

Dodd, Randall

**Working Paper**

## Derivatives, the shape of international capital flows and the virtues of prudential regulation

WIDER Discussion Paper, No. 2002/93

**Provided in Cooperation with:**

United Nations University (UNU), World Institute for Development Economics Research (WIDER)

*Suggested Citation:* Dodd, Randall (2002) : Derivatives, the shape of international capital flows and the virtues of prudential regulation, WIDER Discussion Paper, No. 2002/93, ISBN 9291903132, The United Nations University World Institute for Development Economics Research (UNU-WIDER), Helsinki

This Version is available at:

<https://hdl.handle.net/10419/53049>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



United Nations  
University

**WIDER**

World Institute for Development Economics Research

Discussion Paper No. 2002/93

## **Derivatives, the Shape of International Capital Flows and the Virtues of Prudential Regulation**

Randall Dodd\*

October 2002

### **Abstract**

The paper studies the trend towards the use of securities as a vehicle to transfer capital to developing economies, and how it is linked to the increasing use of derivatives transactions in developing countries. It also provides a descriptive analysis of how each type of capital vehicle is associated with various derivatives instruments. It then looks at how various derivative instruments decompose the risks associated with each capital vehicle, price them separately and then allow those risks to be redistributed. The paper next analyses how this portfolio of capital and derivatives can potentially add to the vulnerability of developing country financial systems to external shocks and domestic policy failures. It concludes with a set of policy recommendations in the form of prudential market regulations that are designed to reduce excessive or unproductive risk taking, reduce the vulnerability of the financial system and mitigate the impact of financial sector disruptions on the overall economy.

Keywords: derivatives, capital flows, risk management, international finance

JEL classification: F3, F4, G1, G2

Copyright © UNU/WIDER 2002

\*Director, Derivatives Study Center, Washington DC.

This study has been prepared within the UNU/WIDER project on Capital Flows to Emerging Markets since the Asian Crisis, which is co-directed by Professor Stephany Griffith-Jones and Dr Ricardo Ffrench-Davis.

UNU/WIDER gratefully acknowledges the intellectual contribution and substantial support given to the project by ECLAC (UN Economic Commission for Latin America and the Caribbean).

*UNU World Institute for Development Economics Research (UNU/WIDER) was established by the United Nations University as its first research and training centre and started work in Helsinki, Finland in 1985. The purpose of the Institute is to undertake applied research and policy analysis on structural changes affecting the developing and transitional economies, to provide a forum for the advocacy of policies leading to robust, equitable and environmentally sustainable growth, and to promote capacity strengthening and training in the field of economic and social policy making. Its work is carried out by staff researchers and visiting scholars in Helsinki and through networks of collaborating scholars and institutions around the world.*

UNU World Institute for Development Economics Research (UNU/WIDER)  
Katajanokanlaituri 6 B, 00160 Helsinki, Finland

Camera-ready typescript prepared by Jaana Kallioinen at UNU/WIDER  
Printed at UNU/WIDER, Helsinki

The views expressed in this publication are those of the author(s). Publication does not imply endorsement by the Institute or the United Nations University, nor by the programme/project sponsors, of any of the views expressed.

ISSN 1609-5774  
ISBN 92-9190-312-4 (printed publication)  
ISBN 92-9190-313-2 (internet publication)

## 1 Introduction

As matter of policy, capital markets in many parts of the developing world underwent ‘liberalization’ during the 1990s. The process was designed to open up those markets to both greater flows and a wider array of capital vehicles.<sup>1</sup> To that extent the policies succeeded, and private capital flows to developing countries both increased and increasingly took the form of securities such as stocks and bonds (see Tables 1 and 5). Even part of the growth in direct foreign investment took the form of purchases of equity securities.

This transformation in developing country capital markets had the effect of broadening the class of global investors. Whereas investors in the prior period were primarily banks (through syndicated loans) and multinational corporations (direct investment), the securitization brought in individual investors and professionally managed funds from institutional investors, pension funds, insurance companies, university endowments and foundations. This contributed to the increase in the overall flow of capital to developing countries.

These increased flows of securitized capital brought forth the new threat of their rapid reversal, and they also introduced or increased the exposure of developing country financial markets to greater volatility of securities prices in other developing countries as well as those in advanced capital market countries.

Along with this transformation of capital flows to developing countries, and the associated new market risks, came a new set of parallel financial transactions. These financial transactions, though less well understood, are integral to modern financial markets and they are just as important in their potential to contribute to financial sector instability. These ‘shadow’ transactions include derivatives,<sup>2</sup> repurchase agreements and securities lending. The term ‘shadow’ should not be interpreted to mean nefarious or devious. Rather, the term appropriately reflects the fact that these transactions are often built upon, or *cast* like a shadow, by the capital flows. The term shadow is also appropriate because these types of transactions are far less transparent.

These shadow transactions often function to hedge or manage the risks associated with capital flows. However, they also serve in some cases to facilitate unproductive activities. The unproductive activities include the avoidance of taxation, the manipulation of accounting and reporting rules and the outflanking of prudential regulations. When used to dodge financial market regulations designed to add safety and soundness to the markets and assure their transparency, then these unproductive activities are a source of market instability and a reduction in the efficiency of market pricing. In addition, the use of derivatives, even when they are used by foreign and domestic enterprises for hedging, can in some cases contribute to the downward pressure on emerging market currencies as investors rush to hedge their

---

<sup>1</sup> The term ‘vehicle’ is used to refer to the form in which capital is raised and traded: bank loans, bonds (including local currency, major currency and structured notes), equities and foreign direct investment.

<sup>2</sup> The term ‘derivative’ is used in the most generic sense to mean a contract that is used to create price exposure by having its price *derived* from that of an underlying commodity, security, rate, index or event. It also creates leverage and does not generally require the ownership of title or principle. Examples of derivatives are futures, options, forwards, swaps and the derivate component of hybrid instruments such as structured notes.

currency exposure in anticipation of a financial crisis or to meet collateral requirements once currency and asset prices begin to fall.

Although exact figures on the magnitude of these transactions do not exist, it does not mean that the subject is not important and that it should not be explored in order to understand how it contributes to a financial crisis.

These new developments in financial transactions in developing countries require new regulatory and supervisory efforts to ensure that they contribute to the growth in living standards and do not result in less stable financial systems and greater economic vulnerability. This paper will focus on derivatives and leave repurchase agreements and securities lending transactions for another time.<sup>3</sup> It will analyse policies designed to stabilize developing country financial markets. This will include a policy analysis of financial regulations from industrialized countries and how they might be adapted to the circumstances in developing countries so that they might be successfully applied to reducing volatility and mitigating the impact of financial sector disruptions on the overall economy.

## **2 Transforming capital flows**

The traditional status of banking<sup>4</sup> as the fount for new capital was diminished by the policies of capital market liberalization that brought forth the emergence of modern capital markets in developing countries. Whereas new capital was once raised solely from within the firm or through the banking sector, the new arrangement allowed capital to be raised through the issue of stocks and bonds.<sup>5</sup> This securitization of new capital proved to be more efficient in several important ways and soon surpassed the once predominant bank lending as the source for new capital formation and sovereign borrowing.<sup>6</sup>

Banking lending was the traditional means of raising new capital. Banks mobilized savings and collected together pools of idle liquidity in the payments and settlements system, and turned them into loanable funds for new investments. Banks traditionally held loans on their balance sheet as assets, and this formed the basis for forming ongoing relationships that promoted greater information sharing and trust. Another traditional beneficial feature of bank lending was that banks could more easily restructure the debt of a borrower because the bank held all of the debt on its balance sheet (thus requiring no cooperation from other lenders).

Traditionally, bank profits were earned through maturity conversion. Banks accepted short-term deposits, on which they paid short-term interest rates, and then transformed the funds into longer-term loans on which they earned higher, long-term interest rates. These earning

---

<sup>3</sup> A repo is similar to a foreign exchange swap in that it includes an obligation to first purchase (sell) and then sell (purchase) a security at agreed-upon prices. A securities loan is comparable but is treated as a loan on which collateral is posted and rent is paid instead of a matching set of transactions.

<sup>4</sup> An excellent discussion of the traditional role of the banking sector can be found in Ron Chernow (1997).

<sup>5</sup> The term 'bond' will be used to mean the broad class of credit instruments which are also known as notes, debentures and 'paper'.

<sup>6</sup> Another discussion of how securities markets surpassed the traditional banking business can be found in Lowell and Farrell (1996).

depended upon the steepness of the yield curve and how far the bank was willing and able to move out along the curve. Banks often avoided this interest rate risk by issuing loans that were of longer maturity but whose interest rate was frequently adjusted over the life of the loan. This enabled banks to match the costs of their deposits to the earnings on their loans while avoiding the market risk of interest rate fluctuations.

Traditional banking had some significant shortcomings. The loans on the portfolio were illiquid, and banks found geographic and sector diversification of their loan portfolio difficult. On a macroeconomic level, capital formation in the form of bank lending meant that investment decisions were controlled by a small number of bank executives and managers and not through the interaction of a large number of anonymous market participants as in securities markets. Another shortcoming on the macroeconomic level was that bank loans did not generate market prices for the investment assets – that is, there was no price discovery as found in stock and bond markets.

Innovation and technological developments in advanced capital markets established a precedent and helped lead to the promotion of capital market liberalization in developing countries.

The modernization of these financial markets had a profound impact on the shape of capital flows to the region during the 1990s. Capital flows to developing countries during the 1970s and 1980s were primarily in the form of syndicated, variable rate, foreign bank loans. In this way they were not very different from other developing countries. Large money-centre banks recycled petrodollars by underwriting syndicated bank loans to developing countries that were struggling to pay for oil imports and eager for new net capital inflows. The loans were mostly adjustable rate and denominated in US dollars or some other major currency.<sup>7</sup>

This created a distribution of risk that was not balanced between borrower and lender. The borrower carried both the exchange rate risk and the interest rate risk. The lender held credit risk, but this was minimized through restricting credit to sovereign entities and through the use of cross-default clauses.<sup>8</sup> The lender also reduced credit risk through diversification and the loan syndication process.

When the market went against the borrowers, their debt position deteriorated so badly that they became unable to properly service their foreign currency bank loans. This failure was thereby transformed into increased credit exposure to the lenders. Painful debt negotiations followed, and they led to debt rescheduling combined with new lending. This approach had proven to be a failure by the end of the 1980s, and a new round of debt rescheduling commenced and this time it was combined with some debt forgiveness. In the end, both the international lenders and the developing country borrowers suffered; in Latin America the depressed 10 years of debt overhang beginning in 1982 has come to be called ‘the lost decade.’

---

<sup>7</sup> The term major currency refers to the US dollar, euro, yen and British pound sterling which are the industrial country currencies most likely to be used to denominate loans and securities issued by developing countries.

<sup>8</sup> Cross-default clauses in the loan contracts whereby a default by a borrower against any lender would be considered a default against all lenders.

Table 1  
Private capital flows to developing countries  
Percentage of total official and private flows\*

Type of flow	1973–81	1990–97
Bonds	3.5	15.2
Bank Lending	63.9	11.7
Foreign direct investment	16.8	50.3
Portfolio Equity	0.3	16.4

\* Note that figures are calculated as percentage of total flows and therefore private flows do not sum to 100 per cent.

Source: World Bank (2000) Chapter 6, p.126.

Table 2  
Maturation of East Asian stock markets

	Number of listed companies		Capitalization (US\$ million)	
	1990	1999	1990	1999
Indonesia	125	277	8,081	64,067
Korea	669	725	110,594	308,534
Malaysia	282	757	48,611	145,445
Philippines	153	226	5,927	48,105
Singapore	150	355	34,308	198,407
Thailand	214	392	23,896	58,365
<i>Total</i>	<i>1,593</i>	<i>2,732</i>	<i>US\$231,417</i>	<i>US\$822,923</i>
		(+72%)		(+256%)

Data source: World Bank (2001).

Capital flows began changing in the late 1980s and early 1990s. Table 1 illustrates the great transformation that occurred in the form of capital flows to developing countries. As a percentage of total capital flows, banking lending fell from 64 per cent to 12 per cent, while capital flows in the form of stock shares rose from 0.3 per cent to 16.4 per cent. The use of bonds as a development finance vehicle rose from 3.5 per cent to 15 per cent over the same period.

This not only elevated the status of the East Asian bond market, but also established their equity markets as platforms on which to raise capital and destinations in which to locate portfolio investments of high net wealth individuals as well as institutional investments (Dalla and Khatkate 1996).

Two of the key indicators of financial market deepening and sophistication is the degree of liquidity (reflected in the trading volume) and the size of market capitalization. Table 2 illustrates how these key indicators changed between 1990 and 1999.

Recall from Table 1, that the percentages measure the proportion of total capital flows. The sum of the percentages equals the share of private flows. Private capital flows accounted for 84.5 per cent of flows in the earlier period, while the capital market liberalization policies of the 1990s resulted in 93.6 per cent of capital flows being from private sources in the later period. This is borne out in Table 3 on the flows to developing countries during the 1990s.

The upshot of the transformation was not just greater flows and greater volatility of flows and asset prices, it was also a redistribution of risk between investors in advanced capital markets and capital recipients in developing countries. This more diversified flow of foreign capital (diversified in the sense that various capital vehicles were used to channel the capital flows) generated a different distribution of market and credit risks. Compared to the bank loans of the 1970s and early 1980s, this more diversified flow of capital tended to distribute risk towards investors in the advanced capital market economies. Stocks or equity shares shifted price risk, exchange rate risk and credit risk to foreign investors. Local currency bonds shifted price, interest rate risk, exchange rate risk and credit risk to foreign investors. Even major currency denominated bonds issued by developing country borrowers shifted interest rate risk, as well as credit risk, to foreign investors. Direct foreign investment in physical capital – whether equipment, plant or real estate – similarly shifted price and exchange rate risks and credit risk to foreign investors. The combined effect was to potentially reduce the developing economies' exposure to the market risk.<sup>9</sup>

Table 3  
Net long-term flows to developing countries  
(US\$ billion)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Official	55.9	62.3	54	53.4	45.9	53.9	31	39.9	50.6	52
Private - Total	42.6	61.6	99.8	165.8	174.5	203.3	282.1	304	267.7	238.7
Bank loans	3.2	5	16.4	3.5	8.8	30.4	37.5	51.6	44.6	-11.4
Bond	1.2	10.9	11.1	36.6	38.2	30.8	62.4	48.9	39.7	25
Other debt	11.3	2.8	10.7	8.7	3.5	1	2.2	3	-3.1	5.5
Equity-portfolio	2.8	7.6	14.1	51	35.2	36.1	49.2	30.2	15.6	27.6
DFI	24.1	35.3	47.5	66	88.8	105	130.8	170.3	170.9	192
Total	98.5	123.9	153.8	219.2	220.4	257.2	313.1	343.9	318.3	290.7
Private (%)										
Bank loans	7.5	8.1	16.4	2.1	5.0	15.0	13.3	17.0	16.7	-4.8
Bond	2.8	17.7	11.1	22.1	21.9	15.2	22.1	16.1	14.8	10.5
Other debt	26.5	4.5	10.7	5.2	2.0	0.5	0.8	1.0	-1.2	2.3
Equity-portfolio	6.6	12.3	14.1	30.8	20.2	17.8	17.4	9.9	5.8	11.6
DFI	56.6	57.3	47.6	39.8	50.9	51.6	46.4	56.0	63.8	80.4

Data source: World Bank (2001).

<sup>9</sup> The term 'market risk' refers to the set of all investment risks except credit risk and settlement risk. Market risk includes price risk, interest rate risk, and exchange rate risk.



### **3 Growth of shadow transactions**

#### **3.1 Overview**

Derivatives trading grew up alongside these new forms of capital flows as part of an effort to better manage the risks of global investing. Derivatives allowed risk to be shifted away from investors who did not want it and towards those more willing and able to bear it. At the same time, derivatives created new risks that were potentially destabilizing for developing economies. The following is an analysis of how derivatives played a constructive role in channeling capital from advanced capital markets to developing economies, and how at the same time they played a potentially destructive role in laying the foundations of the crisis. These capital instruments and their associated risks and the associated derivatives used to manage those risks are listed in Table 4.

Derivatives facilitated capital flows by unbundling risk and then more efficiently redistributing the various sources of risk associated with the various capital vehicles including bank loans, equities, bonds and direct foreign investment. Foreign currency loans expose the foreign investor to credit risk and the domestic borrower to exchange rate risk; a fixed interest rate loan exposes the foreign lender to interest rate risk and a variable rate loan exposes the domestic borrower to interest rate risk; and a long-term loan exposes the foreign lender to greater credit risk and a short-term loan exposes the domestic borrower to refunding risk (sometimes called liquidity risk). Equities expose the foreign investor to credit risk along with the market risk from changes in the exchange rate, market price of the stock, and the uncertain dividend payments. Notes and bonds expose the foreign investor to credit risk and market interest rate risk, and hard currency bonds expose the domestic borrower to exchange rate risk. The financial innovation of introducing derivatives to capital markets allows these traditional arrangements of risk to be redesigned so as to better meet the desired risk profiles of the issuers and holders of these capital instruments.

While the risk shifting function of derivatives serves the useful role of hedging and thereby facilitating capital flows, the enlarged presence of derivatives also raises concerns about the stability of the economy as a whole. The use of derivatives can lead to lower levels of transparency between counterparties and between regulators and market participants. They can be used for unproductive activities such as avoiding prudential regulations, manipulating accounting rules and credit ratings, and evading taxation. They can also be used to raise the level of market risk exposure relative to capital in the pursuit of higher yielding – and higher risk – investment strategies.

The greater the amount of market exposure – possibly created by open positions in derivatives contracts – the greater will be the impact of a large change in the exchange rate or other market price on the financial sector and economy as a whole. In this context, the use of derivatives to reduce the amount of capital relative to risk-taking functions reduce the effectiveness of capital to serve as a buffer against market turbulence; and as a governor on total risk taking thus raises the likelihood of systemic failure and heightens doubts about the stability of the financial sector and the economy as a whole.

#### **3.2 Analysis of transactions**

The remainder of this section will be organized as follows. The risk characteristics of each type of capital vehicle will be analysed along with the types of derivatives that would likely be used in

conjunction with that vehicle. Next, each of the relevant derivatives instruments will be briefly described before joining the two discussions to show how the capital vehicles and derivatives instruments are used together or as substitutes.

### 3.2.1 Foreign exchange forward

A foreign exchange forward is a contract in which counterparties agree to exchange specified amounts of foreign currencies at some specified exchange rate on a specified future date. The forward exchange rate is the price at which the counterparties will exchange currency on the future expiration date. The forward rate is negotiated so that the present value of the forward contract at the time it is traded is zero; this is referred to by describing the contract as trading at par or ‘at the market’. As a result, no money need be paid at the commencement of the contract, although the counterparties may agree to post collateral in order to insure each other’s performance of the contract.

Table 4

Capital vehicle	Risk exposure	Derivative, or risk management
<b>Bank loans*</b>		
Investor	Creditworthiness	credit derivatives, cross-default clause or diversification
Developing country	Interest rate	interest rate swap
	Foreign exchange	foreign exchange forward, swap or option
Carry trade	Liquidity	line of credit (embedded option)
	Foreign exchange	TRS - total return swap
<b>Bonds*</b>		
<b>Major currency bond</b>		
Investor	Interest rate	interest rate swap or future
	Creditworthiness	Diversification
	Price	TRS
Developing country	Foreign exchange	foreign exchange forward, swap or option
<b>Local currency bond</b>		
Investor	Foreign exchange	foreign exchange forward or swap
	Interest rate	interest rate swap
Developing country	NA	
<b>Equity</b>		
<b>Portfolio/DFI</b>		
Investor	Foreign exchange	foreign exchange forward, swap or option
	Price	TRS, equity futures and options
Developing country	NA	
<b>FDI (non-securitized)</b>		
Investor	Foreign exchange	foreign exchange forward, swap or option
Developing country	NA	

\*Bank loans are presumed to be denominated in a major currency (e.g. US\$), at variable (floating) interest rates and underwritten by a syndicate of banks. Bond refers to conventional notes and bonds, floating rate note, and structured note.

Source: Author’s own analysis.

### 3.2.2 *Foreign exchange swap*

A foreign exchange swap is simply the combination of a spot and forward transaction (or possibly two forwards). The start leg of the swap usually consists of a spot foreign exchange transaction at the current spot exchange rate, and the close leg consists of a second foreign exchange transaction at the contracted forward rate. For example, a local investor enters a foreign exchange swap of pesos against dollars in which it buys US\$100,000 today at an exchange rate of US\$0.050 per peso (thus paying 2,000,000 pesos), and contracts to sell US\$100,000 (i.e. buy pesos) at US\$0.0475 in 180 days. The local investor first receives US\$100,000 in the start leg, and then upon the swap expiration date pays US\$100,000 in exchange for receiving 2,105,263 pesos in the closing leg. This 10.8 per cent annual rate of return in pesos is due to the depreciation of the peso against the dollar (or appreciation of the dollar against the peso) and reflects the fact that the peso rate of return from investing in the local currency is higher than the US dollar rate of return.

Foreign exchange forwards and swaps are used by both foreign and domestic investors to hedge foreign exchange risk. Foreign investors from advanced capital markets who purchase securities denominated in local currencies use foreign exchange forwards and swaps to hedge their long local currency exposure. Similarly, foreign direct investments in physical real estate, plant or equipment are exposed to the risk of local currency depreciation. Local developing country investors who borrowed in major currencies in order to invest in local currency assets are also exposed to foreign exchange risk, and they too use foreign exchange forwards and swaps – as well as futures and options where available – to manage their risks.

Of course foreign exchange forwards and swaps were also used for speculation in these local currencies. Derivatives enabled speculators to leverage their capital in order to take larger positions in the value of local currencies. In turn, it meant developing country central banks had to watch the exchange rate in two markets, the spot and forward, in order to maintain their fixed exchange rates.

Forwards and foreign exchange swaps are not always highly collateralized (measured as a percentage of the principal). Collateral is less likely to be used for trading between the major market dealers, and collateral is lower for less volatile financial instruments such as foreign currency.<sup>10</sup> This enables foreign exchange derivatives users to obtain greater amounts of currency exposure relative to capital, and therefore it can leave foreign exchange derivatives counterparties exposed to greater credit risk. The largest source of credit losses in the derivatives markets in recent years were due to defaults on foreign currency forwards in East Asia and Russia (*Swaps Monitor* 1999).

### 3.2.3 *Foreign exchange forwards and swaps – capital outflow problems*

In addition to the above concerns about the potential dangers of foreign exchange derivatives, there is the additional problem with reverse capital flows. This arises from the need of derivatives dealers to create both long and short positions in developing country currencies in order to make a market in derivatives.

---

<sup>10</sup> Volatility is less in comparison to local currency securities whose risk is the product of both the foreign exchange risk and the security price risk.

Table 5

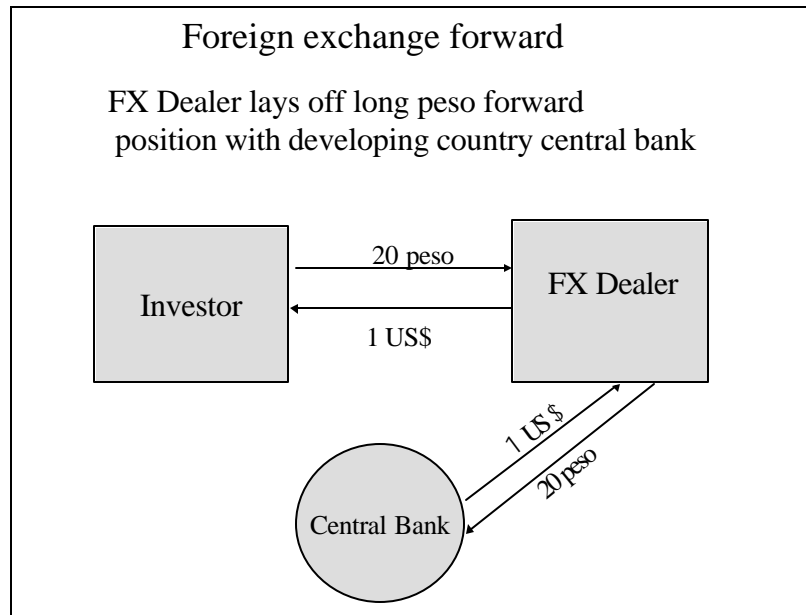


Chart drawn by author.

Every derivatives contract involves a short and a long position. The party buying pesos in exchange for US dollars in the forward market is long pesos (and short dollars), while the counterparty is short pesos. In the market for peso forwards and swaps there is likely to be one or more dealers. A dealer makes a market by quoting bid and offer (ask)<sup>11</sup> prices and then standing behind them. Ideally, the dealer faces a market full of participants who are willing to buy and sell in equal amounts. In this case the dealer reacts to investors hitting his bid (i.e. selling pesos forward to the dealer) by trying to lay-off the long peso exposure by selling pesos to other participants in the market (those who are lifting his offer). However, it is likely that a dealer in developing country foreign exchange derivatives will often face a one-sided or imbalanced market in which most participants want to be short the local currency.<sup>12</sup> This means that it is often difficult or expensive for dealers to lay-off their long positions by selling short to others in the forward or other derivatives markets. As a result, either the forward rate must rise (or fall) sufficiently to compensate the dealer and other risk takers for holding greater amounts of the long positions, or the dealer must find other, cheaper means to manage its risk.

One such alternative method used by dealers in the face of an imbalanced market is to create a synthetic forward or swap contract through the use of the local credit markets. In order to create a synthetic short forward peso position against the dollar, the dealer borrows in the

---

<sup>11</sup> A bid is the price at which the dealer is willing to buy, and the ask or offer is the price at which the dealer is willing to sell.

<sup>12</sup> If investors seek to acquire mostly long local currency positions, then the derivatives dealer will do the opposite and this will create instead a capital inflow.

local peso credit market (thus creating a peso liability), uses the loan proceeds to buy dollars spot and then invests the dollars (thus obtaining a dollar asset). Ideally, the maturity of the forward, peso loan and dollar investment will match. The product of these three transactions gives the dealer a specified amount of dollars in the futures (the loan repayment) that can be sold for pesos at a specified exchange rate in settling the forward contract and the proceeds from which will repay the peso debt and leave the dealer with a profit. In this manner the dealer can continue to quote bid and offer prices without holding market risk.

Note that in the process of creating synthetic short forward position to make a market in foreign exchange derivatives, the dealer has generated a capital outflow by borrowing at home and lending abroad in the dollar market. Thus in the context of imbalanced markets, where there are more participants willing to hold short rather than long positions at reasonable rates, hedging can generate capital outflows. If a foreign investor trades a foreign exchange forward or swap in order to hedge an investment in a local currency security or direct investment, then the derivatives market will potentially generate a capital outflow equal to the size of the hedge. If the foreign investor wishes to hedge the full value of the invested principle, then the hedging process can potentially neutralize or net-out the capital inflow. Of course, the flow is again reversed and returns to the developing country when the dealer's loan matures and he uses the dollar proceeds to unwind his synthetic forward position.<sup>13</sup>

There is an additional concern with foreign exchange swaps and their affect on capital flows. Note that the cash flows from such a swap resemble the cash flow from a short-term foreign currency loan (see example above). Dollars are received today and are repaid in the future, and the 'loan' cost is paid in pesos based on dollar interest rates as well as those in pesos. In recognition of this, Malaysia prohibited foreign exchange swaps as part of its effort to impose capital controls to impede capital inflows prior to the 1997 financial crisis.

### *3.2.4 Interest rate swap*

The basic interest rate swap, called a vanilla interest rate swap, is an agreement between two parties to exchange the net of two series of payments. One series of payments is based on a fixed interest rate applied to a notional principal, such as 6 per cent on US\$1 million, and the other series of payments is based on a floating rate, such as 3-month LIBOR, applied to the same notional principal. In order to simplify payments and other clearing issues, most swap contracts allow the two parties to pay (or receive) only the net or the difference between these two series on each payment or 'drop' date.

Borrowers with variable interest rate loans can hedge their interest rate risk with a swap in which they receive the floating rate and pay the fixed rate (i.e. buy a swap) and thereby swap their floating rate payments for fixed rate payments.

### *3.2.5 Total return swap*

A total return swap (TRS) is a contract in which at least one series of payments is based on the total rate of return (change in market price plus interest or dividend payments) on some

---

<sup>13</sup> Similarly, the purchase of dollars in the spot market by the dealer is also ultimately reversed when he purchases pesos in the settlement of the forward contract.

underlying asset, security or security index. The other leg of the swap is typically based on a variable interest rate such as LIBOR, but may be a fixed rate or the total rate of return on some other financial instrument. Based upon what is known about the pre-crisis situations in Mexico and East Asian, the total return swaps in those situations usually swapped LIBOR against the total rate of return on a government security.

A total return swap replicates the position of borrowing at LIBOR in order to finance the holding of a security. The returns are the same, but unlike the actual cash market transaction, it does not involve ownership or debt. Instead, the only capital involved in a TRS is the posting of collateral. In addition to the reduction in the need to commit capital to the transaction, a TRS also has no impact on a firm's balance sheet and is not likely to be subject to regulatory restrictions on foreign exchange exposure.<sup>14</sup> In short, TRS allow financial institutions and investors to raise their risks, and potential returns, relative to capital.

One of the troublesome uses of total return swaps is to capture the gains from the carry trade or carry business. A profitable carry trade exists where exchange rates are fixed and interest rate differentials persist between the two economies. Then it is possible to borrow in the low interest rate currency and lend in the high interest rate currency with no risk other than that of a failure in the fixed exchange rate regime.

The use of TRS alters the form, but not necessarily the quantity, of capital flows to developing countries. Alternatively, when developing country financial institutions engage in the carry business, the capital flows are in the form of major currency (usually short-term) bank loans. If they pursued the same profit opportunities by using TRS, then it would generate indirect capital flows as swaps counterparties, usually swaps dealers from advanced capital markets, bought the underlying asset as a hedge against their own position in the TRS.

Consider the dealer's side of the transaction. The dealer contracts to receive LIBOR plus a spread in exchange for paying the total return on a local currency security. The dealer does not intend to profit by investing on the expectation that LIBOR will rise or that the total return on the security will fall. Instead, the dealer lays-off the risk by borrowing at LIBOR and using the proceeds to buy the local currency security. The dealer then passes-through in the regular swap payment the proceeds from holding the local security while its cost from borrowing to buy the security are covered by the LIBOR payments received from the developing country swap counterparty. The spread above LIBOR paid to the dealer is the dealer's profit, and the dealer ends up holding no market risk.<sup>15</sup>

Note that in the process of hedging the dealer's position in the TRS, there is a capital inflow to the developing country because the advanced capital market dealer has purchased the local currency security.

As a result, the capital would flow to developing countries through the purchase of local currency denominated securities by swaps dealers instead of through a major currency bank loan. Normally the flow of capital in the form of local currency securities would shift the exchange rate risk to the advanced capital markets, but not in this case. Instead, it functions in

---

<sup>14</sup> It would incur a capital charge only if it were to move into the money.

<sup>15</sup> The dealer's credit risk – the risk of the counterparty failing to perform on the contract – is mitigated through the use of collateral.

conjunction with the TRS to leave the local developing country investors holding the foreign exchange risk (the short dollar position) much like a major currency bank loan.

On one hand, the use of TRS results in similar foreign exchange exposure as before. However in some ways it is far worse. In comparison to using foreign bank loans to capture profit from the carry trade, TRS cause even greater surges in foreign currency than with short-term bank loans. The potential surge originates from the collateral requirements on the swap. If the present value of the swap were to suddenly drop as a result of a rise in local interest rates, a drop in the currency or both, then the local swap holder would be required to post (additional) collateral with their swap counterparty. Generally this means selling other assets, often other developing country assets, in order to obtain dollars in order to meet the requirements to post additional collateral by the next day – if not intraday. In this way, TRS can result in large and immediate major currency outflows in foreign currency transfers. If short-term bank loans are considered hot money, then payments to meet margin and collateral requirements are microwave money – they get hot more quickly.

As an indication of the potential magnitude of these collateral outflows, Garber and Lall (1996) cite the IMF and ‘industry sources’ which reported that Mexican banks held US\$16 billion in tesobonos total return swaps at the time of the devaluation of the Mexican peso. The authors calculated that the initial peso devaluation depressed the value of tesobonos by 15 per cent, and that this would have required the delivery of US\$2.4 billion in collateral the next day. This would explain about half of the US\$5 billion dollars of foreign reserves lost by the Mexican central bank the day after devaluation. In this way, collateral or margin calls on derivatives can accelerate the pace of a financial crisis, and the greater leverage that derivatives provide can also multiply the size of the losses and thereby deepen the crisis.

The use of TRS also increases the likelihood of contagion. They often involve cross-currency assets and payments and are therefore more likely to transfer disruptions from one market to another. Neftci (1998) claims that one reason that Korean banks engaged in so many Indonesian total return swaps was that they were seeking higher rates of return in response to a rise in their funding costs. ‘But, note that at the end of this process, Korean banks are being exposed to Indonesian credit. This however, is not visible on their balance sheets. This situation not only creates the possibility for contagion, but may also make the contagion unpredictable and severe’.

### *3.2.6 Structured notes*

Structured notes, also known as hybrid instruments, are the combination of a credit market instrument, such as a bond or note, with a derivative such as an option or futures-like contract. Hybrid instruments include such conventional securities as convertible stocks, convertible bonds and callable bonds. These have long been among the set of traditional securities regularly issued and traded in US financial markets.

Structured notes were part of the new wave of innovation in capital flows to developing countries in the 1990s. They offered issuers and investors either better yields than similarly rated securities, or better combinations or bundles of risk characteristics. In some cases, structured notes were designed to circumvent accounting rules or government regulations so as to allow lower capital charges, greater foreign exchange exposure or greater overall risk to capital.

Table 6  
 Putable debt issued from East Asia  
 (US\$ millions due in 1999 or 2000)

	Loans	Bonds
Hong Kong	1,549	2,642
Indonesia	2,876	963
Korea	3,263	3,986
Malaysia	547	1,730
Philippines	75	-
Singapore	532	-
Thailand	1,680	1,313
<i>Total</i>	<i>10,522</i>	<i>10,634</i>

Data from the IMF (1999).

The structured notes used in developing countries were usually structured so that their yield was linked to the value of one or more of the currencies or stock indices in the developing economies. The issuers of these structured notes were financial institutions from advanced capital market economies, and the investors were often developing country financial institutions and investors who were more willing to hold their own exchange rate risk or that of their neighboring developing countries.

### 3.2.7 *Putable debt*

The largest threat to financial market stability that did not directly involve foreign exchange exposure was the use of embedded derivatives, called put options, in loan and bond debt contracts. These put options on the debt principal enabled lenders to recall their principal in the event of economic trouble. The effect was to drain the developing country financial markets of liquidity just at the time it was most urgently in need.

It is not unusual for credit instruments to have attached options. Callable bonds are familiar financial instruments in advanced capital markets. They are the combination of a conventional bond and a call option that allows the issuer i.e. the borrower, to recall the principal on the bond at a specified value (usually par) after some future date. Callable bonds are used by borrowers to reduce the risk that they will be locked into higher than market rates of interest on their outstanding debt.

In the case of developing country debt, the attached options were usually puts rather than calls. This granted the lenders, not the borrowers, the right to reclaim their principal. Lenders in advanced capital markets attached put provisions to loans and bonds in order to reduce their risk of adverse macroeconomic conditions or other circumstances which would reduce the ability of their borrowers to repay their debts. It also reduced their exposure to increases in dollar or other hard currency interest rates. Yet another motivation involved outflanking



tax and regulatory requirements because the putable loans could be treated like long-term debts even though they potentially functioned like short-term ones.

These put options were in the form of ‘hard’ and ‘soft’ puts. Hard puts, usually attached to a note or bond, gave the lender the right to demand principal repayment after a certain date, e.g. a five year note might be put-able after one year. Soft puts, usually attached to loans, gave lenders the right to reschedule the terms of their credit in the event of certain adverse ‘events’. Table 6 shows the breakdown between loans and bonds in East Asia.

Most of the ‘hard’ put options were closer to the European rather than the American style option. In these cases, option holders were granted the right to exercise the option only on specific days or perhaps semiannually; in only a very few cases were the options exercisable on a continuous basis like American options.

These attached put options facilitated lending by lowered costs to borrowers and by giving lenders the assurance of obtaining some lending alternatives in the event of adverse market disruptions.

This put-able debt instrument was used widely in the rapidly growing developing country bond market. The IMF estimated in 1999, using available public databases, that there were US\$32 billion in debts putable through the end of 2000 for all emerging countries. Of the total, US\$23 billion is from East Asian issuers, and US\$8 billion was from Brazil.

The presence of put-able debt in lending to developing economies raises several policy concerns. First, the attached put lowers the borrowing costs and this in turn encourages more borrowing and lending. Second, the tax and regulatory treatment of putable debt often incorrectly treats it as long-term debt even though it functions like short-term debt. Third, it creates liquidity shortages in the event of a financial disruption, and it does so just at the time in which liquidity is crucial for the successful functioning of the financial sector. In sum, put-able debt tends to increase indebtedness and does so in a manner that exacerbates financial disruptions.

#### **4 Threats to currency stability: Derivatives and fixed exchange rate regimes**

The presence of derivatives markets poses a special set of challenges for a government maintaining a fixed exchange rate regime. This is true whether it is a soft peg, a crawling peg or a hard peg.

Developing country governments pursue a fixed exchange rate policy in order to encourage trade and investment by lowering exchange rate risk. A fixed exchange rate can promote growth through the expansion of trade and foreign investment by making those economic decisions less uncertain and more dependable. This reduces the costs of foreign exchange risk involved with importing capital and raw material, exporting goods, and repaying foreign debts. Another reason is to stop the acceleration of inflation, or lower the rate of inflation by anchoring to external inflation.

Against this backdrop of a fixed exchange rate policy, the presence of exchange rate related derivatives raises several important problems that are expressed in the following questions.

- i) Of what use are foreign exchange forwards or swaps when the fixed exchange rate regime eliminates normal market price volatility? In other words, how and why would they be used since there is no market volatility to hedge?
- ii) What purpose does the price discovery of the forward rate (discount or premium) serve, and what signals does it send?
- iii) How does it affect the ability of the central bank to maintain the fixed exchange rate?

The first problem is that in the absence of normal market price fluctuations, exchange rate derivatives function as a speculative or hedging instrument against the success of the government's policy. In a fixed exchange rate context, the only exchange rate movement that investors need to hedge against is a failure of the fixed rate regime that results in either a devaluation of the pegged exchange rate or a complete abandonment of the regime. There is a much smaller risk of an appreciation of a developing country currency, and so the more relevant risk is a decline in its value. Using a forward, swap or option to take a potentially profitable position on the possible fall in the currency's value is practically a one way bet. The future exchange rate determined in a forward or swap derivative market is not an expression of economic value but instead reflects the likelihood of government failure or a measure of the lack of confidence in the government's ability to maintain a fixed exchange rate. In short, it is a *political* price or the price of a policy event.<sup>16</sup>

Derivatives markets also provide leverage to speculators and 'players' who might mount an attack on the fixed exchange rate. This leverage in taking a position on the currency's value, whether using foreign exchange forwards, swaps or options, lowers the costs and therefore raises the potential gain from such an undertaking. Derivatives provide lower cost price exposure because of their higher leverage (which saves on costs of capital), higher levels of liquidity (sometimes), and their lower transactions costs. Thus the presence of derivatives markets is to empower those betting or plotting against the success of the government's macroeconomic policy.

Moreover, because it is a *political* price and a practically one way bet, there are likely to be far more investors who want to be short – rather than long – the local currency. In order to complete the market, foreign exchange derivatives dealers will have to engage in the activity of creating synthetic short positions (described above) in order to lay-off their long-side risk. The result of this is a capital outflow, and as the short-interest grows in the derivatives market the capital outflow will increase and thus will contribute to the self-fulfilling speculation against the currency.

The second problem is that in the presence of a fixed rate system, the forward and swap market will create a market price, a process known as price discovery, that will reflect the lack of confidence in the government's exchange rate policy. That price will almost certainly indicate that the future value of the currency will be below the present pegged spot rate. If that price is misunderstood, then it will regularly send the signal that the currency is going to move off of the peg.

---

<sup>16</sup> This is not to say that there is no economic value to a political or policy event.

The third problem concerns how the presence of forward and swap markets affect the central bank's ability to maintain a fixed exchange rate regime against moderate downward pressure caused by some short-term imbalance or a large speculative attack.

If there is only a spot market for foreign currency, then the central bank can defend its exchange rate peg by intervening directly in the spot market to buy its currency with foreign reserves and by tightening domestic credit conditions. Direct intervention, although the foreign currency market is large, can be effective because the central bank's intervention is both a large net purchase within that market and because it sends a signal. The later method consists of either raising interest rates – which attracts foreign capital inflows, discourages outflows and increase the cost of carrying synthetic short positions – or restricting the supply of credit to certain borrowers such as foreigners or non-commercial firms.

The presence of one or more foreign exchange derivatives markets adds policy targets for the central bank. Moreover, the derivatives markets are in some ways more problematic as targets than the spot market. While the spot market is large, the potential size of the forward and swap market is infinite. If the central bank raises local interest rates, then the interest rate differential increases and serves as a larger basis for discounting the forward and swap rates. If the central bank intervenes directly, perhaps in an effort to avoid the forward market signaling a lack of confidence in the regime, then there is potentially no end to the effort. In so far that the central bank intervention succeeds in supporting the forward or swap rate, it offers attackers a better price at which to sell the local currency in the future. If the central bank does *not* intervene, then the forward can continue to signal a devaluation and further growth in open interest in the forward or swap market will spur capital outflows as derivatives dealers construct synthetic short positions.

This is not to say that the situation becomes hopeless. In the face of a currency 'attack,' the central bank can take the extra step imposing capital controls that prohibit banks from delivering the local currency to foreign entities. This prevents foreign speculators from delivering on their forward contracts. This measure, taken together with an increase in interest rates, amounts to a bear squeeze. This strategy, as used in the case of Thailand in the spring of 1997, is described in Lall (1997) and Garber and Lall (1996).

## 5 Policy solutions

The following policy proposals are a set of financial market regulations that are designed to make financial markets more efficient and less susceptible to disruptions and distortions.<sup>17</sup> They should encourage the use of derivatives for risk management purposes while discouraging their use in unproductive pursuits that might create dangerous levels of exposure to market risk, as well as credit risk, or lead to reverse capital flows.

These prudential regulatory proposals are fundamentally of two types. The first type relates to reporting and registration requirements and is designed to improve the transparency – and thus the pricing efficiency – in the markets. Reporting requirements also enable the government, and other market surveillance authorities such as exchanges, to better detect and

---

<sup>17</sup> These proposals were prepared as part of a presentation by the author to the North-South Institute in October of 2001.

deter fraud and manipulation. Registration requirements are especially useful in preventing fraud.

The second type of prudential regulatory measures involves capital and collateral (also known as margin) requirements. Capital requirements function to provide both a buffer against the vicissitudes of the market and a governor on the tendency of market competition to drive participants towards seeking high returns and thus higher risks.<sup>18</sup> Collateral requirements have basically the same effect, although collateral requirements apply to transactions in particular and not institutions. Thus non-financial institutions that would not otherwise be subject to capital requirements would be subject to collateral requirements on their derivatives transactions.

Moreover, the current market practice for managing collateral, in so far there is one, is dangerous. It requires a firm to become ‘super-margined’ if its credit rating drops substantially (especially if it drops below investment grade). This requires a derivatives counterparty to post substantial amounts of additional collateral, and amounts to a large demand for fresh capital just at the time the firm is experiencing problems with inadequate capital. This market practice creates a *crisis accelerator*.

The following list of proposals is broken down into two groups. The first apply to financial institutions and markets in industrialized or developed countries. Developing country financial markets are not isolated from their counterparts in the advanced capital markets of developed countries, and this interconnectedness – especially through derivatives markets – is very important. As one senior IMF official remarked to me in private, ‘I have never seen one sin in developing country financial markets that did not have as its counterparty someone from New York or London’.

The second set includes all the elements of the first plus some additional provisions designed to apply to financial institutions and markets in developed countries. One merit to identifying useful regulatory improvements is that each developing country can adopt these prudential regulations on its own initiative. Another merit is that most of these regulations are the same or similar to ones used in industrialized countries and therefore should not be viewed as objectionable by IMF or other actors in international capital markets.

## **Developed countries – registration, reporting, transparency and liquidity**

### *1 Reporting and registration requirements*

- (a) Require participants (counterparties) in derivatives contracts to report their transactions to the designated regulatory authority.

All exchange traded derivatives are already reported to the exchange and its clearing house. The exchange house collects this information and either reports it to the regulator or keeps the records so that they can be called for in the future. Most OTC derivatives transactions are traded through the ISDA Master Trading Agreement (‘Master Agreement’) which requires that the counterparties to the derivatives trades exchange

---

<sup>18</sup> John Eatwell has raised some serious concerns about the ability of capital held to meet capital requirements to successfully function as a buffer against such changes. See Eatwell (2001).

confirmation messages to insure that all the key terms are understood. The reporting requirement would entail them to CC the email message or fax to the regulatory authority.

- (b) Require derivatives dealers to report their derivatives transactions to the designated regulatory authority. This data should include price, volume, open interest, put-call volume and ratios, maturity, instrument, underlying item, amounts traded between other dealers and with end-users, and collateral arrangements.

This information would be compiled, and the non-proprietary data would be made available to the overall market so as to improve transparency. Once aggregated, this data would reflect the character of the market while protecting the details of dealers' market positions (assuming there are several dealers). The data of a proprietary nature would be retained by the regulator in order to detect and deter fraud, manipulation and potential systemic breaks in the markets.

- (c) Require publicly traded corporations to include an explicit statement of their derivatives activities. Update financial reporting rules to require that financial reports convey the actual, underlying economic properties and business purposes of minority interests, special purpose entities and derivatives transactions as part of their regular financial reporting statements.

In order to bring off-balance sheet activities into the same light as balance sheets, derivatives would be reported by notional value (long and short), maturity, instrument and collateral arrangements. This would enable investors to better determine whether the firm was under- or over-hedged, and whether they were primarily acting as a producer or wholesaler.

- (d) Register all derivatives dealers and brokers.

In the US, banks, thrift and other depository institutions, securities brokers, securities dealers, futures and options brokers and insurance salespersons are required to register with their relevant regulatory authority. This establishes a minimum competence level for the individuals, background checks to detect fraud and theft convictions for salespeople and proper business organization for the institutions. Even though OTC derivatives markets are generally dealer markets, the regulations should also apply to brokers. Some electronic derivatives trading platforms function like brokers, and unforeseeable changes in the markets may again elevate the role of brokers.

- (e) Modernize accounting rules and other financial market regulations in order to properly account for embedded derivatives.

There is a large and growing amount of securities and loans to which derivatives have been attached or embedded. This has fundamentally altered the effectiveness of existing rules for taking capital charges against the risks associated with holding or issuing these securities, for financial reports regarding investments in these securities and even regulations that might otherwise prohibit certain financial institutions, such as pension funds or insurance companies, from investing in these securities. Modernized rules should reflect the market risk associated with the attached or embedded derivative and not merely the credit risk of the principle of the security.

## 2 *Liquidity requirements*

- (a) In order to assure market liquidity, require OTC derivatives dealers to act as market makers and maintain bid-ask quotes throughout the trading day.

- (b) Dealers benefit from the privilege of their role in the market. In addition to earning their bid/ask spread, dealers are also privy to the most current changes in the market. Along with this privilege should come the responsibility to help maintain liquidity and an orderly market. US stock exchanges, such as the NYSE and NASDAQ, already require that ‘specialists’ act as dealers or market makers throughout the trading day. In the OTC cash market for US Treasury securities, the primary dealers are also required to act as market makers throughout the trading day. Those markets have proven to some of the most efficient and most liquid in the world, and so this supporting market rule has proven its merit.

### 3 *Anti-fraud and anti-manipulation authority*

- (a) Strictly prohibit fraud on the market and the manipulation of market prices and make it punishable by civil and criminal penalties.

In order to protect the integrity of market prices so that they encourage the widest possible market participation and do not signal distorting signals throughout the economy, fraud and manipulation should be strictly prohibited and punishable by civil and criminal penalties.

- (b) Requirement reports of large trader positions.

Derivatives dealers and exchanges would have to report each entity that amasses a certain size of position in the market. This information would be compiled across markets in order to detect and deter market manipulation. This large trader reporting data has proven very useful by the Commodity Futures Trading Commission in the US for the purpose of market surveillance.

- (c) Extend ‘know thy customer’ rules to all financial institutions conducting lending, underwriting, repurchase agreement transactions, securities lending transactions, and all derivatives transactions with entities in developing countries.

This provision will discourage financial sharpsters from ‘blowing-up’ their customers. For example, the PERLs served no positive purpose for East Asian investors and were primarily a stealth vehicle for financial institutions in developed countries to acquire long-dated short positions in developing country currencies.<sup>19</sup> This provision also exists in US securities markets and a comparable measure exists for US banking markets. It should be extended to derivatives markets where there is even greater concern with the large differences between market participants in the degree of financial sophistication.

## **Developed countries – capital and collateral requirements**

### 4 *Capital requirements*

- (a) Update capital requirements for all financial institutions, including derivatives dealers that might not otherwise be registered as a financial institution, so that the capital is held

---

<sup>19</sup> For descriptions of these structured securities and how they are transacted, see Partnoy (1999) and Dodd (2002).

in an amount that is commensurate with not only the exposure to credit loss, but also potential future exposure and value at risk (VAR).

These provisions are beginning to be applied in some spheres of developed countries, such as the Securities and Exchange Commission in the US which has adopted these rules for derivatives dealers registered under rules known as 'Broker-Dealer Lite.'

Capital serves two functions: first, it acts as a buffer when the firm suffers from an adverse event; and second, it limits to amount of a firm's risk taking in so far that the capital requirement is appropriately structured to be proportional to risk exposure. Capital requirements are critical to prevent the problems at one firm from becoming problems at other firms. This is especially important for dealers in financial markets because their failure can lead to market problems such as illiquidity (market freeze-up) or meltdown.

## 5 *Collateral requirements*

- (a) Require adequate and appropriate collateral or margin to be posted and maintained on all derivatives transactions.<sup>20</sup>

Collateral (margin) on transactions functions like capital does for financial institutions. It helps prevent the problems at one firm or with one transaction from causing performance problem for other transactions and other firms. In doing so it reduces the likelihood of default or other credit related losses, and it reducing the market's vulnerability to a freeze-up or meltdown. The current market practice for the use of collateral, in so far there is one, is inadequate.

One particularly dangerous market practice is to require small initial collateral levels, but then requires a firm to become 'super-margined' if its credit rating drops. This initiates a large increase in the need for collateral just at the time the firm is experiencing problems with inadequate capital. This amounts to a *crisis accelerator*.

## **Developing countries – registration, reporting, transparency and liquidity**

### 6 *Additional registration and reporting requirements*

- (a) Reporting and registration requirements for derivatives dealers and derivatives participants in developing countries should be the same those in developed countries.

The need to prevent fraud and maintain a transparent market environment are no less important for developing economies. The need to maintain these requirements is thus just as great. The cost of administering and enforcing these requirements is not substantial.

- (b) The ability to enforce reporting requirements can be enhanced by stipulating that any derivatives transaction that is not reported cannot be actionable in court for legal enforceability or bankruptcy claims. This provision will lead derivatives counterparties to thoroughly comply with reporting requirements in order to protect their interests in the contracts. Otherwise it amount to giving a counterparty an option to legally abrogate the obligations of the contract.

---

<sup>20</sup> For good background reading on collateral provision in OTC derivatives markets in the US, see Johnson (2002).

## **Developing countries – capital and collateral requirements**

### *7 Capital requirements, in addition to those for developed countries listed in section 4*

- (a) Limit exposure to foreign exchange rate, interest rate and other market price fluctuations to a percentage of capital.

The limitations can be figured as percent of capital and can be augmented by an absolute limit. The limitation should apply to a consolidated balance sheet and off-balance sheet measure of exposure. The limits can be made tighter for higher degrees of exchange rate management.

Examples of position or exposure limits already exist on US derivatives exchanges. These restrictions amount to explicit limitations on risk taking, but not hedging. This measure can be very effective in limiting the amount of carry trade or ‘hot money’ related transactions because they result in exchange rate exposure and sometimes interest rate exposure. In doing so, it will discourage leveraged exposure to devaluation or depreciation, and encourage long-term or more diversified investment.

- (b) Limit the mismatch in maturity on assets and liabilities

Another source of financial vulnerability that can plague developing countries more than their wealthier, developed neighbors is the risk associated with mismatching the maturity of assets and liabilities. Not only is there an interest rate risk from changes in the level and slope of the yield curve, but moreover there is the liquidity or refunding risk from not being able to continue rolling-over or renewing loans.

### *8 Collateral requirements*

- (a) Collateral requirements for derivatives dealers and other derivatives participants in developing countries should be the same those in developed countries.

Collateral requirements are no less important for financial markets in developing economies. The appropriate level of collateral should be sufficiently high to establish safe and sound foundation for market transactions, and yet not so high that the use of risk management tools is discouraged by their lack of affordability.

Developing countries do have additional reasons to maintain relatively stronger collateral requirements. They have the need to establish a reputation for market safety and soundness. In so far that they suffer more than wealthy countries when financial sector disruptions occur, they have the reason to require a greater ‘buffer’ against such uncertainties. In addition, by raising the cost of risk taking, relatively higher collateral standards will serve to discourage excessive risk taking.

The above regulations apply to both developed and developing countries – thus sharing the responsibility to make changes. Note also how the burden sharing applies not just to debt forgiveness or debt work-outs, but also to the sharing of risks. This follows from the basic insight that developed countries have had more years of experience in regulating their financial markets, and the beneficial wisdom of this experience should be shared. It is not merely a one-way relationship, because it will also be held up as a mirror to developed countries when they push for changes in developing countries that are inconsistent with what is actually practiced at home. After all, US financial markets – with the exception of the OTC derivatives markets – are closely regulated and so the ‘Washington Consensus’ towards a



liberalized, free-market approach to developing country finance markets amounts to advocating 'do as we say, not as we do'. This approach holds both sides accountable in their own way.

## References

- Chernow, Ron (1997), *The Death of the Banker – The Decline and Fall of the Great Financial Dynasties and the Triumph of the Small Investor*, Vintage Books, New York.
- Dalla, Ismail, and Deena Khatkate (1996), 'The Emerging East Asian Bond Market', *Finance & Development*, IMF/World Bank Magazine (March). Washington DC.
- Dodd, Randall (2002), 'The Role of Derivatives in the East Asian Financial Crisis', in Lance Taylor and John Eatwell (eds), *International Capital Markets: Systems in Transition*. Oxford University Press, Oxford.
- Eatwell, John (2001), 'The Challenges Facing International Financial Regulation', presented to the Western Economic Association, July.
- Garber, Peter. 1998. 'Derivatives in International Capital Flow', *NBER Working Paper* No.6623, June.
- Garber, Peter, and Subir Lall (1996), 'Derivative Products in Exchange Rate Crises', in Reuven Glick (ed.), *Managing Capital Flows and Exchange Rates: Perspectives from the Pacific Basin*. Cambridge University Press for Federal Reserve Bank of San Francisco conference.
- IMF (1999), 'Involving the Private Sector in Forestalling and Resolving Financial Crises', IMF, Washington DC.
- Johnson, Christian A. (2002), *Over-The-Counter Derivatives: Documentation*. Bowne Publishing, New York.
- Lall, Subir (1997), 'Speculative Attacks, Forward Market Intervention and the Classic Bear Squeeze', IMF Working Paper, June.
- Lowell, Bryan, and Diana Farrell (1996), *Market Unbound – Unleashing Global Capitalism*. John Wiley and Sons. New York.
- Neftci, Salih N. (1998), 'FX Short Positions, Balance Sheets and Financial Turbulence: An Interpretation of the Asian Financial Crisis', CEPA Working Paper No.11 (October).
- Partnoy, Frank (1999), *F.I.A.S.C.O.: The Inside Story of a Wall Street Trader*, Penguin, New York.
- Swaps Monitor* (1999), Edited by Paul Spraus.
- World Bank (2000), *Global Development Finance*, World Bank, Washington DC.
- World Bank (2001), *World Development Report 2000/2001*, Oxford University Press, Oxford.