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PROVIDING CREDIT IN TIMES OF CRISIS: A Briefing Paper for New Rules Consultations

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I. INTRODUCTION

This short briefing paper provides an overview of various existing programs and proposals to provide resources, whether as credit or disbursements, in times of crisis. The provision of international aid will be ignored for the sake of this discussion, however it is recognized that the emergency credit from official sources sometimes contains elements of concessional lending that constitute, in part, aid.

There are many different existing programs that provide funds in the event of a crisis, so in order to make an orderly presentation some distinctions are needed to group them into sensible categories. All them fall under the category of mitigating rather than preventing problems (although in mitigating the impact of price movements they may prevent other problems such as “Dutch disease”). The first key distinction is between those programs that are created at the national level through various forms of domestic savings or hedging and international programs that draw upon the greater resources of the global economy. This paper will address the national programs first.

The second key distinction is that between programs designed to provide credit or other funds in the event of a natural disaster and those designed to respond to a commodity price shock or other economic disruption such as a financial crisis or balance of payments shortfall. The second priority in listing programs will present those that address natural disasters before financial crises.

The paper will next describe programs under the category of national programs, and then address those under the international category.

II. NATIONAL PROGRAMS TO DAMPEN DISRUPTIONS

BUFFER STOCKS

One way to prevent or substantially diminish the effects of a natural disaster or sudden price change is by establishing financial institutions that will prudently manage the changes in wealth and manage its disposition over time. Two examples of such social trust funds are known as Stabilization Funds and Savings Funds. In both of these cases the purpose is to mitigate any harmful impact of changes in wealth, and especially new found wealth, on fiscal policy and international competitiveness.

- Stabilization Fund

The basic economic lesson for Stabilization Funds is as old and familiar as the Bible. The story of Joseph can be read in the Torah, the Christian Old Testament and the Koran where Yusef is given his own sura. The scriptures describe how Joseph advised the leaders of Egypt to conserve output during period of bumper harvests – called the “fat”

years – and then to dispense the inventory during future “lean” years. This inventory management stabilized Egypt’s income over time and contributed to its peace and prosperity.

Stabilization Funds are designed to accumulate funds when resource prices exceed a target level and to dispense funds when the price falls below the target level. In doing so it takes income away from current spending when the price level generates windfall gains, and it makes income available again when times are depressed by low resource prices.

In order to be effective, Stabilization Funds require two types of budgetary protections. The first, which is important during boom periods, prevents surpluses in the Stabilization Fund from being used as collateral to increase borrowing and thereby increase overall spending. The result would be that government spending was not dampened during a boom period and that instead the interest cost on the new debt would put a burden on future income when commodity prices might not be so high. The second, which is important when prices are depressed, protects the fiduciary integrity of the fund so that it is not raided for short-term reasons. The Stabilization Fund is designed to pump money into the government budget when commodity prices fall below their target levels, but sometimes there is great pressure for additional resources. In order to protect the fund’s savings for future stabilization purposes, it needs to be managed by leadership that is professional, protected from immediate political pressures and ultimately representative of the people served by the fund. One manner of doing this is to have a commission or board appointed by the legislative body to terms of intermediate length that expire at staggered years in the future.

An example of a successful fund is that of Chile’s Copper Fund. Established in 1985, its savings are held in an account at the Central Bank and its management comes from an independent board (which includes members from the state owned copper corporation CODELCO). It has been credited with helping the Chilean government avoid fiscal deficits up until 1999. A poor example is that of the Macroeconomic Stabilization Investment Fund (FIEM) of Venezuela where the lack of strict budget rules has allowed the government to borrow against accumulated assets in order to increase spending as well as to delay scheduled payments into the fund. The result is that the FIEM has only \$700 million in reserve (even though oil prices have been very high), and that its effectiveness has been diminished.

A successful Stabilization Fund will stabilize government budgets, and it can also protect against the effects known as the Dutch Disease by preventing the appreciation of the currency. This is accomplished by investing the fund’s savings in foreign currency denominated securities. Moreover, a successful Stabilization Fund will serve as a signal that the nation’s resource wealth can be constructively channeled into a stabilizing force in the economy.

There is, however, a key limit to this policy strategy. It is premised on the assumption that the “fat” years will come first. Unless the fund can borrow against future income,

then it cannot begin to exercise a stabilizing influence on government budgets until resource prices have first exceeded the target level, and therefore the fund has the additional political burden of having to first act as a drag on the economy before it can act as a stimulus.

- Savings Fund

A Savings Fund is designed to act as a rainy day fund or to help transfer wealth to future generations. This is especially desirable for non-renewable natural resources that might otherwise be exhausted by current generations. A Savings Fund is designed to accumulate assets during times when the resource price exceeded the target level, and hence provide some dampening or stabilizing function, but the assets would then form a trust and the income on the trust could be paid out over time. One example of such a Savings Fund is the Alaska Permanent Fund. It was created in 1977, by the end of 2003 it had accumulated over \$28 billion in assets, and today the income from its assets generate payments that are made to all Alaskan citizens.

COMMODITY CREDIT CORPORATION

This example comes from the U.S. agriculture programs. Unlike the savings approach that creates a buffer stock, the CCC works as a credit facility to lend funds in the event of a price disruption – it has also been used to based price subsidization purposes. It is a government-owned and operated entity that was created to stabilize, support, and protect farm income and prices. It also helps maintain balanced and adequate supplies of agricultural commodities and aids in their orderly distribution. The CCC has a capital stock of \$100 million which is held by the United States, and it also has the authority to borrow \$30 billion at any one time. Funds can be borrowed from the U.S. Treasury as well as private sources.

The CCC aids producers through loans, purchases, payments, and other operations in the production and marketing of agricultural commodities. It also provides for the sale of agricultural commodities to other U.S. government agencies, to foreign governments and makes donations to domestic, foreign, or international relief agencies.

MASSIVE FOREIGN RESERVE HOARDING

Over the past five years, many developing countries have amassed large holdings of foreign reserves, often in the form of liquid U.S. dollar assets such as Treasury securities. As of mid-year 2003, the holdings of US government securities by nine East Asian countries totaled \$647 billion.¹ This build up of foreign reserves might be attributed to the desire to prevent the appreciation of the developing countries' exchange rates, but it can also be viewed, and it can certainly serve as, a buffer stock to self-insurance against

¹) China, Taiwan, S.Korea, Indonesia, Hong Kong, Malaysia, Singapore, Thailand and the Philippines.

the disruptive effects of international shocks that might force the country into an IMF program.

Table 1								
Foreign exchange reserves of developing countries								
US\$ billions								
1995	1996	1997	1998	1999	2000	2001	2002	2003
447.7	538.1	591.0	607.6	645.7	698.3	778.5	951.4	1,227.4
* Data from World Bank 2004, Global Development Finance								

In addition to individual holdings of developing country central banks, 13 Asian countries (Japan, S. Korea, China and 10 ASEAN nations) have formed a currency stabilization pact in order to garner the greater gains of being able to pool their resources during a disturbance or crisis. The agreement calls for currency swaps between members in order to enhance a country's ability to address short-term emergency credit needs.

III. INTERNATIONAL PROGRAMS

NATURAL DISASTER RELIEF FUNDING

- United Nation's Office for the Coordination of Humanitarian Assistance (OCHA) and UN Development Program (UNDP), hold the primary responsibility for coordinating humanitarian and rehabilitation/development assistance. OCHA also manages the bilaterally-financed Central Emergency Revolving Fund (CERF).
- World Bank's Disaster Management Facility (DMF) and Emergency Recovery Loans (ERL). ERLs focus primarily on rehabilitation and reconstruction - supporting restoration of assets, production levels, and social activities immediately after natural disasters as well as war or civil disturbance.
- IMF's Emergency Assistance for Natural Disasters (EAND) aims to provide quick-disbursing assistance to member countries that cannot meet their immediate financing needs arising from a major natural disaster without serious depletion of their foreign reserves. Access is generally limited to 25 percent of quota, although larger amounts can be provided in exceptional circumstances. Emergency natural disaster assistance has been used 25 times, at an average of 30.5 percent of quota. The lack of concessionality has limited its use by low-income countries.
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- Inter-American Development Bank (IDB) set up the Emergency Reconstruction Facility (ERF) in 1998.

- Caribbean Development Bank established the Caribbean Disaster Emergency Relief Fund (ERF).
- Disaster Management Agency (CDMA). In 2000, the CDMA, along with Lloyd's Syndicates, launched the Commonwealth and Small States Disaster Management Scheme (CDMS).

CREDIT IN TIMES OF CRISIS: COMMODITY PRICE SHOCKS

- European Commission's FLEX: Established under the Cotonou Agreement in 2000, and operational since June 2002, FLEX is a mechanism for providing "fast-disbursing" support to developing countries² coping with fluctuating export earnings. Disbursements under FLEX are triggered not by losses in the export value of a specific commodity, but by government revenue losses due to declines in exports of goods.

This program succeeds the EC's STABEX program which spanned the period 1975-1995, and transferred a total of €3 billion (four products: coffee, groundnuts, cotton, and cocoa/copra accounted for 80 percent of effective transfers). It also succeeds SYSMIN, which was established in 1980 by the second Lome Convention, and applied to all minerals except oil, gas, and precious metals. Over €1.7 billion in payments was disbursed over the life of the program, and it was funded at the level of €575 million for the final five year period of its existence (1995- 2000).

- IMF has several programs.
 1. Compensatory Financing Facility (CFF) provides financing to members experiencing balance of payments difficulties resulting from a temporary shortfall in export earnings or an excess in cereal import costs. A total of SDR 25 billion has been disbursed to 344 requests for assistance since 1963. The lack of concessionality has limited its attractiveness for low-income countries.
 2. Contingent Credit Lines (CCL), although no longer extant, was intended to provide a precautionary line of defense for members with sound policies, who were not at risk of an external payments crisis of their own making, but were vulnerable to contagion effects from capital account crises in other countries. Under the facility, an IMF member that met the demanding eligibility criteria could draw on a large pre-specified amount of resources if hit by a financial crisis due to factors outside of the member's control. Created in 1999 as part of its efforts to strengthen member countries' defenses against financial crisis, the facility was never used and in November of 2003 it was allowed to expire on its scheduled sunset date

²) Specially those in Africa, Caribbean and the Pacific.

3. Stand-by arrangements in the credit tranches are general purpose financing instruments that have been used to provide assistance to members with all types of balance of payments difficulties, including those resulting from natural disasters and export price and other terms-of-trade shocks. Access is based on overall balance of payments needs and this allows access decisions to take into account a broader picture. It does not have the detailed data requirements of the CFF, and therefore may allow assistance to be disbursed more quickly than under the CFF. A stand-by arrangement in the credit tranches also has flexibility to provide assistance in the event of a terms-of-trade shock that is expected to last longer than provided for under the calculations for CFF access. Of the 264 terms-of-trade shocks identified between 1981 and 1999, stand-by arrangements in the credit tranches were either approved or already in existence in 56 of the cases, 11 of which combined access under the CFF. Of the 106 large natural disasters between 1977 and 2001, members had stand-by arrangements in the credit tranches in 22 cases, nine of which were combined with CFF access or emergency assistance. About half of the stand-bys were for middle-income and transitional economies and the rest for low-income countries.

INTERNATIONAL FINANCIAL MARKETS: DERIVATIVES AND STRUCTURED FINANCE

CATASTROPHE BONDS

Catastrophe Bonds, or Cat Bonds, are a debt instrument that is usually linked to insurance payments arising from a natural disaster. They are meant to raise money for a developing country or insurance company in the event of a catastrophe such as a hurricane or earthquake. Cat Bonds usually contain provisions that specify that if the issuer (the borrower such as a government or insurance company) suffers a loss from a particular pre-defined catastrophe, then the issuer's obligation to pay interest or principal is either deferred, reduced or forgiven.

One advantage of Cat Bonds is that they are not high correlated with the stock market or general economic conditions and thus provide a diversifiable risk-return opportunity. For example, for the same level of risk, investors can usually obtain a higher yield with a Cat Bond relative to standard stocks or bonds.

According to the GAO (2002), Cat Bonds are usually issued through special purpose reinsurance vehicles (SPRVs) that are usually established offshore - typically in Bermuda or the Cayman Islands - to take advantage of lower minimum required levels of capital, favorable tax treatment, and a generally reduced level of regulatory scrutiny. Catastrophe bonds issued to date have generally received noninvestment-grade ratings because investors face a higher risk of loss of their principal (although some risk tranches are rated investment grade).

The GAO report went on to explain that, Cat Bonds have not attracted a wide range of investors beyond institutional investors. Investor participation in risk-linked securities is limited in part because the risks of these securities are difficult to assess. Fund managers stated that they have concerns about the limited liquidity and track record of catastrophe bonds as well as the lack of in-house expertise to understand the perils, indexes, and other features of the bonds.

CATASTROPHE FUTURES AND OPTIONS

Catastrophe futures were traded on the CBOT as early as 1992, options followed in 1995, but they are no longer actively traded due to the lack of demand. These exchange traded derivatives were linked to “loss indexes” created by the Property Claim Service that measured insurance companies’ losses from major natural disasters.

WEATHER DERIVATIVES

Weather derivatives have been traded on organized derivatives exchanges but are usually traded over-the-counter.³ A weather derivative is a financial contract whose value or payoff is derived from changes in an underlying weather event as determined from a weather index or other measure of certain weather conditions (e.g. temperature or rainfall) at a stated location.

In the US, the Chicago Mercantile Exchange trades futures and options on weather indices for the US, Europe and Asia-Pacific regions. The contracts are based on changes in temperature.

Example from Stoppa and Hess (2003),

“Mexico has experience with using weather indexes to reinsure their crop insurance. In 2001, the Mexican agricultural insurance program (Agroasemex) used the weather markets to reinsure part of their multiple crop insurance programs. By using weather indexes that were based on temperature and rainfall in the major production regions, a weather index was created that was highly correlated with the Mexican crop insurance loss experience. This method of reinsurance proved to be more efficient than traditional reinsurance.”

STRUCTURED FOREIGN RESERVE FUNDS

The Chilean Central Bank’s scheme⁴ of having developing country central banks buy call options on the VIX index⁵ that would generate cash flows that would be correlated with

³) See Primers on derivatives markets and derivatives instruments at www.financialpolicy.org.

⁴) Caballero, Ricardo and Stavros Panageas. 2004. “Contingent Reserves Management: An Applied Framework.” Manuscript prepared for the Central Bank of Chile.

⁵) The VIX index is the implied volatility on the S&P100 option contract traded on the Chicago Board Options Exchange, and that same exchange also trades a futures contract on that index.

“sudden stops” in international capital flows to developing countries. The effectiveness of this foreign reserve fund depends critically on the degree and persistence of correlation between the VIX index and international flows to a particular developing country. As an example, the VIX did not move more substantially during the 1994 Mexican financial crisis and thus would not have generated any compensating cash flows. Alternatively, the index sometimes jumps when there is no “sudden stop” in international flows and thus would generate flows when they are not needed – implying that the insurance cost of purchasing the options amounts to buying more protection than is actually needed.

OPTIONS ON CREDIT

The private debt markets have for a long time provided contingent credit in the form of contracts to provide lines of credit. These amount to options that the borrower purchase and that allow the borrower to obtain credit on short notice upon demand. The contracts however often contain provisions that allow the bank or credit supplier to cancel the contract if the borrower has suffered a material decline in their credit quality.

Another variation on this theme is the idea of attaching long put options to bonds and loans that allow the debtor to extend the maturity and schedule of repayments. The option would presumably be exercised if the borrower faced either its own financial crisis or a “sudden stop” in international capital flows that might prevent the debt from being refinanced. This proposal was raised following the 1997 East Asian financial crises as a means to “bail in” the private sector.

COMMODITY BONDS

Long-term plans made on the assumption that resource prices would remain high will likely be disrupted by actual future price movements. Governments, businesses and individuals that operate by spending out of current income will find that their spending, investing and living standards fluctuate greatly as the result of changes in resource prices.

One method to reduce exposure to this volatility is to transfer the price risk to others through the use of commodity-indexed bonds or commodity-linked bonds.

- Commodity-indexed bonds

These bonds are structured so that their coupon and/or principal payments are determined by the price of some underlying commodity. In some versions, the price linkage is structured like a forward derivatives so that payments will be higher or lower depending on the commodity price. For example, the payment is equal to the commodity price times a specified amount of the reference commodity; in the case of crude oil, the principal might be one million barrels of West Texas Intermediate crude oil times the market price at maturity – thus it would amount to a \$25 million bond at \$25 a barrel, or a \$40 million bond if prices were \$40 a barrel at maturity.

Another structure for commodity-indexed bonds would link the coupon and/or principal payments to the price of the underlying commodity through an options-like structure. In

this case, the payments would be some cash amount or the amount of the underlying reference commodity times its market price.

- Commodity-linked bonds

Commodity bonds structured in this option-like arrangement are sometimes known as commodity linked-bonds, and they are of two basic types. Bonds with a “long” call give the bond owner the right to the higher of a certain cash payment or a payment determined by the price of the commodity. In this instance the bond investor would share in the upside gain from higher resource prices. Bonds with a “short” put option provision give the issuer the right to pay the lower of the certain cash payments or one determined by the commodity price. This type of commodity linked-bond shifts the downside risk of resource prices to the foreign bond investor.

While these commodity bonds help the developing county to transfer some of its exposure to commodity price risk, and do so over the intermediate to long-term maturity of the bond, it can be expensive. Complexity is expensive, and options premiums are expensive, and so borrowers should to pay much higher yields on bonds that must be sold to the subset of foreign investors that are also willing to buy commodity price risk.