

The Prevention of Future Currency Crises

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A Preview

- ◆ Prevention of Crises—Analogy to the Prevention and Containment of a Potentially Disastrous Fire
 - ◆ Prevention of starts of fires—use of nonflammable material in construction; outlawing the storage of flammable material; forbidding smoking and fireworks at hazardous areas; encouragement of individual responsibility and discouragement of moral hazard (through the use of less than full insurance)
 - ◆ Minimizing potential damage—regular inspection of fire exits, purchasing fire insurance
 - ◆ Early detection--automatic sprinklers and fire alarms
 - ◆ Maintenance of readiness—regular preventive maintenance and inspection, fire drills, standby fire hydrants, and better fire-fighting equipment
 - ◆ Contingency support—mutual aid pacts with nearby communities
 - ◆ Fast response (to put out a fire before it gets out of control) with overwhelming force and prevention of panic
 - ◆ Prevention of propagation (both before and after the start of fire)—designation and establishment of fire lanes, periodic and systematic clearings, intentional burning and clearing to contain the fire
- ◆ The Causes of the East Asian Currency Crisis of 1997-1998
- ◆ Possible Measures for the Prevention of Future Currency Crises

The East Asian Currency Crisis was a Currency Crisis Inducing a Financial Crisis

- ◆ The problem was triggered by perceived insufficient liquidity in terms of foreign exchange reserves
- ◆ Unexpected outflow of short-term capital (including non-renewal of foreign-currency denominated loans) caused the exchange rate to plunge
- ◆ A “bank run” on foreign exchange ensued
- ◆ Financial insolvency caused by the resulting revaluation of the foreign-currency denominated debt and the rise in the rate of interest (due to expected further devaluation and increased volatility of the exchange rate)
- ◆ Domino effects of insolvency and bankruptcy, magnified by high leverage (that is, debt to equity ratio), leading to systemic failure

A Brief History of the East Asian Currency Crisis

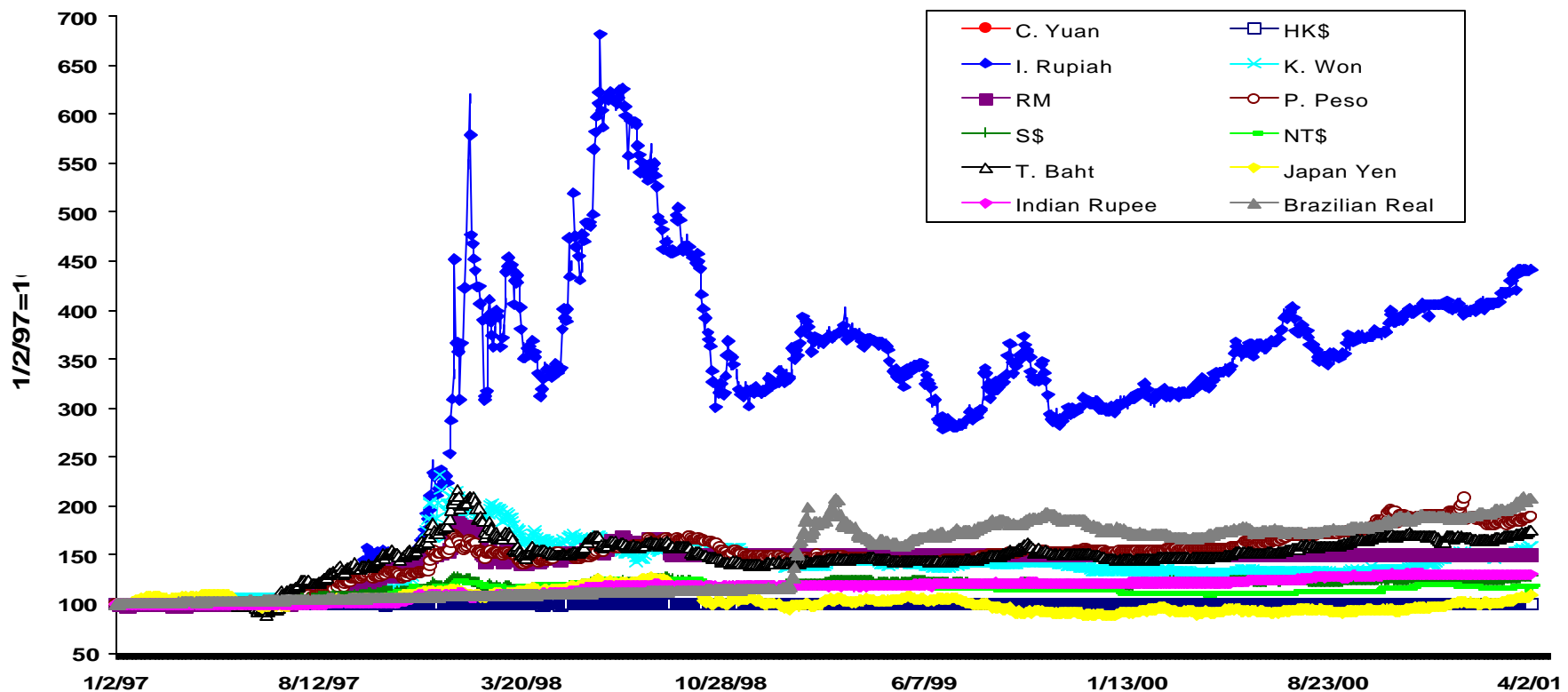
- ◆ The East Asian currency crisis began in Thailand in late June of 1997 and essentially stabilized in the last quarter of 1998
- ◆ While the simultaneous downturns in the East Asian economies exacerbated the problems of one another, leading to exceptionally sharp declines in real GDPs, the simultaneous upturns have also allowed the recovery to be extraordinarily and unexpectedly rapid, with the rising import demands of each economy feeding into rising export demands of its trading partners
- ◆ For most of the East Asian economies, the bottom was reached (0% rate of growth of real GDP) in 2Q/1999; by mid-1999 the real GDPs of all of the affected economies began to show positive rates of growth
- ◆ With the exception of two currencies, the Chinese Yuan and the Hong Kong Dollar, all other East Asian currencies lost significant value vis-à-vis the U.S. Dollar, albeit by varying degrees, and did not recover to pre-crisis levels

The Recovery Followed the Stabilization of the External Environment

- ◆ After 3Q/1998, there were no more speculative attacks on the Thai Baht or any other East Asian currency--the hedge funds had a “credit crunch” due to losses, net redemption and curtailment of available credit lines in the aftermath of the collapse of the Russian ruble and the “Long-Term Capital Management” crisis.
- ◆ Once the exchange rates stabilized at their new (lower) levels, the rates of interest began to fall to more reasonable levels that permit normal real economic activities to resume.
- ◆ The U.S. economy was exceptionally strong throughout period of the East Asian currency crisis (until 4Q/2000), providing a market for East Asian exports and compensating for the very slow recovery of the Japanese economy.

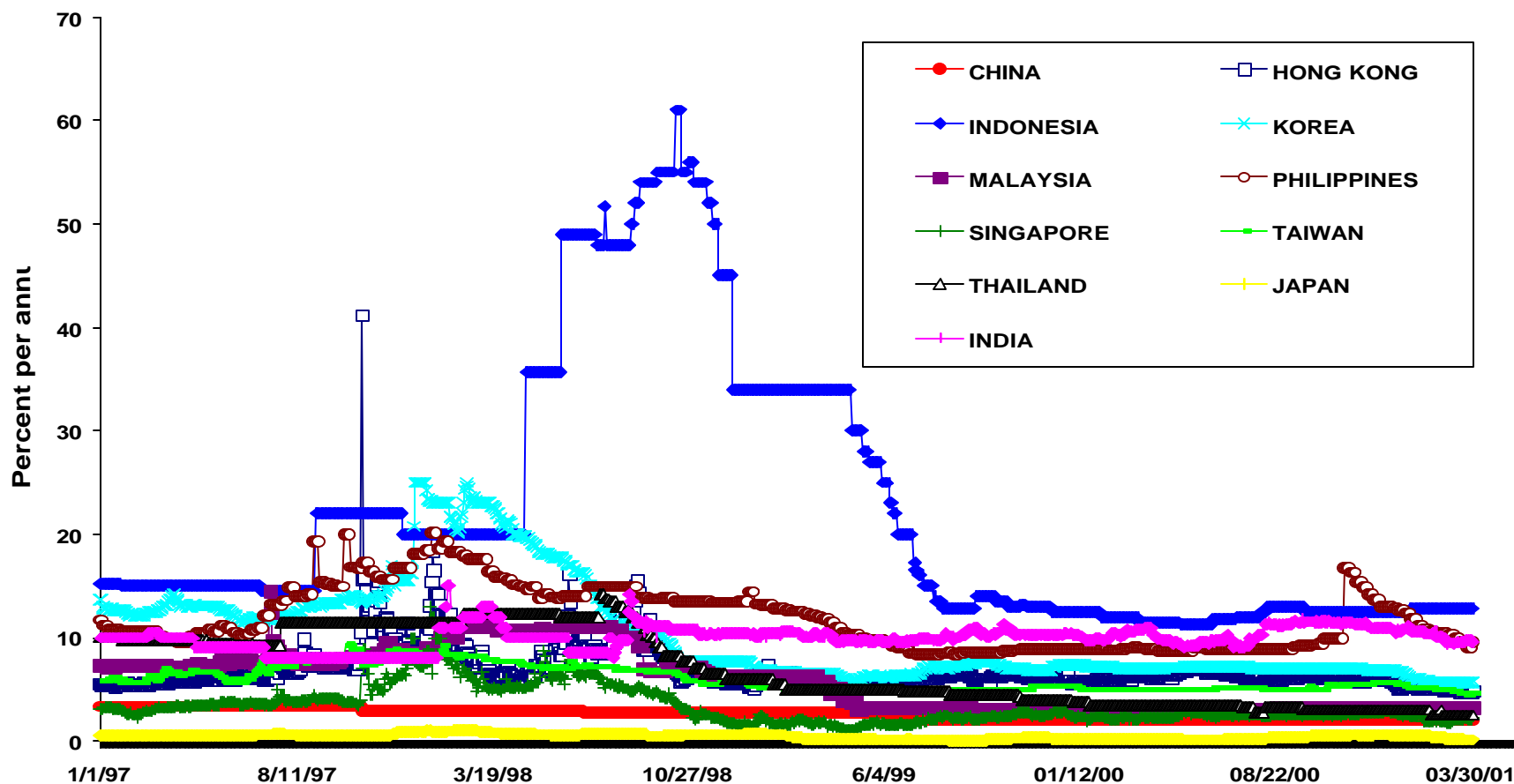
Indexes of East Asian Exchange Rates: Local Currency per US\$ (January 2, 1997=100)

Indices of East Asian Exchange Rates
(Local Currency per U.S. Dollar, 1/2/97=100)



Short-Term Rates of Interest

Short-Term Rates of Interest, Selected East Asian Countries
(percent p.a.)



Early Warning Signals (1)

- ◆ L. J. Lau and J. S. Park, “Is There a Next Mexico in East Asia?,” Project LINK World Meeting, Pretoria, South Africa, Sept., 1995; Lau and Park, “Is There a Next Mexico in East Asia?,” Beijing, China, 1996
 - ◆ Thailand and Philippines were identified as the most likely candidates as the next Mexico, followed by S. Korea and Indonesia
 - ◆ China, Hong Kong, Singapore and Taiwan were identified as the least likely candidates as the next Mexico
- ◆ Indicators of potential vulnerability, e.g.
 - ◆ Stock of potential short-term foreign-currency liabilities (including portfolio investment and bank loans) relative to foreign exchange reserves
 - ◆ Interest rate differential between domestic and foreign currency-denominated loans
 - ◆ Real exchange rate appreciation (loss of competitiveness)

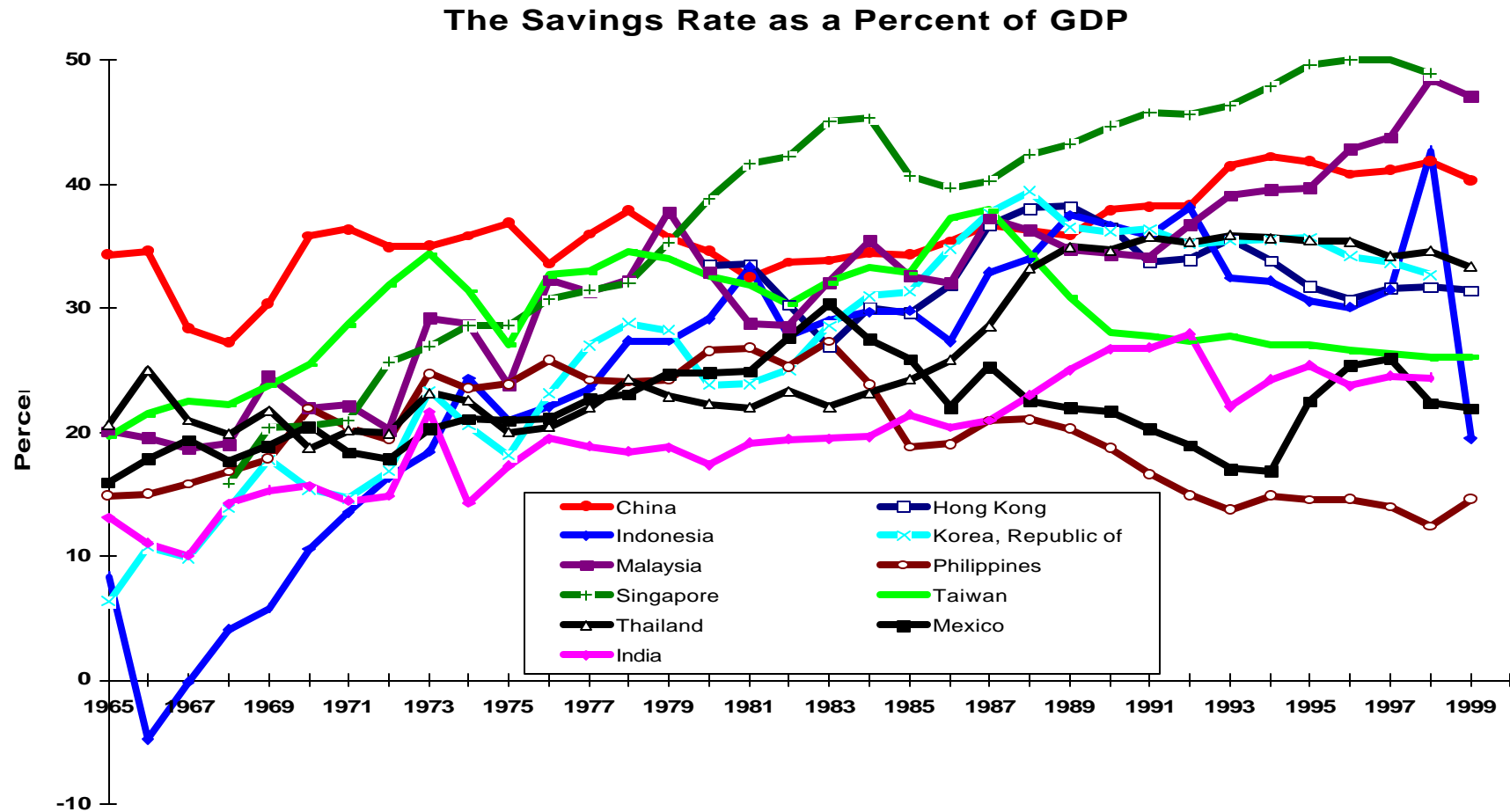
Early Warning Signals (2)

- ◆ Indicators of economic performance, e.g.
 - ◆ Level and rate of change of the marginal efficiency of real capital (rate of return)
 - ◆ Rates of return on the domestic stock market relative to the rates of return on the world stock markets

Fundamental Macroeconomic Causes of the East Asian Currency Crisis

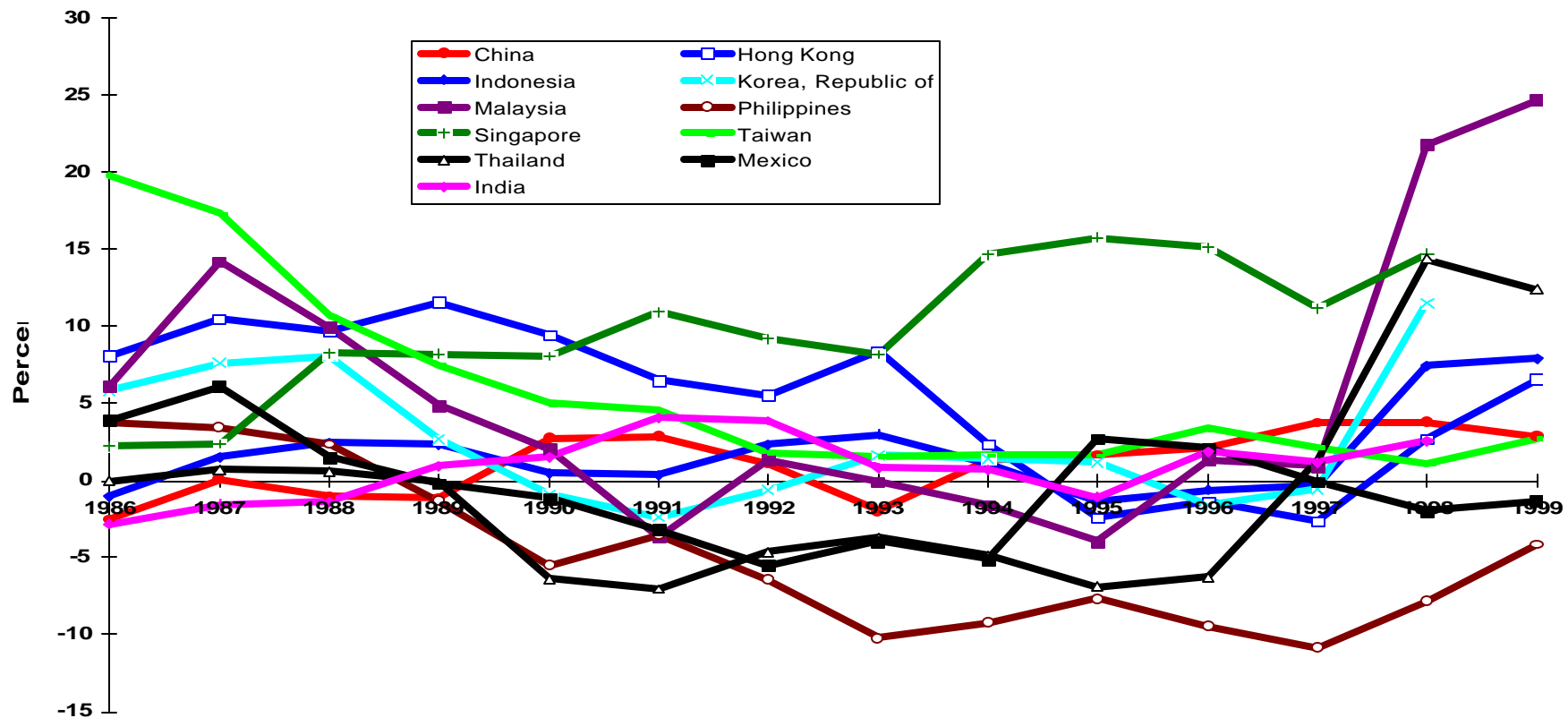
- ◆ Savings-investment imbalance--also reflected as current account imbalance
- ◆ Dependence on short-term foreign capital (portfolio investment--both equity and debt instruments--and loans) by private investors
 - ◆ Equity is better than debt
 - ◆ Direct investment is better than portfolio investment
 - ◆ Insolvency caused by the revaluation of foreign-currency denominated debts and the rise in the domestic and foreign rates of interest
 - ◆ Domino effects of insolvency and bankruptcy
 - ◆ Problems magnified by high leverage (high debt to equity ratio) of enterprises and financial institutions
- ◆ Inadequacy of foreign exchange reserves (working capital of a country) for supporting imports, debt service, and (potential) net short-term capital outflows
- ◆ Real exchange rate appreciation (loss of competitiveness) due to a domestic rate of inflation higher than the U.S. rate of inflation

Savings Rates as a Percent of GDP of Selected East Asian Economies



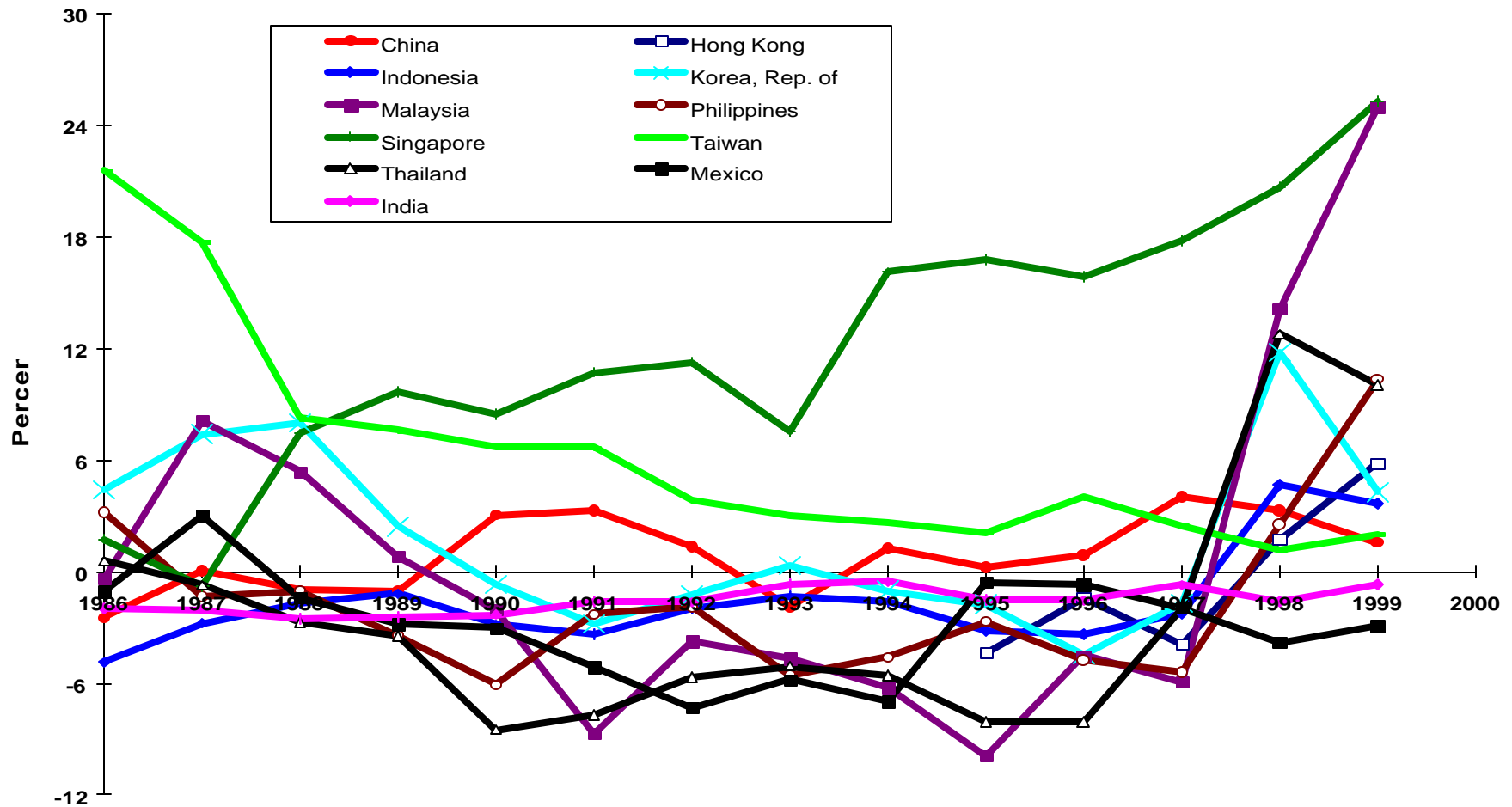
The Savings-Investment Gap Selected East Asian Economies

The Savings-Investment Gap as a Percent of GDP



Current Account Surplus (Deficit) as a Percent of GDP

The Current Account Surplus (Deficit) as a Percent of GDP



Fundamental Microeconomic Causes: Borrowing Too Much, Short-Term and in Wrong Currency

- ◆ Maturity mismatch--borrowing short and investing (lending) long
- ◆ Currency mismatch--revenue and cost (liability) in different currencies
 - ◆ Vulnerability magnified by high debt to equity ratio
 - ◆ Insolvency caused directly or indirectly by declines in the exchange rates (through revaluation of debt in terms of domestic currency, high nominal domestic and foreign rates of interest, and domino effects of bankruptcy)
 - ◆ Oversold currencies create unnecessary bankruptcies and discourage re-capitalization and re-structuring
- ◆ Moral hazard on the parts of both lenders and borrowers
 - ◆ Past bailouts (Latin American loans, Mexican loans) of developed country lenders encourage moral hazard on the part of lenders
 - ◆ Implicit guarantee of banks and enterprises “too big to fail” by governments encourage moral hazard on the part of both borrowers and lenders

Fundamental Microeconomic Causes: Excessive Leverage and Herd Mentality

◆ Excessive Leverage

- ◆ Excessive leverage of enterprises magnifies the negative effects of a sharp devaluation on foreign-currency denominated debt as well as the resulting rise in both the domestic and the foreign rates of interest
- ◆ Excessive leverage magnifies the negative effects of a sharp devaluation even for enterprises without foreign-currency denominated liabilities because of the resulting rise in the domestic rate of interest
- ◆ Excessive leverage encourages moral hazard (recklessness) on the part of the borrowers
- ◆ Excessive leverage magnifies the domino effect of insolvency and bankruptcy on the entire financial system
- ◆ Excessive leverage also enables the hedge funds to engage in predatory speculation on a large scale
- ◆ “Herd mentality”--too much money chasing too few good projects leading to mis-pricing by developed country investors and lenders (it is better to make the same mistake as everyone else)--the making of an East Asian “bubble”

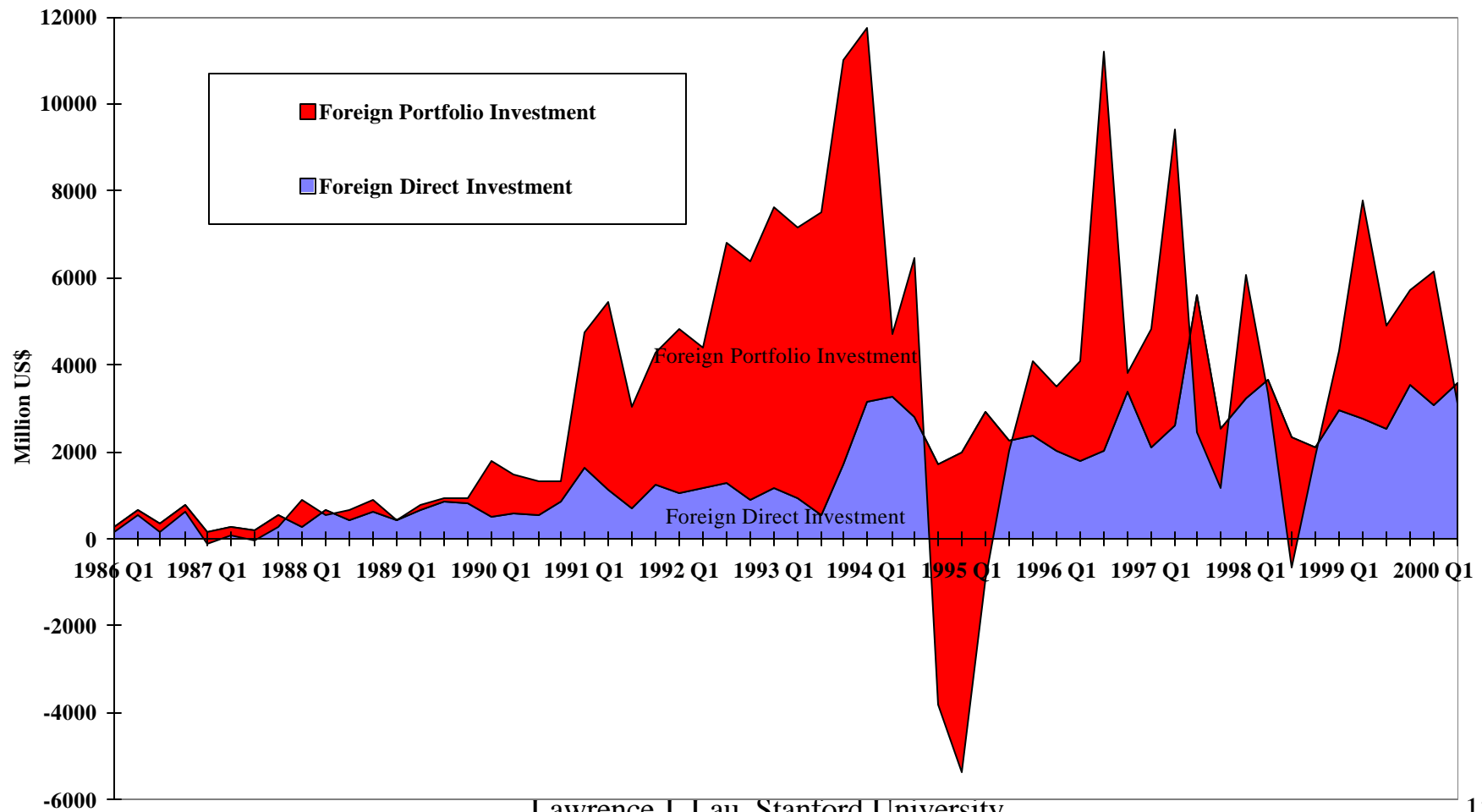
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Over-Dependence on Potentially Short-Term Foreign Capital

- ◆ Dependence on foreign capital per se is not necessarily risky, but dependence on potentially short-term foreign capital, such as foreign portfolio investment and short-term bank loans, that can be withdrawn on short notice (and usually at the first sign of real or perceived trouble), can be risky for small developing economies. Both the foreign portfolio investors and lenders need to be paid, directly or indirectly, in terms of foreign exchange, thus potentially putting tremendous pressure on the exchange rate to devalue, especially if the domestic borrowers do not have matching sources of foreign-currency revenue.

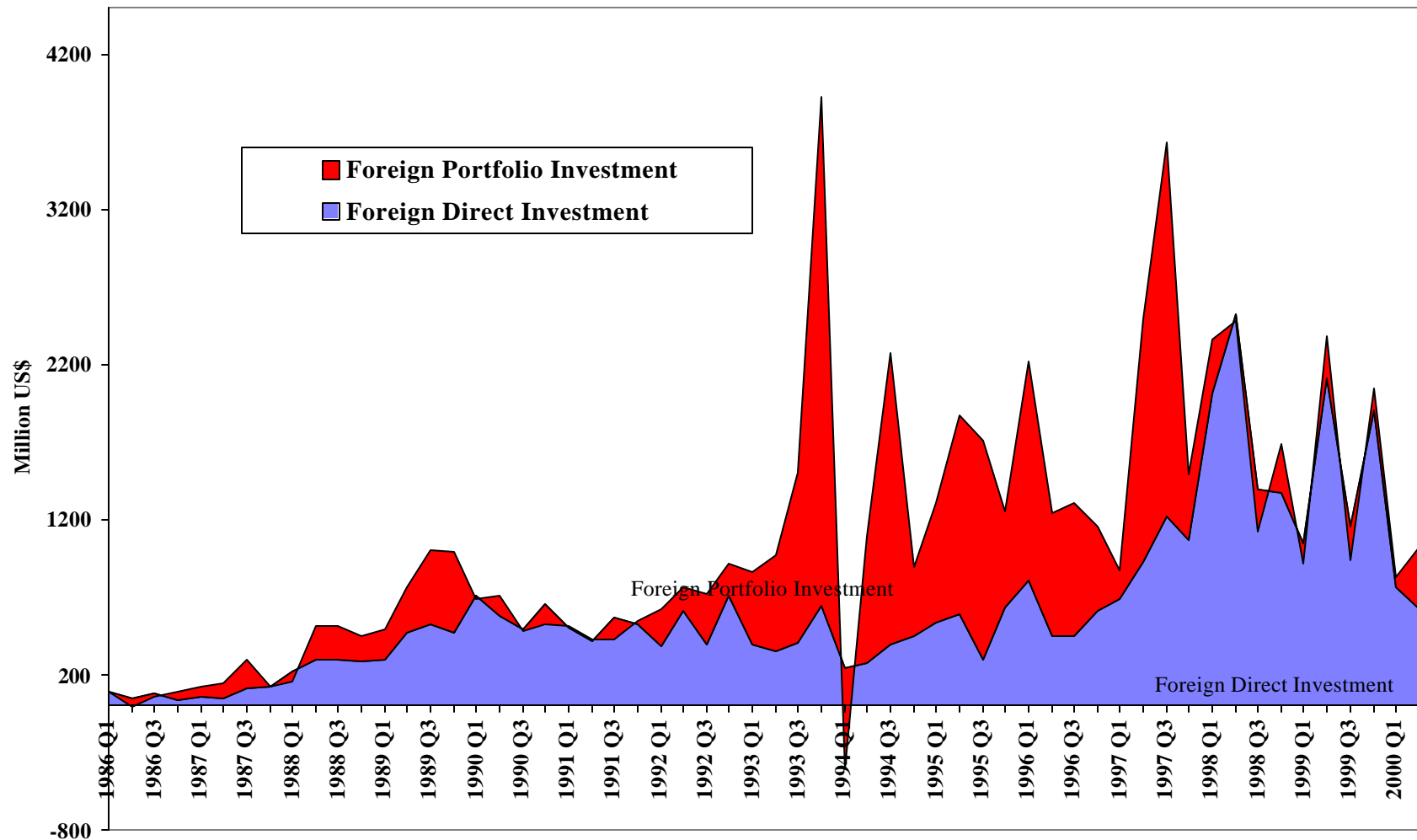
Composition of Foreign Investment: Mexico (Quarterly Data)

Composition of Foreign Investment: Mexico

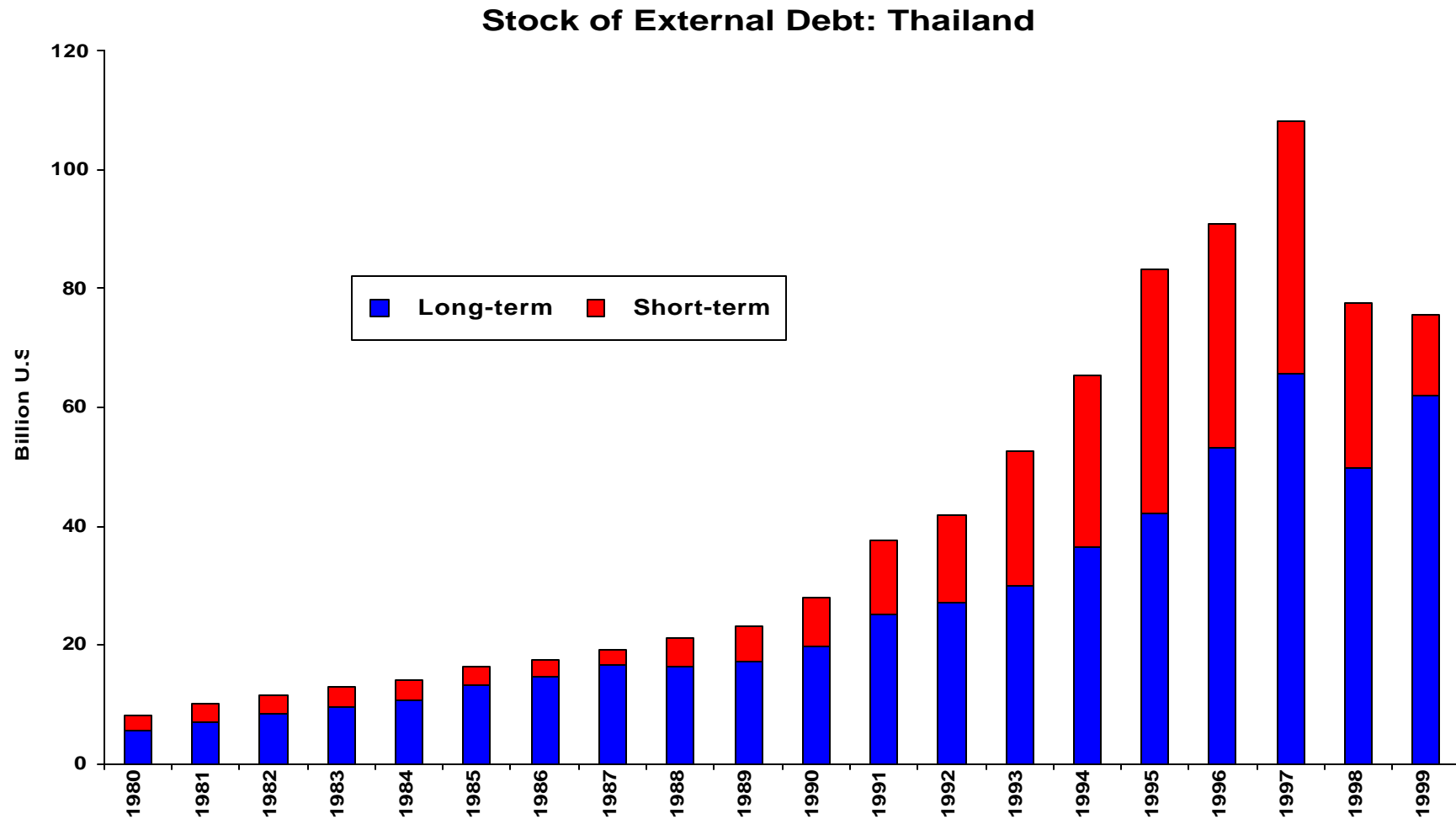


Composition of Foreign Investment: Thailand (Quarterly Data)

Composition of Foreign Investment: Thailand

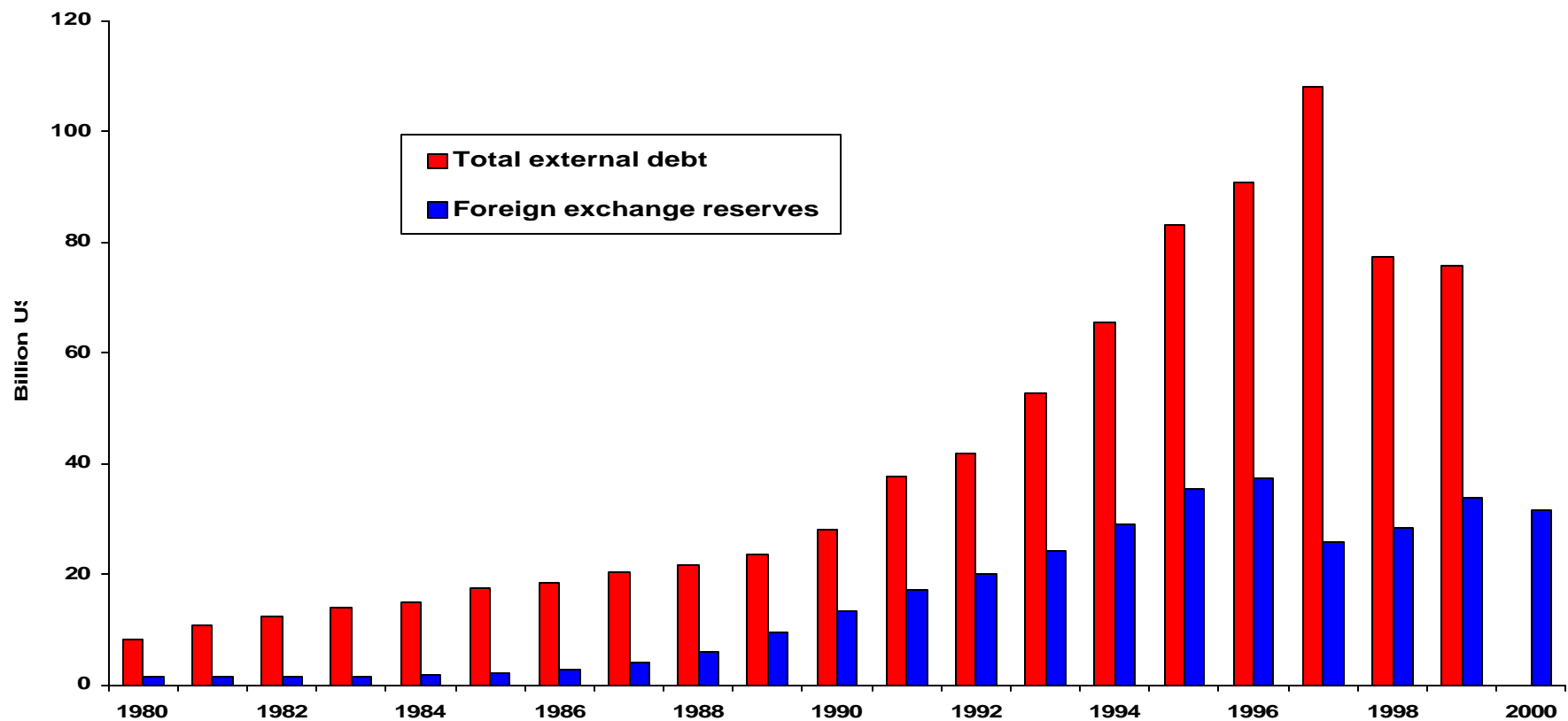


Composition of External Debt Thailand



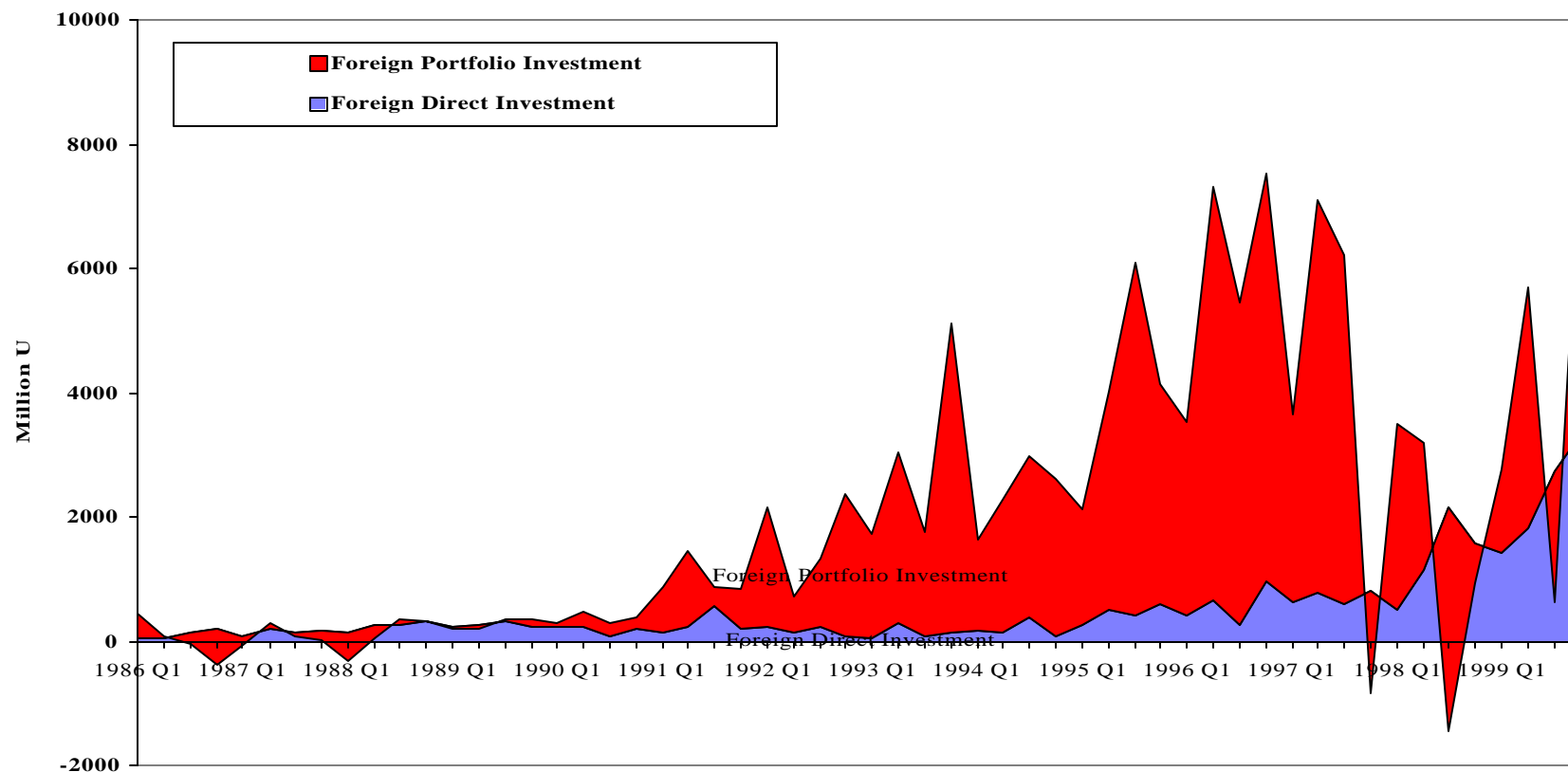
External Debt and Foreign Exchange Reserves Thailand

Thailand's External Debt vs. Foreign Exchange Reserves



Composition of Foreign Investment: South Korea (Quarterly Data)

Composition of Foreign Investment: Republic of Korea

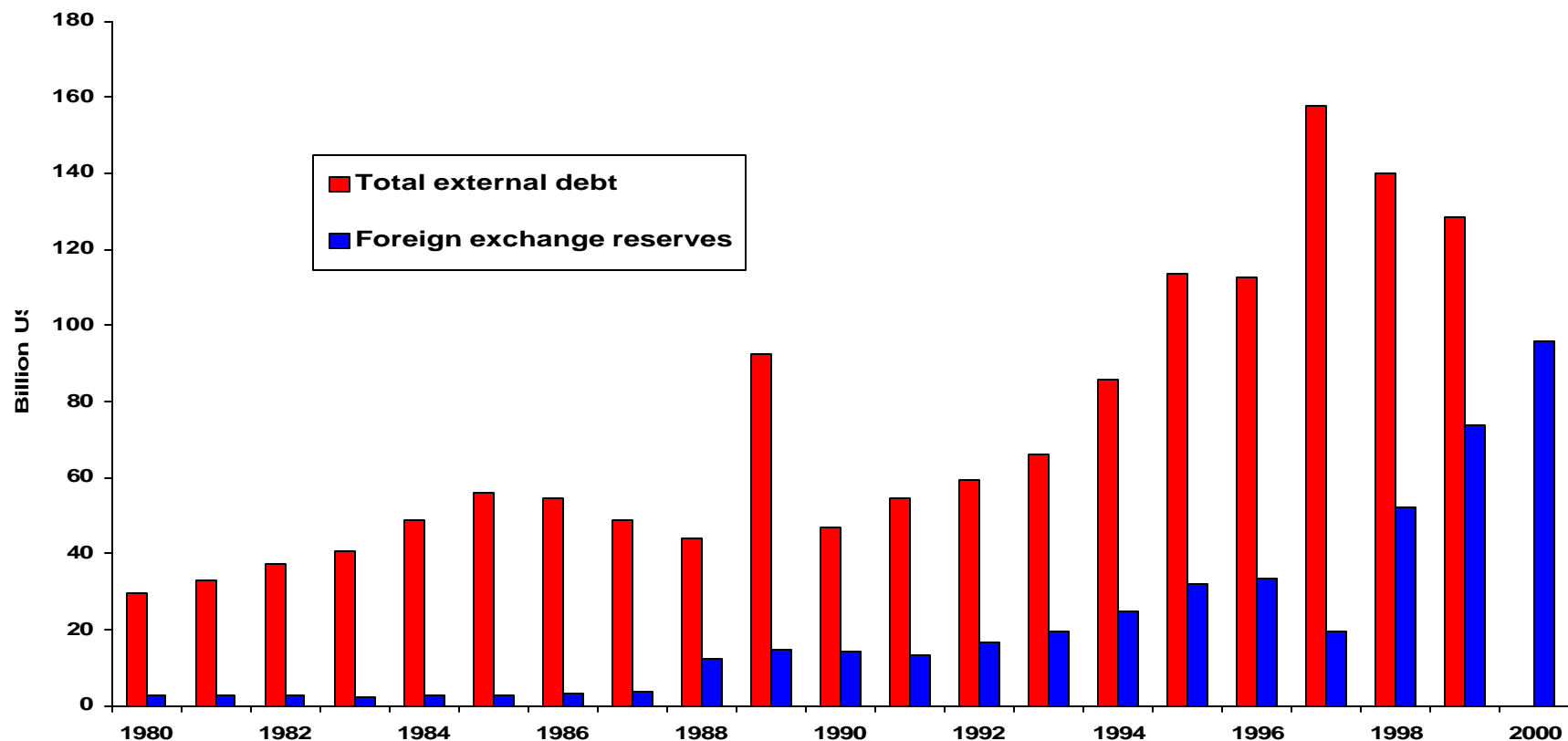


Composition of External Debt South Korea



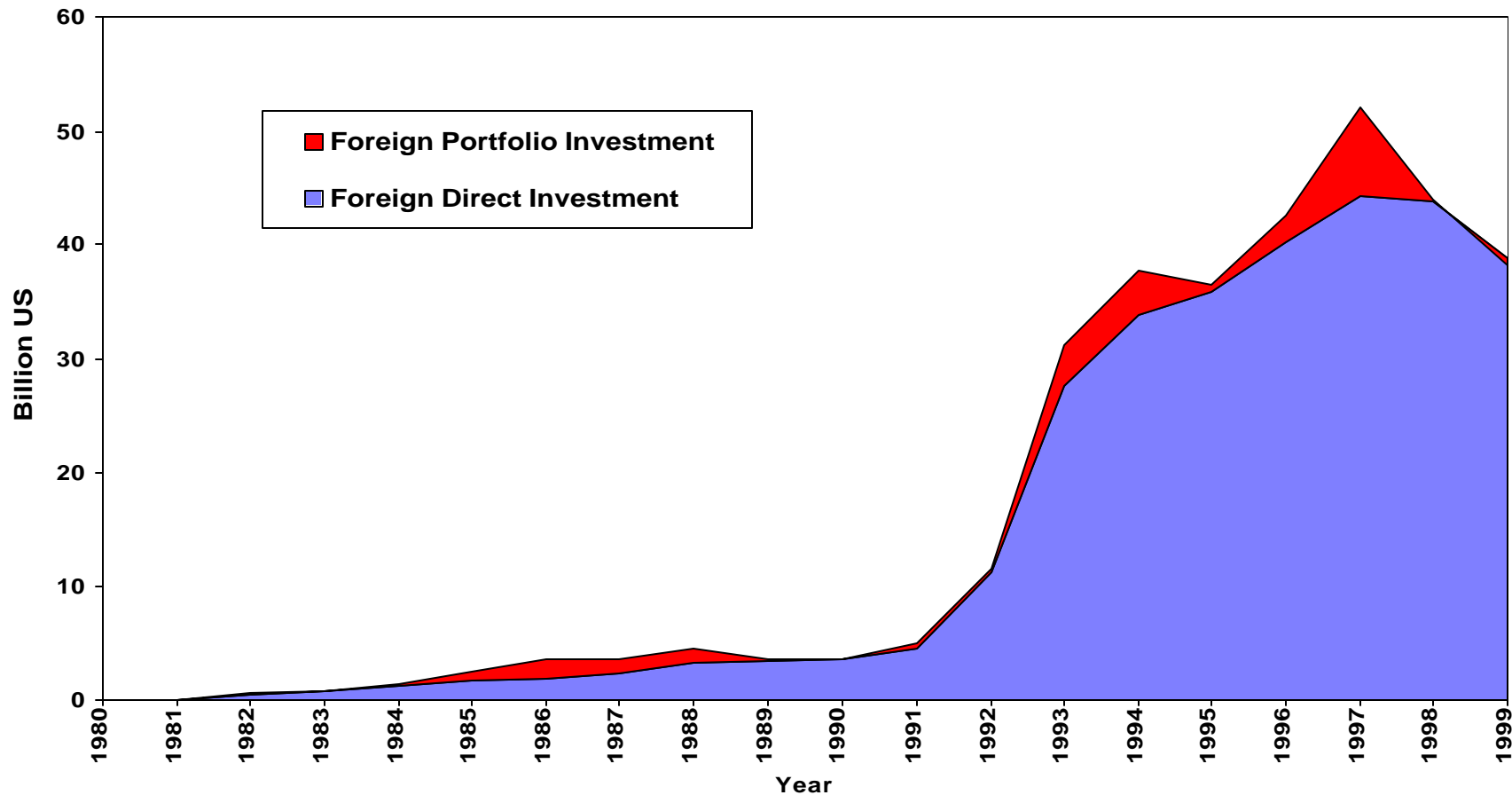
External Debt and Foreign Exchange Reserves South Korea

Korea's External Debt vs. Foreign Exchange Reserves



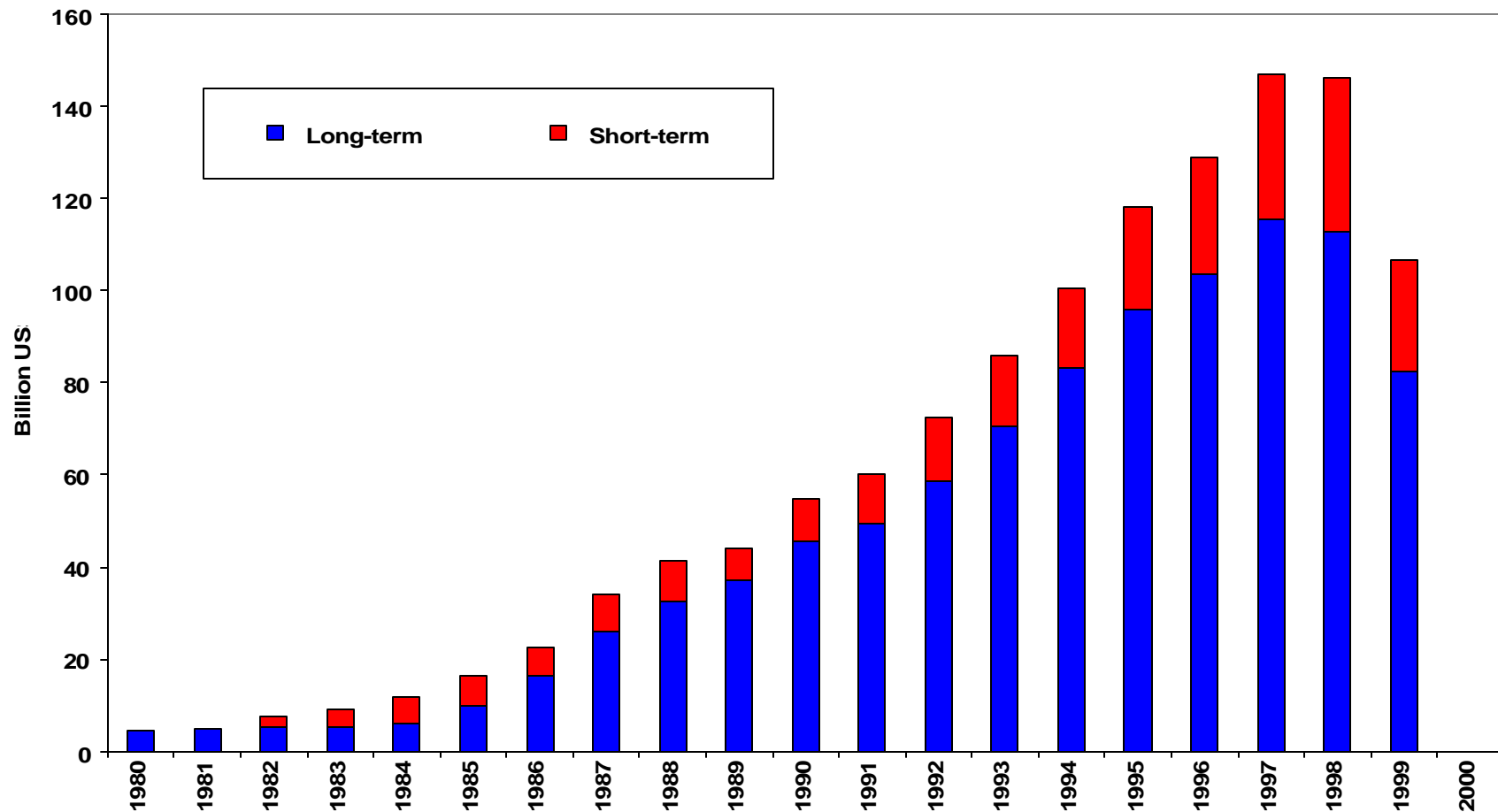
Composition of Foreign Investment: China (Annual Data)

Composition of Foreign Investment, China

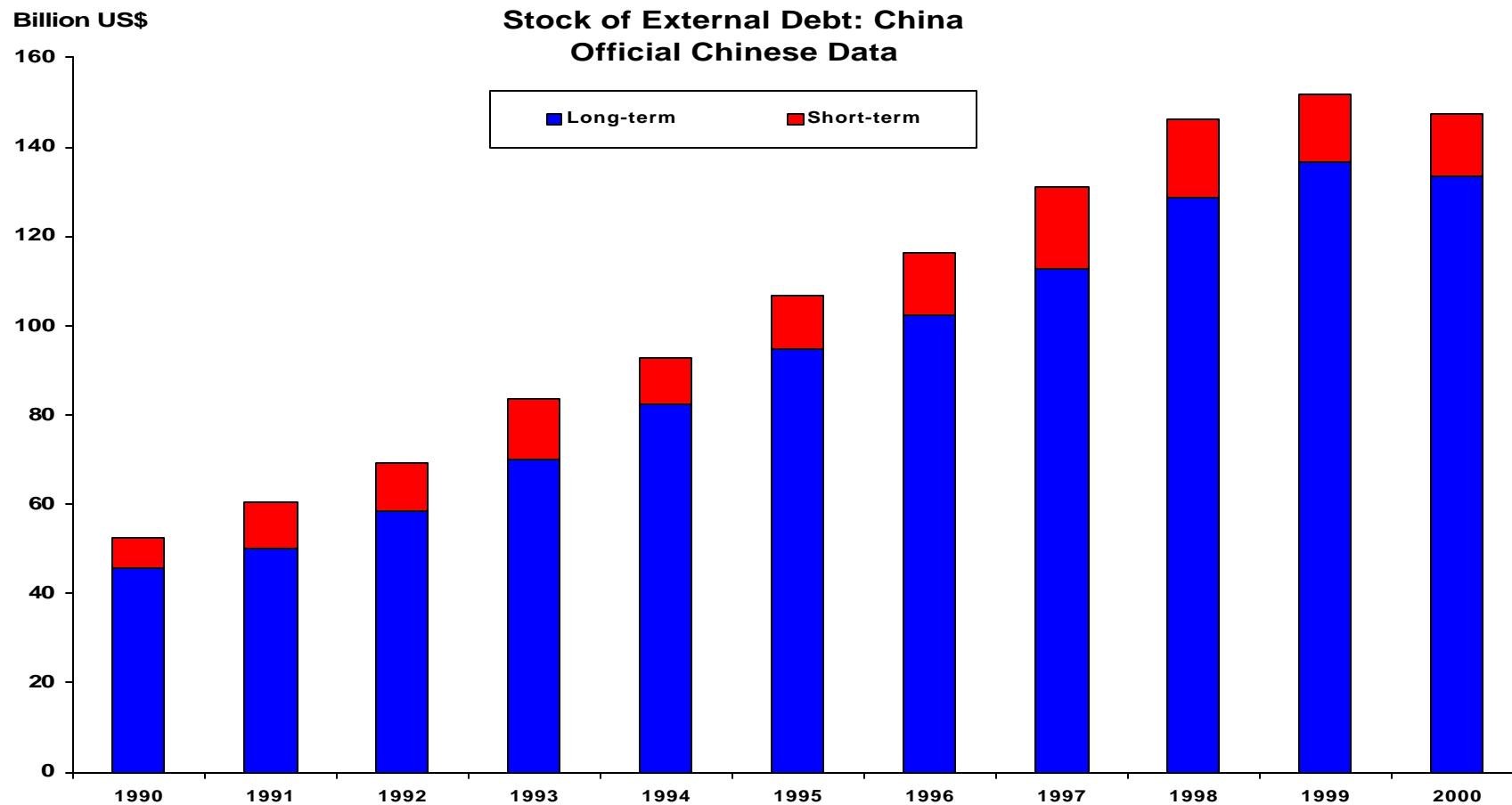


Composition of External Debt China

Stock of External Debt: China
Bank for International Settlements Data

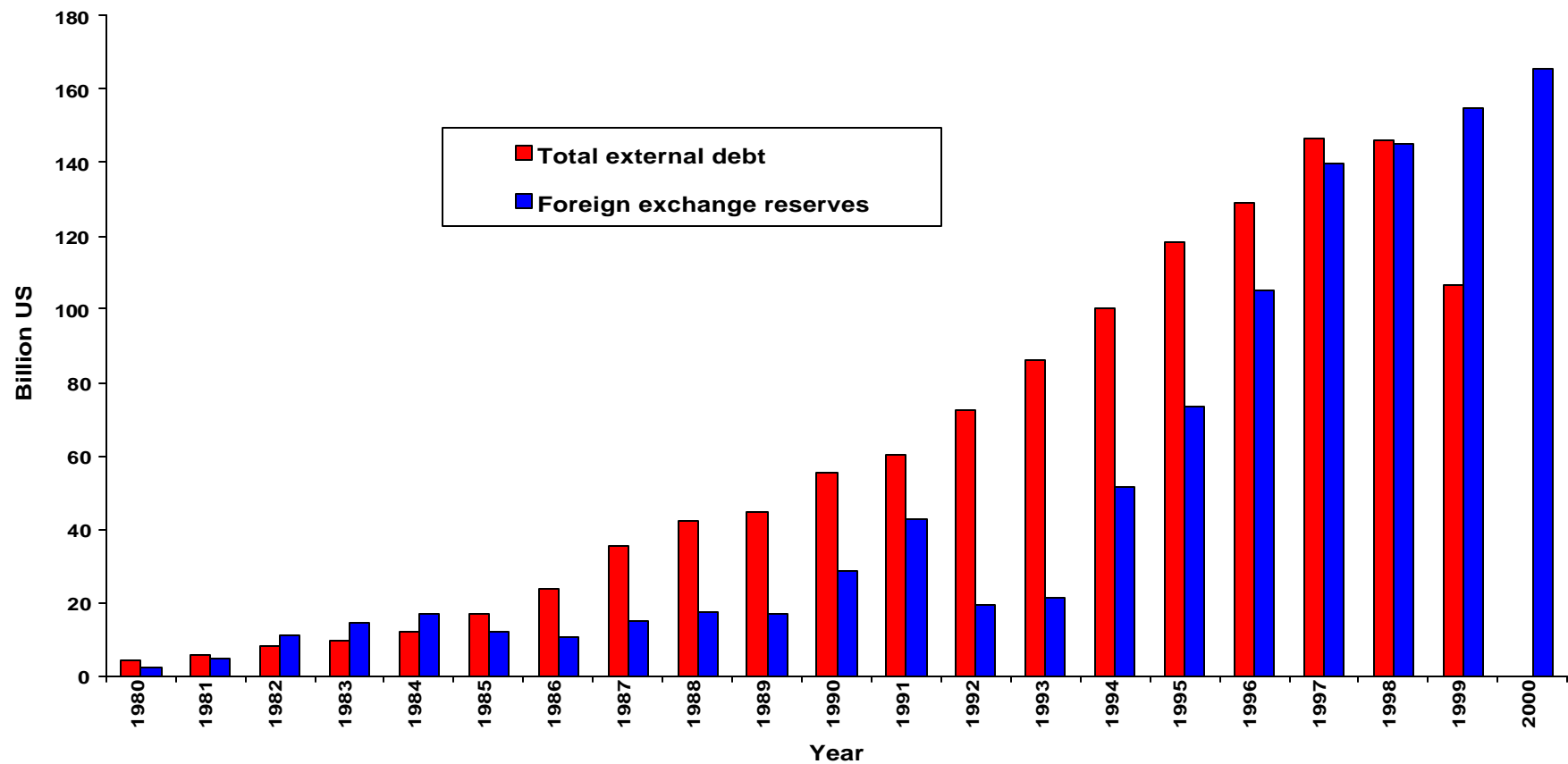


Composition of External Debt China



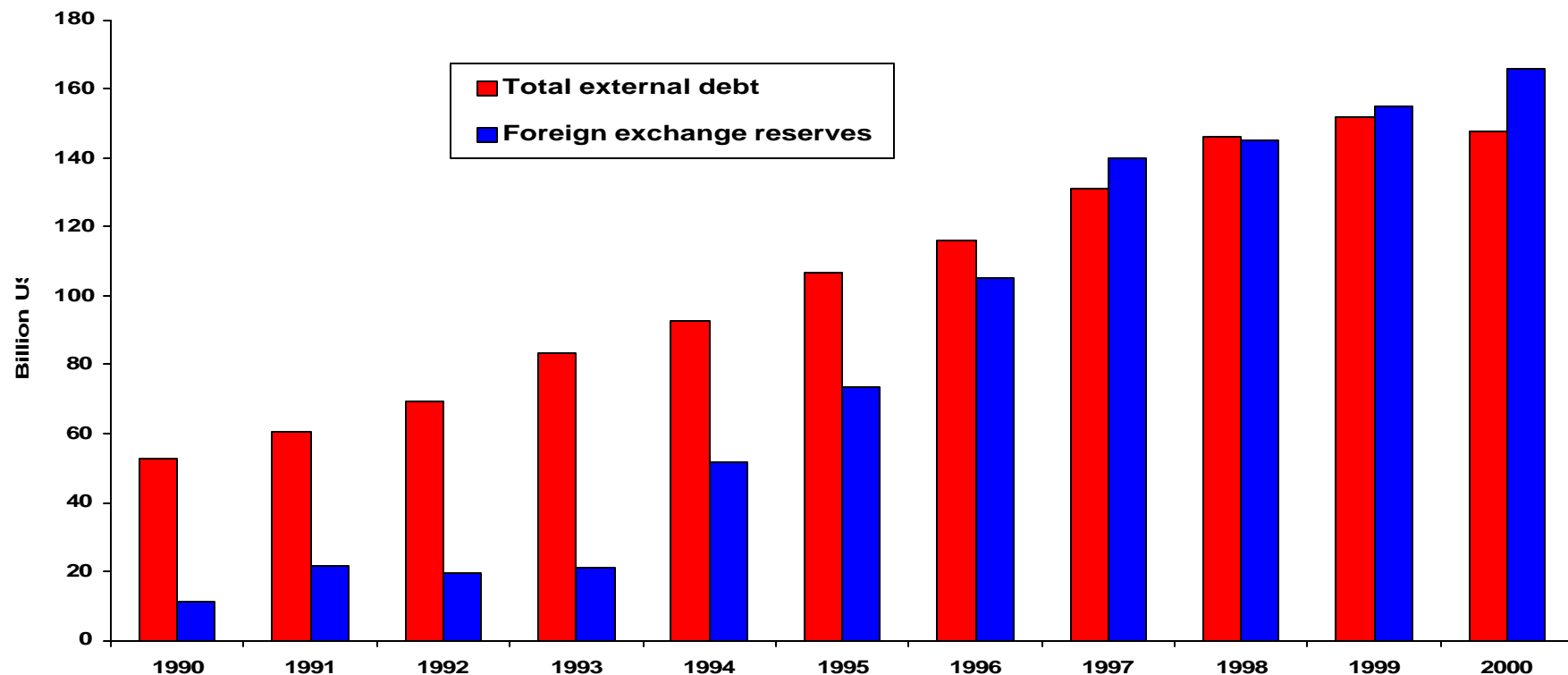
External Debt and Foreign Exchange Reserves China

China's External Debt vs. Foreign Exchange Reserves
(International Financial Statistics Data)



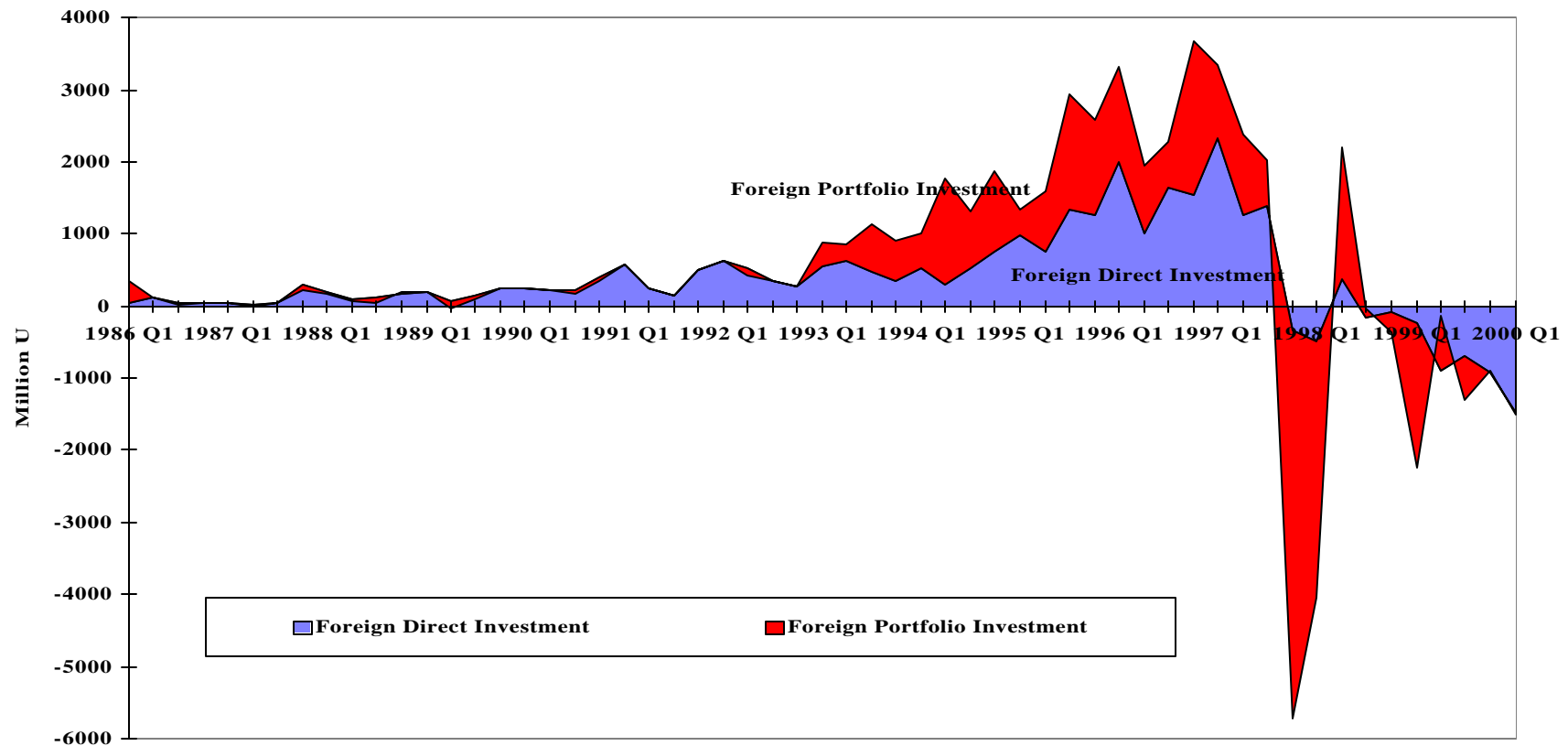
External Debt and Foreign Exchange Reserves China

**China's External Debt vs. Foreign Exchange Reserves:
Official Chinese Data**



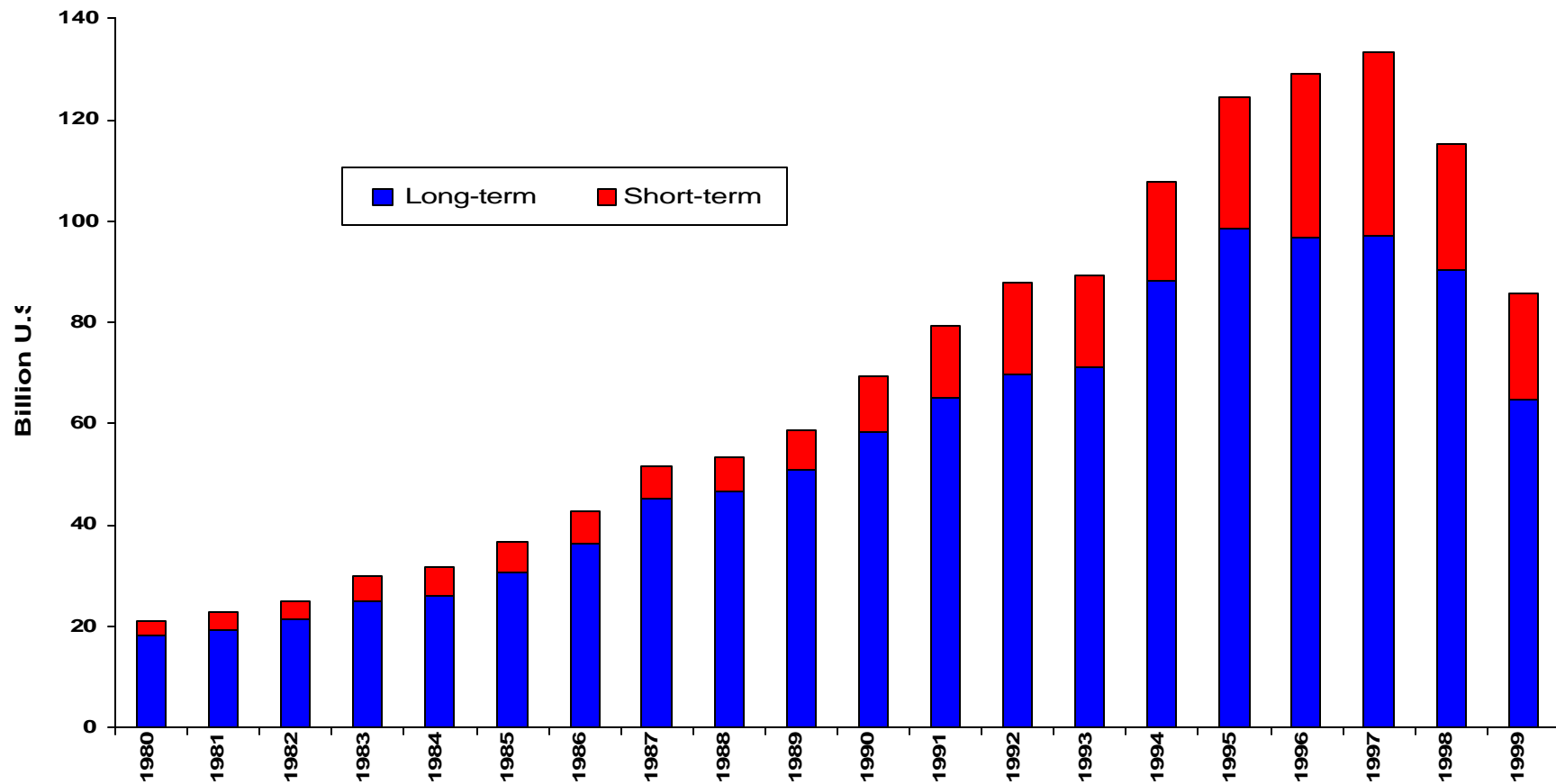
Composition of Foreign Investment: Indonesia (Quarterly Data)

Composition of Foreign Investment: Indonesia



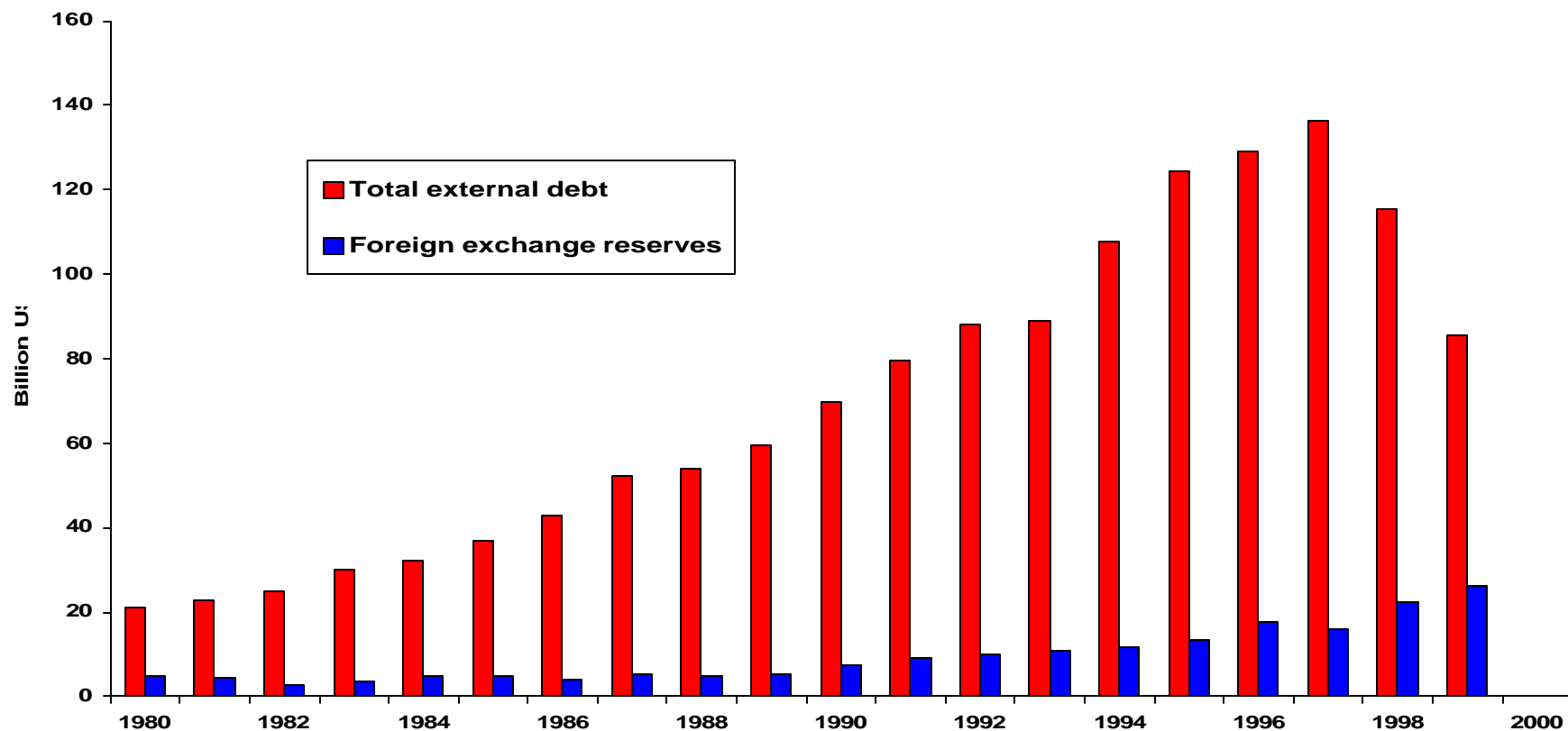
Composition of External Debt Indonesia

Stock of External Debt: Indonesia



External Debt and Foreign Exchange Reserves Indonesia

Indonesia's External Debt vs. Foreign Exchange Reserves

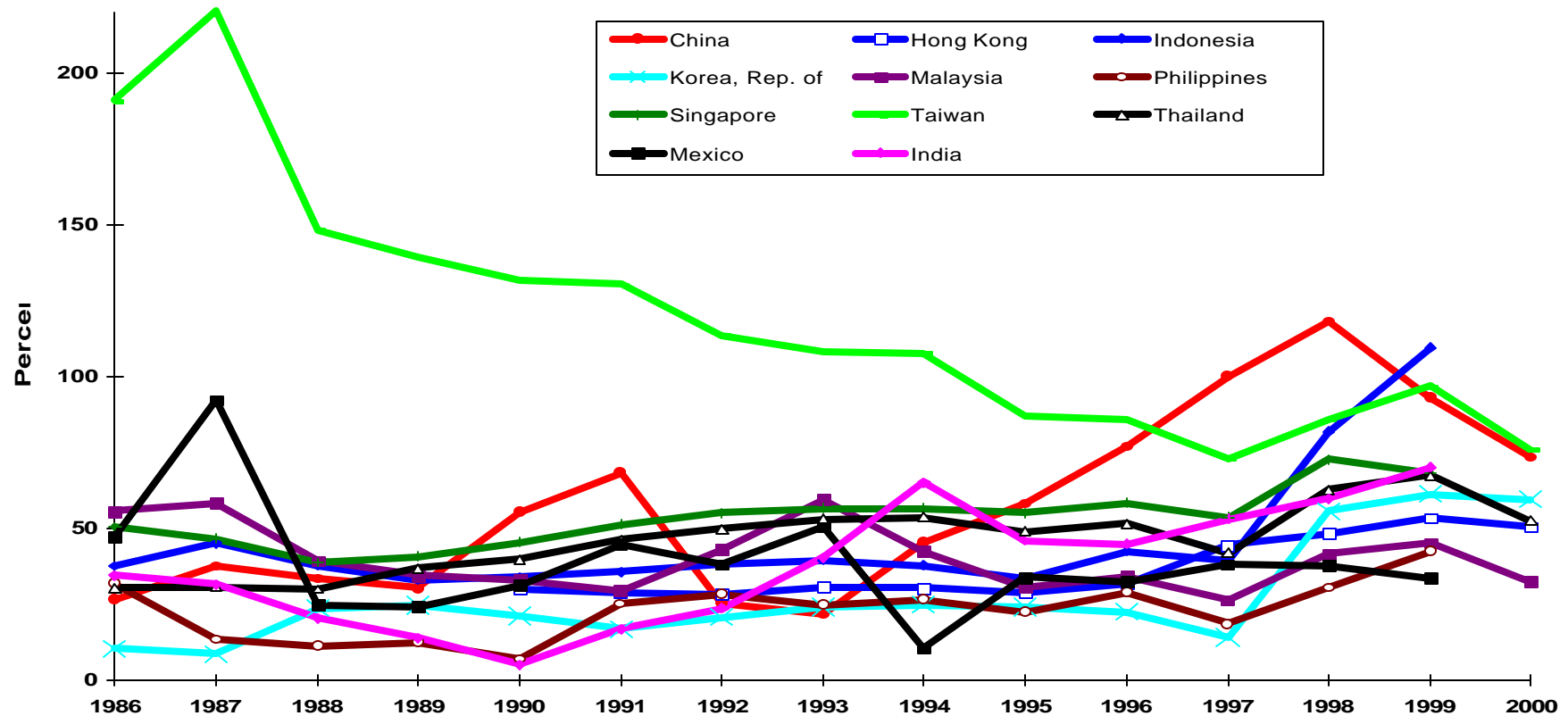


Inadequacy of Foreign Exchange Reserves Relative to Potential Short-Term Foreign-Currency Liabilities

- ◆ Traditional yardstick of a level of foreign exchange reserves equal to 3-6 months of imports no longer adequate for some countries because of the magnitudes of potential movements in the capital accounts (foreign direct and portfolio investment, short- and long-term bank loans and deposits) relative to the current accounts.
- ◆ The International Monetary Fund's pre-crisis standard of 13 weeks of imports was established in an era in which trade flows dominate capital flows (late 1950s and early 1960s). The cross-border flow of short-term capital, if any, at the time was primarily related to the financing of trade. The old standard is totally inadequate in today's world in which the magnitudes of the potential capital flows dwarf those of the trade flows

Foreign Exchange Reserves as a Percent of Annual Imports

Foreign Exchange Reserves as a Percent of Annual Imports



Inadequacy of Foreign Exchange Reserves Relative to Potential Short-Term Foreign-Currency Liabilities

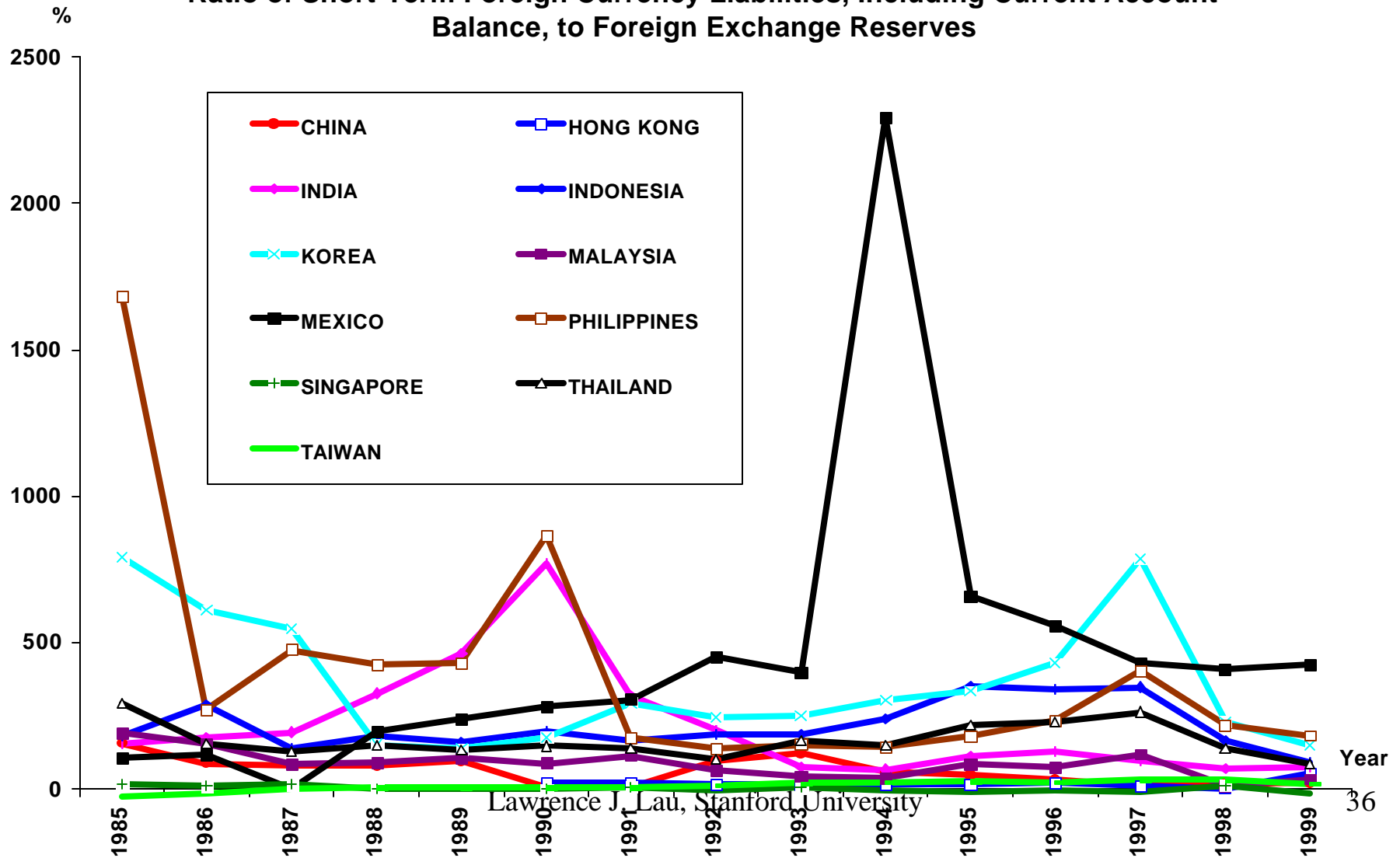
- ◆ A higher level of foreign exchange reserves is therefore necessary to support not only imports, but also debt service (including both principal and interest), and potential net short-term capital outflows resulting from the withdrawal of foreign portfolio investors and lenders
- ◆ Moreover, if the level of foreign exchange reserves is allowed to fall to a level perceived to be inadequate, a crisis will likely ensue
- ◆ Simulations by Lau, Li and Qian (1999) suggest that foreign exchange reserves can be considered adequate (in the absence of capital controls) only if it is approximately equal to 10 months of imports
- ◆ Potential disruptions in the foreign exchange and capital markets can be caused by the quick inflows and outflows of large pools of hot money, which can in turn affect adversely trade flows, real fixed investment and real output in the absence of a high level of foreign exchange reserves as a buffer

Ratio of Short-Term Foreign-Currency Liabilities to Foreign Exchange Reserves

- ◆ The potential short-term foreign exchange liabilities, that is, the foreign exchange that can be withdrawn from the country with little or no prior notice, consists of the stock of foreign portfolio investment and short-term foreign loans
- ◆ The stock of foreign portfolio investment can be estimated by cumulating past foreign portfolio investments; however, the existing stock may be under- or over-estimated by this procedure because of the possibilities of gains and losses from these investments
- ◆ To these may be added the current account deficit of the current period
- ◆ If foreign exchange reserves are low relative to these potential demands for withdrawals of foreign exchange, the currency may be vulnerable to a run

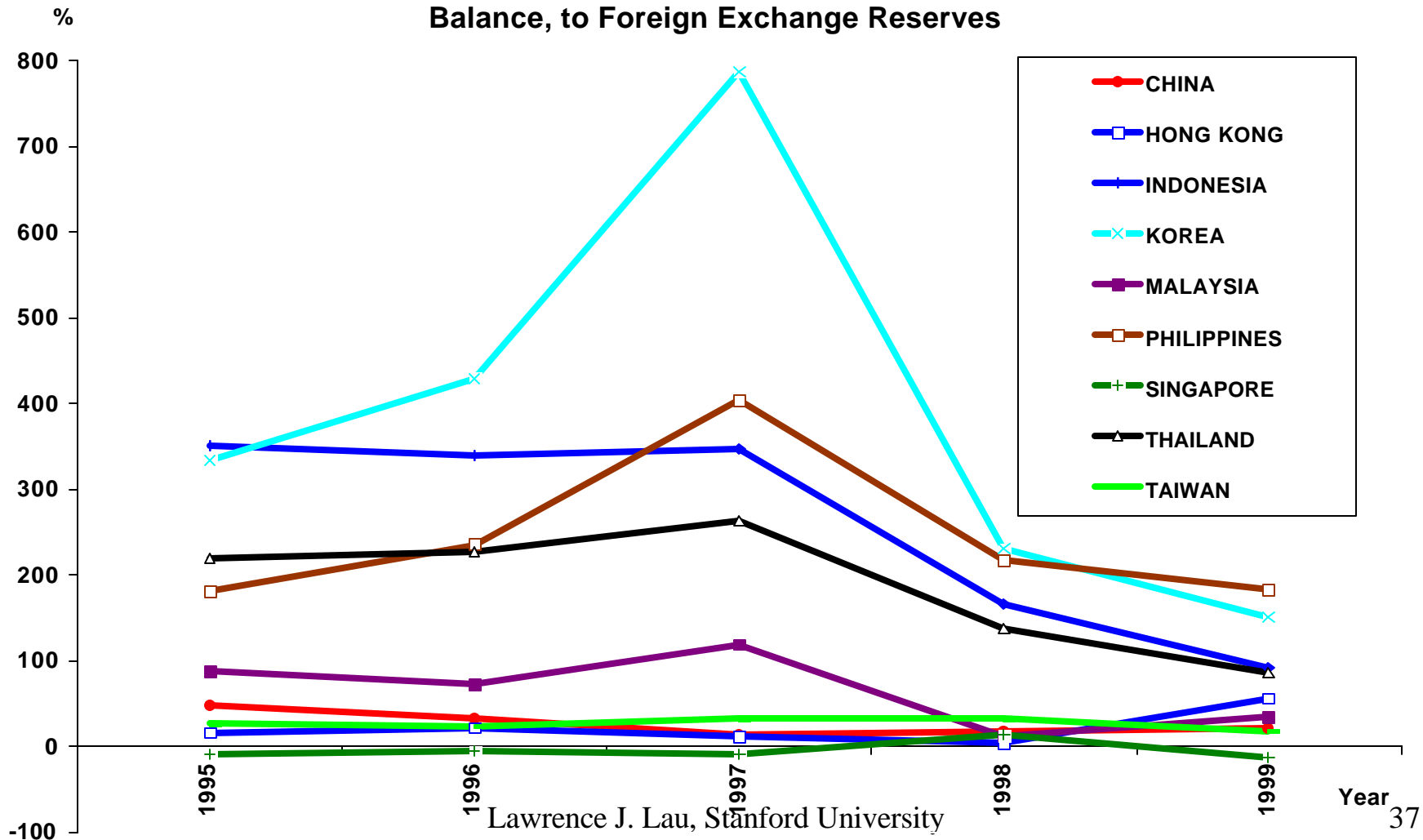
Ratio of Short-Term Liabilities, Including Current Account Balance, to Reserves

Ratio of Short-Term Foreign Currency Liabilities, Including Current Account Balance, to Foreign Exchange Reserves



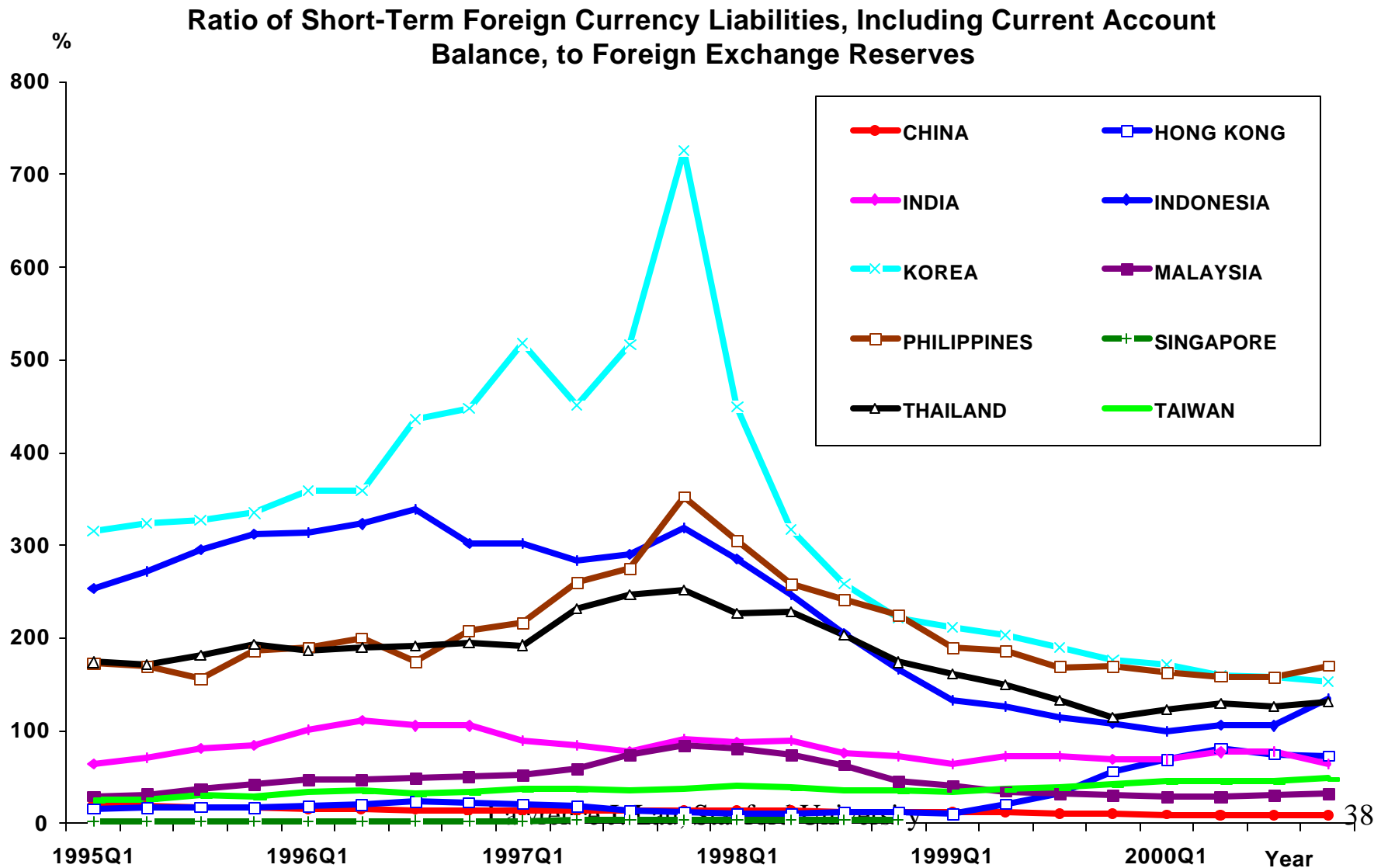
Ratio of Short-Term Liabilities, Including Current Account Balance, to Reserves

Ratio of Short-Term Foreign Currency Liabilities, Including Current Account Balance, to Foreign Exchange Reserves



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Ratio of Short-Term Liabilities, Including Current Account Balance, to Reserves



Comparison between Thailand and South Korea and China

- ◆ The contrast between, for example, Thailand and South Korea on the one hand, and China on the other, immediately prior to mid-1997, is striking. Both Thailand and South Korea had a large proportion of foreign investment in the form of portfolio investment, and a large proportion of foreign debt in the form of short-term (less than one year maturity) loans, and low foreign exchange reserves relative to the potential foreign exchange liabilities--hence they were both vulnerable to speculative attacks.

Was “Crony Capitalism” or the Primitive Financial System the Culprit?

- ◆ The real mistake was to borrow too much short-term and in the wrong currency
- ◆ Even a perfectly efficient enterprise cannot withstand the increase in debt servicing required due to the massive exchange rate devaluation
- ◆ Japan, despite its massive devaluation between 1995 and mid-1998, has been able to muddle through because its firms have little net foreign debt and it has massive foreign exchange reserves
- ◆ Hong Kong (with its large exposure to real estate loans), Singapore and Taiwan (despite its massive non-performing loans problem) also escaped relatively unscathed because they did not and do not have significant net foreign debt, especially net short-term debt, relative to their foreign exchange reserves
- ◆ China was not significantly affected because it retained capital control and its foreign debt was (and continues to be) mostly medium to long-term

Was “Crony Capitalism” or the Primitive Financial System the Culprit?

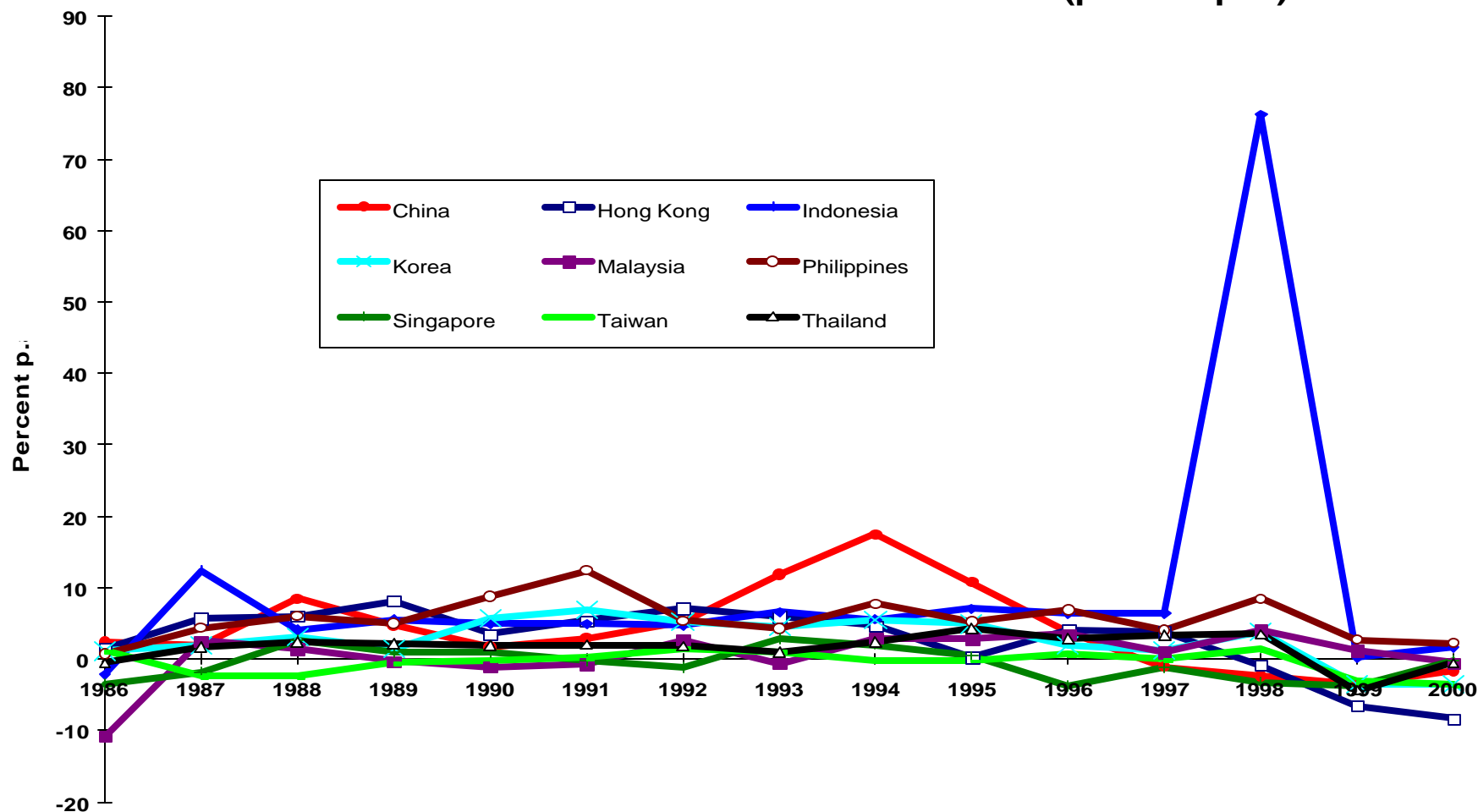
- ◆ The financial systems collapsed in the affected countries because of the currency crisis. Many of the firms became insolvent because of illiquidity. Whatever weaknesses they might have had were not the direct causes of the crisis.

Real Exchange Rate Appreciation

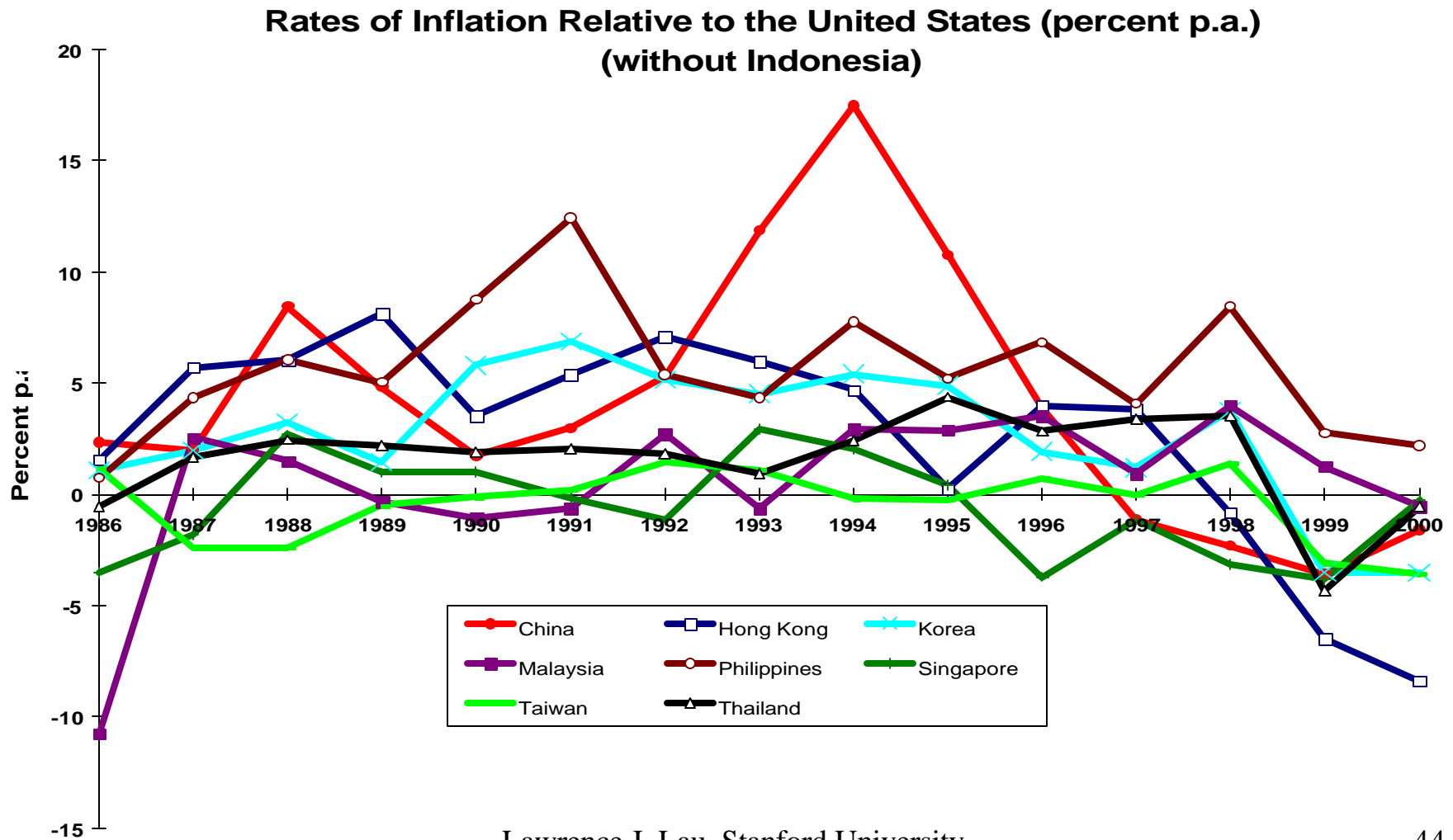
- ◆ By mid-1997, many of the East Asian currencies, with the exceptions of the Chinese Yuan, the Indonesian Rupiah and the Malaysian Ringgit, had appreciated, in real purchasing power terms, 20-50% relative to the U.S.\$ compared to 1986.
- ◆ This implies a loss of competitiveness vis-a-vis the U.S., and an adjustment was potentially warranted.
- ◆ However, by 1999, sufficient adjustments had occurred in the East Asian currencies so that, with the exception of Hong Kong and Singapore, they had effectively devalued, in real terms, relative to their 1990 values.

Rates of Inflation Relative to the United States

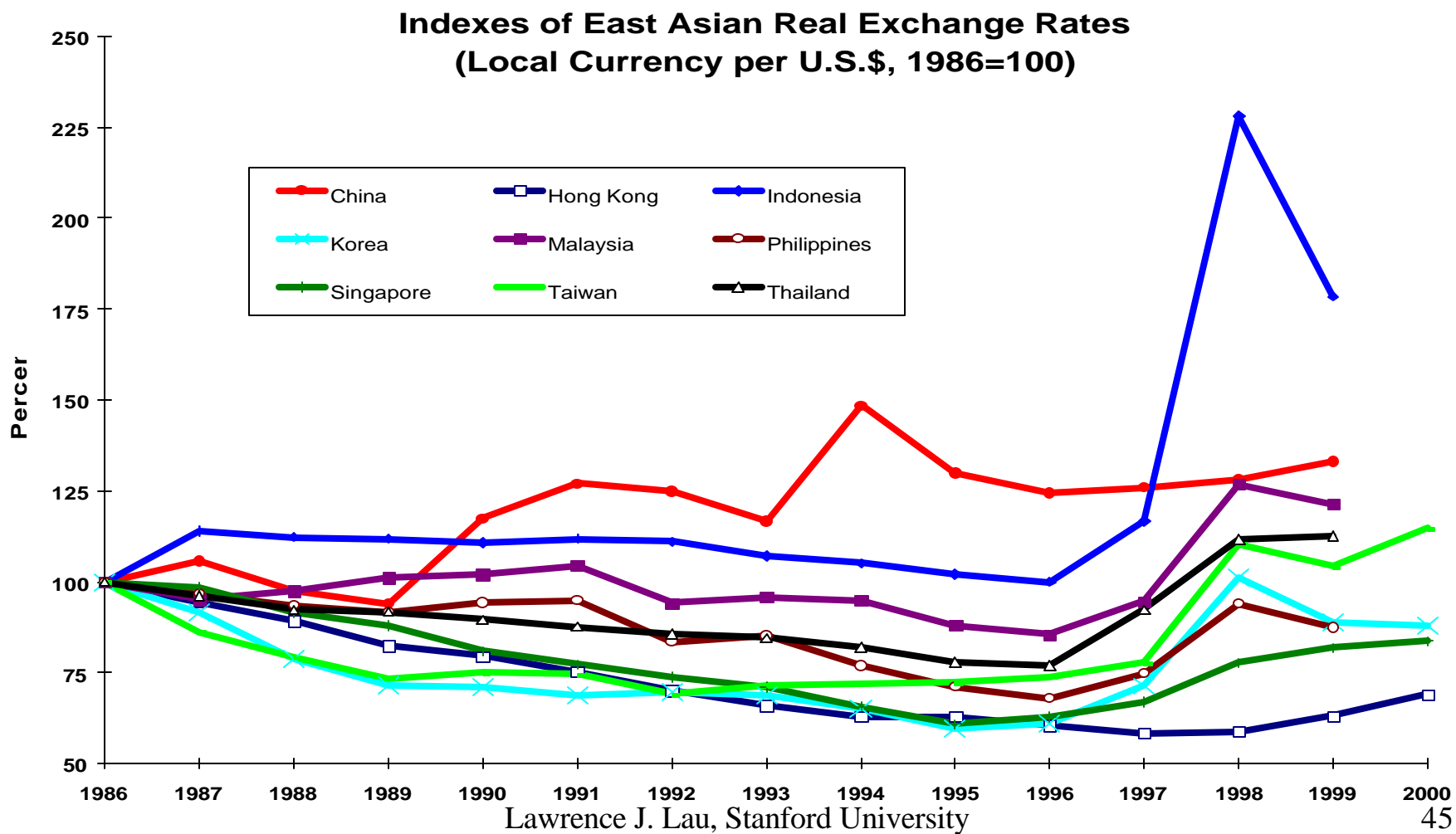
Rates of Inflation Relative to the United States (percent p.a.)



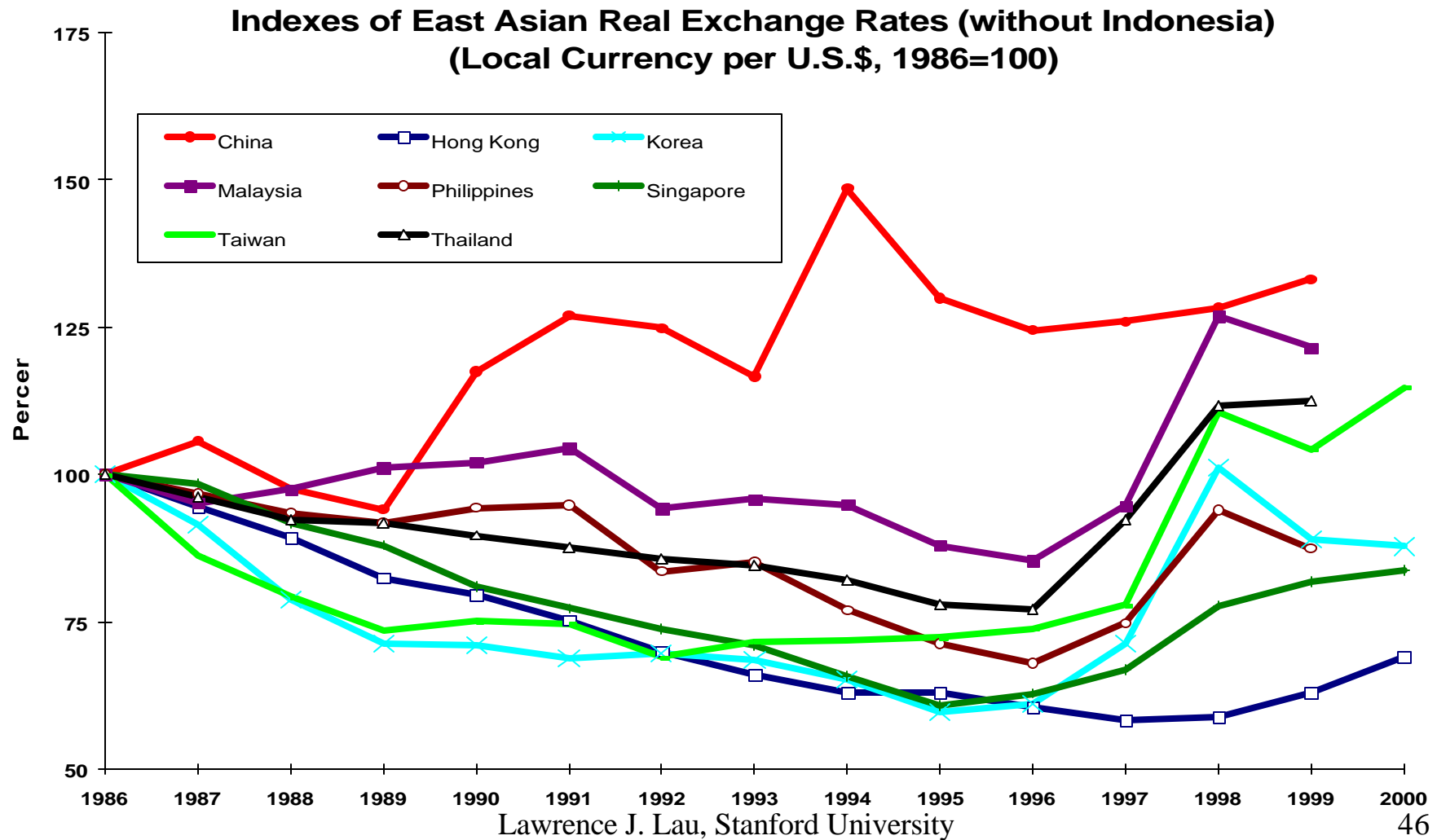
Rates of Inflation Relative to the United States (without Indonesia)



Real Exchange Rate Movements



Real Exchange Rate Movements (without Indonesia)



What is New with the 1997-1998 Currency Crisis?

(1) New Channels for Contagion!

- ◆ The speculative attacks on the New Taiwan Dollar (10/17/97) and the Hong Kong Dollar (10/23/97) show that even **ECONOMIES WITH SOUND FUNDAMENTALS ARE NOT IMMUNE!**
- ◆ Spread to South Korea, Latin America, and Russia
- ◆ Traditional channels for contagion (through trade)
 - ◆ Competitive devaluation
 - ◆ Nervous domestic traders and investors (Prof. Jeffrey Sachs's "rational panic")
- ◆ New channels for contagion (through short-term capital flows)
 - ◆ Predatory speculation by hedge funds
 - ◆ Domino effect of cross-country lending and re-lending (e.g., by Korean banks and chaebols)
 - ◆ The confidence factor--withdrawals by indiscriminate investors of developing (emerging) countries equity and debt; reduction of outstanding credit by multinational banks

Predatory Speculation (1)

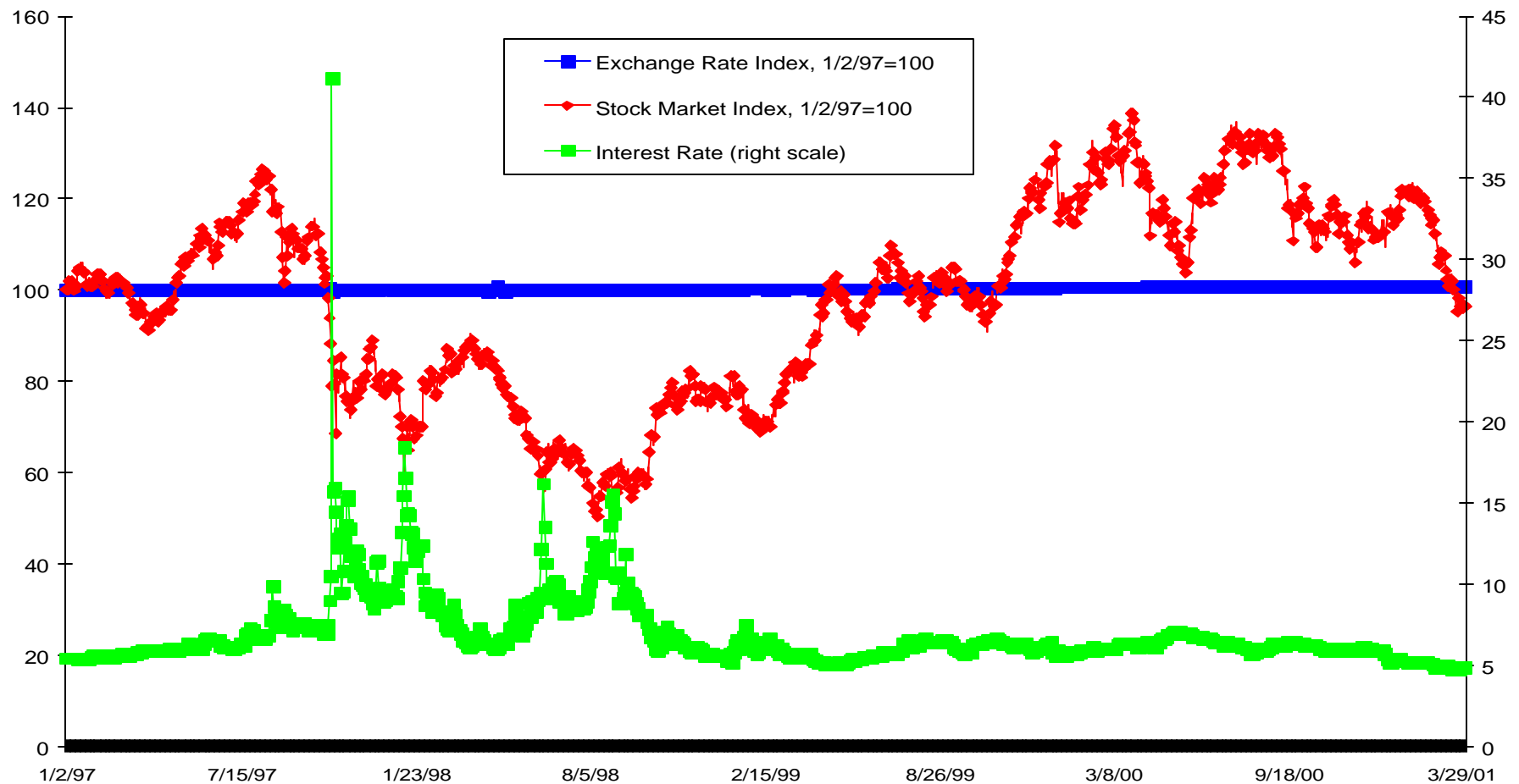
- ◆ Large pools of hot money (3,000-4,000 hedge funds with aggregate capital of US\$300 billion+) that can move (small) markets
- ◆ Formulae for almost risk-free profits, especially in economies that are expected to defend their exchange rates (transactions must be large enough to be a credible threat to the exchange rates)
- ◆ (Short) Sales of large quantities of local currency induce purchases by local central bank or monetary authority
- ◆ Such purchases by the central bank or monetary authority cause the local money supply to contract and liquidity to tighten, sending the short-term rate of interest up
- ◆ The local central bank or monetary authority may also raise the rate of interest directly to discourage the conversion of local currency-denominated assets into foreign currency-denominated assets

Predatory Speculation (2)

- ◆ For example:
 - ◆ Simultaneous shorting of currency and going long on interest rate futures (Attack on the British Pound, 1992)
 - ◆ Simultaneous shorting of currency and stock (or stock index futures), in either spot or forward markets or both (Attacks on Hong Kong)
 - ◆ Shorting the stock market and then selling the domestic currency proceeds for U.S. dollars
 - ◆ Simultaneous longing of currency and stock or stock market index
- ◆ Predatory speculation can occur and succeed independently of the economic fundamentals if the resources of the speculators are sufficiently large relative to the size of the market
- ◆ Short sales of forward contracts in the local currency will have the same effect through arbitrage (Buyers of forward contracts will sell short in the spot market)
- ◆ Predatory speculation has the effect of depressing the exchange rate and increasing its volatility and hence the interest rate risk premium

An Example: Hong Kong

Relationship between Exchange Rate, Stock Market Index and Interest Rate,
Hong Kong

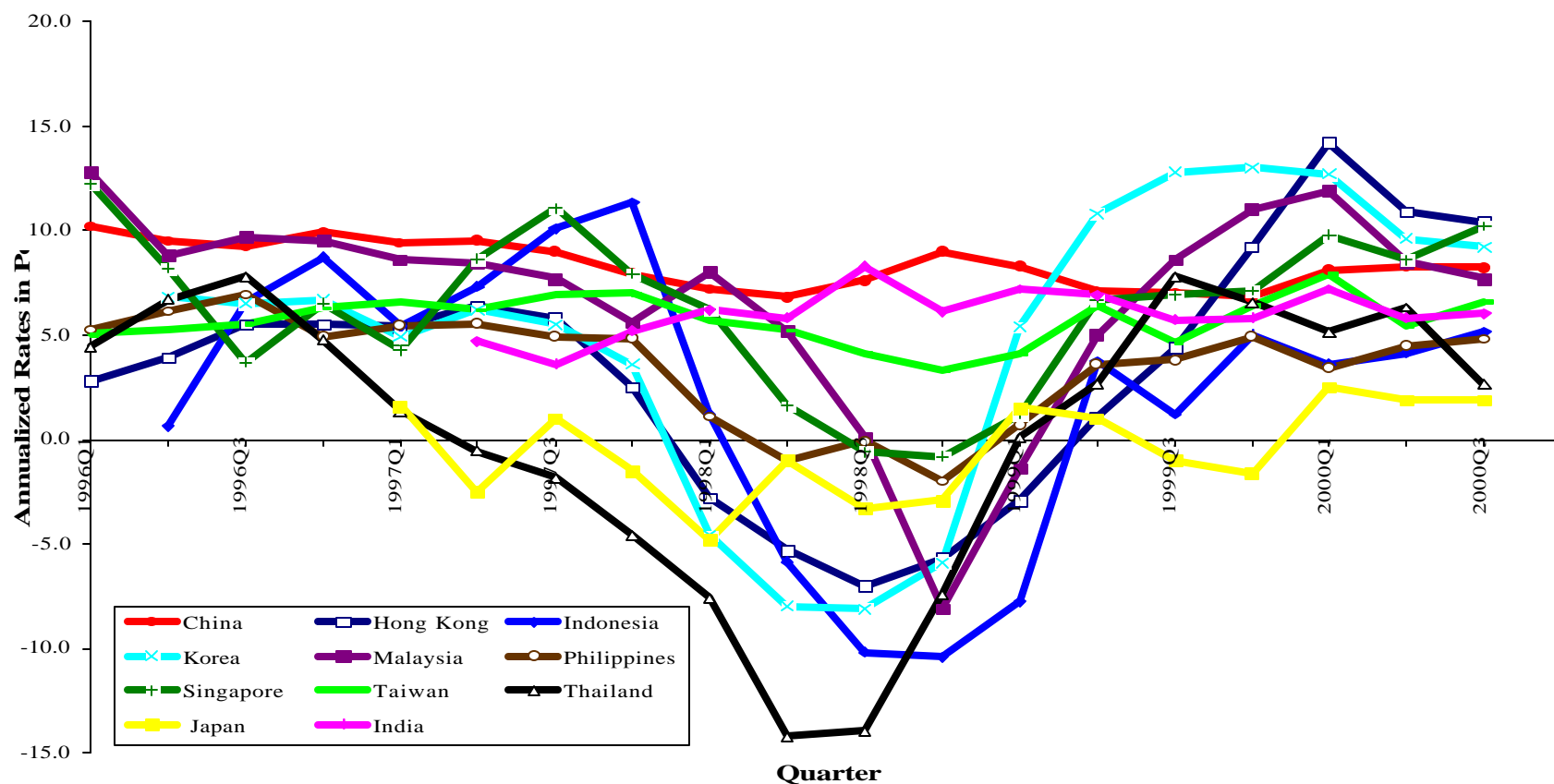


What is New? (2) Contagion through Inter-Dependence--Synchronization of Down Turns

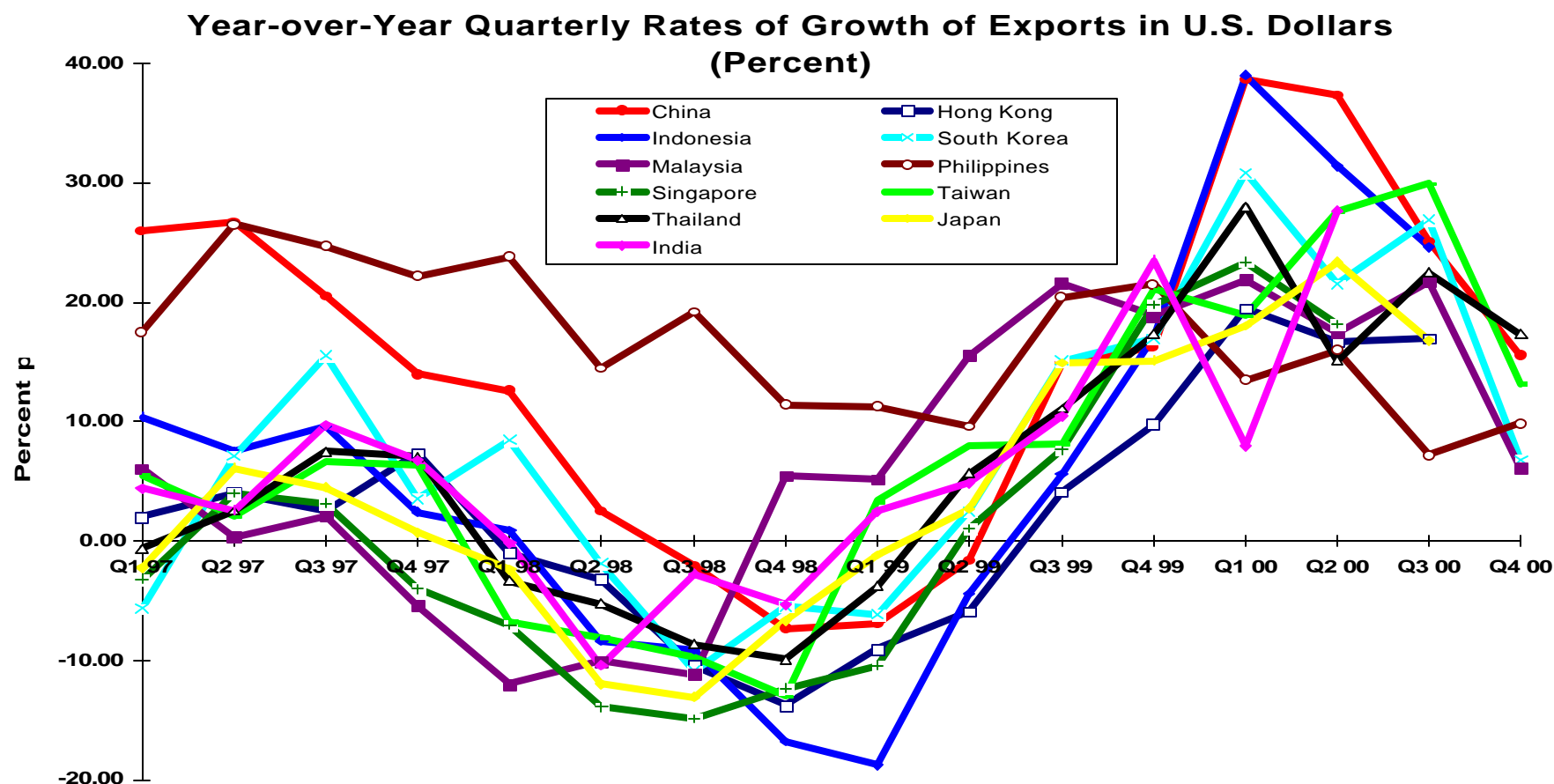
- ◆ Over the last decade, the proportions of East Asian exports to other East Asian economies have been increasing rapidly
- ◆ By the late 1990s, approximately 50% of the exports of the East Asian economies are destined for other East Asian economies
- ◆ All East Asian economies, with the exception of China and Taiwan, experienced rises in the rate of interest and downturns in economic activities at the same time, which in turn caused significant reductions in the demands for one another's exports, further exacerbating their recessions

The Rates of Growth of Real GDP Have All Turned Significantly Positive and Remained So

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

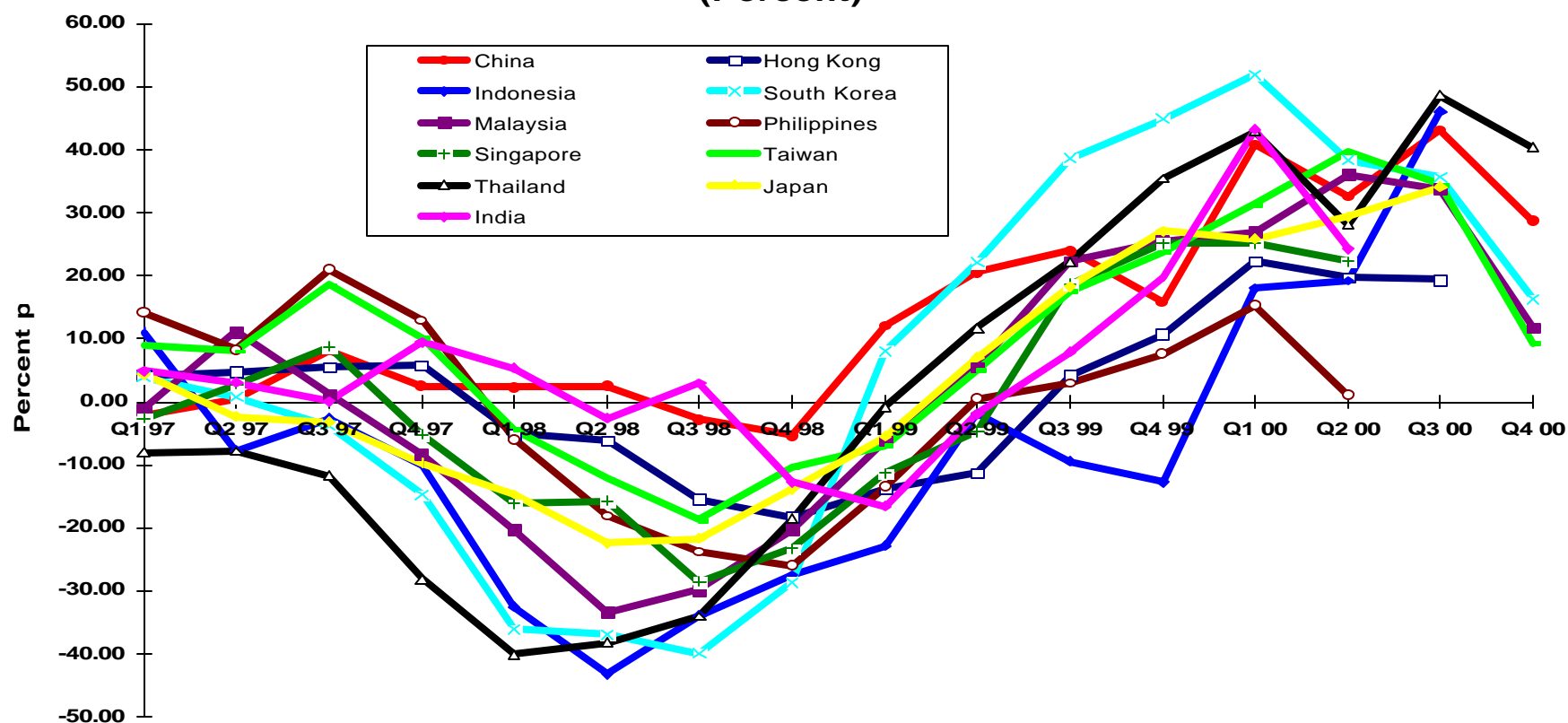


Quarterly Rates of Growth of Exports



Quarterly Rates of Growth of Imports

Year-over-Year Quarterly Rates of Growth of Imports in U.S. Dollars
(Percent)



Preventing Future Crises: Minimizing the Probability of Systemic Failure

- ◆ How to reduce the probability of a melt-down or collapse of the entire financial system such as those that occurred in Thailand, Indonesia, South Korea and, to a lesser extent, Japan?
- ◆ How to design a system that can maintain its stability in the face of both internal and external disturbances?
- ◆ Examples of systemic failure
 - ◆ The East Asian currency crisis of 1997-1998
 - ◆ The Japanese stagnation of the decade of the 1990s
 - ◆ The U.S. Savings and Loan Associations problem in the early 1980s
- ◆ Common features
 - ◆ An asset price bubble (that eventually burst)
 - ◆ Supported by excess leverage
 - ◆ Driven by moral hazard
- ◆ The key to minimizing the probability of a systemic failure of the financial system lies in implementing measures that (1) reduce excessive leverage (debt to equity ratio) of enterprises and (2) reduce the incidence of moral hazard.

The Hazards of Short-Term Foreign Capital

- ◆ There is good theoretical justification for the desirability of free trade and free international flows of direct investment; there is no similar justification for free international flows of short-term capital
- ◆ Over-dependence on foreign capital, especially short-term foreign capital, makes an economy and its exchange rate vulnerable
- ◆ Foreign direct investment is better than foreign portfolio investment or loans because it is less mobile
- ◆ Long-term loans is better than short-term loans because they are not subject to immediate withdrawal
- ◆ Short-term foreign-currency denominated loans should be carefully monitored and controlled in order to avoid the compounding of currency mismatch by maturity mismatch
- ◆ Short-term foreign funds are inherently different from short-term domestic funds because the former is much more likely to leave at the first sign of real or imagined trouble

Reducing Dependence on Short-Term Foreign Capital

- ◆ Lengthening maturities of foreign-currency denominated loans through the imposition of a fee by the central bank, say, of 25 basis points, each time such a loan is made or renewed. This fee implies the recognition by the Central Bank of such a loan, which should be comforting to the foreign lenders. However, it also has the effect of forcing the foreign lenders and the domestic borrowers to rethink whether a foreign-currency loan is in their best interests and if so whether a longer-term loan, with floating rates of interest, may fit their interests better, reducing the potential fees payable to the central bank
- ◆ Larger reserve requirements can also be imposed on non-resident domestic currency deposits on the grounds that they are likely to be more mobile than resident domestic currency deposits

Reducing Dependence on Short-Term Foreign Capital

- ◆ Foreign portfolio investment can be channel into closed-end mutual funds and/or foreign depository receipts, greatly reducing the potential impact of a massive sell-off by foreign portfolio investors on the exchange rate
- ◆ Foreign direct investment should be promoted as a substitute to foreign portfolio investment (Many East Asian countries, such as South Korea and Thailand, used to discourage foreign direct investment, especially in some selected industries.)

Reducing Vulnerability to Speculation: An Adequate Level of Foreign Exchange Reserves

- ◆ An adequate level of foreign exchange reserves should be maintained, taking into account not only trade flows but also short-term and long-term capital flows. A conservative estimate of foreign-currency needs would be three months of imports plus the stock of foreign portfolio investment plus the stock of short-term foreign-currency denominated bank loans plus debt service on long-term foreign-currency denominated debt. If foreign exchange reserves, plus available lines from international organizations and other countries, are perceived to be less than the estimated foreign currency needs, a run on foreign currency may ensue.

Avoiding Real Exchange Rate Appreciation

- ◆ Maintaining a stable real exchange rate--a fixed exchange rate and chronically higher relative inflation cannot be compatible in the long run
- ◆ A country must choose between having a fixed exchange rate and hence low or zero inflation relative to the U.S. and having a high relative inflation and continual devaluation

Reduction of Moral Hazard Which Contributes to Excessive Risk-Taking and Recklessness

- ◆ Moral hazard occurs when the negative consequences of (possibly hidden) actions, including excessive risk-taking, is borne by others (risking “other people’s money”).
 - ◆ E.g., from past experience, developed country lenders expect that they will not suffer losses in the event of a large-scale default of their loans to developing countries (The Latin American loan crisis of the 1980s, the Mexican crisis of 1994).
- ◆ Reduction in the leverage per se also helps to reduce the moral hazard of managers and owners of enterprises because a higher proportion of the potential loss will be borne by the owners and managers themselves.
- ◆ When an enterprise wholly or almost wholly funded with non-recourse debt, or a financial institution with very low capital requirement, fails, the owners are not adversely affected at all.
 - ◆ E.g., the savings and loan association crisis in the United States in the early 1980s
- ◆ Thus, moral hazard contributes to excessive risk-taking and recklessness

Reduction of Moral hazard on the Parts of Both Lenders and Borrowers

- ◆ Past bailouts (Latin American loans, Mexican loans) of developed country lenders encourage moral hazard on the part of lenders
- ◆ Implicit guarantee of banks and enterprises “too big to fail” by governments encourage moral hazard on the part of borrowers

Moral Hazard

- ◆ The doctrine of “too big to fail” applies to both financial institutions as well as to enterprises (borrowers), e.g., Hyundai—financial institutions tend to over-lend to enterprises deemed too big to fail; enterprises that consider themselves too big to fail tend to over-borrow; e.g., Hyundai of South Korea.
- ◆ Reducing the debt/equity ratio of enterprises
 - ◆ Increasing and promoting equity investments
 - ◆ Risk-based deposit insurance premium
- ◆ Rationalizing the capital requirements of financial institutions depending on the nature of the assets and liabilities
 - ◆ Distinguishing between different lines of business
 - ◆ Distinguishing between capital requirements and liquidity requirements
 - ◆ Bank for International Settlement idea of using credit-rating firms to rate the assets of financial institutions is unlikely to help
- ◆ Encouragement of specialization and division of labor in banking and credit
- ◆ Government support of the stock market also leads to moral hazard (speculators can make one-way bets)

Moral Hazard and Financial Institutions

- ◆ The capital requirements (e.g., the Bank for International Settlement (BIS) standard of 8%) are generally too low to discourage moral hazard on the part of the owners of the financial institutions
- ◆ Government-directed credit and the doctrine of “too big to fail” encourage moral hazard on the part of the lenders as well as borrowers
- ◆ Explicit or implicit deposit insurance encourage moral hazard on the part of savers and depositors in their choices of depository institutions for their deposits
- ◆ Informal credit markets (the lack of anonymity of which limits moral hazard)
 - ◆ Mutual credit associations
 - ◆ Grameen banks

Reduction of Moral Hazard in Financial Institutions

- ◆ Changing the capital requirements on financial institutions
 - ◆ The BIS requirement of 8% capital requirement is both too high and too low. For financial institutions specializing in the investment in short-term central government securities, e.g., Treasury bills, even an 8% capital requirement may be too high. For financial institutions making risky loans, 8% is obviously too low—because if the loan goes sour, the owners of the financial institutions only lose 8 cents on the dollar. They are therefore very likely to engage in high-risk activities which may yield an exceptionally high return on the equity invested.
- ◆ Avoidance of moral hazard in financial institutions with diffused ownership and a large number of shareholders
 - ◆ Senior executives should be required to own shares in the financial institution in an amount large relative to their own individual net worths, if necessary, financed with recourse debt, so that the interests of the executives and the institution are aligned
 - ◆ Mutual monitoring by peers
 - ◆ Pension benefits for the executives should also be tied to the performance of the financial institution

Explicit or Implicit Deposit Insurance

- ◆ Enhances confidence in and hence stability of the financial system
- ◆ Reduces the probability of bank failure due to illiquidity as opposed to insolvency
- ◆ Reduces the spillover (contagion) effect of bank failure
- ◆ Levels the playing field between large and small banks (a large number of small banks is not as efficient as a small number of large banks because of the intrinsic economies of scale in banking; however, the political economy may favor a large number of small banks)
- ◆ A high capital requirement is a possible substitute for ineffective prudential regulation and supervision

Deposit Insurance

- ◆ Deposit insurance, implicit or explicit, encourages moral hazard and increases systemic risk—moral hazard on the part of both the depositors and the owners of financial institutions (lenders)
- ◆ Deposit insurance effectively enables an insured financial institution to attract deposits with sovereign credit, regardless of its own financial conditions—hence the need for prudential supervision and regulation
- ◆ However, the regulatory agencies in most countries lack the ability to detect and correct problems before it is too late—insufficient qualified personnel, the incentive for the financial institution to cheat, and the ability of the financial institution to circumvent regulations—self-regulation through a higher capital requirement is much more effective
- ◆ Deposit insurance limits should be consolidated to a per person basis rather than a per account basis for each failure. This effectively implies, in practice, that there is an upper limit to the insurance provided to each person for the failure of each financial institution (since it is not likely that more than one financial institution will fail at the same time). The existence of this per person limit will at least force risk-averse depositors to diversify across financial institutions and hence lower the potential liability of the deposit insurance system.

Deposit Insurance—Risk-Based Insurance Premium

- ◆ Deposit insurance premium should be tied to the average debt/equity ratio of the borrowers (and to the credit quality)—the lower the average debt/equity ratio, the lower the insurance premium, thus providing the financial institutions with the incentive to lend to borrowers with lower debt/equity ratios.
- ◆ Deposit insurance premium should also be tied to total size of the financial institution as measured by its net capital (marked to market)—the higher the total net capital, the lower the insurance premium, thus encouraging the emergence of larger financial institutions that are better able to pool risks themselves (otherwise the existence of deposit insurance enables the proliferation of small financial institutions)
- ◆ Deposit insurance premium should also be tied to the degree of concentration by borrower in the loan portfolio—the higher the concentration, the higher the insurance premium, thus encouraging diversification and discouraging over-exposure to particular borrowers by the financial institutions
- ◆ Deposit insurance should also be tied to the degree of net (unhedged) foreign-currency denominated liabilities of a bank

Distinguishing and Matching Classes of Bank Assets and Liabilities: Specialization

- ◆ Pure transactions banks--demand deposits to be matched with investments in short-term Treasury securities (30 days)—no capital requirements and no deposit insurance premium required, a low reserve requirement (in the aggregate, the total funds should balance), and no loans
- ◆ Pure savings banks--deposits to be matched with investments in slightly longer Treasury securities (30-90 days)—no capital requirement and no deposit insurance premium required, an even lower reserve requirement and no loans (e.g., postal savings)
- ◆ Capital requirements for deposit-taking and loan-making financial institutions can be set at a higher level, say 20-25%, to discourage moral hazard
- ◆ Mortgage banks, consumer durable financing, and credit card receivables—funding through securitization, no deposits are taken
- ◆ Non-retail-deposit taking consumer bank and business bank—securitization to achieve the maturity match, transferring the interest rate risk to the public securitized bank bond holders
 - ◆ Banks providing credit will face higher capital requirements because they have to finance their loans not through deposits but through direct borrowings from the market, by issuing commercial papers, notes and bills, which are not insured
 - ◆ Capital requirements and the rates of interest are a function of the market conditions and the specific characteristics of the credit banks—they are not set by the regulatory agency

Can Rating the Assets of Individual Financial Institutions Help?

- ◆ A recent proposal by the Bank for International Settlements recommends capital requirements based on ratings of the quality of the assets made by rating agencies is basically unlikely to be helpful. The problem is that the rating agencies themselves really do not have the capacity to determine the credit quality a priori—otherwise they would have made superior bankers themselves. The incentive is also not there for them to make an accurate and usable classification since their capital is not at risk. In most cases, rating agencies change the credit ratings of enterprises only after the fact, and not before.
- ◆ It is really a matter of providing the right incentives for proper governance of the financial institutions, including regulatory compliance and risk management

Reduction in Excessive Leverage in the Economy Reduces the Overall Risk of Systemic Failure

- ◆ First, if the debt to equity ratio is lower at the level of the individual enterprises, the probability of failure of any one particular enterprise is reduced—with the equity (shareholders) absorbing the losses rather than the debt (creditors including lenders and suppliers).
- ◆ Second, reduction in leverage helps to reduce the overall level of excessive risk-taking in the economy by reducing moral hazard
- ◆ Third, even when an enterprise fails, and some creditors suffer losses as a consequence, they are less likely to fail themselves because the losses from the debts are smaller, and they themselves have more equity to absorb these losses.
- ◆ Fourth, the low capital requirement on the financial institutions (also an example of excessive leverage), of, say, 8%, implies that they do not have the capacity to take large losses
- ◆ Fifth, a lower debt/equity ratio or a higher capital requirement implies that no borrower or financial institution will become “too big to fail”

Reduction in Excessive Leverage in the Economy Reduces the Overall Risk of Systemic Failure

- ◆ Thus, and more importantly, a lower debt/equity ratio reduces the “domino effect” or the “spillover effect” of insolvency and bankruptcy of one enterprise on other enterprises and on financial institutions.
- ◆ Reduction in leverage lowers the probability of a failure propagating throughout the economy, causing a widespread failure of enterprises and financial institutions, which in turn lowers the probability of a failure of the entire financial system, including the banking system.
- ◆ It is only in highly leveraged economies that failure of enterprises will cause the failure of other otherwise sound enterprises in a series of chain reactions and eventually even cause the financial institutions to fail.

Discouraging/Preventing Excessive Leverage

- ◆ Highly leveraged firms are more likely to fail than firms with low leverage
- ◆ Excessive leverage encourages moral hazard (recklessness) on the part of the borrowers (risking “other people’s money”)
- ◆ Excessive leverage also increases the odds of systemic failure because of domino and spillover effects
- ◆ A lower debt/equity ratio reduces the domino effect of insolvency and bankruptcy--no borrower will become too big to fail
- ◆ Excessive leverage of enterprises magnifies the effects of a sharp devaluation even in the absence of foreign-currency denominated liabilities because of the resulting rise in the rate of interest
- ◆ The excessive leverage also enables the hedge funds to engage in predatory speculation on a large scale

Discouraging/Preventing Excessive Leverage

- ◆ Excessive leverage can be discouraged by the central bank charging a commercial bank a deposit insurance premium that is calibrated to the debt/equity ratio of the borrowers of the bank. This gives the banks the incentive to lend to borrowers with lower debt/equity ratios.

Discouraging/Preventing Excessive Leverage by Enhancing Transparency and Disclosure

- ◆ Globalization of accounting standards and disclosure (transparency) requirements
 - ◆ Insistence of financially responsible auditors by lenders
- ◆ Global credit reporting system for large borrowers (say over \$500 million in aggregate debt) (e.g., LTCM, Daewoo)
 - ◆ Voluntary reporting by lenders of large credit transactions of large borrowers (say, transactions exceeding \$500 million each) to a central bureau operated by a consortium of global lenders
 - ◆ Inquiry by lenders of total cumulative debt to-date (as opposed to debts to individual lenders, thus preserving confidentiality and privacy) prior to extension of additional credit
 - ◆ It is in the self-interest of each lender to cooperate and to report to such a system
 - ◆ Regulatory agencies may require that a lender must have knowledge of the total outstanding indebtedness of its large borrowers prior to extension of additional credit

Excessive Leverage Led to the Bubble and Its Subsequent Bursting in Japan

- ◆ The large volume of non-performing loans and bad investments (not yet marked to market) in Japanese financial institutions reduces significantly their net capital
- ◆ They are thus forced to contract and are unable and unwilling to finance new investments
- ◆ This has prevented an economic recovery despite very low rates of interest
- ◆ It also makes it necessary for the Japanese Government to engage in “price-keeping operations” to support the solvency of the financial institutions
- ◆ The result is a whole decade of economic stagnation

Reduction of Excessive Leverage in the Stock Market

- ◆ High leverage in the stock market can eventually make the government hostage to the stock market. A high leverage implies that a collapse of the stock market will adversely affect the health of the financial institutions that have provided directly or indirectly the financing of the stock purchases. Thus the government will be motivated to try to support the stock market (Japan and Taiwan are examples). However, government support of the stock market encourages moral hazard—speculators will realize that they will never lose money but can only make money—this in turn encourages even more margin purchases, further increasing the leverage. The government will find itself in a position that it cannot extricate itself.
- ◆ The margin requirements for stock purchases should be kept relatively high, e.g., 50%. The government should maintain the flexibility of increasing (or decreasing) the margin requirement, on the margin, i.e., for new purchases, if the price/earnings ratio in the stock market becomes too high (imposing a higher margin requirement only on new purchases minimizes the downward pressure on the stock market) or too low; increasing the margin requirement is similar to increasing the tax rate on short-term capital gains relative to long-term.
- ◆ Another advantage of a lower leverage in the stock market is that when the stock market falls (or when the bubble bursts), there will not be as severe a social disturbance as if all the shareholders wind up owing huge amounts of money to the financial institutions. The market collapse of 1992 in Taiwan did not lead to any social disruption largely because there was little use of margins.

Increasing Equity Investments: Increasing the Supply

- ◆ The supply of equity investments can be increased by facilitating the listing of new public companies on the public stock markets
- ◆ Establishment of a second board--The second board should specialize in medium-sized enterprises. It should take as its model not so much the NASDAQ in the United States or the GEM board in Hong Kong. Rather, it should concentrate, at least initially, in the provision of capital to medium-sized enterprises with a good operating profits record (at least three years) and good future potential (like the American Stock Exchange in the United States). The enterprises do not have to be in the high-technology sector.
- ◆ It is risky to start a GEM-like board in any emerging market today. The probability of failure of these high-technology enterprises is very high, as evidenced by the recent NASDAQ and GEM board experience. The real dangers are (1) the government will be left holding the bag—that the shareholders of such failed enterprises will demand a government bailout, on the grounds that the government has approved the listing of these enterprises and (2) there will be a backlash so severe that it will close off the possibility of another second board for years to come, thus shutting off a potential source of capital for medium-sized, low-technology, enterprises.

Increasing Equity Investments: Increasing the Supply

- ◆ The corporate and individual income tax laws can be changed or modified; e.g., corporate dividends can be made a deductible expense for the corporation, thus putting it on a par with interest on corporate debt, removing a major reason for favoring debt over equity (this proposal has the additional advantage of removing the controversial double-taxation of income—once at the corporate level and once at the individual level)
- ◆ Venture capital should also be promoted, but it should not be done at this stage through the public stock markets because of its very high rate of failure. (Approximately only one out of twenty venture-capital funded firms in the Silicon Valley eventually succeeds.)
- ◆ The utilization of foreign capital either in the form of portfolio investment or direct investment, including the issuance of American or Global depositary receipts (ADRs or GDRs).

Increasing Equity Investments: Increasing the Demand

- ◆ Changing the tax treatment on income from equity investments
 - ◆ Corporate dividends can be exempted from individual income taxation up to a certain limit
 - ◆ A distinction should be made between the taxation of short-term and long-term capital gains
 - ◆ Short-term (e.g., below 6 months or a year) capital gains should be taxed as ordinary income
 - ◆ Long-term capital gains on the shares of listed public companies can be given more preferential treatment than ordinary income at the individual level; e.g., lower marginal tax rates
 - ◆ Increasing the marginal tax rate on short-term capital gains decreases short-term demand by reducing the potential profits from short-term speculation but increases long-term demand by making the market more rational and less vulnerable to speculative bubbles
- ◆ Improving regulation and supervision
 - ◆ Leveling the playing field—prevention of manipulation, insider-trading and self-dealing
 - ◆ Ensuring better corporate governance—protection if minority shareholders
 - ◆ Requiring more, better and more timely information disclosure and greater transparency
- ◆ Allowing institutional investors to invest in equities; e.g., endowments, pension funds, insurance companies, so as to enlarge the pool of long-term investors and thereby leading to a more rational and stable stock market

Reduction of Information Asymmetry Enhances the Attractiveness of Equities Investment

- ◆ Enforcement of disclosure of holders with large positions in individual stocks, bonds, options, currency contracts and other instruments
- ◆ Disclosure of pledges of securities as collateral for loans, in addition to sales and purchases, by directors and officers
- ◆ Enforcement of the “real names” system
- ◆ Piercing the corporate veil—greater use of recourse rather than non-recourse debt

More Timely and More Accurate Financial Information

- ◆ Financial institutions and enterprises should be required to mark their financial accounts to market at the end of each quarter so that the true state of their financial condition is known
- ◆ Such a requirement will encourage greater prudence, greater use of hedging instruments and more careful risk management

The Information Content of Equity Investment

- ◆ One additional advantage in emphasizing equity over debt lies in the information content in equity investment. When an entrepreneur is willing to put up his own equity in an investment project, it reveals his confidence in the probability of success of the project. If he is not confident enough to put up his own equity in his own investment project, why should anyone else invest with him or lend him money? Thus, the amount of equity to debt reveals the degree to which the entrepreneur believes in his own project, other things being equal.

The Information and Communication Revolution

- ◆ The information and communication revolution makes possible the efficient sharing of information by the various types of financial institutions and hence the realization of the benefits of specialization and division of labor
- ◆ Faster settlement and clearing of transactions reduces the systemic risk
- ◆ Debit and credit cards instead of checks; e-commerce

The Role of the Central Bank

- ◆ The Central Bank possess valuable information through the payments and clearing mechanism and is hence a more ideal locus for prudential supervision and regulation
- ◆ The Central Bank is the lender of last resort
- ◆ Countries with independent Central Banks tend to have a lower rate of inflation over the long run
- ◆ With the formation of financial holding companies that can engage in banking, insurance, asset management and securities businesses at the same time, there is a need to unify the regulatory process so that the overall risk to the financial system can be controlled and minimized

Problems of Exchange Rate Stabilization for a Small Economy

- ◆ A thin market--total volume small relative to the size of hedge funds and other pools of hot money (estimated to total 100s of billions of US\$)
 - ◆ E.g. the average daily net turnover of foreign exchange trading in April 1995 in Hong Kong was US\$90 billion compared to US\$1,460 billion for the world as a whole
 - ◆ At the time Hong Kong had foreign exchange reserves of US\$ 55 billion
 - ◆ Shorting the Hong Kong \$ for 6 months require only a 4% premium
- ◆ Possibility of market manipulation due to lack of regulation and transparency
- ◆ Central bank/monetary authority has to assume the role of market-maker
- ◆ A credibly adequate level of foreign reserves (and/or standby commitment from an international or regional stabilization facility) is required

The Size of the Global Foreign Exchange Market

- ◆ According to the Bank for International Settlements data, London is the largest foreign exchange market in the world with average daily turnover of approximately \$650 billion in 1998
- ◆ London is larger than the New York and Tokyo markets combined
- ◆ Total worldwide average daily turnover is probably on the order of US\$2 trillion, approximately two-thirds of the trade are conducted through the interbank market
- ◆ Private capital flows to developing countries increased from US\$40 billion in 1990 to US\$290 billion in 1997
- ◆ There are between 3,000 and 4,000 hedge funds, at a conservative estimate of US\$100 million of equity capital each, with an estimate of aggregate capital of between US\$300-400 billion
- ◆ Large and well known funds such as Quantum Fund (Soros) and Tiger Fund had approximately US\$20 billion worth of capital
- ◆ With leverage, the hedge funds can collectively undertake transactions as high as US\$10 trillion (Total U.S. stock market capitalization is US\$12.5 trillion)

Post-Crisis Options for Exchange Rate Regimes: Large Markets and Currency Areas

- ◆ The impossible trinity--countries cannot simultaneously all three of the following:
 - ◆ Capital mobility
 - ◆ Independent monetary policy
 - ◆ Fixed exchange rate
- ◆ Large and deep individual markets--United States, Japan
 - ◆ Stabilization of a freely-floating currency is difficult unless it has a large and deep market relative to the short-term capital flows
- ◆ Currency areas
 - ◆ The Euro--even before the Euro there was the EMS “snake” pegged to the DM (German Mark)--evidence that small and shallow markets for individual currencies can be too volatile even for developed economies such as Austria, Belgium and the Netherlands
 - ◆ World monetary union—A “group of three” monetary union advocated by Robert Mundell, Nobel Laureate in Economics

Post-Crisis Options for Exchange Rate Regimes: Capital Control

- ◆ Capital control--Japan before 1980, China, Malaysia
 - ◆ Current account convertibility, long-term capital convertibility, limited short-term capital convertibility
 - ◆ Some forms of capital control, especially on short-term flows, may make sense to prevent exchange rates from being moved around excessively by short-term capital flows as opposed to by real factors of competitiveness
 - ◆ For small economies, it is not possible to have a stable floating exchange rate without some kind of control over short-term capital flows--this is because the potential short-term capital flows can overwhelm the flows generated by exports and imports of goods and services and long-term capital flows in the determination of the exchange rate

Post-Crisis Options for Exchange Rate Regimes: Dollarization

- ◆ True dollarization (Panama) and quasi-dollarization (Hong Kong, Argentina) through a currency-board arrangement
 - ◆ True dollarization implies that the U.S. dollar will be legal tender for all obligations and contracts can be denominated in U.S. dollars
 - ◆ Hong Kong and Argentina with a fixed U.S.\$ peg are not quite truly dollarized but is very close to being so
 - ◆ Benefits:
 - ◆ Insulation from exchange rate volatility
 - ◆ Promotes long-term FDI as well as foreign portfolio investment
 - ◆ The rate of interest and the rate of inflation will be at U.S. levels if credible
 - ◆ Facilitates foreign trade
 - ◆ Costs:
 - ◆ No more monetary policy (neither money supply nor interest rate can be independently controlled)
 - ◆ Fiscal policy constrained by the ability to issue US\$ denominated government notes and bonds
 - ◆ Loss of seigniorage from currency issuance

Dollarization and Quasi-Dollarization

- ◆ Conditions for an effective currency board system
 - ◆ A sufficient initial supply of foreign exchange reserves
 - ◆ Low, preferably zero, relative actual and targeted rates of inflation
 - ◆ A low level of short-term foreign capital (including debt) relative to official foreign exchange reserves
 - ◆ Fiscal conservatism—a low level of net public debt over the economic cycle
- ◆ Outstanding issues
 - ◆ What is an adequate level of foreign exchange reserves for quasi-dollarization?—even with zero local currency (M0) in public hands, foreign exchange reserves will still be required
 - ◆ Is there a lender of last resort (to domestic financial institutions)?
 - ◆ Can the seigniorage be shared under true dollarization?
 - ◆ Coordination, if any, of monetary policy with the U.S. (e.g., monetary union)?
- ◆ The U.S. benefits from seigniorage, both direct and indirect

A Multilateral Currency Swap Framework with Bilateral Agreements

- ◆ The ASEAN (Brunei, Indonesia, Malaysia, Myanmar, Khmer Republic, Laos, Philippines, Singapore, Thailand and Vietnam) + 3 (China, Japan, Korea) have approved, in principle, bilateral standby swap arrangements for the support of the exchange rate
- ◆ It is also possible to have bilateral agreements on settlement of transactions in the currencies of the countries instead of the U.S. dollar, thus conserving foreign exchange reserves and freeing them up for potential use in emergencies

A Rule-Based Lender of Last Resort: The IMF Contingent Credit Line (CCL) Facility

- ◆ The facility offers countries with sound economic policies a one-year (renewable) precautionary line of credit to defend against potential balance of payments problems that may arise from financial contagion
- ◆ The distinction is between temporary illiquidity, which the IMF is prepared to relieve with financial resources provided under the credit line, and insolvency, for which more structural readjustment and reform will be required
- ◆ No country has applied as yet—signaling effect, insufficient automaticity, surcharge and commitment fee (eliminated in November 2000)

A Rule-Based Lender of Last Resort: A Cooperative Asian Currency Stabilization Fund

- ◆ A multi-country cooperative currency stabilization fund may have a useful role to play by augmenting the potential foreign exchange reserves perceived to be available for the defense of any single currency. (Timely intervention in the currency markets of certain countries, such as Indonesia, would have helped to reduce the misery significantly.)
- ◆ In order to avoid moral hazard, countries must meet certain prescribed rules of solvency and liquidity in order to avail themselves of the facility

The Importance of Timely Action with Decisive and Overwhelming Force

- ◆ Sudden increase in variance (riskiness) encourages flight to safety
- ◆ Confidence of domestic citizens most critical
- ◆ Successful stabilization requires “decisive and overwhelming force”
- ◆ Perceived commitment is more important than
 - ◆ the actual value of the exchange rate (the Hong Kong (1983) and Chinese (1993) examples) or
 - ◆ the actual amount of foreign exchange available (the Mexican example)
- ◆ Prevention of contagion and a vicious cycle in competitive devaluation

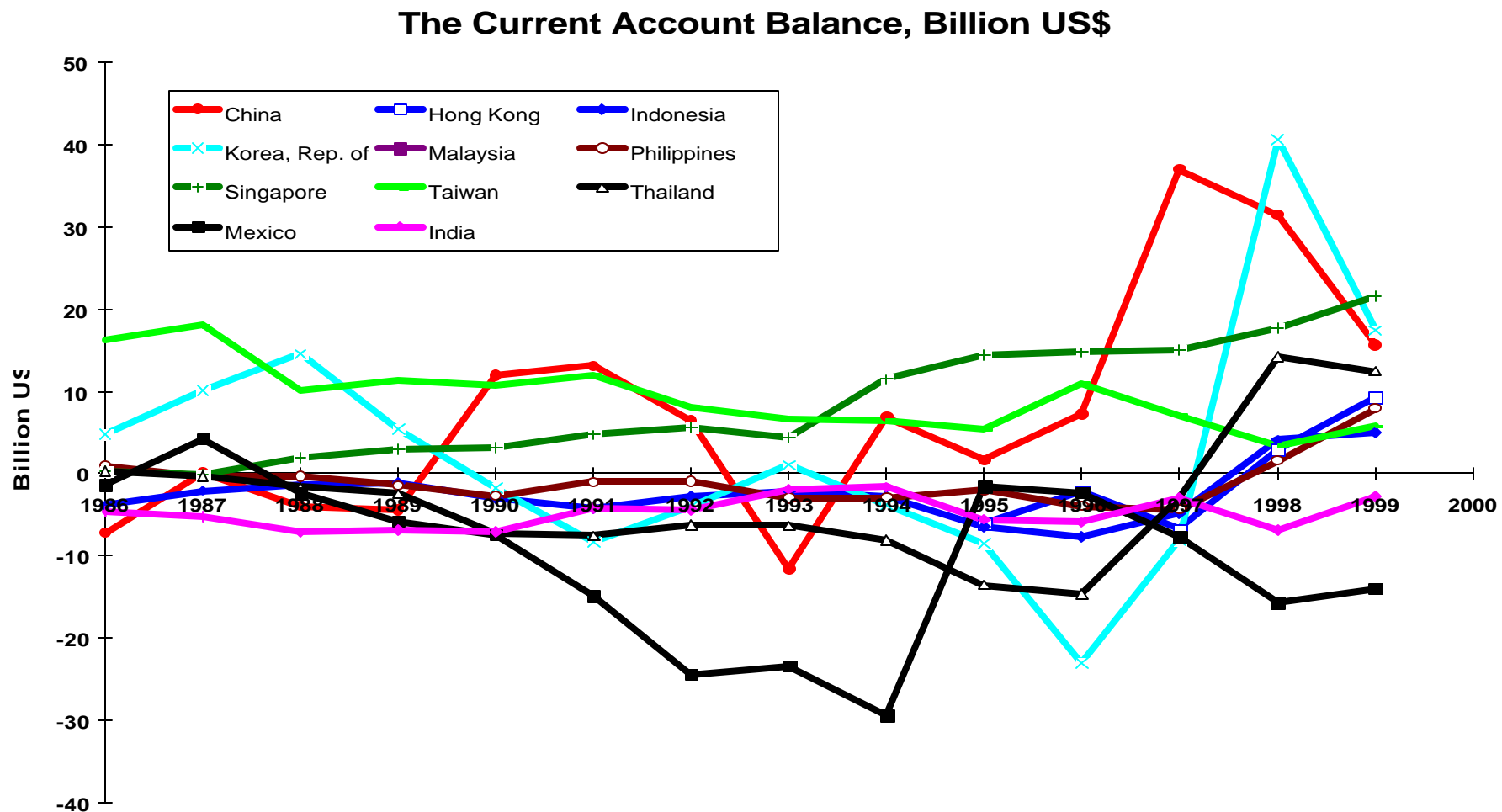
Containing Contagion

- ◆ Predatory speculation by hedge funds should be monitored and controlled --through mandatory disclosure of large positions (similar to what New York Stock Exchange requires of individual stock holdings) and imposition of margin requirements on purely speculative (non-current account-related) spot, forward or future currency transactions thereby reducing the degree of leverage and hence potential profitability of such transactions
- ◆ Exchange rate policy coordination among countries of the region
- ◆ Worldwide or region-wide currency stabilization facility

Is Another Crisis Likely?

- ◆ Based on the early warning economic indicators, the East Asian economies are unlikely to have another crisis in the foreseeable future
 - ◆ The savings rates have remained high while the savings-investment gaps--also reflected as the current account gaps--have largely disappeared
 - ◆ The dependence on short-term foreign capital (portfolio investment--both equity and debt instruments--and loans) has been significantly reduced
 - ◆ Foreign investment now consists mostly of direct rather than portfolio investment
 - ◆ Both total and short-term external debts have declined
 - ◆ The ratio of short-term to total external debts has also declined
 - ◆ Foreign exchange reserves have risen both absolutely and as a percentage of annual imports
 - ◆ Real exchange rates have depreciated significantly from their peaks in most of the affected economies

The Current Account Balance



The Current Account Balance as a Percent of GDP

The Current Account Surplus (Deficit) as a Percent of GDP

