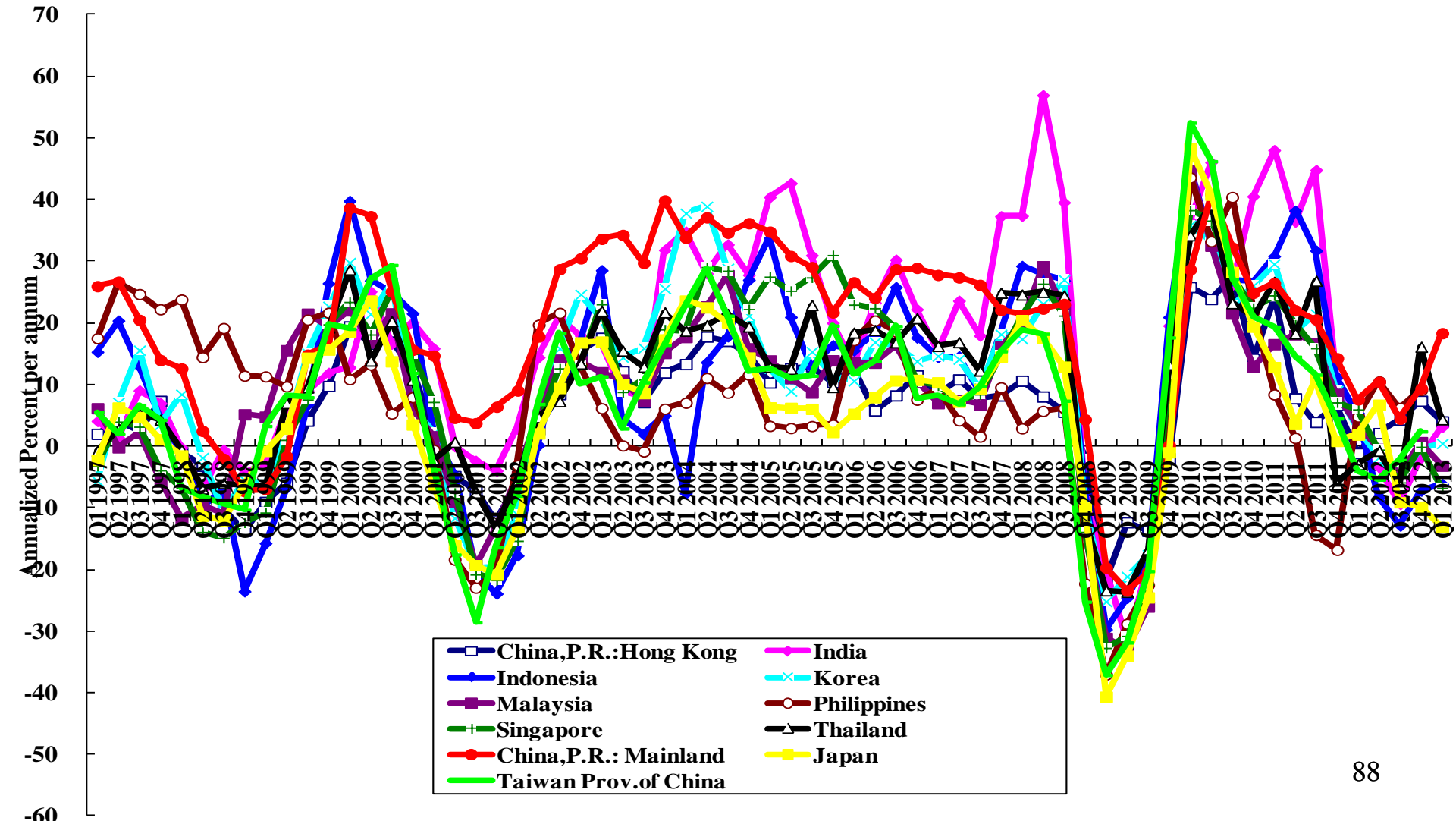
# The Partial De-Coupling Hypothesis

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- ◆ Any doubt that the Chinese economy can be partially de-coupled from the World economy should be resolved by an examination of the following three charts. Even though 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 East Asian Economies

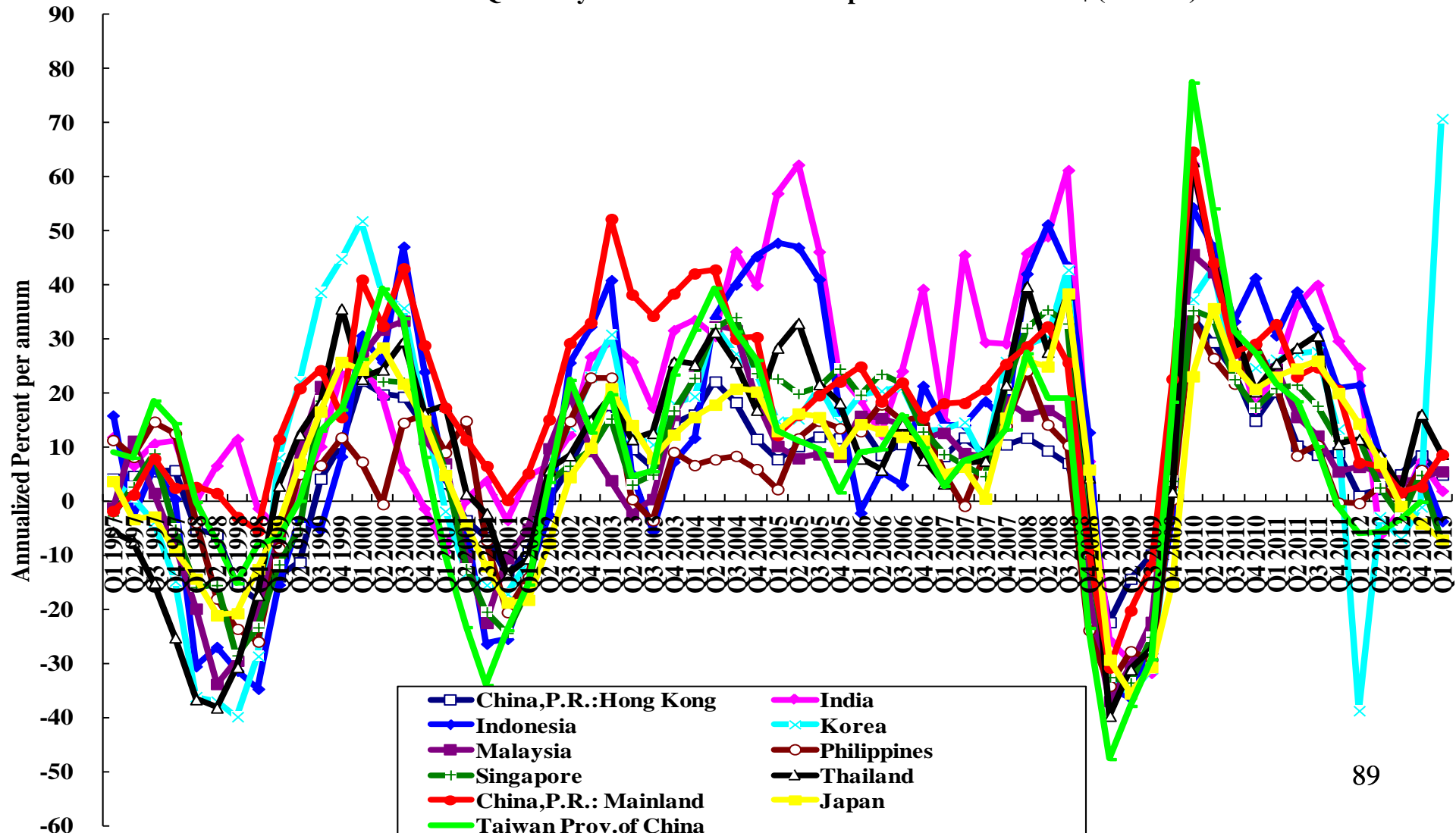
Year-over-Year Quarterly Rates of Growth of Exports of Goods in US\$ (Percent)





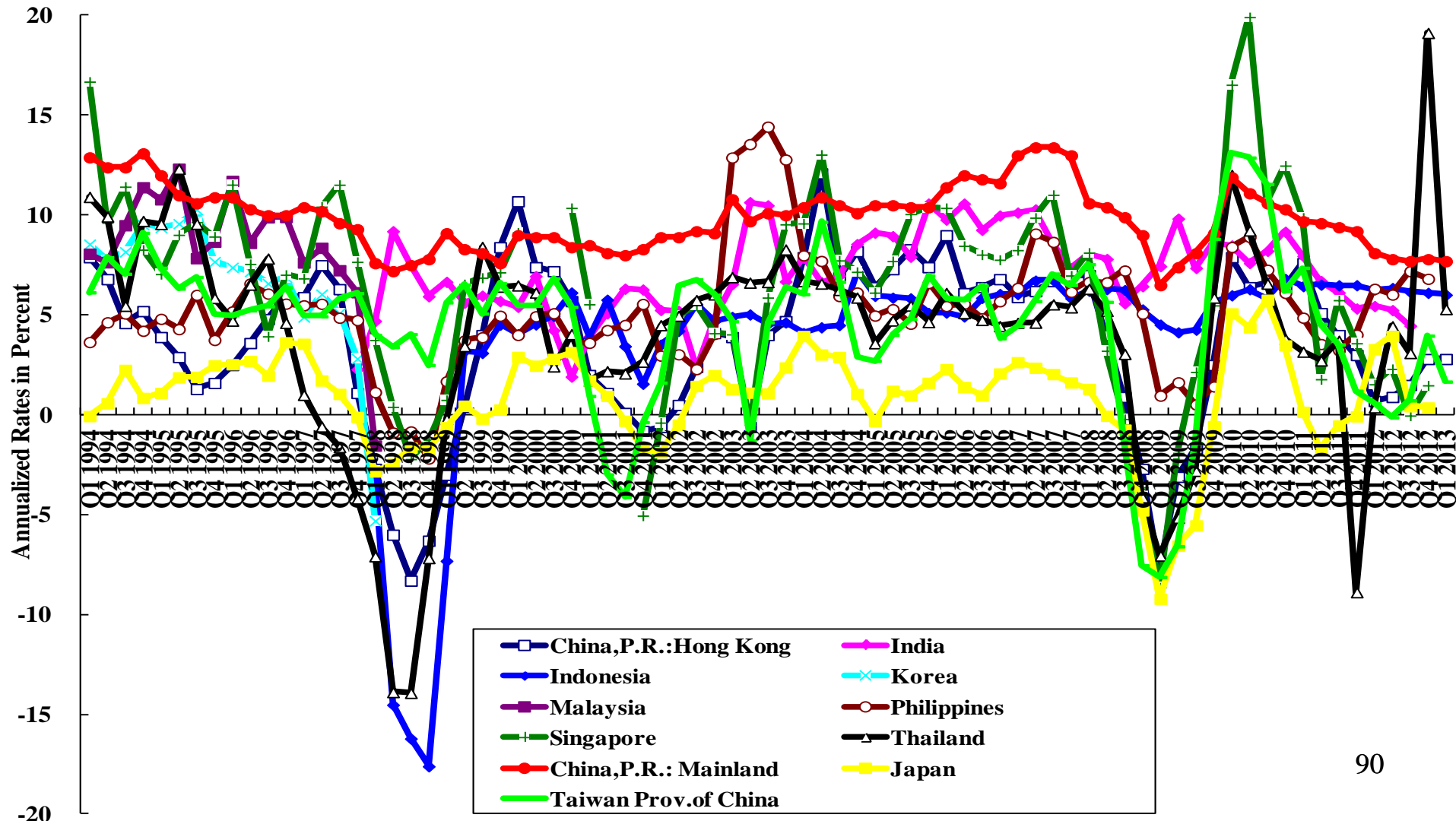
# Quarterly Rates of Growth of Imports of Goods: Selected East Asian Economies

Year-over-Year Quarterly Rates of Growth of Imports of Goods in US\$ (Percent)



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

Quarterly Rates of Growth of Real GDP, Year-over-Year, Selected East Asian Economies



# Concluding Remarks

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- ◆ The centre of gravity of the World economy has been gradually shifting to East and South Asia. The centre of gravity of the East Asian economy has been gradually shifting to China.
- ◆ The Chinese and East Asian economies have been partially decoupled from the United States and Europe.
- ◆ The growth of tangible capital, supported by high domestic saving rates, was the principal source of early East Asian economic growth.
- ◆ Intangible capital (human capital and R&D capital) has been gradually supplanting tangible inputs (physical capital and labour) as the most important source of growth in the more developed East Asian economies such as Japan, South Korea, Singapore and Taiwan.
- ◆ The expansion of the non-agricultural sectors through the utilization of surplus labour and active participation in the World economy are common features of the development experience of successful East Asian economies.