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**DATA REQUIREMENTS TO SUPPORT EARLY WARNING
SYSTEMS AMELIORATING THE IMPACT OF ADVERSE
VOLATILE CAPITAL FLOWS**

Volatile Capital Flows: Assessment of the Current Policy Environment

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ABSTRACT

Efficient markets rely on timely and high quality data and other information to provide the price discovery and liquidity functions relied upon by market participants. International capital market data from official disclosures are examined and evaluated against the standards of timeliness, completeness, and adequacy in meeting market users' needs to anticipate problems and develop early-warning systems. Among the many efforts since the 1990's crises to improve capital flow data, the balance sheet approach offers the most promise. Hedge fund data from regulatory filings and private data sources are reviewed next, with the amount of proprietary hedge fund statistics on their activity presenting the best prospects for an analysis of their investment strategies that might threaten market stability. The availability of data on derivatives is described and evaluated. The final section of the paper contains a number of recommendations concerning the publication and use of data to increase the ability of regulators and policy-makers to anticipate and deal with possible problems to the smooth functioning of international capital markets.

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This paper reviews the international economic and financial situation currently and compares it to the 1990's and concludes that conditions are very different: it is unlikely that a crisis similar to those of the earlier period will occur now. Capital controls in the 1990s are examined in detail and two examples of the most highly regarded implementation of them – Chile and Malaysia – provide evidence that capital controls have a debatable and inconclusive effect on the variables policymakers are concerned with. Two types policy interventions, “circuit breakers” and “bank holidays,” are described and used to define a spectrum of possible innovative controls to consider. This analysis concludes that innovative policies promising desired results different from those due to the types of capital controls tried in the past are difficult if not impossible to identify. The paper concludes that ABAC should advocate: (1) improvement in collection and dissemination of data useful in assessing potential liquidity problems and required by “early warning systems;” (2) possible controls on the flow of international capital should carefully weigh the short-term advantages, if any, against long-term costs, and if controls are implemented, implementation should be predictable and the controls transparent in application and neutral in impact; (3) policy discussions should focus reactions to the most likely crisis under current circumstances, for example a precipitous adjustment to the dollar in response to accumulating global imbalances.

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EXECUTIVE SUMMARY

Volatile capital flows are usually related to sudden changes in market sentiment coming from revisions in the assessment of future economic outcomes that can be the basis of speculative gains or losses or from profits or losses associated with routine business activities. Better information has economic value in terms of reducing risks of investments in an economy. Research has shown a reduction of one-half percent in the borrowing costs of emerging market economies with the best data dissemination systems. Adequate flows of information to market participants reduce the likelihood of surprises and abrupt revisions in expectations producing capital flow reversals and the possibility of financial crises. Information is essential to efficient market functioning where prices of assets reflect a meaningful balance of expectations concerning future risks and returns in the marketplace and liquidity can be provided to traders at reasonable cost. This paper focuses on the types of information needed by participants in international capital markets: official information on capital flows, cross-border investments, and the structure of economies; information on the activities of active international capital market traders like hedge funds; information on developments in derivative markets used for hedging, risk management, and speculation.

All market participants need data, and market participants always want more information than is available: data is only available at a cost. Data dissemination policies of governments and businesses are determined by weighing the advantages of informed trading market participants and the costs of collecting data and the disadvantages of revealing private or official strategies or possible policy options to the market. Available information will never be sufficient to satisfy all market participants. This paper provides background material for ABAC members to form opinions on data needs and policy that advance their goal of efficient, integrated, and growing international capital markets.

The paper recommends that APEC economies take actions to address issues that limit the perception of reliability of official data releases. It is suggested that ABAC urge APEC statistical agencies to commit to a uniform code of conduct concerning the quality, completeness, and timeliness of data releases. A second recommendation is that ABAC consider urging economic officials to create investor relations units that would work with investors in an effort to provide them with the data they need to reduce their concerns about risks in the economy and the uncertainty concerning the key economic fundamental determinants of an economy's financial market performance.

Official data releases on international capital flows and the structure of economies in terms of sector balance sheets have been improved greatly since the financial crises of the 1990's. Some areas of improvement are more complete than others, as discussed in

the paper, and new developments in data collection promise development of more effective early warning systems than in the past. Data necessary for these efforts can be enhanced by additional effort in collecting balance sheet data. The paper recommends that ABAC endorse the further improvement in the quality and completeness of data collection conducted under the auspices of the International Monetary Fund (IMF) GDDS, SDDS, and balance sheet approach.

Hedge fund regulation and required reporting remain minimal. If hedge funds are considered a threat, despite the proliferation of hedge funds and shift away from exchange-rate speculative strategies by the industry in recent years, private and informal data sources will be required to develop intelligence concerning future speculative attacks or massive hedge-fund trading disruptive to markets. The paper suggests that ABAC members weigh the costs and benefits of developing hedge fund surveillance units and, if the costs are warranted, recommends the development of hedge fund expertise within the APEC community housed in individual economies or as a multilateral effort.

Derivative markets are mainly over-the-counter markets and data on activities in those markets is gathered infrequently. An aggressive effort of data collection and combining from various sources might be warranted as an effort to detect possible problems stemming from derivative trading. The paper recommends that these efforts, like hedge fund surveillance efforts, might be considered if they are judged to be worth the considerable costs.

DATA REQUIREMENTS TO SUPPORT EARLY WARNING SYSTEMS AMELIORATING THE IMPACT OF ADVERSE VOLATILE CAPITAL FLOWS

The current economic and financial market situation among the APEC emerging economies is substantially different than it was in the crisis period of the 1990s. With the floating of the Chinese and Malaysian currencies in July 2005, few of the regional currencies have a fixed peg to the dollar and most exchange rates demonstrate substantial variability. International reserve accumulations by emerging market economies in general are large, trade and capital accounts are roughly in balance compared to the large capital inflows and trade deficits characteristic of the crisis economies in the 1990's. Market conditions are improved, with valuations of stocks in general and of the financial sector strong, and of course, substantial changes in the capitalization and regulation of the financial sector has been undertaken since the crisis years. Hedge funds are on average smaller, less highly leveraged, more carefully scrutinized by their lenders, and pursue more heterogeneous strategies than in the 1990's.

Based on a review of capital controls imposed by APEC emerging economies, with a particular focus on the most positively assessed use of controls by Chile and Malaysia, the conclusion is that capital controls have a limited effect on policy variables of interest in most economies. Even in the economies believed to have successfully used controls, the effects are difficult to detect and unintended consequences of controls and are believed by many to have had negative long-term impacts and costs.

This study intended to identify possible innovations in capital useful in reducing costs and increasing their effectiveness in future crises. Analysis of circuit breakers on organized exchanges reveals their limited usefulness in controlling international capital movements. Controlling payment flows through system-wide payment halts, as in bank holidays, reveals the large costs and indiscriminate impacts of the measure. Controls on specific transactions by halting certain payments are difficult to implement and have costly implications. The conclusion is that controls used in the past, combined with transparency in application and clarity on their invocation, are the least distorting and costly types of controls, but as always present challenges in definition and implementation. Furthermore, growth in derivative markets makes controls based on domestic institution activity of limited impact on speculation.

Recommendations presented in the report aim at improving the ability to reduce the costs of financial crises. In short, recommendations are: (1) improve data collection in terms of coverage, timeliness, and quality; (2) limit the use of controls to pre-announced trigger levels using tried methods like specified transaction taxes but understand the ease of evasion and the distortions such taxes cause over the long run and the damage they cause to market reputation; and (3) advocate concerted efforts to analyze likely future crises.

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I. Introduction Financial Crises and Data: Introduction

Data and information are the grease to the many wheels and hubs in efficient capital markets. The term *efficient capital markets* in the finance literatures refers to the assumption that asset prices reflect relevant information concerning economic fundamentals available to investors and other market participants. Markets are important because they provide investors with *liquidity*, essential to most investors to ease entry to and exit from commitments of financial resources to asset holdings. An equally important role of markets is *price discovery*, that is that transactions initiated by informed investors operating in efficient financial markets establish values and rates of return on assets reflecting consensus views of fundamental economic conditions determining the future risks and returns on different assets. These values and expected rates of return are important in determining the most efficient business strategies and achieving an efficient allocation of real resources in both the public and private sectors. Liquidity and price discovery are valuable if not essential aspects of international financial markets that are built on reliable sources of economic and financial data.

Data on financial market activity are reported by participants in the market, including official institutions like governments and central banks, regulated private firms like commercial banks and others, exchanges, trade associations, estimates of the

activities of private individuals and firms, and so forth. Some financial market activities are reported partially or not at all. As will be discussed in the next section, the quality and timeliness of data on the financial-market activities of all classes of financial market participants are important in forming expectations of future market conditions and associated risks, trading strategies, and possible future opportunities or problems.

High quality, timely, and comprehensive data collection and dissemination is costly to provide. What benefits to market participants justify these costs to suppliers of data? Two answers reflect the *public good* and *private benefit* attributes of financial markets benefiting from the availability of good data. Both the public good and private benefits and their relation to data are described in the following discussion.

Liquidity and *price discovery* are public goods that benefit all market participants and policy makers since they contribute to good policy decisions and efficient allocation of resources. Reliable trades at prices meaningful in terms of underlying fundamentals assure private investors of fair returns on average for investment strategies entailing risk. Unreliable data force economic decision-makers to be cautious in their financial market activities, demanding lower prices and higher returns to account for the uncertainties and unreported unknowns inherent in an economic environment. New information may easily tip expectations based on partial or unreliable information towards expectations reversing or doubling the implications of financial market strategies, increasing the price reactions and hence risk of the market. The chances of herd behavior and accompanying “crowded trading” as many traders attempt to exit positions simultaneously in response to changes in expectations arising from unexpected data or rumors are reduced with high

quality data enabling analysts and research departments to sift through historical data and build statistically reliable predictive models.

The private benefits to financial markets with the availability of good data result from increased confidence and reduced uncertainty concerning the true state of an economy and financial markets. Increasing data quality can have real benefits to an economy by increasing confidence and reducing uncertainty concerning the ability of sovereign borrowers to fulfill debt obligations. For example, Cady and Pellechio (2006) provide convincing evidence that emerging-market sovereign borrowers adhering to higher IMF data standards (as described in the next section) have borrowing costs between 20 and 50 basis points lower than sovereign borrowers with lower quality data, with the larger interest-costs savings associated with the most complete data disclosures. Reduced yield risk spreads on debt instruments issued by emerging-market governments have clear benefits for residents of those economies. To achieve these important savings, emerging market officials in countries issuing securities must be committed to gathering and disseminating the best data possible.

Private-market analysts and investors aggressively seek more reliable international market data. Data distribution services have developed to ease the updating and expansion of available data series to financial market customers. Sophisticated market participants scrutinize critical data series as they are released to assess any implications requiring minor or major innovations in previously held expectations. Hypothesized relations between data series and important economic magnitudes are based on extensive statistical analysis and comparisons of theoretical models with market outcomes, as we discuss with early warning systems (EWS) in the next section. These

analyses require long historical series of comparable observations on important economic variables. Some officials and policy-makers may view this attention and scrutiny as bothersome, but it has an useful analogy in private debt and equity financial markets.

In the United States and other developed markets, the analyst community, regulators, and sophisticated investors demand high-quality data from publicly traded firms. Poor or misleading data is often punished by the market in terms of valuations of firms reluctant to communicate candidly and frequently to the investor community. Recent accounting scandals and revelation of option-granting practices producing large share-price losses illustrate the importance of investor confidence in reported private-sector data and the consequences for assets values of a loss of confidence in data quality.

Most firms in the United States have *investor relations* departments. Top executives and investor relations staffs of the firm participate in presenting and analyzing financial and operating data through a variety of mediums like analyst meetings, phone conferences, and “road shows.” Securities laws in the United States also assure investors that false disclosures are subject to criminal and civil legal sanctions. Gaining the confidence of current and future investors justifies the management time and direct costs of investors relations departments in terms of market access and valuation of claims on corporations. Losing the confidence of its investors is a major cost to firms that often must expend substantial resources to restore the reputation of the firms.

Sovereign borrowers of emerging market (or developed) economies entering international capital markets are in a situation similar to private corporate issuers in developed securities markets. The economic situation is however qualitatively different between sovereign and private issuers in one very important way. Governments and

other official issuers can influence economic fundamentals for an entire country through policy decisions. The market can lose confidence in official data disclosures due to lack of complete data reporting or the discovery or suspicion of manipulation of data. If officials offer unconvincing arguments in defense of policies accompanying data disclosures (as for example loss of reserves and continuing pledges to maintain a fixed exchange rate), this can and often does shake market confidence and increase assessments of risk. Inadequate, suspicious, unreliable data can increase the chances of sudden changes in market sentiment when new information becomes available to market participants.

Agencies responsible for official data, like central banks, statistical bureaus, and regulatory agencies, develop reputations among investors in part on the basis of their historical record of releasing and explaining data, no matter how bad or good the statistical releases appear. In the interest of smooth market functioning, it would be productive if official agencies were committed and held accountable on the record to highest possible standards in data publication. An important extension of this commitment would be if these agencies were actively helpful to data users and were perceived as trying to meet the data requirements of the international investor community, like the most successful investor relations departments of publicly traded firms. As Larry Summers wrote after the 1990's crises:

Providing confidence to markets and investors that a credible path out of crisis exists and will be followed is essential. That requires transparency (providing all relevant information to markets so that risk-averse investors are not uncertain about how deep serious problems are), consistent and credible commitment to a coherent –policy-adjustment package (so that political and policy uncertainty does not undermine investors' confidence), and close consultation with creditors (so that sudden negative policy and information are minimized, and so that creditors are reassured that cooperative approaches to debt servicing difficulties will be pursued. (p. 11)

Clearly, data disclosures and other official communications can create confidence and may serve to avoid crises in the first place. Institutional investors' confidence and trust should be an objective of reporting agencies, in anticipation of the positive goals of reducing unnecessary risk assessments, smooth market functioning, and expanding the role of international financial markets in an economy's development. This report suggests some measures in support of increasing confidence in international financial market data based on this discussion in the final section.

II. Official Efforts to Improve International Capital Market -Flow Data*

Since the Financial Crises of the 1990s, most economies have attempted to improve financial market data released to the public under the guidance of multi-lateral organizations, most importantly by the International Monetary Fund (IMF). The effort to improve data has been a multi-pronged process with many task forces formed out of the many multi-national organizations (like the Bank for International Settlements (BIS), the World Bank, and the United Nations (UN)), as well as regional organizations and individual economies. It is enough for purposes of this policy background paper to provide a general summary describing this effort and provide an assessment of its successes to date. Providing a summary here should not be taken to diminish the importance of the details of this effort and the significance of its agenda for many working groups and task forces for the future. Paukula and Waller (2005) provide a n good review of many of these data improvement initiatives: the following discussion can be seen as an update and expansion of the discussion in that paper. The most recent activities directed at improvements in international data are described in the IMF's Statistics Department newsletter (2005b) and in the many papers and reports of meetings posted on their website and those of other multinationals describing data improvements initiatives and reporting on their progress.

Improvements in Official International Capital Flow Data and Early Warning Systems

The IMF has played a key role in efforts to improve international capital market data in its General Data Dissemination System (GDDS) and the Special Data

* Prepared with the assistance of Rahul Giri and Rubina Verma, Economics Department, University of Southern California

Dissemination Standard (SDDS), both initiated in the wake of the financial crises of the 1990's. The GDDS is a framework to develop a program of data collection and publication for less developed economies among IMF members. This GDDS program is often accompanied by assistance by the IMF and other multinational agencies and organizations. One goal of the GDDS program is to encourage and assist countries to develop data dissemination systems adequate to "graduate" to the SDDS. As of September 2004, 76 countries belonged to the GDDS program.

The SDDS was established to guide IMF members in developing data disclosures adequate to provide access to international capital markets. As of March 31, 2006, 62 countries participated in SDDS, or were "subscribers" to the system in IMF terminology. Subscription to SDDS requires data in four sectors: the real sector, fiscal sector, financial sector and external sector. An important component of these data disclosures are country disclosures of "metadata" consisting of information by subscribers about their data definitions and collection methods, as well as initiatives to improve future data releases, including actions taken under both the GDDS and SDDS and the Data Quality Program (IMF Statistics Department, 2005a).

Timely disclosures of data are important in the application of early warning systems (EWS). To illustrate the adequacy of existing data disclosures as well as the types of data requirements market participants have used to develop EWS, Table 1, "EWS Data Variables and Availability for Three Economies," lists all the variables used in representative EWS models of financial crises or sovereign debt defaults that have been published and reviewed for this study. As is demonstrated by the table for the selected economies, most required data is available and is published within a

reasonable timeframe. In terms of the data reporting by SDDS, most of the variables required by EWS are available from the system (all APEC economies except Brunei, Chinese Taipei, and New Zealand subscribe to SDDS). While data comparability and timeliness have improved since the 1990's with the development of the SDDS, this does not mean that there are no complaints from international capital market participants about low quality or lack of availability of comparable data series from each economy.

An informal survey of international financial market participants and a review of the literature identify two often-mentioned types of limitations to data available through SDDS. Addressing these limitations will form the basis of additional ABAC recommendations to APEC concerning international financial data presented in the final section of the paper. These data limitations are discussed below under the two headings, practical and theoretical limitations on SDDS data.

Practical International Financial Data Limitations

First, in terms of practical considerations, financial market data users continue to raise certain general criticisms of some data series, for example international reserves. While these data are reported monthly, Table 1 shows that they are often reported with a two-month lag although the IMF explains that some delays are due to “technical problems.” According to Maurine Haver, President of Haver Analytics, a data distribution firm widely used by institutional investors, one major concern to international financial market observers is that the definitions of international reserves are not consistent. Market observers feel they need more detail on the composition of reserve assets and currencies. The currency composition of reserves is likewise of interest (see Truman and Wong (2006)). While the IMF is focusing attention on the issue of

improving international reserves reporting (see IMF Statistics Department (2005b), p. 4), the concerns of the private financial market participants concerning the timeliness, comparability, and completeness of the reporting of reserves are voiced frequently.

Another set of practical concerns has to do with the terms at which necessary data are made available to researchers and analysts in the private sector. For example, some countries until recently charged substantial subscription fees for data to be distributed to financial market users. Other statistical offices continue to charge for historical series necessary for statistical analysis and model building. Some data are published that are difficult to users to interpret because English language annotations of tables are not easily used or are not available.

Finally, several international financial market participants have voiced concerns about the ethics of data publications by some statistical offices. For example, official data releases have been said to contain obvious errors, and that corrected data are provided to some users before an officially scheduled update of the release. When these data have large financial market impact, possession of corrections to released data that are not officially released could have significant market impact and present issues similar to those associated with inside information concerning private-sector issuers. Another complaint dating from the crisis period is that official data disclosures were not complete pictures of underlying financial exposures of government-related institutions.

Theoretical Issues

Theoretical issues raised by practitioners with respect to international financial data have to do with the fact that most of the published data under SDDS is flow data, based on balance of payments and national account or similar statistics. National income

Table 1: EWS Data Variables and Availability for Three Economies (Korea, Thailand, Chinese Taipei)

(Last updates as of May 2006)

Variables	Korea		Thailand		Chinese Taipei	
	Availability	Last Update (Frequency)	Availability	Last Update (Frequency)	Availability	Last Update (Frequency)
External Sector Variables						
Overvaluation (<i>Exchange rate</i>)	Yes	28-Apr-06 (D)	Yes	23-May-06 (D)	Yes	Apr-06 (M)
Terms of trade	No		No		No	
Current account	Yes	Mar-06 (Q)	Yes	Q4-05 (Q)	Yes	Q1-06 (Q)
Current account balance/GDP	Yes	Q1-06 (Q)	Yes	Q4-05 (Q)	No(GDP)	
Current account balance/investment	No (investment)		No (investment)		No(investment)	
Reserves growth	Yes	Apr-06 (M)	Yes	May-06 (M)	Yes	Apr-06 (M)
Reserve losses	Yes	Apr-06 (M)	Yes	May-06 (M)	Yes	Apr-06 (M)
Reserves/M2 (level)	Yes	Mar-06 (M)	Yes	Mar-06 (M)	Yes	Mar-06 (M)
Reserves/M2 (growth)	Yes	Mar-06 (M)	Yes	Mar-06 (M)	Yes	Mar-06 (M)
Reserves/Imports (level) ¹	Yes	Mar-06 (Q)	Yes	Q4-05 (Q)	Yes	Q1-06 (Q)
Openness (Exports+Imports/GDP)	Yes	Mar-06 (Q)	Yes	Q4-05 (Q)	No(GDP)	
Export growth ²	Yes	Mar-06 (Q)	Yes	Q4-05 (Q)	Yes	Q1-06 (Q)
Import growth	Yes	Mar-06 (Q)	Yes	Q4-05 (Q)	Yes	Q1-06 (Q)
Total external debt/GDP	Yes	Q4-05 (Q)	Yes	Q4-05 (Q)	No(debt, GDP)	
Debt/Export	Yes	Q4-05 (Q)	Yes	Q4-05 (Q)	No(debt)	
Short-term external debt (original maturity basis)/reserves	Yes	Q4-05 (Q)	Yes	Q4-05 (Q)	No(external debt)	
Short-term external debt (remaining maturity basis)/reserves	No		No		No	
ST Debt/Reserves	Yes	Q4-05 (Q)	Yes	Q4-05 (Q)	No(debt)	
Interest on short-term external debt/GDP	No(interest)		No(interest)		No(interest, GDP)	
Debt service on short-term external Debt/reserves	No (debt service)		No(debt service)		No(debt service)	
Financing requirement/reserves	Yes	2004 (Y)	Yes	Mar-05 (Q)	No(financing)	
FDI/GDP	Yes	2004 (Y)	Yes	2004 (Y)	No(FDI, GDP)	

¹ Import of goods and services is available quarterly but merchandise import is available monthly.

² Export of goods and services is available quarterly but merchandise export is available monthly.

Table 1 (continued): EWS Data Variables and Availability for Three Economies (Korea, Thailand, Chinese Taipei)

Variables	Korea		Thailand		Chinese Taipei	
Oil prices	No		No		No	
LIBOR	Yes		Yes		Yes	
U.S. Treasury bill rate	Yes		Yes		Yes	
Monetary/Fiscal Policy Variables						
Bank Deposits	No		No		No	
Domestic credit growth ³	Yes	Mar-06 (M)	Yes	Mar-06 (M)	Yes	Mar-06 (M)
Domestic credit/GDP growth	Yes	Q4-05 (Q)	Yes	Q4-05 (Q)	No (credit, GDP)	
Growth of credit to pvt. Sector	Yes	Mar-06 (M)	Yes	Mar-06 (M)	Yes	Mar-06 (M)
Financing requirement (<i>Govt</i>)	Yes	Mar-06 (M)	Yes	Mar-06 (M)	No (financing)	
Domestic real interest rate ⁴	Yes	Mar-06 (M)	Yes	Apr-06(M)	No (inflation)	
<i>Real interest rate on deposits</i>	Yes	Apr-06 (M)	Yes	Apr-06(M)	No (inflation)	
<i>Ratio of lending interest rate to deposit interest rate</i>	Yes	Apr-06 (M)	Yes	Apr-06(M)	No (inflation)	
Domestic Foreign real interest Rate differential	Yes	Apr-06 (M)	Yes	Apr-06(M)	No (inflation)	
Inflation (year-on-year, in percent)	Yes	May-06 (M)	Yes	Apr-06(M)	No	
Short Term Debt	Yes	Q4-05 (Q)	Yes	Q4-05 (Q)	No	
Debt coming due	No		No		No	
Total Debt	Yes	Q4-05 (Q)	Yes	Q4-05 (Q)	No	
Commercial Share	No		No		No	
Concessional Share	No		No		No	
Multilateral Share	No		No		No	
Primary balance in percent of GDP	No (net interest payment/receipt)		No (net interest payment/receipt)		No (net interest payment/receipt)	
General government consumption as % of GDP	No (govt cons)		No (govt cons)		No (govt cons, GDP)	
Real Sector Variables						
GDP growth	Yes	Q1-06 (Q)	Yes	Q4-05 (Q)	No	

³ Domestic credit is not given in case of Taiwan. However, one can obtain it by adding claims on public and private sector.

⁴ Can calculate using nominal interest rate and inflation on which data is available. Though interest rate data is available daily price data is available only monthly. For Taiwan, inflation data is not available.

Table 1 (continued): EWS Data Variables and Availability for Three Economies (Korea, Thailand, Chinese Taipei)						
Variables	Korea		Thailand		Chinese Taipei	
Industrial production	Yes	Mar-06 (M)	Yes	Mar-06 (M)	No	
Stock Market Variables						
Stock market	Yes	28-Apr-06 (D)	Yes	23-May-06 (D)	Yes	23-May-06 (D)
Stock price growth	Yes	28-Apr-06 (D)	Yes	23-May-06 (D)	Yes	23-May-06 (D)
Contagion Variables						
Global liquidity contagion	These model specific derived variables, i.e. the authors have used various variables to construct these measures and the exact methodology and data requirements are not known for these variables. Most of these variables are used in EWS models used in industry.					
Regional Contagion						
Devaluation contagion						
Market pressure contagion						
Interest rate 'event' ⁵	Yes	Mar-06 (D)	Yes	23-May-06 (D)	Yes	Mar-06 (M)
Other Variables						
Political event	No		No		No	
Regional dummies	No		No		No	
Moody's sovereign credit ratings	No		No		No	
Institutional investor sovereign credit ratings	No		No		No	
Presidential Elections	No		No		No	
Index of Freedom Status	No		No		No	

Sources for EWS Model Variables: Berg, Borensztein, and Pattillo (2004), Detraigiache and Spilimbergo (2001), Manasse, Roubini, and Schimmelpfennig (2003), and Pakula and Waller (2005).

⁵ Depending on the definition of "event" it can be calculated from the data. Although Korea is supposed to report interest rate data daily it reports it when there is a change in the interest rate on aggregate credit ceiling loans.

account and balance of payments data like GDP or exports are *flow* statistics rather than the total accumulation of *stocks* of assets or liabilities on balance sheets of decision-making entities in an economy. Stock data on debt levels necessary to estimate debt-service obligations are often not available (see Table 1). While the IMF has expanded its SDDS requirements for external debt in 2003, the quality and coverage of stocks of assets and liabilities are limited in most countries. The historical lack of balance sheet data forced analysts to construct analytical approaches and models that were compromised by data availability, as noted in Table 1, under several asset and liability classifications.

In evaluating the data available for EWS development, one must keep in mind that most of these models were developed and conditioned on data availability, not necessarily the suitability of data. In other words, the coverage of the current data required by SDDS, even if available and of sound quality, does not satisfy the theoretically desirable and most useful variables to use developing in EWS models. Previously reported EWS research reflects data compromises forced on analysts concerning measurements of vulnerabilities in asset and liability accumulations or stocks, and should not be used as a standard for the ideal data to have available. These points are relevant to the following discussion on the recent efforts to improve data useful in diagnosing financial market vulnerability to crisis.

Asset and Liability Data and the Balance Sheet Approach

Voluminous research reported by academic and central bank researchers, private analysts, and by the multilateral institutions since the financial crises of the 1990's, has focused on balance-sheet mismatches (maturity and currency) for important economic

entities as an important cause of these crises. Sector balance-sheet mismatches can result in liquidity crises when income or other flows are inadequate to cover required debt service (see Chang and Velasco (1998)). The distributed effects of liquidity crises are transmitted from one sector of the economy to other sectors: for other examples of transmission, see Counterparty Risk Management Policy Group II (2005) report discussed in the next section. These accumulating liquidity and often solvency issues are responsible for increased volatility in asset values and required rates of return in international financial markets in the face of liquidity difficulties. These issues are emphasized by Pettis (2001) among others.

In recognition of the importance of balance sheet mismatches and the way economic shocks are transmitted through balance sheets of sectors in an economy, in 2002 the IMF increased its efforts to develop a *balance sheet approach* (BSA) to presenting sector sheets. The goal is to be able to assess each sector's financial market exposures to currency and maturity mismatches (see Mathisen and Pellechio (2006)). In the following discussion, we discuss both the implications of the BSA for data reporting and quality improvement and the significance of IMF surveillance effort to reducing the probabilities of an unexpected financial market disturbances (crises).

The BSA is based on the presentation of aggregate balance sheets for seven sectors of an economy:

- (1) Central bank;
- (2) General government;
- (3) Other depository institutions;
- (4) Other financial corporations;
- (5) Non-financial corporations;
- (6) Other resident sectors ;
- (7) Rest of the world.

Table : Availability of EWS Models' (Currency crisis & Debt crisis) Variables in SDDS

Variables	Korea		Thailand		Taiwan	
	Availability	Last Update (Frequency)	Availability	Last Update (Frequency)	Availability	Last Update (Frequency)
External Sector Variables						
Overvaluation (<i>Exchange rate</i>)	Yes	28-Apr-06 (D)	Yes	23-May-06 (D)	Yes	Apr-06 (M)
Terms of trade	No		No		No	
Current account	Yes	Mar-06 (Q)	Yes	Q4-05 (Q)	Yes	Q1-06 (Q)
Current account balance/GDP	Yes	Q1-06 (Q)	Yes	Q4-05 (Q)	No(GDP)	
Current account balance/investment	No(inv)		No(inv)		No(inv)	
Reserves growth	Yes	Apr-06 (M)	Yes	May-06 (M)	Yes	Apr-06 (M)
Reserve losses	Yes	Apr-06 (M)	Yes	May-06 (M)	Yes	Apr-06 (M)
Reserves/M2 (level)	Yes	Mar-06 (M)	Yes	Mar-06 (M)	Yes	Mar-06 (M)
Reserves/M2 (growth)	Yes	Mar-06 (M)	Yes	Mar-06 (M)	Yes	Mar-06 (M)
Reserves/Imports (level) ⁶	Yes	Mar-06 (Q)	Yes	Q4-05 (Q)	Yes	Q1-06 (Q)
Openness (Exports+Imports/GDP)	Yes	Mar-06 (Q)	Yes	Q4-05 (Q)	No(GDP)	
Export growth ⁷	Yes	Mar-06 (Q)	Yes	Q4-05 (Q)	Yes	Q1-06 (Q)
Import growth	Yes	Mar-06 (Q)	Yes	Q4-05 (Q)	Yes	Q1-06 (Q)
Total external debt/GDP	Yes	Q4-05 (Q)	Yes	Q4-05 (Q)	No(debt, GDP)	
Debt/Export	Yes	Q4-05 (Q)	Yes	Q4-05 (Q)	No(debt)	
Short-term external debt (original maturity basis)/reserves						
Short-term external debt (remaining maturity basis)/reserves						
ST Debt/Reserves	Yes	Q4-05 (Q)	Yes	Q4-05 (Q)	No(debt)	
Interest on short-term external debt/GDP	No(interest)		No(interest)		No(interest, GDP)	
Debt service on short-term external Debt/reserves	No(debt service)		No(debt service)		No(debt service)	
Financing requirement/reserves	Yes	2004 (Y)	Yes	Mar-05 (Q)	No(financing)	
FDI/GDP	Yes	2004 (Y)	Yes	2004 (Y)	No(FDI, GDP)	
Oil prices	No		No		No	
LIBOR	Yes		Yes		Yes	
U.S. treasury bill rate	Yes		Yes		Yes	
Monetary/Fiscal Policy Variables						
Bank Deposits	No		No		No	
Domestic credit growth ⁸	Yes	Mar-06 (M)	Yes	Mar-06 (M)	Yes	Mar-06 (M)
Domestic credit/GDP growth	Yes	Q4-05 (Q)	Yes	Q4-05 (Q)	No(credit, GDP)	
Growth of credit to pvt. Sector	Yes	Mar-06 (M)	Yes	Mar-06 (M)	Yes	Mar-06 (M)
Financing requirement (<i>Govt</i>)	Yes	Mar-06 (M)	Yes	Mar-06 (M)	No(financing)	
Money multiplier change	No		No		No	
Domestic real interest rate ⁹	Yes	Mar-06 (M)	Yes	Apr-06(M)	No(inflation)	
<i>Real interest rate on deposits</i>	Yes	Apr-06 (M)	Yes	Apr-06(M)	No(inflation)	
<i>Ratio of lending interest rate to deposit interest rate</i>	Yes	Apr-06 (M)	Yes	Apr-06(M)	No(inflation)	

⁶ Import of goods and services is available quarterly but merchandise import is available monthly.

⁷ Export of goods and services is available quarterly but merchandise export is available monthly.

⁸ Domestic credit is not given in case of Taiwan. However, one can obtain it by adding claims on public and private sector.

⁹ Can calculate using nominal interest rate and inflation on which data is available. Though interest rate data is available daily price data is available only monthly. For Taiwan, inflation data is not available.

Domestic Foreign real interest Rate differential	Yes	Apr-06 (M)	Yes	Apr-06(M)	No(inflation)	
Excess M1 balances ¹⁰	No		No		No	
Inflation (year-on-year, in percent)	Yes	May-06 (M)	Yes	Apr-06(M)	No	
Short Term Debt						
Debt coming due						
Total Debt						
Commercial Share						
Concessional Share						
Multilateral Share						
Primary balance in percent of GDP (Budget deficit/GDP)						
General government consumption as % of GDP	No(govt cons)		No(govt cons)		No(govt cons, GDP)	
Real Sector Variables						
GDP growth	Yes	Q1-06 (Q)	Yes	Q4-05 (Q)	No	
Industrial production	Yes	Mar-06 (M)	Yes	Mar-06 (M)	No	
Stock Market Variables						
Stock market	Yes	28-Apr-06 (D)	Yes	23-May-06 (D)	Yes	23-May-06
Stock price growth	Yes	28-Apr-06 (D)	Yes	23-May-06 (D)	Yes	23-May-06
Contagion Variables						
Global liquidity contagion						
Regional Contagion						
Devaluation contagion						
Market pressure contagion						
Interest rate 'event' ¹¹	Yes	Mar-06 (D)	Yes	23-May-06 (D)	Yes	Mar-06 (M)
Other Variables						
Political event						
Regional dummies						
Moody's sovereign credit ratings	No		No		No	
Institutional investor sovereign credit ratings	No		No		No	
Presidential Elections						
Index of Freedom Status						

This breakdown of an economy into sectors with balance sheets is comparable to the venerable Federal Reserve Board's *Flow of Funds* accounts, published since the end of the Second World War. In addition to the sectors, data gathering is aimed on a classification of important asset and liability classes, that is the required entries in the balance sheets. The major difference in the IMF BSA initiative and the data reported by the Federal Reserve is the emphasis by the IMF on maturity classifications and currency

¹⁰ Data is there on M1 only for Thailand. Do not know what the authors mean by excess M1 balances.

¹¹ Depending on the definition of "event" it can be calculated from the data. Although Korea is supposed to report interest rate data daily it reports it when there is a change in the interest rate on aggregate credit ceiling loans.

classifications denomination of individual asset and liability classes. Of course, these are the classifications are of central interest in developing assessments of likely international financial market disturbances stemming from volatile capital flows.

Accurate and timely data disclosures under the BSA initiative would meet many practical and theoretical concerns raised in developing EWS. Unfortunately, data on balance sheets of most sectors in most economies are not yet reported with enough reliability to give a complete view of non-financial sector vulnerabilities and aggregations of balance sheet data items can obscure significant omissions in data on specific types of transactions. Tables 2 and 3 below from Mathisen and Pellichio (2006) show the an assessment of the relative reliability of difference sectors' balance sheets source data and specific asset and liability entries, and they report:

Data reliability can vary significantly by sector (Table 2). In general, central bank data are most reliable, followed by data from commercial banks and other financial institutions, international investment position data, and government debt data. Secondary trading in government debt can substantially affect the ability to determine sectoral holdings of government securities. Data on households and nonfinancial corporations are typically very scarce in emerging markets and in many cases are nonexistent. ... Sectoral data reliability can vary by methodology. In general, the most reliable data are those that follow ... [IMF guidelines].... Data on nonfinancial corporations' positions vis-à-vis household and nonprofit organizations are generally less reliable. The uncertainty of these data are exacerbated if derived on a residual basis. [p. 30]

Households and businesses account for most bank and non-bank borrowing. Much of the data on foreign obligations and asset claims are estimated and the above quote may overstate the reliability of these assets and liabilities. Most of these data are based on comparisons between domestic reporting and foreign creditor and investment surveys. A BIS report (2002), while somewhat outdated, discussed the differences between national and creditor estimates: these can be substantial and important.

While in most economies central bank and regulated financial institutions balance sheet data are routinely generated in great detail and with sanctions against

misrepresentation (see Table 2), many of the other non-bank data items are estimated using survey data. Surveys are expensive and hence data are collected less frequently than would be desirable to analyze growing sector maturity or currency mismatches. The Bank of Thailand (2006) provides a detailed example of survey procedures for estimating external debt for the non-bank sector, illustrating the effort and adjustments required by the survey approach to estimates. Several commentators have noted problems with trade credit in particular, an important variable not only from the point of view of short-term non-financial liabilities, but also often used to misrepresent hidden transactions that are essentially speculative short-term capital flows. A focus on trade credit availability during crises is usual because credits reflect changes in trade volumes in and out and may be essential to support exports with their foreign exchange earnings frequent since it necessary for exports to generate foreign currency earnings to take place. potential.

Bilateral Surveillance and the Balance Sheet Approach

Research reported by the IMF (for example IMF (2004a)) and others provides several examples of the benefits of using the BSA to diagnose the vulnerability of emerging market economies to financial crises. The IMF has embraced the balance sheet approach in its surveillance program based on the value the BSA has in identifying financial

Table 2: Data Reliability (by Sector)

	Public sector		Financial Private Sector		Nonfinancial Private Sector		Rest of the world
	Central bank	General government	Other depository corporations	Other financial corporations	Nonfinancial corporations	Other resident sectors	
Central bank	High	Low	Low	Low	Low	Low	Low
General government	Low	High	High	High	High	High	High
Other depository corporations	Low	High	High	High	High	High	High
Other financial corporations	Low	High	High	High	High	High	High
Nonfinancial corporations	Low	High	High	High	High	High	High
Other resident sectors	Low	High	High	High	High	High	High
Rest of the world	Low	High	High	High	High	High	High

	Public sector		Financial Private Sector		Nonfinancial Private Sector		Rest of the world
	Central bank	General government	Other depository corporations	Other financial corporations	Nonfinancial corporations	Other resident sectors	
Central bank	High	Low	Low	Low	Low	Low	Low
General government	Low	High	High	High	High	High	High
Other depository corporations	Low	High	High	High	High	High	High
Other financial corporations	Low	High	High	High	High	High	High
Nonfinancial corporations	Low	High	High	High	High	High	High
Other resident sectors	Low	High	High	High	High	High	High
Rest of the world	Low	High	High	High	High	High	High

Table 3: Data Reliability (by Financial Instrument¹)

■ : High ■ : Middle □ : Low

	Financial corporations				General government		Nonfinancial corporations				Other residents		Rest of the world	
	Depository corporations		Other financial corporations		Assets	Liabilities	Private nonfinancial corporations		Other nonfinancial corporations		Assets	Liabilities	Assets	Liabilities
	Assets	Liabilities	Assets	Liabilities			Assets	Liabilities	Assets	Liabilities				
Currency and Deposits	High	High	High	High	High	High	High	High	High	High	High	High	High	High
Currency and Deposits	High	High	High	High	High	High	High	High	High	High	High	High	High	High
Deposits	High	High	High	High	High	High	High	High	High	High	High	High	High	High
Loans	High	High	High	High	High	High	High	High	High	High	High	High	High	High
Securities other than shares	High	High	High	High	High	High	High	High	High	High	High	High	High	High
General government securities	High	High	High	High	High	High	High	High	High	High	High	High	High	High
Other securities	High	High	High	High	High	High	High	High	High	High	High	High	High	High
Structured-financing instruments	High	High	High	High	High	High	High	High	High	High	High	High	High	High
Shares and other equities	High	High	High	High	High	High	High	High	High	High	High	High	High	High
Financial derivatives	High	High	High	High	High	High	High	High	High	High	High	High	High	High
Insurance technical reserves	High	High	High	High	High	High	High	High	High	High	High	High	High	High
Other accounts	High	High	High	High	High	High	High	High	High	High	High	High	High	High

Source: IMF, *Compilation Guide for Monetary and Financial Statistics*, Chapter 8 (forthcoming).

1/ The darker areas indicate where the compiler placed a relatively "high" degree of reliability. The moderately shaded areas indicate series where estimates are judged to be less reliable, but still where source data are available on a sample basis or on a basis where the frequency is less than quarterly or annually. The lightly shaded areas are for series where there is virtually no source data; estimates for series in the non shaded area are based largely on residual calculation.

system vulnerabilities. The IMF's review of its surveillance activities under its Article IV (IMF (2004b)) describes the value of the BSA as follows:

Vulnerability assessments are benefiting from initiatives to enhance coverage of balance sheet issues, including implementation of the strengthened framework for debt sustainability assessments. Balance sheet issues have received substantial attention in surveillance of both advanced and emerging market economies. In advanced economies, the focus has been on private balance sheet vulnerabilities, particularly in connection with risks stemming from risking real estate prices and mortgage lending. In emerging market countries, staff reports have focused on the potential transmission of shocks across domestic sectors under crisis conditions, key factors contributing to resilience under such conditions, and ensuing policy advice. Nevertheless, limited data availability remains an obstacle to detailed balance sheet analysis in many instances. [p. 13]

The IMF Annual Report of 2005 states as follows:

During FY2005, such balance sheet analysis was increasingly integrated into the Fund's operations, with a particular focus on the role of public debt. Analyses of balance sheet vulnerabilities are increasingly being incorporated into Article IV consultations and other surveillance exercises. [p. 2]

Data on short-term foreign currency assets and liabilities, for example, are balance-sheet series directly relevant to assessing potential international payments problems.

Improvements in the quality, reliability, and timeliness of balance sheet data, both in support of the IMF surveillance program and to supply private-sector analysts with useful statistics, is an obvious position for ABAC to support to the APEC economics ministers, as will be presented in the final section.

IMF Surveillance and Public Information Notices

Transparency is necessary for market participants to assess policy and performance in economies as effectively as possible. Economic conditions are always changing and there are always risks of unexpected events or developments. A major part of effective financial market assessments of values and risks underlying international investment strategies in economies and regions is to consider likely future outcomes contingent on future policy changes and the resilience and adaptability of governments and institutions to unexpected changes. An open dialogue or debate between various market participants can help analysts assess the range of reactions official and private market participants might consider in the face of unexpected events.

The IMF surveillance effort produces biannual detailed reviews of IMF member economies. Official and private international financial market participants have differing views about the effectiveness of past IMF policy prescriptions and the ultimate value of the IMF and other multilateral organizations in dealing with past and future crises.

However, open debate of these issues, including the assessments resulting from IMF surveillance efforts, contributes to an understanding of the range of possible future policy responses to unexpected financial market disturbances and can reveal the considerations

relevant to determining the impact of policy changes on financial market performance. In other words, active discussion of current economic conditions and possible future problems reveals information about the understanding, motives, and likely responses of major market participants in the event of shocks to the system. Because this non-data based information is relevant to assessing risks and develops an understanding of alternative theories and objectives and decisions by major participants in financial markets, this debate should be encouraged to stimulate broader transparency going beyond disclosure of data in international financial markets.

For example, as part of the IMF surveillance process, individual countries have the option of publishing or not publishing the IMF staff report covering the assessment of its economy. Countries may release only the IMF executive board's assessment contained in the Public Information Notice (PIN). In 2005, 130 countries were reviewed of which 12 are ABAC economies. Of the 12 ABAC members, seven either did not publish the full IMF staff report or published it with a lag of one month or greater (as tabled in *IMF 2005 Annual Report*). While many reasons could be advanced to justify non-publication of the IMF staff report, non-publications limits the ability of market observers to debate the merits of the assessment and the concerns raised by IMF staff. We believe that timely airing of all the positions concerning the likely future status of an economy and financial markets is a healthy contribution to a broader notion of market transparency and will be the subject of a proposed recommendation in the final section of this paper.

Data sources for EWS Models:

Debt Models

Manasse, Roubini and Schimmelpfennig (2003) for 47 countries (76 originally but not all countries have all variables for all years) for 1970-2002

Global Development Finance (GDF) – World Bank on external debt and public debt.

World Economic Outlook database and Government Finance Statistics (GFS), both from IMF, for public finance and macroeconomic variables.

Detragiache and Spilimbergo (2001) for 69 countries for 1971-1998

Global Development Finance (GDF) – World Bank on external debt and public debt.

IFS statistics (IMF) for international reserves.

Global Development Indicators (World Bank) for GDP.

Some concepts

Short-term external debt (original maturity basis)/reserves

Short-term external debt (remaining maturity basis)/reserves

Short term debt: debt with original maturity of less than one year

Debt coming due: principal maturing in the year and interest payments on debt with original maturity of more than one year. It is the sum of interest and principal on commercial debt repaid plus any arrears on principal or interest.

Total debt:

Commercial share: share of total debt owed to commercial banks

Concessional Share: share of debt at concessional terms

Multilateral share: share of total debt owed to multilateral creditors

Global liquidity contagion

Regional contagion

Devaluation contagion

Market pressure contagion

III. Hedge Fund Regulation, Reporting, and Data

Hedge funds have come to play an almost mythic role in international financial markets. They were alleged to have played a major role in the speculative attacks on currencies in the 1990's financial crises. Funds under the control of hedge-fund managers are said to grown to over \$1.3 trillion in the last few years. They operate without disclosing their operations and strategies publicly and are therefore often considered suspicious and possibly dangerous. This section reviews the current status of the data available to follow the hedge-fund industry. The discussion first makes some general observations about the hedge-fund industry and then reviews the concerns of regulators related to hedge funds and the state of regulation and official reporting. The

section concludes with a discussion of non-official sources of data and some possible recommendations that could be made with regard to the hedge-fund industry.

General Observations on the Hedge-Fund Industry

The hedge-fund industry in terms of hedge-fund managers has spread to many money-market centers but management of the industry is still dominated by the United States (estimated 70% of assets under management in world) and in Europe by London (15 to 20% under management) (Waters, 2005). In addition to Europe, Asian centers like Hong Kong and Singapore have become important centers of hedge-fund management. While the location of hedge-fund management may be the most important attribute of the hedge-funds strategic regional orientation, other functions required by a hedge-fund, like brokerage, custody, marketing (capital introduction), accounting, and so forth, have also spread widely to locations like Ireland, the Channel Islands, and off-shore tax havens like the British Virgin Islands. The hedge-fund industry is very mobile, despite its reliance on sophisticated financial market talent. Most host economies are reluctant to lose the jobs, prestige, and related business associated with the location of services required by hedge funds. The politics of hedge-fund regulation is clearly influenced by the mobility of the industry in a world of increasingly integrated capital markets and cheap international communication.

Traditional hedge-fund managers invest money on behalf of sophisticated investors, where sophisticated is interpreted as institutional investors (insurance companies, endowments, pension funds, other corporations) or wealthy individuals. In the United States, the capital by investors is paid into a partnership where investors are limited partners and the manager is a general partner. Off-shore funds are usually

corporations (SEC (2003)). The typical hedge manager charges fund provides investors both asset-management fees (say one percent of invested capital) and demands incentives payments when the fundto exceeds benchmark performance (for example, 20 percent of profits above the benchmark will be paid to the fund managers). Historically, the client of the investment advisor or hedge-fund manager is a fund (a limited partnership), and managers can have several funds to manage.

Because hedge funds are not sold to the general public but only large, sophisticated investors, they are exempt from regulation under United States law. Mutual funds, on the other hand, are marketed to individuals so mutual funds are regulated. Regulation of mutual fund companies in the United States consists of required registration of their investment advisors and periodic examination under the Investment Advisors Act (1940). Mutual funds have required periodic filing of reports to the Securities and Exchange Commission (SEC) and to their current or potential investors. Separation of mutual fund advisory functions and asset custodial functions is mandated under the Investment Company Act (1940). Advisors and mutual funds and separate accounts of corporate pension funds are also subject to U.S. securities laws and codes of conduct and regulations of exchanges.

Many hedge fund managers have avoided registration and regulation by limiting their marketing to sophisticated investors, so-call *qualified purchasers* of hedge-fund partnership shares (SEC (2003), p. 11-12). This treatment is widely followed around the world, as for example in the United Kingdom (see FSA (2002)) and elsewhere (see PriceWaterhouseCoopers (2006)). The attraction of hedge funds for sophisticated investors is that they can employ investment strategies that are not possible for regulated

investment vehicles and that they are not required to report to regulatory authorities like the SEC or FSA. Another class of institutional money managers using investment strategies called global tactical asset allocations (GTAA) and employing derivatives to trade foreign exchange are exempt from registration requirements.

As discussed below, hedge funds are not totally exempt from regulation by government agencies like the SEC or self-regulatory organizations like the exchanges. A recent SEC initiative attempted to bring hedge fund advisors under regulations similar to those for mutual fund advisors by arguing that individual investors in hedge funds partnerships were the advisors' clients. The SEC reasoned that an exemption from registration requirements for advisors with fewer than 15 clients was not a valid basis for exemption from registration of hedge-fund advisors with more than 15 investors, an argument that was contested in court. In June 2006, the Supreme Court of the United States ruled that the SEC had exceeded its authority in requiring the registration of hedge fund advisers. Regulation of hedge-fund advisers was thus determined to be an unauthorized extension of SEC authority. Regulation of hedge funds in the United States is currently under intense discussion.

Market observers classify the investment strategies of hedge-fund managers into several categories. Three broad categories are *market trend* or *directional strategies*, *event-driven strategies*, and *arbitrage strategies* (SEC (2003), p. 34). Under the first broad category are two subcategories: *macro* and *long-short strategies*. Currency speculation falls under the subcategory of a macro strategy. While no official data on hedge-fund portfolio composition is available, industry sources (as discussed below) indicate that total hedge-fund assets managed on the basis of all possible macro strategies

are estimated to have fallen from around 71% in 1990 to under 10% of off-shore funds currently (presentations to ABAC by Macquarie Bank (2005) and Russell (2006)).

Hedge funds currently seem to be much less engaged in currency speculation than in the 1990's.

Unregulated hedge funds, unlike mutual funds, can employ borrowed funds (often margin account lending) to leverage their speculative positions. They also can sell stocks short (that is, sell borrowed shares with the intention of returning the shares later with purchases at lower prices.) Both margin-account borrowing and short selling require the services of large brokers that offer those services to large accounts. Brokers providing these services to hedge funds, as well as handling clearing and settlement for transactions handled with other brokers, are called *prime brokers*.

Hedge funds require custodial, accounting, and marketing services, as mentioned above. Firms outside of the residency of the fund manager often provide these services, sometimes for tax reasons. For example, Ireland has developed a substantial presence as a service center for hedge funds. Hedge funds, with their large investment pools of money and frequent trading, are desirable residents in cities attempting to retain or develop active securities markets services and the employment and incomes associated with those activities.

Hedge Fund Regulation and Disclosures

Hedge funds are not regulated much, as discussed above. Nonetheless, an active debate is underway by potential regulators like the SEC and FSA and others about why (or why not) hedge funds should be regulated. Essential to understanding this debate concerning regulation is an appreciation of regulators' major concerns. Major issues and

concerns related to hedge-fund activities raised in the debate concerning hedge-fund regulation (see SEC (2003) and FSA (2004)) are:

- (1) Protection of retail investors;
- (2) Concerns about market stresses because of concentrated trading in similar instruments;
- (3) Liquidity problems caused by leverage used by hedge funds;
- (4) Corporate control issues from large share positions;
- (5) Valuation of assets in hedge-fund portfolios;
- (6) Incentive issues concerning investment advisors and different classes of investors.

Each of these concerns can be related to developments in the industry, as discussed below. To illustrate the general tenor of the discussion concerning policy issues raised by hedge funds, the European Central Bank *Financial Stability Review (2006)* summarizes its concerns about hedge funds as follows:

The possibility of tighter global liquidity conditions in the period ahead has raised investor redemption risk for hedge funds managers, particularly as the share of less liquid assets has reportedly been increasing. The correlation of returns within some hedge fund investment strategies and among strategies have remained high or have even increased, raising the risk of disorderly synchronous exits from similar trades. [p. 133]

Market liquidity and smooth functioning of markets are main focus of regulators' concerns.

Concerns regarding hedge funds and retail investors are mainly due to the development and marketing of hedge funds investing exclusively in other hedge funds forming so-called "funds of funds," intended to provide hedge funds returns as well as diversification in smaller investment amounts to the retail market. Marketing of hedge fund related products to the retail market is controversial because securities market regulators want to be assured that small savers not be exposed to excessive risks or risks they do not understand. Funds of funds, however, can be regulated without regulating the underlying hedge funds since they are a type of mutual fund.

Hedge fund concerns not related to the retail market have a number of bases. Concentrated simultaneous trading of assets that are the focus of hedge- funds pursuing

similar strategies that require quick entry and exit into positions to realize profits or limit losses. Liquidity issues associated with many traders unwinding strategies involving the same or similar assets have moved to the forefront of regulatory concerns following the Long Term Capital Management (LTCM) hedge-fund collapse in September 1998. Corporate control issues associated with accumulations of large equity positions have always played a role in securities regulation in the United States. Hedge funds are not exempted for reporting investment positions that could be considered an attempt to gain control of a private firm. Valuation issues are an issue because of the complexity of many hedge-fund assets and the requirement to report performance to investors. Finally, since funds are limited partnerships, different classes of partners (defined by so-called “side letters”) may be disadvantaged relative to other partners and managers may be able to exploit these differences to advantage (for example, by differentiated disclosures to classes of partners or priority calls on capital ahead of other investors).

None of the issues of concern to potential hedge-fund regulators in the above list is related to concerns about issuers of securities or derivative contracts suffering unwarranted attacks on their values unless the usual securities trading rules are violated. For example, hedge funds might fraudulently manipulate a market in order to profit from a “short squeeze,” whereby funds could extort high prices for assets deliverable against contracts (like shares of stock or commodities) that they have accumulated secretly with undisclosed trading through affiliated parties. Market manipulation of securities’ values is prohibited in most securities markets. Outside of the impact of illegal trading practices and fraudulent disclosures, regulators currently are not concerned about the effects of hedge fund trading on issuer security values.

Two of the concerns from the above list, market stress and leverage, are being addressed in the hedge-fund industry, but not through regulatory intervention. In the case of large concentrations of assets (item (2) on the list), for example, the FSA is planning on developing intelligence on potential problems through the improvement of communication with the hedge-fund industry based on voluntary relations with FSA “hedge-fund supervisory teams” (FSA 2005). These teams would become familiar with the hedge-fund industry and its managers and focus on the possible adverse effects on securities markets of “high impact” funds with large concentrations of less liquid assets. The existence of these team could possibly increase investor confidence in hedge funds.

The Counterparty Risk Management Policy Group (CRMPG), chaired by a former president of the Federal Reserve Bank of New York, E. Gerald Corrigan, has concentrated on averting the systemic risks associated with the liquidity and credit-risk problems associated with the LTCM collapse. This effort has had the effect of increasing the credit-risk standards applied to hedge fund customers of prime brokers and other service providers of hedge funds. Most observers believe that impact of improved risk-management by hedge-fund creditors has been to reduce average hedge-fund leverage and to reduced systemic risk. The latest CPRMG report (2005) summarizes:

In approaching its task, the Policy Group shared a broad consensus that the already low statistical probabilities of the occurrence of truly systemic financial shocks had further declined over time. The belief that the risk of systemic financial shocks had fallen was based on a number of considerations, including: (1) the strength of the key financial institutions at the core of the financial system; (2) improved risk management techniques; (3) improved official supervision; (4) more effective disclosures and greater transparency; (5) strengthened financial infrastructure; and (6) more effective techniques to hedge and widely distribute financial risks. [CRMPG (2005), p. 1]

The report focuses on risk-management of large exposures and makes the following recommendation:

CRMPG II recommends that the private sector, in close collaboration with the official sector, convene a high level discussion group to further consider the feasibility, costs and desirability of

creating an effective framework of large-exposure reporting at regulated financial intermediaries that would extend – directly or indirectly – to hedge funds. Using the indirect method, regulators would collect and aggregate large exposure data from traditionally regulated institutions and, through those institutions, collect data on hedge fund activity. Under the direct approach, hedge funds would, on a voluntary basis, provide a large exposure data directly to the appropriate regulator. [p. 40]

This position is very similar to that advocated by the FSA (2005, p. 16).

Regulators are primarily concerned about market liquidity and solvency risks of major securities market participants like investment banks serving as prime brokers to the hedge-fund industry. They are also mindful of the huge supply of liquidity hedge funds supply as part of their routine trading activities. For example, the *Wall Street Journal* (July 27, 2006, p.1) reports that the hedge fund industry accounts for up to half the daily trading volume on the New York and London stock exchanges. Interference with routine hedge-fund activity would reduce liquidity (and price discovery) benefits from major money-center exchanges. Important officials like Ben S. Bernanke, Chairman of the Federal Reserve System, and his predecessor Alan Greenspan, are skeptical about the merits of more required hedge fund reporting (Bernanke (2006)).

Hedge funds do not escape all regulation or regulatory reporting requirements (see SEC (2003), pp. 23–32). Hedge fund managers that have registered with the SEC as investment advisors because they also manage pension funds and mutual funds are subject to examination and audit. Large hedge funds managers with over \$100 million in assets under management must file quarterly portfolio reports detailing asset long positions in equity holdings over 10,000 shares or \$200 thousand on a form 13-F to the SEC. Assets include U.S. stocks, some equity options and warrants, shares in closed-end investment companies, and convertible debt securities. Hedge funds report to investors as agreed in partnership arrangements and provides information to prospective investors in private placement memorandums. Under certain circumstances, hedge funds trading

commodity contracts are considered to be “commodity pools,” subject to reporting requirements by the Commodity Futures Trading Commission (CFTC). The United States Treasury Department may require reporting large positions in Treasury securities or large foreign currency positions (over \$50 billion) to the Federal Reserve Bank of New York. They may be subject to reporting requirements if they manage pension fund assets due to the Employee Retirement Income Security Act (ERISA), and they are subject to National Association of Securities Dealers (NASD) regulation on the suitability of hedge fund investments for individual investors. Most of this reporting is not available in public data sources.

It seems likely that neither in the United States nor other centers of hedge-fund management will increase the regulation of hedge-fund activity in the near future. If there is increased regulation, this regulation will most likely focus on sales of hedge-fund related investments to the retail market or will focus on position concentrations and/or leverage in an effort to reduce systemic risk. The alleged role of hedge funds as a cause of the crises of the 1990’s, even if valid, would not be addressed by regulatory initiatives in these two directions.

Short of internationally enforceable and enforced rules preventing hedge-fund investments in assets whose values are linked to exchange rates, any foreign currency denominated assets, or even broader capital controls preventing cross-border payments and settlements, it is hard to imagine any future regulation of hedge funds reducing their ability to speculate on exchange rates. Officials of economies concerned about the role of hedge funds in speculative attacks should consider improving the assessment of

accumulations of undesired speculative positions through surveillance of the private data sources that are available and are discussed next.

Data From Hedge-Fund Information Services

Interest in the returns to hedge funds following different investment strategies and by hedge-fund service providers in developments in the hedge-fund business have led to a robust industry in collecting and disseminating information on hedge fund returns, assets under management, and strategies. Hedge fund managers themselves are also interested in what other managers are doing: hedge funds are among the most active subscribers to hedge fund information providers. Most of this data is proprietary, with subscription fees for access to data reports and the ability to screen or analyze data at varying levels are high. For example, annual access fees for Morningstar Direct, an information provider for all-types of managed assets using a variety of proprietary databases are between \$7 to \$15 thousand per year, depending on the kinds of data included in the subscription. A variety of services allow limited search capabilities and the ability to extract data from different hedge-fund databases for around \$1 thousand per year.

There are several competing hedge-fund database services. For example, many academic studies have used the Lipper-Tremont TASS database (see Malkiel and Saha (2005) for an example) that contains 3,900 hedge funds and over 300 commodity trading advisor programs as of July 2006. Hedge Fund Research (HFR) with over 5,000 funds and Center for International Securities and Derivatives Markets (CISDM) with over 3,000 funds at the end of 2004 are competing databases (see Fung and Hsieh (2006)). Data analysis and software services have also developed to enable users to search and

analyze these data. Other databases are also maintained by Morgan Stanley Capital International and Eureka Hedge of Singapore. Many other firms and publications involved in hedge fund management or services develop data bases or provide research on hedge fund activity and strategies.

Proprietary databases on hedge fund activity rely on voluntary disclosures of data to collection and dissemination services, since most hedge funds are not subject to mandatory regulatory filings. Most of the attention on hedge-fund databases is focused on comparing performance of alternative funds and strategies. Poorly performing funds often stop providing data on their operations, meaning that performance statistics based on the usual hedge-fund databases are biased towards higher performance than actual averages.

Some databases contain combined data for large hedge fund advisors' 13-F quarterly filings (as discussed above) enabling analysis of portfolio composition and trading activity data for the aggregate funds managed by advisors with large sums of money under management (see for example Brunnermeister and Nagel (2002)). Morningstar offers clients the ability to merge data from the 13-F filings for asset managers with hedge fund performance and strategies, allowing estimates of net quarterly trading in reported positions. Large hedge fund managers meeting the 13-F reporting standard accounted for only 71 investment advisors in 1998 in the Brunnermeister and Nagel study. For comparison, only 4 of the 49 hedge funds located in Singapore had assets under management of that magnitude. Morningstar's new database linking hedge-fund advisors with return data has 600 advisors accounting for around \$600 billion assets under management, although not all of these assets are hedge funds since 13-F filings

include pension fund and mutual fund assets managed by hedge-fund advisors as well. Thus detailed portfolio strategies for hedge funds on a quarterly basis would provide incomplete coverage in terms of the number of funds included in the sample^{**}.

It is very possible that a dedicated staff of financial market experts could track hedge fund trading and strategies with some accuracy as part of an effort to identify threats to international capital market functioning. Such a staff would require expertise in analyzing data, access to proprietary data bases and public filings from a number of sources, and appropriate analytical resources. Putting together a reasonable assessment of recent trends using quarterly data (and higher frequency data on some derivatives as discussed in the next section) seems possible some private sector analysts do that now. Staff members with institutional investing experience with and contacts in the hedge-fund industry, its service providers including especially prime brokers, data dissemination firms, trade publications, and so forth, as well as access to regulators, banks and brokers, and exchanges, could develop a pretty good sense of current or even fast-breaking changes in hedge fund trading strategies. This is in fact what the FSA is proposing and the CPRMG II has suggested. However, such a surveillance unit would not be cheap to staff and maintain.

The opinions of many experts like Federal Reserve Chairman Bernanke (2006) as well as his predecessor Alan Greenspan or academic experts like Barry Eichengreen *et al* (1998) are that hedge funds do not pose a serious problem for international financial markets. If hedge funds, despite these experts' opinions, are felt to be a threat to global financial market stability, a recommendation could be made to form a hedge fund

^{**} This discussion benefited from an extensive conversation with Peter Dietrich and Ryan Zigal of Morningstar

surveillance effort. Such an effort could be housed in a multinational institution like the Asian Development Bank or in another regional institution, possibly with funding and cooperation in operations with other member central banks. Of course, there could be several efforts in different APEC economies. The real question is to weigh the costs of such an effort against the threat poised by hedge funds. We summarize these tradeoffs in the recommendation to consider the establishment of a hedge fund surveillance unit in the final section of this paper.

IV. Data on Derivative Markets Activities

Speculative activity in international financial markets can be implemented, often more cheaply and in more liquid markets, using derivatives. As described in Garber (1998), all speculative strategies using assets or liabilities can be replicated with derivatives, avoiding disclosures to authorities of “on-balance” items. However, for private firms, audited disclosures do contain information on “off-balance sheet” derivative positions. This section explores the availability of data concerning the use of derivatives for speculation and hedging. The goal is to identify the availability or lack of availability of data useful in identifying speculative attacks on asset values, specifically those of importance to international capital movements, primarily exchange rates.

Aggregate trading activity of OTC derivatives is reported on a semi-annual basis by the Bank for International Settlements (BIS). These data reflect OTC derivative trading in the G-10 countries plus Switzerland. The data are classified by forwards, swaps, and options and by foreign exchange, interest-rate and equity-linked contracts. The data are released with a three-month lag. While aggregate trading by type of contract may signal some aspects of derivative market developments, the data are obviously not of high enough resolution in terms of timeliness of reporting or specifics of contracts to assess speculative surges in particular currencies. The BIS supplements these data with more complete surveys every three years.

Data on derivative activity in the United States are available from four different sources: (1) corporate use of derivative contracts are reported in footnotes of audited statements filed with the SEC; (2) the Comptroller of the Currency (OCC), the regulator

of nationally chartered U.S. banks, publishes quarterly summaries of derivative activity by U.S. chartered commercial banks; (3) the CFTC requires registration of commodity pool operators and futures commission agents (commodity brokers) and publishes aggregate reports on their capital and assets; and finally, (4) commodity futures and options exchanges are required to provide daily commitments of traders (COT) reports trades and positions for contracts by traders classified as “commercial” (presumably used for hedging) and “non-commercial” (large traders including speculators), and “non-reportable” (small traders), a residual category. Each classification is discussed briefly below.

Some of the above listed data enable an examination of aggregate derivative activity by individual firms. Academic research, for example Covitz and Sharpe (2005), has used 10-K SEC filings for an examination of corporate hedging activity. The article cited examines different corporations’ use of derivatives for hedging interest-rate risk. These data are annual. The OCC data on bank derivative positions are published quarterly and some individual bank data, for example large banks, are published allowing some assessment of the activity of individual banks measured by total notional amounts in different classes of derivatives. For example, J. P. Morgan Chase had \$53 trillion notional amount of total derivatives, of which \$280 billion is spot foreign exchange, on March 31, 2006 (OCC (2006), Table 1). Since the derivative data is aggregated into categories, actual positions, as for example a net exposure to a given currency, are impossible to infer. Finally, the CFTC provides individual commodity brokers capital and assets quarterly, but does not report details of derivative positions.

The COT reports do not report by individual firms but does provide weekly data on aggregate positions and trading activity by individual contract. These data can be used to track aggregate investor activity in individual contracts. For example, Wall (2006) presents an example of using COT reports to assess the direction of the market by analyzing commercial, large trader, and residual trades in a stock-equity index contract. While some efficient market economists might question the assumptions underlying the analysis (small traders are slow to react to changes in expectations), the level of detail and frequency of these data do enable close analysis of link ages between trading patterns and future market events as would be necessary in an EWS.

The COT data are limited to contracts traded on exchanges. As is well known, a substantial share of the growth of derivative markets has taken place in the over-the-counter (OTC) markets. In the case of the most innovative contracts, like swaps and credit derivatives, nearly all the trading by sophisticated investors is done in OTC markets, with commercial and investment banks playing a major role. OTC reporting, beyond that reflected in the SEC and OCC filings discussed above, does not exist on a frequent basis.

Prime brokers and major commercial and investment bank counterparties normally know the identities of individual traders with large exposures to derivative contracts. This information is proprietary and in many cases is subject to non-disclosure agreements with traders. Trade data are and not reported in official statistics, but hints and clues about major concentrations may be possible to obtain through detective work. As with hedge fund activities discussed in the previous section, sophisticated market observers with access to major traders, including hedge funds, can often develop a sense

of market sentiment using bits of data and tips from contacts. Obtaining information on critical market moves, like an attack on a specific currency, may be possible given skilled intelligence gathering. These moves are never going to be obvious since speculators and other traders will not want to dilute their ability to profit from market swings by signaling their intentions, so detecting them will require the full resources of experienced market observers. If speculative or other disruptive trading is of concern to policy makers and measurement of potentially adverse activity is desirable, as with hedge funds, intelligence or surveillance units could justify their costs. We include this observation in our recommendations in the next section.

Summary and Possible Recommendations to APEC Ministers
Derivative Markets

V. Summary and Conclusions and Assessment of Current Conditions versus Crisis Conditions

The previous three sections of this report describe data issues concerning official reporting of international capital flows and related economic statistics, the data available on hedge funds and their activity, and finally data available on traded derivatives. In line with that discussion and to further the goal of the ABAC Finance Working Group to promote growth and development of integrated international capital markets, actions by APEC economy officials to improve the supply of good information desirable for markets to function smoothly and efficiently are identified. The following suggestions for policy advocacy and recommendations are made:

A. Statistical offices and official agencies in APEC are urged to recognize that participants in active international capital markets require the best information possible if those markets are to perform effectively and grow. Rather than viewing demands for information disclosure as a bothersome chore, these offices and agencies should:

- Commit to a uniform code of conduct concerning the reliability and care taken in assuring the quality and unbiased nature of information releases, to be governed by fairness in the timing and nature of releases, and in general, to make it easy to obtain, interpret, and use data for market participants.

- Form units within their economies that take as their objective to play a role similar to investor relations units in private firms in anticipating and meeting data requirements and other information needed by current and future investors in the economy, explaining official policy, and strategy and being open to queries and discussion.

B. APEC officials should support the IMF actively in improving data disclosures and specifically should:

- Commit to the highest SDDS data quality standards and work with other APEC members to assure the maximum comparability of data on economic activity
- Urge APEC statistical bureaus and related agencies to commit to improving data disclosures under SDDS and other reporting efforts necessary to further develop the balance sheet approach, with particular attention to improving data on non-financial sectors of the economy.

C. APEC policymakers would contribute to the quality of economic policy debates and understanding of financial market participants of the principles guiding decision-making by timely publishing of the complete IMF surveillance staff reports and engage in an active discussion and providing official explanations of the points raised in the reports.

D. Concerns about hedge funds should be assessed carefully against the likelihood of problems to financial markets caused by their trading activities and, if these concerns are felt to be important, to develop hedge fund market surveillance teams to develop intelligence on hedge fund actions and their trading intentions. This effort could be conducted by individual economies, or housed and operated in an appropriate multilateral

organization funded by several economies, or could be contracted to a private institution. In any case, if such an intelligence effort is judged to be worthwhile, sponsors must recognize the need for such an activity to have adequate funding, resources, and access to policymakers.

E. If derivative trading is also felt to be a problem, an intelligence unit solution similar that discussed in D. above should be considered, perhaps in conjunction with that effort.

The possibility of a financial crisis like those of the 1990's in Latin America and Asia is a major focus of concern of market participants and policymakers in those regions and around the world. The costs of the crises were enormous: lost output, financial institution failures and bailouts, and loss of local policy flexibility, as commitments were required by foreign and multilateral emergency lenders. This discussion paper addresses the issues of the relevance of possible new policies that should be advocated by the APEC Business Advisory Council (ABAC) to minimize the likelihood of similar crises in the future and to mitigate them should they occur.

Sections I.1 to I.5 of Part I compare conditions in the crisis years of the 1990s with the current situation. In presenting these contrasts, standard international statistics are presented in graphical form. This evidence demonstrates conclusively that for most countries, the situation in 2005 has changed significantly from the conditions accompanying the earlier crises. However, the data themselves leave much to be desired, both as diagnostic tools and as input into forecasting: Section 1.6 of this part assesses the data and provides a critique and contrast of the quality and timeliness of statistics that can

be used to predict problems and concludes with some recommendations concerning reporting by creditor economies.

I.1 Foreign Exchange Rate Policies in the 1990's Crises and Current Period

International crises are most common in the presence of fixed exchange rates. A lack of confidence in any economy's ability to defend a fixed or managed rate causes speculative capital flows. For example, Hernandez and Montiel (2001) write:

The severe financial crises experienced over the past decade by many emerging market economies have been attributed to a variety of causes of which an important common one is the attempts by the crisis countries to maintain exchange rate regimes ("soft pegs") that were no longer viable in light of their greatly enhanced integration with international capital markets. (p. 4)

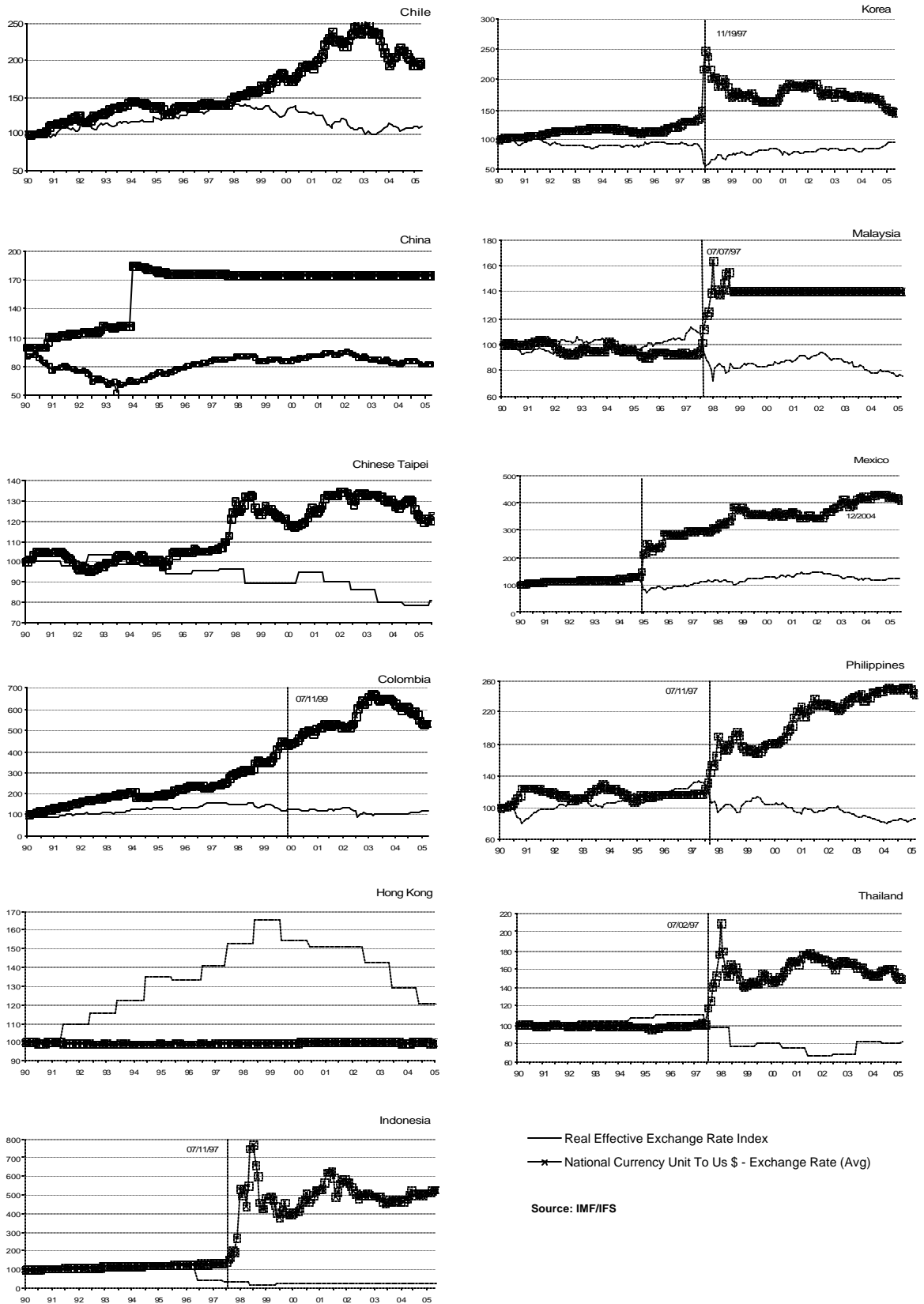
As another example, Glick and Hutchison (2002) write:

A growing conventional wisdom ... holds that liberalization of international capital flows, especially when combined with fixed exchange rates, is either an underlying cause or at least a contributing factor behind the rash of currency crises experienced in recent years. A common policy prescription under these circumstances is to impose restrictions on capital flows and other international payments with the hope of insulating economies from speculative attacks and thereby creating greater currency stability. (p. 1)

A central underlying problem in these crises has been that the exchange rate supported by governments or central banks appears unsustainable to non-official market participants. Market participants, who include not just pure speculators but importers and exporters and financial firms transacting business in different currencies, take actions to minimize costs or maximize profits from exchange rate changes that are expected in the face of what are believed to be unsustainable exchange-rate pegs adopted by policymakers.

A glance at the nominal exchange rates for Asian economies in Figure 1 (containing monthly graphs of exchange rates for selected APEC economies indexed to 100 in 1990) demonstrates that, except for China and Malaysia, there has been substantially more variability in market exchange rates since the 1997 crisis. The observation that the Asian Crisis economies of Indonesia, Korea, and Thailand, as well as the affected economies of Chinese Taipei and the Philippines, have been more

Figure 1: Real and Nominal Foreign Exchange Rates



variable is substantiated through 2001 by careful statistical analysis reported in Hernandez and Montiel (2001). Continued exchange-rate flexibility since 2001 is apparent from the graphs for the same economies that have loosened or abandoned pegs. Finally, China and Malaysia both adopted more flexible exchange rate policies relative to a basket of currencies, rather than pegging to the dollar, in July 2005.

The increase in exchange-rate flexibility since the 1990s, in line with the discussion above, suggests that the probability of a crisis is reduced. It is also interesting to note the results of Glick and Hutchison (2002), who use a careful statistical analysis of 69 countries over the years 1975 to 1997, when a total of 160 currency crises occurred. They find that capital controls increase the likelihood of a speculative attack, summarizing their results as follows:

This evidence is supportive, of course, of previous work questioning the effectiveness of capital controls in insulating countries from speculative attacks on inconsistent policy regimes. It also indicates that, in the context of the sequencing literature on economic reform, an environment where the capital account is liberalized does not appear to be more vulnerable to exchange rate instability. Surprisingly, the opposite appears to be the case. Countries without capital controls appear to have greater exchange rate stability and few speculative attacks. (p. 19-20)

Emerging APEC economies would seem less likely to experience a financial crisis currently than in the 1990s due to more flexible exchange rates and fewer capital controls.

Another significant difference between the 1990s emerging market exchange rate environment and the situation today can be seen in the real exchange rates shown in Figure 1. During the crisis period in Asia, it was felt that many of the crisis economy

exchange rates were overvalued and would depreciate eventually, inducing speculative attacks. Looking at real exchange rates shown in Figure 1, it is clear that real rates are below crisis period levels. For example, Korea, Malaysia, and the Philippines are currently below their 1997 levels. Calculations of real rates, of course, account for the change in nominal exchange rates and relative inflation domestically and internationally. The argument made in the pre-crisis period that exchange rates in those economies are overvalued can no longer be maintained. If anything, they are undervalued, suggesting primarily (as many people say), that the dollar is overvalued.

I.2 Emerging Economy Foreign Reserve Holdings in the 1990s and Currently

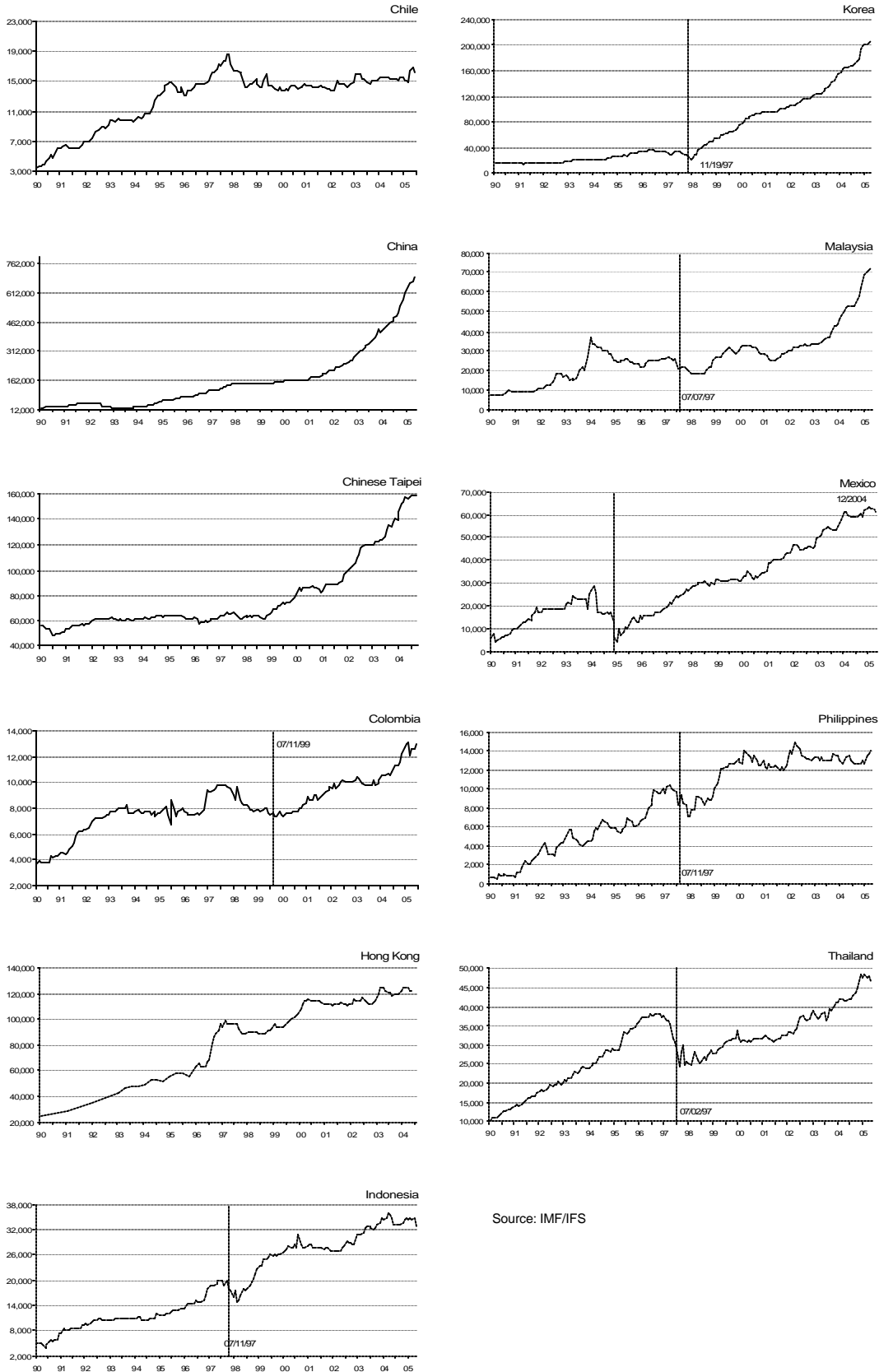
The financial crises of the 1990s were in part the result of speculation that some emerging market economies had insufficient foreign exchange reserves to defend an exchange rate at a given pegged level. The situation today is – as is widely known and discussed – precisely the opposite. Foreign exchange holdings, mainly dollar assets, in most emerging market economies are substantially above their 1990 levels. In several of the Asian crisis economies, for example Indonesia, Korea, Malaysia, the Philippines, and Thailand, reserves are more than double their levels of the previous decade.

Large dollar asset holdings may present a different problem. The perception of an overvalued dollar may signal speculative capital flows opposite to those experienced in the 1990s. We explore some of the implications of the accumulation of dollars in Part IV of this study.

I.3 Current and Capital Account Balances in the 1990s and Now

The crises of the 1990s were preceded by balance-of-payments difficulties. Figures 3 and 4 present graphs of measures that are often the focus of concern when

Figure 2: Foreign Exchange Reserves



Source: IMF/IFS

assessing economies' international position. Figure 3 shows annual data on net private capital flows as a percent of gross domestic product (GDP). The graph clearly shows a shift in the pattern of these flows before and after the crises of the 1990s. For example, all the Asian Crisis economies experienced large private capital inflows prior to the crises, and in the crisis year (shown by the date of the currency devaluation in the graphs) a dramatic reversal. Since that time period, these economies (except for Korea in 1998) have experienced lower level of private capital inflows or net private outflows. This evidence suggests that a build-up of obligations to foreigners in these economies is either reversed or moderated since the 1990s.

The current account balances as a percent of GDP for these economies also show a clear shift since the period of the 1990s. All of the economies shown with the exception of China and Chinese Taipei have a current account deficit in the early 1990s. In the case of the Asian Crisis economies, their current accounts turned to surplus after the Crisis and remains so until the latest period available. Given the large accumulations of international reserves noted in the previous section, balance-of-payments difficulties can safely be ruled out as a source of liquidity problems for these economies under current conditions.

I.4 Stock Market Indices and Financial Market Conditions

Figure 3: Net Private Capital Flows
(in percent of GDP)

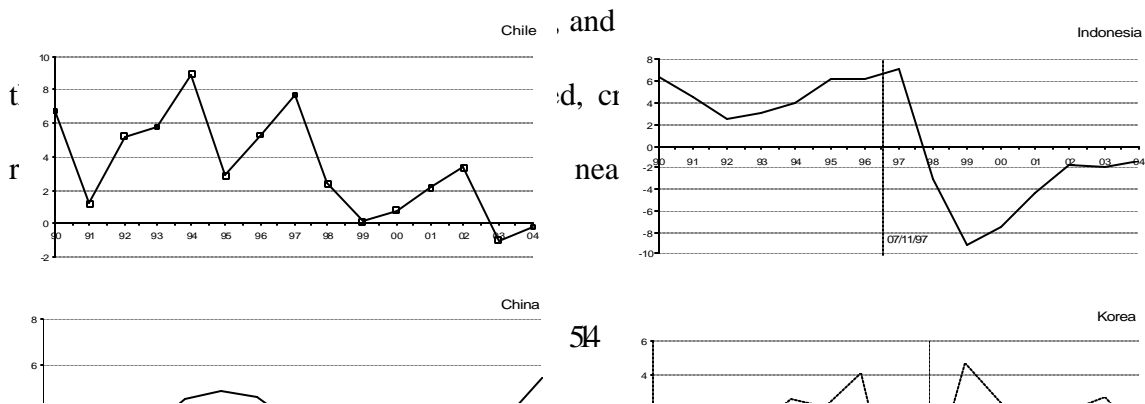
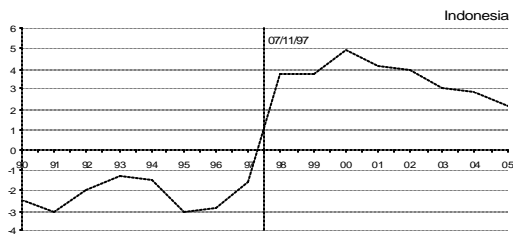
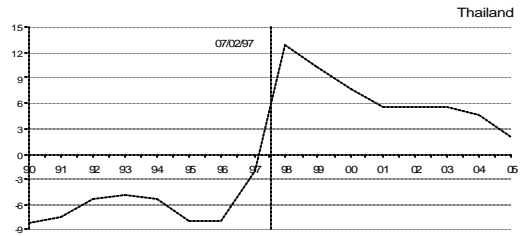
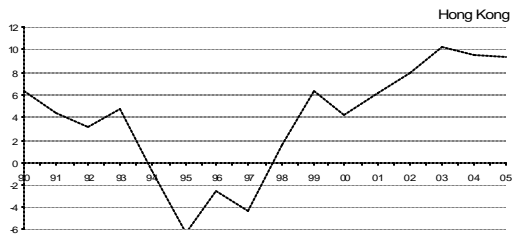
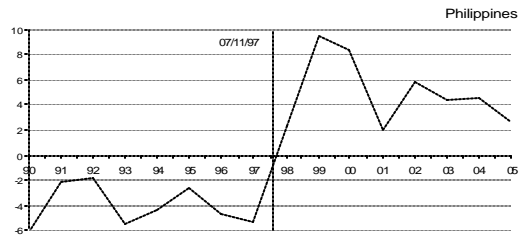
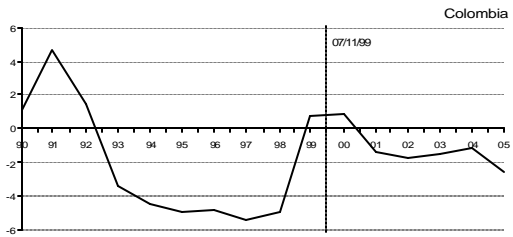
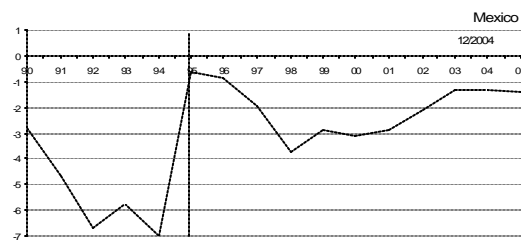
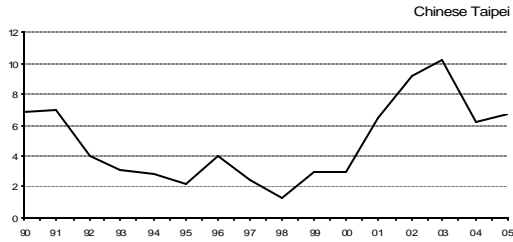
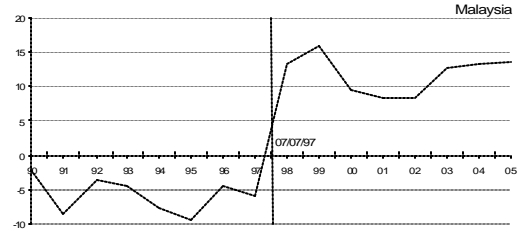
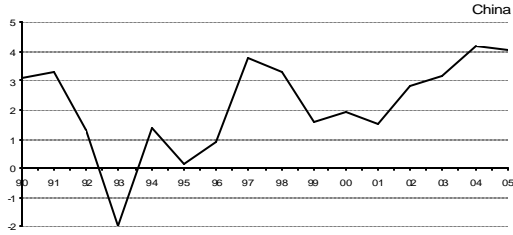
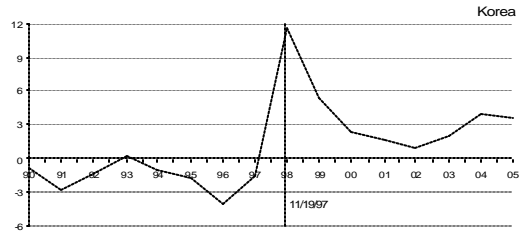
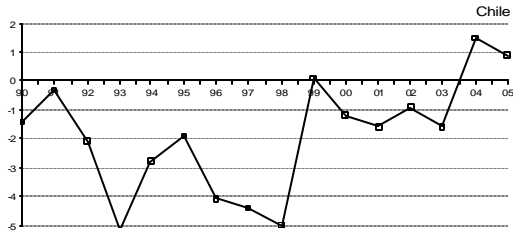


Figure 4: Current account balance



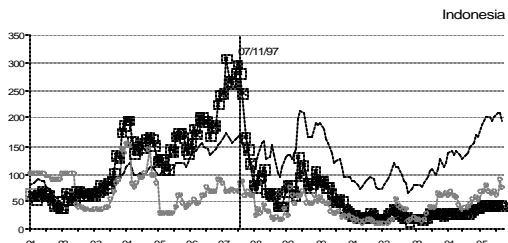
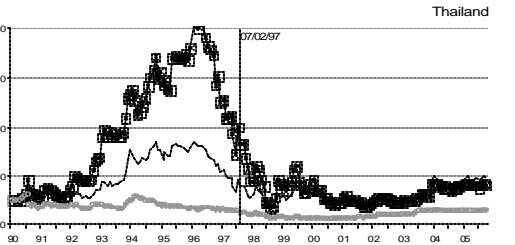
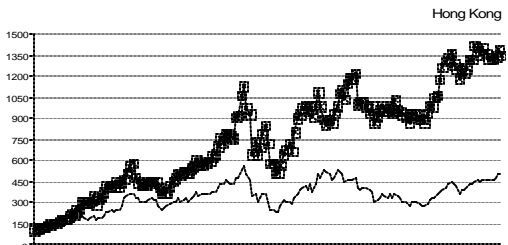
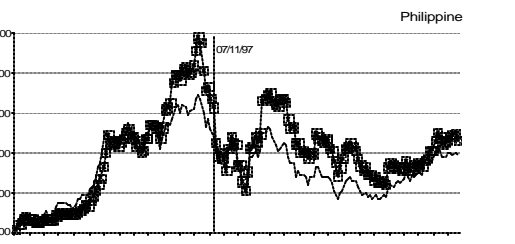
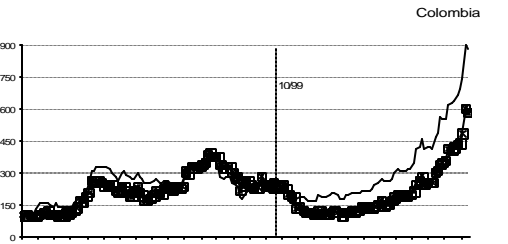
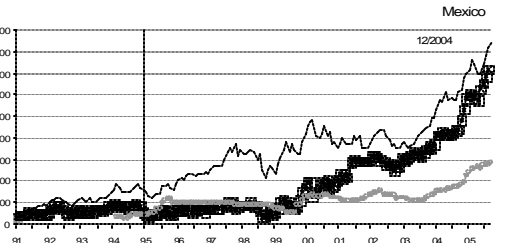
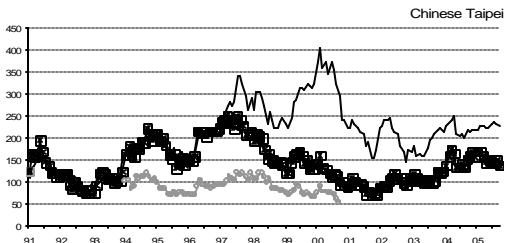
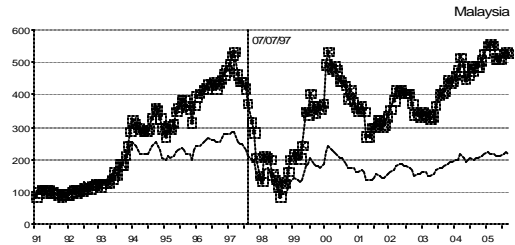
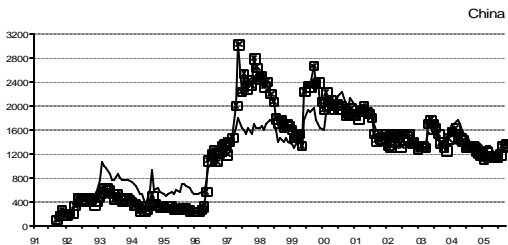
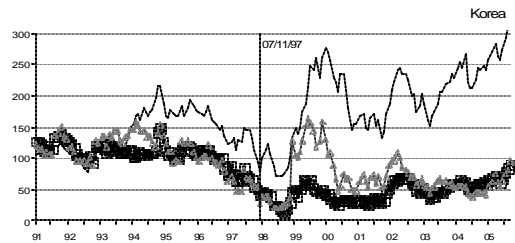
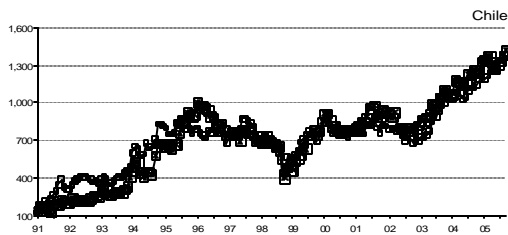
Source: IMF/IFS

Some of this restructuring was the result of IMF conditionality contained in agreements with Indonesia, Korea, and Thailand. Other restructuring was a domestic policy initiative in response to the crisis (for example, Malaysia and the Philippines) or part of long-term strategic decisions (for example, China and Chinese Taipei). Figure 5 presents data available on general stock indices and, where available, for financial sector specific indices, for economies shown in previous figures.

Each graph in Figure 5 contains the overall stock market index as a benchmark (shown with the plain line) with 1990 set to 100 (as is true for all series shown). All of the graphs also contain a bank share-price index, where data points are marked with an “x”. Finally, for one economy (Korea), a securities firm index is shown, and with several of the other economies, and insurance company index. The evidence from these graphs is not easy to interpret and coverage of series is different across economies. It is also important to interpret performance of these indices against the background of the global collapse in share prices starting in 2000. In this discussion, we focus on the bank and general market index.

Looking first at the Asian Financial Crisis economies that made agreements with the IMF (Indonesia, Korea, and Thailand), experience varies. The Korea general index and bank index are both above levels experienced in 1998, with the general index at an all-time high since 1990. Indonesia and Thailand have not recovered to pre-Crisis highs, but both economies’ general market and bank stock indices have been steadily increasing since 2000, when markets globally collapsed. This evidence suggests that confidence in both the general economy and in bank performance have been improving in the face of substantial restructuring of banking systems. Indonesia and Thailand also have insurance

Figure 5: Local Stock Exchange Indices



Source: Data Stream

company indices that have been improving in the last four years.

For all the economies shown in Figure 5, except China, general indices and financial institution indices are above the 2002 lows. We interpret this information to provide evidence that these emerging market financial systems, having undergone substantial restructuring in many cases (including large inflows of foreign direct investment), have good prospects producing improving share performance.

To the information in improving share prices in the financial sector, we can add common knowledge that there has been a substantial improvement in risk management in the financial sector. Accompanying foreign investment in banks and insurance companies has been an emphasis by foreign investors, often other financial firms, in improving risk measurement and control in target firms. The Basel II process has also been accompanied by substantial focus on improving risk measurement and management. The use of risk-management tools like derivatives has grown dramatically in the region with the development of the relevant markets for risk-management contracts. All of these developments point to a qualitatively different attitude towards risk and abilities to implement risk management assessment and management techniques by financial institutions in emerging market economies in the region.

To summarize, the Global Financial Stability Report (2005) concludes:

Banking systems in emerging markets generally show improving capital positions, asset quality, and earnings... Most market-based measures, including market valuations of bank stock relative to the broader market indices and computations of distance to default derived from a standard valuation model ... also reveal a generally positive picture. In Asia, banks further improved their financial positions with the ongoing economic

expansion, and banks in Latin American are showing stronger results, especially in countries that were not recently afflicted by crises. (p. 31)

While these observations are no grounds for complacency, they do suggest a substantial turnaround from the situation in the 1990s.

A last consideration in differences between current and past international financial market conditions is the recent evolution of the hedge-fund industry. Hedge funds were reviled as a precipitating factor in the Asian Financial Crisis, specifically the alleged speculation by George Soros' Quantum Fund against the Malaysian ringgit. The collapse of Long-Term Capital Management (LTCM) in 1998 focused attention on these highly leveraged institutions (HLIs) and their vulnerability of financial markets to a failure by one of them. The collapse also highlighted the HLIs' sensitivity to changes in economic fundamentals underlying their strategies.

A number of initiatives have been undertaken in response to the concerns about hedge funds in advanced economies: by regulators in developed markets, for example the Securities and Exchange Commission in the United States requiring registration of hedge funds starting in 2006; and by the private sector, as for example the Counterparty Risk Management Group, led by a former Federal Reserve official, reviewing hedge fund developments. The effect is to increase the monitoring of risks taken by hedge fund managers by lenders and it is generally assumed that leverage has been reduced – reducing the funds available for speculation by these funds. For example, Financial Stability Forum' (2002) reports:

On balance, concerns that HLIs could pose a systemic risk to the international financial system are less than before. Funds are smaller and are generally perceived to employ less

leverage. Although the extend of improvements may be uneven, counterparty risk management with regard to hedge rfunds has improved as have HLI's own risk management practices. However, it is recognized that the information available to outside observers is not perfect, and there are always intangibles. There will be a need to ensure there is no backsliding in these broadly positive developments. (p. 11)

Many market observers, noting the withdrawal of some major hedge funds from the market and reduced returns, are less concerned about hedge funds than in 1990s.

Other changes in the hedge fund industry should be noted. While the total industry has grown in terms of assets (estimates suggest about \$1 trillion in assets in 2004ⁱ), there are more funds and they have become smaller on average. More fund management is outside North America, mainly in Europe and Asia. Average fund returns are down, suggesting greater heterogeneity of speculative positions (as winners' gains are offset by losers' losses). Finally, the strategy of funds have shifted dramatically from year to year. As reported by the IMF (2005) for the most recent years, 2003 and 2004, global macro strategies – including currency speculation – have accounted for less than 15% of fund inflows. In search of higher returns, hedge fund managers seem to be pursuing strategies based on perceived opportunities in domestic equity and bond markets.

I.5 Conclusions from Review of Current Situation in Emerging Market Economies

The unavoidable conclusion from the above discussion is that the environment for emerging market economies in the APEC region is substantially different than in the

crisis-ridden 1990s. First, with China and Malaysia now pegging to a basket of currencies, all exchange rates for these economies are more flexible than in the pre-crisis period of the 1990s. Defending unsustainable fixed pegs is substantially less likely, and hence so are the speculative flows felt to be so important in the 1990s. Evidence reviewed suggests that the likelihood of crises is significantly reduced with flexible rates.

Macroeconomic data for emerging markets also presents a marked contrast with the pre-crisis period of the 1990s. All economies have amassed substantial foreign exchange reserves, and the flow of net private capital has fallen substantially. Moreover, current account balances have in general gone from negative to positive. Stock market data suggest growing confidence in economic conditions as well as improving prospects for financial institutions, most importantly, banks. Finally, the threat of speculative surges of risk capital into emerging markets by hedge funds seems reduced relative to the 1990s as these funds are more closely monitored by their lenders and the industry has matured with smaller average firm size and broader geographic dispersion of managers.

With this background, it seems that a discussion of policies concerning capital controls should be focused on problems that are possible in the current environment. One problem that is frequently discussed is the dollar glut associated with the large accumulations of reserves and continuing U.S. trade deficits. We return to this issue in our discussion of possible innovations in policies relevant to international capital flows for emerging market economies in APEC.

I.6 Predicting Financial Crises and Data Reporting

Many believe that closer attention to developments in the emerging market economies in the 1990s would have led to earlier concerns about possible crises. Predicting trouble could have led to earlier adoption of policies that might have avoided or reduced the costs of crises. Indeed, there is a substantial literature on the performance of crisis-prediction methods. For example, Berg, Borensztein, and Pattillo (2004) review a number of “early warning systems.” Their assessment is that the performance of early warning systems (EWS) are mixed, but conclude:

Overall, these results reinforce the view that EWS models are not accurate enough to be used as the sole method to anticipate crises. However, they can contribute to the analysis of vulnerability in conjunction with more traditional surveillance methods and other indicators. It is worth underlining the relatively high standard to which these models are being held. It is plausible to suppose that comprehensive assessments by informed analysts, based on all available qualitative and quantitative information, must be better than the inevitably simple EWS models. But the evidence we have examined with respect to this questions is not encouraging concerning these more comprehensive assessments. (p. 30)

While the valuation of models above is definitely cautious, it does seem that in the context of dealing with potential international financial crises and the enormous costs to economies directly involved and also to other economies in the global financial system, all avenues to anticipate and if possible to avoid problems should be explored.

The accuracy of all forecasting and surveillance systems depend on data. The EWS evaluated in the above-cited study also requires data. Timely and detailed data in the hands of experts and financial market participants can be used to refine assessments

of problems and improve estimates of equilibrium values of magnitudes like exchange rates. The Working Group on Capital Flows of the Financial Stability Forum (2000) has emphasized the availability of high quality and timely data.

The International Monetary Fund (IMF) and the World bank have launched an online database offering access to “timely, quarterly external debt statistics for 41 countries”.¹² However, of the emerging market APEC economies, only Chile, Columbia, Korea, Malaysia, and Thailand participate in the project, as of early November 2005, the latest data available was for the second quarter (i.e. June 30) of 2005.

A review of emerging market published data on short-term capital flows (by looking at statistical releases on website) reveals great differences in the detail and timeliness of coverage of short-term liabilities and assets. For example, currency denomination and precise type of liability are often not provided. Many series are reported only through the end of 2004.

The point is that data availability severely limits the ability to assess the liquidity positions and currency exposures of most emerging market economies. Improvements in crisis prediction and prevention require continued efforts to standardize international financial statistics and to improve the timeliness of data releases. ABAC should consider restating its strong support for efforts to improve data collection, dissemination, and the development of early warning systems and sophisticated expert review of developments in international capital markets.

¹² Financial Stability Forum (2005), p. 4.

II. Summary of the Policy Debate, Country Experiences, Assessments

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II.1 Introduction and Background

This part of the paper presents a discussion of the debate concerning the value of imposing controls on the flow of capital between economies. This will provide a background for the discussion of innovations in capital account regulation in Part III and perspectives on recent experiences widely thought to have been successful with the use of capital flow regulation in the 1990's. The evidence to support policies interfering with the free flow of capital is reviewed in an effort to provide a framework for considering innovative policies introduced in the following section.

Since the financial crises in Latin America and Asia in the 1990s, many economists and policy makers argue that globalization has gone too far and that free capital mobility has created a highly unstable international financial system. The idea of restricting capital mobility is not new in policy discussions. For example, James Tobin in 1978 argued that a global tax on foreign exchange transactions would reduce destabilizing speculation in international finance. However, it soon became evident for the effectiveness of the so-called "Tobin tax" to work, all economies would have to coordinate the introduction of such a tax, making it costly and politically infeasible because of the differences of opinions concerning controls among policy-makers

globally. Clearly, the debate concerning the use of capital controls is of long standing among experts.

Economists have long debated whether capital mobility brings significant benefits to an economy. For example, Obstfeld and Rogoff (1996) present persuasive arguments that support the existence of gains from inter-temporal trade from open capital markets. In fact, an open capital account facilitates the flow of savings to their most productive uses, avoids financial segmentation and microeconomic distortions, brings efficiency gains in producing financial services, reduces the cost of capital in emerging markets, stabilizes consumption, diversifies risks and promotes foreign direct investment (FDI), a key factor in growth. On the other hand, Cooper (1998) has argued that free capital mobility is likely to amplify existing distortions, encourage moral hazard and excessive risk taking, and may help develop major and costly crises. It may increase the vulnerability of a country to sudden capital flow reversals, deepen the business cycle due to the procyclical nature of flows, destabilize the economy due to the emergence of wealth effects in aggregate demand, erode the tax base and reduce monetary policy autonomy.

Capital controls are not a natural or permanent feature of economic systems. Before 1914, private capital moved without restriction under the gold standard. Capital controls started to be used as emergency measures after World War II and survived thereafter. During the seventies and the eighties, exchange controls were meant to preserve monetary policy autonomy. A number of countries during the eighties and the nineties started to phase out capital controls, as a recognition of their ineffectiveness.

Economies must adjust to changes in underlying market fundamentals. Economists frame the discussion in terms of three policy initiatives used by government to affect economic activity: exchange rates, monetary policy, and controls on capital flows. As Paul Krugman (1999) writes in describing Robert Mundell's contribution to economics:

The point is that you can't have it all: A country must pick two out of three. It can fix its exchange rate without emasculating its central bank, but only by maintaining controls on capital flows (like China today); it can leave capital movement free but retain monetary autonomy, but only by letting the exchange rate fluctuate (like Britain--or Canada); or it can choose to leave capital free and stabilize the currency, but only by abandoning any ability to adjust interest rates to fight inflation or recession (like Argentina today, or for that matter most of Europe)."

With capital mobility and the restriction imposed by Mundell's "impossible trinity," policy makers increasingly faced the choice between managing monetary policy or managing the exchange rate.

In the policy debate, the discussion usually centers on the speed and sequencing of capital account liberalization. McKinnon (1973) argues that opening of the capital account should be postponed until free trade of goods was consolidated to avoid in the first place substantial capital inflows and second an appreciation of the real exchange rate that could jeopardize trade reform.

A number of authors have argued that a successful sequencing of the capital account liberalization requires first establishing a sound banking system with adequate regulation and supervision. McKinnon (1991) argues that, because of the moral hazard associated with the financial sector, capital account liberalization should be postponed until the banking sector is well supervised and sound. One danger is that poorly regulated

banks may intermediate significant capital inflows in an inefficient manner, raising the probability of a financial crisis.

Prerequisites for complete capital account liberalization are the previous adoption of best practices on disclosure standards, the prior establishment of sound accounting practices, bankruptcy and security laws, the removal of implicit government guarantees (exchange rate and interest rates), the development of risk management techniques and the soundness and adequate regulation and supervision of the banking system. It may also be wise to first liberalize FDI and then short run capital flows, and to have in place flexible arrangements for exchange rate and interest rates determination.

In particular, capital account liberalization requires strengthening the prudential framework for the banking system such as demanding capital charges for exchange rate risk and higher liquidity requirements for foreign currency liabilities. It may also require strengthening the dissemination of information to the market to enhance its disciplinary function.

When capital controls are selective, the private sector has found ways of evading controls. Typical mechanisms employed are over-invoicing imports, under-invoicing exports and mislabeling the nature of the capital flows. The historical tradition of the country to respect law and order is crucial to determine the extent of elusion of capital controls. Garber (1998) discusses other sophisticated mechanisms employed through the extensive use of derivatives contracts traded abroad. A major concern is that uneven application of controls by regulators, by design or due to political pressure or corruption, or the unequal ability among market participants to evade controls, will distort the flow of capital and the allocation of resources in economies imposing controls.

The following sections discuss the arguments concerning controls on capital inflows and outflows, followed in each instance by a detailed discussion of the cases most widely believed to have been successful implementation of capital controls. The cases review the range of assessments of the success of controls using complex statistical analysis of the impact of controls on economic variables of interest, augmented with expert observers' and market participants' views of the success of restrictive capital flow policies.

II.2 Controls on Inflows of Capital

Some analysts and policy-makers in the face of the crises of the 1990s have been inclined to view capital controls on inflows as prudential measures aimed at preventing a build-up of short-term foreign liabilities, particularly in lower-income countries that do not have the capacity to put in place sophisticated financial supervisory regimes. Openness to international capital flows, especially short-term credit flows, can be dangerous for countries with weak or inconsistent macro-economic policies or inadequately capitalized and regulated financial systems. According to Eichengreen (1999), imposition of controls on capital inflows may be viewed as a way of preventing a future currency crisis. These controls would in principle protect local currency from further appreciation, reduce capital inflows, allow central banks to undertake independent monetary policies, twist the time profile of external debt towards longer term, and may

immunize a country from contagion. In summary, controls allow an economy to reduce its vulnerability to international finance instability.

On the negative side, costs of controls may be of microeconomic nature, such as creating segmentation of capital markets between large and small firms, increasing the cost of capital, particularly for small firms augmenting their difficulties in finding financial access. Imposition of controls may have long-term resource allocation effects due to these distortions that limit the efficiency of the economies imposing controls, thus impairing their long-term ability to grow in competitive internationally integrated markets for goods, services, and capital.

II.3 Chile's Experience with Controls on Capital Inflows

Chile introduced capital inflow regulations in June 1991, after an important surge of inflows. Originally, all portfolio inflows were subject to a 20% reserve requirement that earned no interest during the maturity of the inflow. In the case of maturities longer than one year, the reserve requirement lasted only one year. The private sector quickly found loopholes by misstating the purpose of the flow, labeling them as trade credits or loans supporting FDI. In July 1992, the rate of the reserve requirement was raised to 30%, and its holding period was set uniformly at one year. The coverage was extended to a subset of the trade credits and loans assigned to FDI projects. In 1995, in an effort to close additional loopholes, the controls were extended to Chilean stocks trading as American Depositary Receipts (ADRs) in New York and to international bond issues. In order to apply or not the reserve requirement, FDI was subject to an analysis of the nature

of the project to be financed, as portfolio flows began to be labeled FDI. Valdés-Prieto and Soto (1998) have argued that in spite of the authorities' efforts to close loopholes, Chile's controls have been subject to considerable evasion.

It is important to describe some characteristics of the reserve requirement applied in Chile. First the shorter the maturity of the flow, the higher was the implicit rate of the tax (reserve requirement). Second, the tax equivalent of the reserve requirement varies not only with the rate of the reserve requirement but also with its opportunity cost. To counteract the excessive decline of capital inflows produced by the Asian Crisis, by mid 1998 and September of the same year, the reserve requirement was lowered to 10% and then zero, respectively.

There is some evidence that by regulating capital inflows, the Chilean authorities indeed affected the composition of inflows. During the period 1988-1998, flows with a maturity smaller than one year declined very steeply relative to longer-term capital. De Gregorio *et al* (1998) and Valdés-Prieto and Soto (1998) found that the tax on capital inflows indeed discouraged short-term flows. These studies also suggest that the reduction in short-term capital inflows was fully compensated by an increase in long-term capital inflows. However Le-Fort and Lehmann (2003) have recently challenged these results by showing that the reserve requirement was effective in reducing total capital inflows.

The analysis of the effects of capital account restrictions on the real exchange rate are mixed: Valdés-Prieto and Soto (1996) concluded that the reserve requirement did not affect in any way the long run level of the real exchange rate and De Gregorio *et al* (1998) found that Chile's capital inflows regulation had no effects on the behavior of the

real exchange rate. However, Le-Fort and Lehmann (2003) found that the reserve requirement on average allowed a depreciation of the real exchange rate of 9%.

On the issue of the influence of the reserve requirement on interest rates, using a vector autoregression model, Soto (1997) found that a change in the implicit tax on capital inflows had a very small, positive short-term effect on interest rates. Edwards (1999) found similar results. De Gregorio *et al* (1998) found a large effect of capital inflows regulation on domestic rates, so that a 30% reserve requirement will allow interest rate to be higher by 140 basis points. According to Le-Fort and Lehmann (2003) the reserve requirement allowed a higher domestic interest rate between 90 and 300 basis points higher, giving monetary policy more room to act. Edwards (1998) found that interest rate differentials became more sluggish after the imposition of controls, giving the Central Bank a greater ability to manipulate domestic interest rates in the short-term. Therefore, the accumulated evidence may suggest that controls allowed Chile to undertake a more independent monetary policy.

With respect to financial volatility, Edwards (1999) found that capital controls in Chile helped reduce stock market instability but did not help reduce short-term interest rate volatility. In addition, Edwards (1999) found that the controls in Chile may have been able to protect the economy from small shocks, but were not effective in preventing contagion originated in large shocks.

II.4 Controls on Capital Outflows

Controls on capital outflows are intended to constitute a policy that helps address a balance of payment and financial crisis. Preventive controls are imposed when an economy with a fixed exchange rate is facing a severe balance of payments deficit, without yet having experienced a devaluation crisis. These preventive controls can take a number of forms, including taxes on funds remitted abroad, dual exchange rates and outright prohibition of funds's transfers. These type of policy measures will help slow down the drainage of international reserves, giving authorities time to implement the needed adjustment policies.

According to Edwards (1999), the empirical evidence suggests that these types of controls have been largely ineffective due to evasion and corruption. There is also evidence that controls on capital outflows may give a false sense of security, encouraging careless behavior on behalf of policymakers and market participants. For example, until late 1997, international analysts and local policymakers believed that, due to the existence of restrictions on capital mobility, Korea was largely immune to a currency crisis.

The use of capital controls on outflows as a crisis-resolution measure remains highly controversial, despite a clear-cut economic policy rationale. As emphasized in models of currency crises, a country can be faced with creditor panic and a run on reserves even when it has strong fundamentals. In these situations, a temporary suspension of capital-account convertibility can stop the rush towards capital flight and provide time for policy makers to take corrective action. But the risk is that capital controls can prove ineffective, undercut market confidence even further, and be used to delay needed adjustments.

A second type of capital controls on outflows has gained some support among economists. For example, Krugman (1998) argues that countries already facing a major crisis could benefit from the temporary imposition of controls on outflows. According to this view, this type of “curative” policy may allow the country to lower interest rates and put in place pro-growth policies. Restricting capital outflows would give crisis countries additional time to restructure their financial sector. Once the economy has recovered, authorities may proceed to eliminate such controls. Malaysia followed this path in 1998-1999.

On these issues, Edwards (1999) believes that the imposition or tightening of capital controls on outflows have not been very helpful on average. According to Edwards (1989), half of the countries imposing controls failed to generate the needed devaluation and to improve the balance of payments, nor were successful in controlling capital flight. Moreover 66% of the countries that established capital controls experienced low GDP growth, while 35% of the countries that did not control outflows went through a period of slow growth.

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II. 5 The Malaysian Experience with Controls on Capital Outflows

Malaysia entered the Asian financial crisis with relatively strong fundamentals, and a relatively small share of short-term external debt. Malaysia's short-term debt stood well below its foreign exchange reserves, which appeared to make it less prone to a run by foreign creditors. At the same time, as a country with a very high level of indebtedness

overall, Malaysia was quite vulnerable to turnarounds in general market sentiment that would be reflected in an increase in interest rates or reduction in credit availability. Private sector indebtedness was higher than in Thailand and Korea. During periods of financial panic, all short-term liabilities, regardless of whether they are domestic or foreign, become potential claims against the Central Bank's liquid foreign assets. These high levels of debt suggest that Malaysia was not as well protected against financial turbulence as its external liquidity indicators would suggest.

Before the controls were established, Malaysian policymakers intended to provide a monetary stimulus to the economy through cuts in interest rates and credit expansion, but there was little effective change in monetary policies over the ensuing months. The attempt to reduce domestic interest rates was undercut by growing speculation against the ringgit in offshore markets. Offshore institutions, mainly in Singapore, borrowed ringgit at premium rates to purchase dollars and bet in favor of the ringgit's collapse. The economy's decline continued.

The primary objective behind Malaysian capital controls was to stop speculation against the ringgit. To shut down offshore trading, the government mandated that all sale of ringgit assets had to go through authorized domestic intermediaries, effectively making offshore trading illegal. All ringgit assets held abroad had to be repatriated. Worried that these measures would lead to an outflow of capital and further depreciation of the currency, the Malaysian government also banned for a period of one year all repatriation of investment held by foreigners.

In an attempt to revive aggregate demand, the Bank Negara Malaysia (its central bank) lowered its monetary policy rate as well as the liquid asset ratio required to

financial intermediaries. During the month of February 1999, the Bank Negara changed the regulations on capital account restrictions, shifting from an outright ban to a graduated levy and replacing the levy on capital with a profits levy on future inflows. Thus, in contrast to other Asian Crisis economies, Malaysia took a different path. Instead of implementing an IMF adjustment program, the Malaysian authorities imposed controls on capital-account transactions, fixed the exchange rate, cut interest rates, and embarked on a policy of monetary stimulus.

A medium-term goal of capital controls had broader economic significance than the ability to defend the exchange rate: Did capital controls combined with fiscal and monetary stimulus and a fixed exchange rate allow a faster recovery from the economic crisis and assure superior economic performance than would have been possible in their absence? This is where considerable controversy remains. The question is essentially whether Malaysia would have been better off in the immediate aftermath of the crisis following the orthodox, IMF-prescribed route that the other countries in the region followed. We explore the comparative performance of the Asian Crisis economies in the following section.

Another issue is whether the controls were effective in terms of their narrow objective of influencing the nature of capital flows. The possibility of corruption is mentioned frequently. In Malaysia's case, there is no indication of an increase in corruption as the controls were implemented transparently and with remarkable efficiency. With the controls in place, the Malaysian government had no difficulty in sharply lowering domestic interest rates, and making the fixed exchange rate stick without the appearance of a black-market premium for foreign currency. As Kochhar

(1999) states, "there were only a few reports of efforts to evade controls, and no indications of circumvention through under-invoicing or over-invoicing of imports". Ariyoshi et al. (1999) concludes that the controls were effective in eliminating the offshore ringgit market and choking off speculative activity against the ringgit despite the easing of monetary and fiscal policies. Kaminsky and Schmukler (2000) and Edison and Reinhart (1999) found that the September 1998 controls were successful in lowering interest rates, stabilizing the exchange rate, and reducing the co-movement of Malaysian overnight interest rates with regional interest rates.

Finally, in assessing the performance of the Malaysian capital controls, one needs also to maintain a long-term perspective. Even if controls are successful in the short-run, it is possible that their long-term economic consequences will prove damaging. The government was concerned about the impact of the controls on future capital inflows, particularly of FDI on which the Malaysian economy was highly dependent. The authorities therefore took care to ensure that the controls would not affect FDI or current account transactions. Repatriation of profits and dividends from FDI activities were freely allowed. Foreign currency transactions for current-account purposes, including the provision of up to 6 months of trade credit for foreigners buying Malaysian goods, were also not restricted.

An article in *Forbes International* predicted "Foreign investors in Malaysia have been expropriated, and the Malaysians will bear the cost of their distrust for years" (Roche 1998). Moody's downgraded Malaysian securities. Spreads rose more than 200 basis points for Malaysian bonds in September 1998, while they declined for other East Asian countries. However, in May 1999, Malaysia went back to the international capital

market with a \$1 billion bond issue, paying a premium of 330 points above the U.S. Treasury rate. Some scholars, such as Merton Miller, continue to view the controls as a disaster. The mainstream view is that it is hard to attribute much success to the capital controls since Korea and Thailand also recovered around the same time without using capital controls (Lim (1999)).

II. 6 Benchmarking Malaysian Experience Against Other Asian Crisis Economies

Comparisons between the recoveries of the Asian Crisis economies can be used to assess the value of Malaysia's imposition of controls on capital outflows. Malaysia recovered from the Asian financial crisis swiftly after the imposition of capital controls in September 1998. The fact that Korea and Thailand recovered in parallel has been interpreted as suggesting that capital controls did not play a significant role in facilitating Malaysia's rebound. Using a complex statistical analysis, Kaplan and Rodrik (2001) find that Malaysian policies produced faster economic recovery compared to economies following IMF programs, smaller declines in employment and real wages, and more rapid turnaround in the stock market. In summary, Malaysia has recovered nicely since the crisis, but so have Korea and Thailand, two countries that took the orthodox IMF path.

Did the controls help Malaysia recover faster? The answer remains unclear. The imposition of capital controls in Malaysia coincided with a general improvement in the business climate in the region. Most economic indicators for Thailand and, especially, South Korea sharply turned upward just as Malaysia was beginning its own recovery. Kaplan and Rodrik (2001) found that the Malaysian controls produced better results than

the alternative on almost all dimensions. On the real side, the economic recovery was faster, and employment and real wages did not suffer as much. On the financial side, the stock market did better, interest rates fell more, and inflation was lower.

Capital controls advocates such as Krugman (1999), and Jomo (2001) have taken a cool attitude towards the success of Malaysian policies, as there was a recovery even in the countries that did not impose controls. Some economists believed that Malaysia may have imposed its controls in a much more favorable environment than the one that prevailed at the time that Korea (or Thailand or Indonesia) implemented their IMF programs, and this in turn may account for a substantial part of the speedier recovery in the former country.

For Kaplan and Rodrik (2001), it is not at all obvious that the external environment was improving for Malaysia during the second half of 1998 in the way that it had been for Thailand and Korea. Pressure on the ringgit remained very strong, even though the Korean won and Thai baht had already started to appreciate. Interest rates in both Korea and Thailand had declined significantly, whereas offshore interest rates on ringgit deposits remained in double digits. The recession in Korea and Thailand had already bottomed out by September 1998, with Korea in particular exhibiting a healthy rebound; but there were no indications of a similar easing up in Malaysia. Second, it is not at all obvious that an improvement in the external environment, to the extent that it did take place, would have produced much benefit for a country that actually excluded itself from international financial markets by implementing capital controls. To the extent that the controls were effective, they would have insulated Malaysia from an improvement in market sentiment.

It is clear that the speculative attacks differed in their timing on the Asian Crisis economies. Thailand was hit first, with the peak of the crisis occurring in September 1997. Korea followed with a few months lag, reaching a peak in January 1998. Malaysia was behind both countries, and it began to experience a sustained pressure in the foreign exchange market only during the early months of 1998. The peak for such a pressure is reached in August 1998, just before the imposition of capital controls. Korean reserves sharply rebounded in early 1998, while Malaysia's reserves continued to fall. In fact, Malaysian reserves started to recover only after September 1998. This is also reflected in currency values, as the ringgit continued to depreciate from the end of March 1998 while the won steadily appreciated.

Kaplan and Rodrik (2001) estimate that in Malaysia, the reduction in growth following the imposition of capital controls was 5.2 percentage points lower than in Korea. They found that compared to Korea, Malaysia suffered smaller reduction in manufacturing employment (a difference of 19.1 percent), smaller drop in real wages (a difference of 10.8 percent), smaller drop in the stock market (a difference of 22.3 percent), larger reduction in interest rates (a difference of 3.9 percentage points), less currency depreciation (a difference of 18.5 percent), and a smaller increase in inflation (a difference of 1.8 percent).

Critics of the IMF such as Krugman (1999), Radelet and Sachs (2000), Feldstein (1998), and Furman and Stiglitz (1998), and UNCTAD (2000), among others, have argued that the IMF programs in the region aggravated the crisis and exacerbated financial panic (at least during the initial months) by calling for excessively contractionary monetary and fiscal policies, by mandating bank closures, by overreaching

in structural reforms, and by not putting enough pressure on creditors for an early standstill on debt repayment. The findings by Kaplan and Rodrik (2001) are consistent with these critiques and suggest that the Malaysian policy was more successful in accomplishing an immediate reduction in interest rates, stabilizing the currency, and stemming financial panic. The turnaround in market confidence was correspondingly faster. In addition, fiscal policy was on balance more expansionary. All these in turn spurred consumption and economic activity.

Kaplan and Rodrik (2001) hypothesize that there were two channels through which the capital controls worked. One was the standard Keynesian policy of stimulating demand, implemented through expansionary monetary and fiscal policies. The other, and perhaps more operative channel, was the removal of the substantial uncertainty about the financial system and the exchange rate, which had previously depressed confidence and business activity. Some economists believed that Malaysia was not confronted with a serious economic crisis of the type faced by the other countries. Nevertheless, it is clear that Malaysia was in the midst of a very severe real economic crisis, one comparable with the crises experienced by Thailand and Korea, by the time the controls were implemented.

Another hypothesis is that Malaysia's recovery was essentially due to the IMF-style policies it had put in place in 1997. However, there is in fact scarce evidence that the real economy was about to turn around in Malaysia. If anything, the economy was sinking deeper as time went on. Would Malaysia have been wiser by going to the IMF in late 1997 instead of waiting for another year and reacting by imposing capital controls as it did in late 1998? Perhaps. But, on the basis of the evidence brought by Kaplan and

Rodrik (2001), one might also argue that Malaysia would have behaved even better if it had imposed capital controls sooner—better than earlier IMF policies, and better than they did subsequently. There are indications that FDI into Malaysia may have slowed down, and that bond spreads have remained a bit higher in relation to other countries in the region (Liu 2000). On the other hand, Korea and Thailand are left with large debts to the IMF and other international lending institutions; Malaysia did not accumulate such debts.

II. 7 Summary

We examine the debate concerning capital controls on both inflows of capital, using as an example the often-praised use of those controls by Chile, and outflows of capital, illustrated by the often favorably cited example of Malaysia's response to the Asian Financial Crisis. Despite the frequent favorable assessment of these two economy's reliance on capital controls, the effects of capital controls on the economy are still debated and the long-term costs still in question. Chile's policies, for example, are said to have limited funds to the extremely important small-business sector, and Malaysia's policies may have had an adverse effect on the quantity and cost of long-term foreign capital. Quantitative assessments of the costs and benefits to these economies rely on complex time-series econometric models and this evidence is conflicting, complex and contested, even in cases of widely praised use of controls like Chile and Malaysia.

Policy-makers responsible for and experts who supported the use of controls claim success and in two cases (Chile and Malaysia) it is clear that the controls at least influenced behavior of participants in financial markets. Nonetheless, on balance one cannot rely even on often cited cases of success to unambiguously support the argument that the benefits to an economy from imposing capital controls outweigh the long-term costs in terms of their effect on economic and financial market performance and their impact on the risk-return expectations of long-term investors and other market participants in economies imposing controls.

III. Innovative Policy Initiatives to Control Volatile Capital Flows

III.1 Background on Liquidity Crises

Markets are valuable to market participants because they constitute an efficient way to bring buyers and sellers together. One assessment of market performance is how rapidly transactions can be completed. A market where buyers and sellers can reliably transact in a short period, even though the prices may not be the most desirable, provides liquidity services to market participants. Everything else equal, traders prefer to deal in liquid markets. Another important role of active markets is “price discovery,” that is, providing a reliable source of the latest valuation by market participants on the different kinds of claims on productive assets traded in a given market. Good value and return information guides the allocation of risk capital in an economy into the most productive investments. Active trading by many traders relying on a given market means transaction costs, seen most often in bid-ask spreads, can be low as fixed costs of markets can be spread over many transactions and market makers seeking business lower spreads to competitive levels. In efficient markets, prices are informative, transaction costs are low, and participants can rely on the market for liquidity services under almost any circumstances.

Trading halts are major events for markets. First, the valuable benefits of liquidity and price discovery to traders and the economy at large disappear. Second,

traders are forced to find new markets if they can, and if those markets prove to be more reliable, they are reluctant to return to the market that halts trading. Finally, closed markets can change the types of instruments traders buy and sell, moving for example from cash markets to derivative markets that are not controlled.

An enormous economic and finance literature has emerged in response to the international capital market events of the 1990's and it is important in thinking about innovative policies to consider the basics of a crisis in order to understand how best to deal with one. All financial crises have liquidity dimensions requiring liquidation of assets by those directly damaged by the crisis. Some parties in a crisis are harmed because of a lack of money, cash, or acceptable liquid assets to meet obligations to counterparties. The lack of liquidity may be in terms of official reserves necessary for a central bank to defend an exchange rate peg, or lack of dollars for a private domestic borrower to service contractual debt obligations to a foreigner. Inadequate liquid assets can result from the requirement to service or repay debt obligations that are financing investments, from loss of a source of financing for working capital for business activities, from loss in the ability of selling assets in a short time span and without much harm, or the inability of an intermediary to continue financing other businesses if a investor or depositor does not renew a short-term liability of a financial institution.

Lack of liquidity causes a crisis because losses from selling assets for those facing a liquidity crisis are high because prices must be discounted to induce a buyer to trade, often resulting in values being inadequate to meet obligations, i.e. liquidation of assets results in insolvency. Lack of liquidity occurs when markets where assets normally trade are halted or shut down for regulatory reasons, forcing an expensive search for

possible buyers. Assets may be worth less than liabilities because asset sales interfere with a business' going-concern value by interrupting operations, for example goods-in-process inventories are not ready for sale and must be heavily discounted, or long-term investments are not finished and ready for sale so must be sold as incomplete. Asset values are less than the debt obligations due to errors in valuations by lenders or changes in market conditions. The point is simply that liquidity crises are caused by the need to liquidate assets at prices that cause sellers problems and these crises are made worse when the liquidity provided by the usual asset markets are closed or limited. Liquidity crises are not necessarily international and do not necessarily involve international capital flows.

Closing or restricting trading on markets reduces or eliminates normal sources of liquidity, making liquidity crises worse. Transactions arising from non-restricted activities in a crisis may be impaired due to lack of liquidity in a subset of an economy's markets: closing down a market or limiting its trading has a chain effect on a economy. The lack of liquidity and consequent lack of flexibility may distort short-run and long-run investment strategies. And, of course, it may force some traders into insolvency.

Volatile international capital flows are funds from abroad that can be reversed when foreign counterparties withdraw or do not renew investments in an economy. While it is presumed that short-term liabilities to foreigners are a bigger problem for domestic economies, maturing long-term liabilities or large scheduled debt-service commitments also can cause liquidity problems, for example due to the presence of prepayment options. Short-term investments are not the only source of liquidity problems.

A particularly sensitive topic are short-term investments made in order to speculate on possible price changes, where most of the attention concerning international capital flows has been on exchange rates that speculators believe are unsustainable. Speculation is not limited to foreign exchange, however: speculation can occur with commodity prices in narrowly defined markets or in financial asset values in more broadly defined classes of debt or equity markets.

Speculators are reviled because they are felt to cause crises. However, speculators only profit if prices like exchange rates are being fixed at unsustainable levels and ultimately change. Some of the disgust generated by speculators is due to the fact that they are often right and profit from others' mistakes or futile pursuit of desirable but unsustainable objectives, like an exchange rate peg. In the Asian Financial Crisis of 1997 and 1998, speculators (especially in Thailand and Malaysia) were accused of profiting from speculating on overvalued currencies. Despite economists general acceptance of the stabilizing influence on markets of speculation in line with Milton Friedman's analysis, speculation is popularly dismissed as predatory profit seeking.

Hedge funds have been a particular focus for criticism for their speculative activities. A single hedge-fund speculator was accused of having a major role in the pressure on the ringgit in 1998. Without addressing the issues of speculation by hedge funds in the 1990's, the hedge-fund industry has changed dramatically since then, as noted in Part I of this paper. Recalling that discussion, since the Long-Term Capital collapse, hedge funds are more closely monitored by institutional lenders and investors, and a number of initiatives by multilateral organizations have focused on improving counterparty risk management involving hedge funds. This has no doubt limited these

funds' access to speculative funds from debt. Second, the enormous growth in hedge fund assets has been accompanied by greater heterogeneity of hedge-fund expectations and varying speculative positions. The average size of hedge funds has declined with the expansion of this financial activity.

As is discussed in Section I, exchange rate variability has increased dramatically since the 1990's crises such that the risks and possibility of errors in anticipated exchange-rate adjustments (needed for speculation to work) are much higher. Finally, most emerging market exchange rates are felt, if anything, to be undervalued relative to the overvalued dollar. The fear today is a run on the dollar and the newly designated Federal Reserve Board chairman's ability to deal with that possibility¹³. If these fears are real, the current environment requires an approach in the face of revaluation of emerging market economies rather than reconsideration of policies considered in the 1990's. In the following discussion, we analyze the appropriateness of a number of capital controls in the context of current conditions.

Market interventions to control investment flows can be thought of as consisting of two basic types: (1) trading halts and (2) prohibitions concerning clearing and settlement. Conceptually these are qualitatively different in that trading can cease and clearing and settlement of trades before the halt can take place during the trading halt. Stopping clearing and settlement prevents any transactions from being completed, whether they have already occurred or were planned. We organize our discussion in terms of these two different aspects of capital controls. Trading halts, as discussed

¹³ *Wall Street Journal*, October 26, 2005, "Big Challenges Await Bernanke In Managing Fed, the Economy" by Gregory Ip.

below, we associate with “circuit breakers,” while stopping clearing and settlement are discussed in the form of “bank holidays.”

The following sections discuss possible innovations in the regulation of international capital markets experiencing rapid inflows or outflows of capital. Of particular focus in the next section are “circuit breakers” or temporary trading halts on exchanges. Circuit breakers are a form of “trigger mechanism” since they are implemented automatically upon a predefined change in market outcomes, as defined and discussed in the following section. A complete market shutdown in terms of payments is discussed using the example of “bank holidays” in Section III.3. The following section, Section III.4, uses these two extreme interventions to analyze possible intermediate market controls that can be a framework for thinking about innovative policies for international capital markets and focuses attention on the likely sources of crisis in the near future and the types of controls most useful for dealing with them. The final section summarizes the discussion of Part III.

III.2 Circuit Breakers

Circuit breakers are a market intervention that was first advocated and described in detail in the report of the Brady Commission created in response to the Stock Market Crash of 1987 in the United States. The commission’s recommendations are limited to markets related to trading in common stocks and derivatives related to common stocks in the United States. As the report describes:

Circuit breaker mechanisms involve trading halts in the various market segments. Examples include price limits, position limits, volume limits, trading halts reflecting order imbalances, trading halts in derivatives associated with conditions in the primary marketplaces, and the like. To be effective, such mechanisms need to be coordinated across the markets for stocks, stock index futures and options. Circuit breakers need to be in place prior to a market crisis, and they need to be part of the economic and contractual landscape. The need for circuit breaker mechanisms reflects the natural limit to inter-market liquidity, the inherently limited capacity of markets to absorb massive, one-sided volume.

Circuit breakers have three benefits. First, they limit credit risks and loss of financial confidence by providing a “time-out” amid frenetic trading to settle up and ensure that everyone is solvent. Second, they facilitate price discovery by providing a “time-out” to pause, evaluate, inhibit panic, and publicize order imbalances to attract value trades to cushion violent movements in the market. [p. 66]

Several aspects of circuit breakers are clear from this description. First, a primary role of circuit breakers is to enhance the liquidity of markets by allowing the enforcement of margin requirements and to avoid trade failures, while also giving time to additional traders (providing additional liquidity) to enter the market if prices are attractive to long-term investors. Nothing in the rest of the commission’s report or clearly in the above quotation relates to the prices at which securities should trade.

The only example of circuit breakers currently in place in U.S. securities markets are the organized exchanges, namely the New York Stock Exchange (NYSE), the Chicago Board of Trade (CBOT), where stock index futures and options related to prices on the NYSE trade, and the Chicago Mercantile Exchange (CME), trading contracts

related to stock price or stock index levels similar to those traded on the CBOT. Currently, for example, NYSE trading halts for one hour before 1:30pm or one-half hour after that time if the Dow Jones Industrial Average (DJIA) changes more than 1050 points (around 10% of its current level). CBOT trading in the corresponding index futures contracts halts if at opening the index changes by 1050 (the current limit) or if NYSE trading is stopped; trading on the CBOT does not open after two hours if trading is halted on more than half the shares in the index. The circuit breakers on the NYSE stop trading for two hours or the rest of the trading day if the change in the DJIA index is greater than 20% and for one trading day if more than 30%. Circuit breakers have also been adopted by other exchanges, for example by the Kuala Lumpur Stock Exchange, and are similar to those on the NYSE.

Circuit breakers in the case of organized exchanges like the NYSE, the CBOT, and the CME are enforced by the exchanges and are invoked under very clearly specified changes in market conditions. These trading halts are designed to give broker members and clearing houses time to enforce margin requirements for traders. Trading halts clearly ease potential liquidity problems for those holding losing positions, because they need to raise their cash margins but the increased required is limited to a maximum change due to the trading halt. Losers have more time to raise funds if the change is greater and trading halts longer.

Nothing in the regulation of U.S. securities markets prevents trading in securities or indices by non-members of exchanges in the over-the-counter markets or through proprietary trading systems. To place this observation into context, in the U.S. and globally, a significant volume of trading in listed securities is moving off regulated

exchanges. Furthermore, the greatest growth in derivative markets for credit risk, interest rates, and other asset markets, has been in over-the-counter markets. Implementation of trading halts in a circuit-breaker fashion have not been discussed or implemented in U.S. securities markets other than in equity markets and with trading limits with specific contracts. Circuit breakers are probably not enforceable in highly developed economies with many alternatives to trading on organized exchanges.

Derivative markets have grown enormously in recent years and perform the socially useful role of redistributing the risks in financial markets more efficiently than can be achieved by other types of contracts. However, derivative markets can also be used to defeat standard capital controls by speculators. Garber (1998) describes in detail the use of over-the-counter derivatives markets to speculate in the presence of capital controls and also provides many examples. He shows how offshore trading in derivative contracts (futures, forwards, options, swaps and various combinations) can be used by speculators, financial institutions and commercial firms, and wealthy individuals to perform pure speculation and to leverage speculative positions. Garber concludes:

From the explosion in the use of derivative products has emerged a blind spot in both national and international surveillance of capital markets. Through derivatives both individual institutions and financial systems can be put at risk in magnitudes and from directions completely unknown to regulators. This problem arises because derivatives are ideal means of avoiding prudential regulations, given the universally slow adjustment of accounting principles to the advent of these products. On a more parochial level, the accounting principles on which the balance of payments data gathering exercise is based are being made increasingly obsolete. For each country, the extent of the problem is unknown because comprehensive data on derivatives are gathered only at long intervals,

and even the triennial BIS data are not broken down into those relevant for emerging market economies. (p. 34)

Attempting to control speculation when derivative strategies are readily available poses an enormous challenge to policymakers.

The above discussion raises two points about use of derivatives that are relevant to the design of mechanisms, like circuit breakers, to halt trading: first, they may not be reported to regulatory authorities since most are off balance sheet accounting entries; and second, if the markets are offshore, the only control domestic market regulators could possibly implement would be limitations on payments to satisfy cash settlements. As discussed in the next section, identifying and enforcing control over such cash flows would seem to require such a high level of monitoring and intense enforcement as to pose a threat to normal commercial transactions entailing international settlements.

The foregoing discussion suggests that circuit breakers as currently used are effective only in organized exchanges and their effectiveness may be limited by trading in over-the-counter markets. Further, the rapid development of derivative markets has made domestic control on trading of limited value in preventing speculation from influencing critical economic values like exchange rates. The basic idea of circuit breakers, a temporary halt to allow liquidity issues stemming from large price changes, does have some appeal. In the next section, we discuss how more inclusive trading halts have been imposed in the past.

III.3 Financial System “Holidays” (Bank Holidays)

As discussed in the first section of this part, all crises have liquidity dimensions. The most dramatic example of a liquidity crisis is a run on deposits when bank assets are thought to be worth less than their deposit liabilities. During the Depression in the United States, “bank holidays” were declared. In that instance, state and local authorities limited banks’ ability to process transactions by closing them for specified periods of time (hence “bank holidays”) or by limiting the amount of transactions (e.g. deposit withdrawals) banks could perform. Finally, in 1933, President Roosevelt declared a bank holiday on Sunday, March 5, to start the next day and that lasted ultimately ten days. This period was used to pass bank legislation that reassured depositors and began a period of bank regulation that lasted until the end of the 20th century.

Rockoff (2003) draws the parallel between the inter-regional transfers of gold and reserves in the United States that preceded the banking crisis of the Depression and the “twin crises,” a term associated with the financial crises of the 1990’s associated with banking and balance of payments crises¹⁴. Rockoff is not advocating the use of bank holidays. He shows how, even in the United States with an effective exchange rate of regional currencies (actually issues of the twelve local Federal Reserve banks) of one-to-one, that liquidity problems occurred as asset values fell differentially in different regions and that depositors moved funds to banks felt to be more secure (largely Eastern banks). This movement of reserves caused bank runs (liquidity crises) and the capital flows represented capital flight from distressed regions.

¹⁴ See Kaminsky and Reinhart (1999).

A banking or complete financial system “holiday” is conceivable as a means to stop volatile capital flows from eroding policy goals, like a pegged exchange rate. The effect of such an action is to stop all transactions within the region and any ability to settle cross-border transactions. Of course, it would have repercussions on counterparties outside the economy that had expected transactions to be completed. Such a dramatic policy of capital controls seems unrealistic. Nonetheless, it is illuminating to consider why such a complete economy-wide trading halt is unrealistic.

The reason why complete suspension of payments is unrealistic is that economic activity would be completely halted or at least severely limited. No transactions could be completed in the economy affected by such a holiday without careful agreed-upon arrangements between each party, parties who could not pay parties who promised to deliver real goods or services due to the holiday. For example, credit between counterparties could be arranged so that goods could be delivered or contracts completed, but payment (settlement) would be delayed to a possibly unknown date (when the holiday ended) and perhaps the values of payments would change (due to regulatory intervention in the system). Bank holidays reinforce a complete lack of confidence by depositors in the financial system. After the end of the holiday, banks will have serious difficulties in attracting deposits.

The costs of such a complete lack of liquidity are clearly enormous. The act of declaring such a bank holiday in the United States in 1933 was justified by the perception that the banking system was faced with total collapse. The appropriateness of the move has been actively debated.

Another question is whether even a complete halt in all transactions as in a bank holiday would eliminate the possibility of speculation and movements of financial assets (i.e. capital flows). Unless all communication was simultaneously severed, it seems clear that domestic residents could enter into arrangements to minimize the costs or maximize the profits from the expected conditions following the end of the halt. In any case, off-shore activity could not be stopped unless the halt were extended to all trading partners. All of these possibilities are unthinkable.

We are left with the following challenge in identifying innovative controls on capital flows. How can we implement, enforce, and analyze the effects of partial shutdowns of the international financial system to achieve specific goals that are qualitatively different than the types of controls that have been used heretofore? The next sections investigate the possibility of partial shutdowns of the payment systems to achieve this objective.

III.4 Partial Controls and “Trigger Mechanisms” for Capital Flows

The discussion in Part II revealed that policies can be developed and implemented to influence specific capital inflows and capital outflows, although the results on the policy objectives of interest are controversial. To structure thinking about selective controls, we present a list of eleven types of transactions that can be restricted by capital controls in Glick and Hutchison (2002):

- (1) capital market securities;
- (2) money market instruments;
- (3) collective investment securities;

- (4) derivatives and other instruments;
- (5) commercial credits;
- (6) financial credits;
- (7) guarantees, sureties, and financial backup facilities;
- (8) direct investment;
- (9) liquidation of direct investment;
- (10) real estate transactions;
- (11) personal capital movements. (p. 7, fn. 10)

This list may not be exhaustive and it does not consider the time or maturity dimension of international contracts. But the list is illustrative of the intrinsic problem of selective capital controls because specific choices have to be made. The related problem, of course, is the different challenge in enforcing each of these different types of transactions, the possibility of deception or corruption in declaring the intention in specific transactions, and the distorting effects of selectively limiting some transactions. We encountered these issues in our discussion of the experience of capital controls in the 1990s, because those controls were variants of innovative capital flow restrictions we can imagine being proposed by new subsets of the above list of transactions to control through the payments system.

In thinking about possible controls that minimally distort the flow of transactions and capital and minimize risk to market participants, one innovation is to preannounce under what circumstances controls would be imposed and what they would be. Here the use of “trigger mechanism” in the context of a narrow segment of transactions would be an improvement over mid-crisis invocation of unexpected controls, since market

participants would know when controls would be implemented and could make plans limiting potential liquidity problems should controls be invoked. Market participants could assess the likelihood of occurrence as market events develop and provide for the impact on them of possible international capital market interventions.

The key problem is defining the appropriate trigger. For example, the Counterparty Risk Management Policy Group report (2005) states:

With the benefit of hindsight, it is not difficult to draw distinctions between financial disturbances and financial shocks. Unfortunately, in real time it is virtually impossible to draw such distinctions. Indeed, neither financial market participants nor policy makers have a good track record of anticipating the specific triggers – or their timing – that will cause financial disturbances, much less distinguishing in advance which disturbances have the likelihood of taking on shock-like features with systemic properties. In fact, even when the threat of a major financial disturbance is recognized by many – as for example, recent concerns about a dollar crisis or a significant rise in credit spreads – such awareness of a threat provides little assurance that the marketplace in general will anticipate whether, when and with what degree of severity such a disturbance will actually occur, much less anticipate whether the face of the disturbance will have potential systemic implications. (p. 6)

In line with this discussion, any trigger mechanism would be subject to signaling false crises or missing an unexpected source of a crisis.

An exercise in thinking about innovative capital controls is to think about policies appropriate to a dollar crisis mentioned as a possibility in Part I and in the above quotation. Given that the dollar floats freely and has devalued around 50% in the last two

years, it is clear that large changes in dollar exchange rates are possible in short time periods without provoking crises. What would be the rationale for policy interventions and what kind of policies would be relevant and how would trigger mechanisms be used to invoke those controls?

The rationale for emerging market economies to limit capital inflows would be based on protecting domestic policy initiatives when confronted sharply increased demand for short-term domestic currency liabilities (to be traded for dollar assets after the dollar devaluation). This would have the effect of lowering domestic interest rates and possibly forcing the central bank to sterilize the resulting capital flows to maintain monetary policy goals. The central bank itself might wish to switch out of dollar reserve assets, but this of course would even make the situation worse in terms of domestic assets returns.

The impact of emerging market economies, in terms of capital inflows, however, would seem to be much less than on the developed economy world. Because of the size of the dollar market, most capital flows would flow to the Euro, yen, sterling, Swiss franc, and other large markets. Since all of these exchange rates float freely, the impact on emerging markets would most likely be indirect. Assume the policy goal, however, is to limit short-term inflows of capital caused by speculation of further depreciation of the dollar, increases in dollar interest rates and fall in dollar asset values, and/or a search for safe harbors.

To continue this experiment, assume for example that the central bank and regulators of an APEC emerging market economy wish to stop or slow the flow of short-term capital into an economy and announce a trigger mechanism that controls will be

active in the dollar depreciates more than 5% in a day or U.S. Treasury securities decline in value by a percent depending on maturity, say 1.25% for three-month Treasury bills (a 5% drop in interest rates) in a day and corresponding amounts for longer maturity securities.

Since volatile capital flows are usually classified as short-term capital flows, selective trading halts could possibly be arranged as partial “bank holidays” limited to certain kinds of transactions. For example, banks could be instructed that payments involving U.S. Treasury securities or close substitutes, like dollar denominated short-term deposits or bankers’ acceptances, or any subset of the list of transactions presented above, are suspended. There would be no clearing of transactions involving the specified list of securities.

Imposition of this type of payment control has several disadvantages. It would be costly to implement and control. The system would necessarily leave substantial discretion to banks and other members of the clearing system in terms of enforcement. This would open the controls to evasion and abuse. Second, these controls would be much more selective than other controls. It would appear that the implication of narrowly defined trading or clearing halts are more difficult to administer and easier to evade than the types of controls reviewed in Part II of this paper. Third, it would be difficult to identify transactions not on the restricted transaction list that could achieve the same speculative purpose.

By using banks to eliminate clearing for specified transactions, even if invoked under clear rules like a trigger, the loss of liquidity and costs of monitoring and controlling the implementation of the policy would cause problems for all market

participants. The substitutability of short-term assets and the requirement of close supervision of all declared purposes of transactions would have spillover effects on virtually all payments. It seems clear that using the payments system for capital controls would be extremely costly and have many unintended consequences for the economy.

Controlling cash settlements might seem particularly attractive in limiting the impact of derivative strategies as described above. However, since the derivative contracts would most likely be off shore, the ability to disguise settlements is apparently unlimited. Simple transfers of cash cannot be prohibited without substantial dislocations, and determining the reason for the transfer (e.g. settling a derivative contract) impossible to discern in the absence of substantial investigative powers.

The conclusion is that, in the face of volatile capital flows, there is a limit to possible methods of controls. We have discussed the range of alternatives on capital controls from limited trading halts like the circuit breakers on exchanges discussed in Section III.2, invoking policies prohibiting clearing of specific transactions (a partial “bank holiday” as discussed above), and a total payment system shutdown with a real bank holiday as discussed in Section III.3. These policies define a spectrum of possible innovative capital control measures that have not been used before. If we accept this analysis of policy options, there is not much room for innovation outside of controls based on trading or payment halts that look substantially different than the controls that have been implemented in the past, like those described in Part II.

While highly focused and selective innovative capital controls governing specific inflows or outflows of capital in an economy may seem like an attractive policy tool, implementation would require the involvement of institutions, like banks, that would

open such controls to burdensome monitoring or ineffectiveness or abuse. If APEC emerging market economy policymakers believe that capital controls are desirable in the face of the current economic situation, the above discussion and recent experience would suggest that the policy should be contingent on a previously announced “trigger mechanism,” a given change in a market indicator widely observed and beyond manipulation, and that the control be implemented across the board. Since interfering with the payments system in line with the previous discussion is costly and is likely impractical, capital control methods used in the past are probably the most realistic intervention tools.

In choosing a control policy, low costs of implementation and minimal distortion of markets are the most desirable attributes. Among these policies, a “Tobin” tax on certain types transactions, possibly designed like the Chilean system such the controls are more costly for short-term capital movements than long-term capital investments, may have some appeal. However, policymakers should keep in mind that all such controls have now been removed and any economy implementing such a policy would place its financial markets at a disadvantage. Furthermore, the effectiveness of such controls, as discussed in Part II, is unclear. The usefulness of capital controls with in the current environment of likely market disturbances or shocks, focused on dollar assets, is questionable given the size of the emerging market money markets and the ability to evade controls through the use of derivatives.

III.5 Summary of Innovative Policy Recommendations

Capital controls limit market performance by reducing liquidity and price discovery. The most important attributes of effective markets are liquidity and reliable price discovery. By limiting trading, the usefulness to some or many participants of the market is reduced. Furthermore, trading halts, bank holidays, or selective payments controls have both an immediate effect and long-term effects. The loss of confidence in the reliable provision of liquidity and price information from a market may drive participants away. The economy is less efficient and fewer potentially active market participants will rely on unreliable markets. A market's or an economy's reputation for being a reliable place to complete transactions is accumulated slowly over time and only rebuilt after disruptions by substantial and credible commitments to not repeat the imposition of controls in the future.

Emerging APEC markets appear to be less vulnerable to current market concerns, like a run on the dollar devaluation or an increase in interest rates, than large developed economies that can probably absorb larger shocks. Designing and implementing innovative international capital flow restrictions present many practical challenges and any policy innovations are likely to have questionable policy advantages, if any, over traditional practices. An analysis of costs of trading halts through different market regulation methods like circuit breakers and bank holidays demonstrates that these approaches are costly, hard to implement, and can be evaded. We conclude, that outside of trading halt types of capital controls, only a limited range of alternatives can be considered. Future international capital market controls, if necessary, will resemble those used in the past but could be improved if the policies were announced before a crisis and

would be imposed only under pre-specified conditions, i.e. they were invoked by a publicly known trigger mechanism.

IV. Summary: Proposal for ABAC Policy Recommendations

The goal of APEC and ABAC is to promote open and integrated capital markets. Capital controls, by their nature, interfere with this goal. This paper demonstrates that these controls rarely produce their desired objectives and are often accompanied by negative unintended consequences. However, the costs of past financial crises experienced by APEC emerging economies and presumed to result from volatile capital flows has been large and may justify consideration of innovative capital market interventions.

The analysis in this paper supports the conclusion that the likelihood of anticipating and avoiding likely crises would be enormously enhanced with better and more timely data on capital flows, financial institution assets and liabilities, and on activity in derivative markets. This fact is nearly universally accepted but there has been little progress in improving data available. Thus, the first and least controversial recommendation is:

International institutions, individual economy central banks, finance ministries, economic research bureaus, and regulators should be encouraged to cooperate in an effort to improve the quality, timeliness, availability, and comparability of international financial capital flow statistics and related macroeconomic and financial market data.

The analysis of the use of capital controls in the 1990s and consideration of possible innovative methods of avoiding crises or mitigating the costs of financial crises

leads to the conclusion that any future controls will probably resemble those used in the past. Capital controls, if imposed, are less costly if they are transparent in application and capital flow restrictions ideally should be imposed only under conditions that market participants can anticipate and plan for. However, capital controls should be implemented reluctantly (if at all), and should be relatively straightforward in application. The second and substantially more controversial recommendation based on this analysis is:

Capital controls should be implemented reluctantly and invoked only in the case of easily identified changes in market conditions (i.e. linked to readily observable market outcomes). The least costly and less distorting method is a transaction tax, but those implementing these taxes must be aware that attempting to limit specific types of capital transactions under current market conditions may have limited effectiveness and can entail large reputation costs for the market and the economy imposing capital controls.

Finally, policy makers should not focus on past conditions in assessing the types of crises that might occur. The current situation is very different than that of the 1990s, and the likely disturbances or shocks to financial markets will likely come from different sources, like a dollar crisis. A crisis of this type will have very different global and regional implications than the assaults on APEC economy financial systems in the past. The last recommendation is:

A concerted effort should be made by policymakers in APEC and in the APEC economies to carefully analyze the likely types of financial crises in the

future given current economic conditions and update these assessments with future economic changes, disseminate concerns about possible disturbances or shocks to officials and regulators in the region, and encourage policymakers to plan specific policy responses, if any, to the anticipated nature of possible future crises.

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ⁱ IMF (2005), p. 50)