UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

G20 Working Group on the Reform of the International Monetary System

CONTRIBUTION BY THE UNCTAD SECRETARIAT TO SUBGROUP I: CAPITAL FLOW MANAGEMENT

May 2011

UNITED NATIONS

Table of contents

List of charts

THE CAPITAL FLOW CONUNDRUM – AND A SOLUTION

Following the G20 Capital Flow Management Working Group in April 2011, the UNCTAD secretariat examines in this technical paper four questions that arose in the discussions :

- *Are push and pull factors equally important for the determination of volatile capital flows?*
- *How can push factors be determined if the actors do not raise funds in their country of origin but in other open capital markets?*
- *What impact has Quantitative Easing had on capital flows as compared to normal expansionary monetary policies?*
- *How can herding, mispricing and destabilizing flows in currency and money markets be explained?*

I. Introduction

Capital flow volatility is one of the most pressing financial problems facing developing and emerging economies. These countries expect steady and reliable inflows to promote investment in fixed capital and to help to finance temporary shortcomings in physical or fiscal resources. Flows that are volatile, unreliable or damaging can harm the prospects of development and hamper the ability of developing and emerging economies to catch-up with the most advanced economies.

Capital flow volatility, floods of capital inflows at one point of time and a full reversal at others, may hit countries in totally different circumstances. Monetary policy is expected to deal effectively with floods as well as with sudden droughts. Central banks try to sterilize part of the inflow by buying foreign currency in the market and they try to decelerate the pace of outflows by selling foreign currency or by raising interest rates. Either way, direct intervention has become the most amenable instrument to dampen the negative effects of capital flow volatility. The IMF concedes that "the reserves buildup of recent years seems to be a byproduct of policies aimed at 'leaning against the appreciation wind', rather than at strengthening precautionary buffers" (International Monetary Fund, Regional Economic Outlook: Western Hemisphere, Washington, DC, 2010, p. 22).

Indeed, the huge stocks of foreign reserves that developing countries have been piling up since the end of the Asian crisis are clear testimony that outside crisis periods the currencies of major emerging countries are under permanent pressure to **appreciate** and in this way to overshoot their justified value by a wide margin. This endangers the competitiveness of the countries affected on the world market and distorts the perceived welfare effects of trade.

II. The "Appreciation Wind"

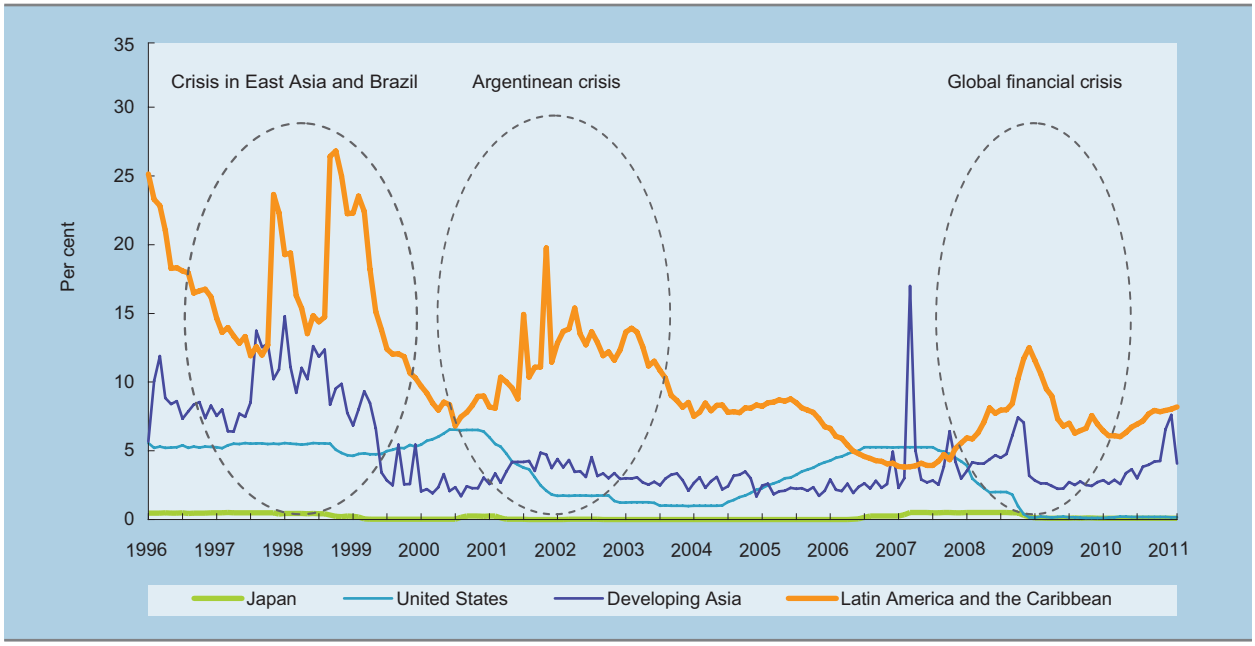
Which forces are behind the "appreciation wind" that is now a common threat to many emerging economies? Is it mainly pull factors, which means attractive rates of return in emerging economies or are there also push factors, such as general distractions in advanced economies. Do the latter include low return expectations or extremely low interest rates due to expansionary monetary policies such as "Quantitative Easing 2" in the United States and the zero interest rate policy in the last two decades in Japan? Chart 1 gives clear evidence showing for most of the time a huge gap in short-term nominal interest rates between emerging economies and advanced economies since the mid of the 1990s.

The size and the stability of the gap between **Japan** and most emerging markets for the last fifteen years is particularly remarkable. Developing Asia reduced its interest rates significantly after its financial crisis and was able to remain thereafter in a range below five per cent and very close to the big developed economies. By contrast, Latin America and the Caribbean countries, clearly dominated by Brazil, achieved a certain reduction but, with rates between 5 and 10 per cent, remain consistently above the Asian rates.

The sharp reduction of the United States interest rates during the "great recession" has put the United States at the level of Japan and has fundamentally changed its relation to the developing and emerging markets compared to the years before the crisis. However, the quantitative and qualitative importance of this switch of the US dollar from a high yielding to a low yielding currency has to be carefully interpreted. The bulk of the currency carry trades, which exploit

Chart 1

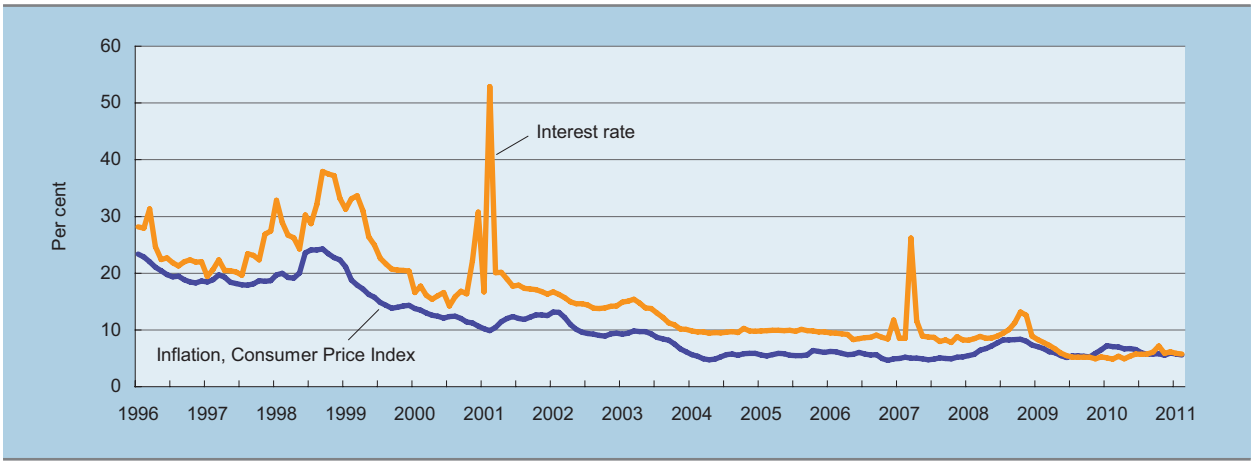
INTERREST RATE DEVELOPMENTS, JANUARY 1996–FEBRUARY 2011



Source: UNCTAD secretariat calculations, based on IMF, *International Financial Statistics* database.
Note: Regional interest rate aggregates are PPP-GDP weighted using current PPP weights.

Chart 2

INFLATION AND SHORT-TERM INTEREST RATES IN EMERGING AND TRANSITION ECONOMIES, JANUARY 1996–FEBRUARY 2011



Source: UNCTAD secretariat calculations, based on IMF, *International Financial Statistics* database.
Note: Emerging and transition economies include Brazil, Chile, Colombia, Czech Republic, Hungary, India, Indonesia, Malaysia, Mexico, Philippines, Poland, Romania, Singapore, South Africa, Thailand and Turkey. Emerging market averages are PPP-GDP weighted using 2005 weights.

the differences in short-term interest rates, always used the low-yielding currencies of Japan (or, for targets in Eastern Europe the Swiss Franc) as funding currencies. A hedge fund located in the United States or on a Caribbean Island would borrow money in Japan and deposit it in Brazil, in Turkey, in South Africa, or, before 2008, in Iceland.

Hence, as to whether the bulk of the flows are pushed from advanced economies or pulled from emerging markets, should not be the focus of interest. For global players with access to the most important financial centres the absolute size of the interest rate difference between the funding country and the target country is the decisive factor. In this regard, the widening gap in interest rates between the United States and the emerging regions, which is mainly due to aggressive US monetary expansion after 2008, has induced a switch in the funding currencies from Japan to the United States (see section IV below). "Quantitative easing", the US Federal Reserve's attempt to put pressure on long term rates, has played a minor role in the calculation of carry-trade returns as they are based on short term interest rates. The same is true for QE2, the second attack of the Fed on long-term rates. There is no evidence that it has changed the perception of the overall relationship between advanced and emerging markets.

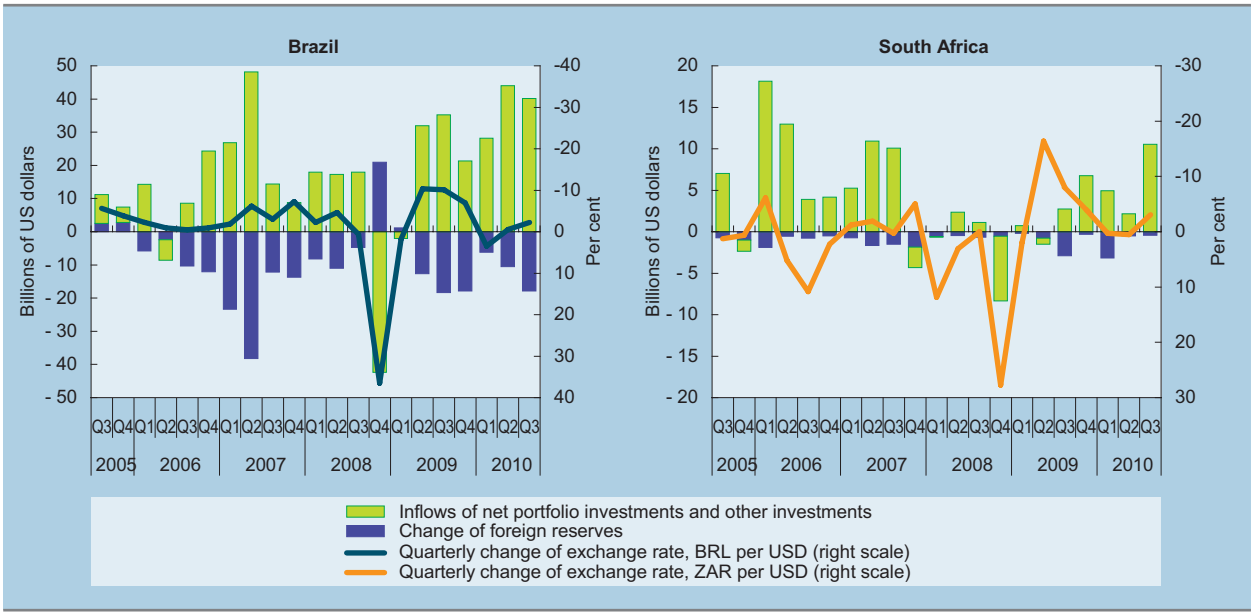
The crucial political point is the failure of the financial markets on both sides of this trade to deliver the expected balancing out of these flows. The remarkable stability of the interest rate differentials points to the lack of an endogenous mechanism to even the "interest rate-mountains" between national money markets. Huge inflows of short-term money do not bring down the domestic interest rate in the target country and do not raise it in the funding country. This stickiness of short-term rates on both sides can only be explained by the central banks willingness to set and to hold the short-term interest rate at a level conducive to reach its national economic targets. Consequently, central banks sterilize inflows and compensate outflows by applying all the instruments available including the use of reserves and domestic open market operations.

The power of central banks to determine national interest rates provides the crucial link to the global monetary system. For monetary policies to be successful nationally and on a global scale an effective **external adjustment mechanism** is needed to help them to cope with external shocks and the diminution of their policy space.

In theory such a mechanism is simple and straightforward: As interest rate differentials are closely associated with inflation differentials (chart 2), the text book expectation for market determined exchange rates is a rule called "uncovered interest rate parity" (UIP, where high interest rates are compensated by the expectation of a depreciation) or the one

Chart 3

CHANGES IN EXCHANGE RATES AND RESERVES, AND NET PORTFOLIO INVESTMENT FLOWS, THIRD QUARTER 2005–THIRD QUARTER 2010



Source: UNCTAD secretariat calculations, based on IMF, *International Financial Statistics* database.
Note: A negative value of reserves means an increase in reserves (capital outflow). A positive value of the exchange rate change represents a depreciation of the currency.

called "purchasing power parity" (PPP, where high inflation rates are compensated by the expectation of a depreciation). However, there is no evidence that currency markets would bring about such a result – at least not in the short- and medium run – that would be needed for effective economic policies.

For both UIP and PPP rules to work, exchange rate changes should compensate for interest or inflation differences. This would result in stabilizing capital flows since arbitrage with differences in interest rates would be no longer profitable, and stable trade equilibriums would ensue, as the real exchange rate, the rate that determines competitiveness of nations, would be rather stable. Flexible or market determined exchange rates have failed on both accounts because in reality net portfolio investment inflows have appreciated the currencies of high-interest and high inflation rate countries over extended periods of time.

Moreover, appreciation itself has increased the returns of interest rate arbitrage, which has fuelled further inflows. In this way, the system was unstable and monetary policy autonomy has been reduced dramatically. Brazil is only the most striking example. Huge inflows dominated the picture before and immediately after the crisis of 2008 bringing about a huge and unwarranted real appreciation (see charts 3 and 7).

Against these destabilizing inflows the central banks of the countries concerned have used direct intervention time and again and in significant quantities. In the second quarter 2007, for example, the central bank of Brazil sterilized nearly the whole inflow of portfolio investments and other investments by buying US dollars and increasing its reserves. South Africa acted accordingly when the Rand started to appreciate sharply after the 2008 crisis.

However, with their intervention central banks face an uphill struggle as capital flows of the carry trade type are resilient and the central banks are normally not willing to use their interest rate instrument aggressively to fight off these inflows. The markets easily use the stickiness of central bank determined national interest rates and the interest rate differential acts like a huge magnet that after each shock attracts the flows back to the target currencies.

Highly leveraged financial institutions like hedge funds and globally active banks (but also the archetypical "Japanese housewives") run carry trade – before and after the crisis – as one of their main businesses. Hence, the amounts of funds involved

are huge and dominate most of the other single determinants of overall capital flows. Even if there are statistical limits to establishing the full amount of such movements in all countries and at all times, the logic to prove their existence and dominance for the determination of exchange rates is straightforward. Nothing else but a financial flow like carry trade can explain the fact that exchange rates are driven **against the fundamentals** time and again and only interrupted by financial crises.

As carry trade is a classical example of herding behaviour the investment strategy of a single investor is enhanced if many others follow his example. A large movement of flows into a target country like Iceland (before the crisis of 2008), Brazil, Turkey or South Africa will drive the exchange rate of the target country down (appreciate the currency) and will sometimes even depreciate the exchange rate of the funding countries, although their financial markets are much bigger and deeper.

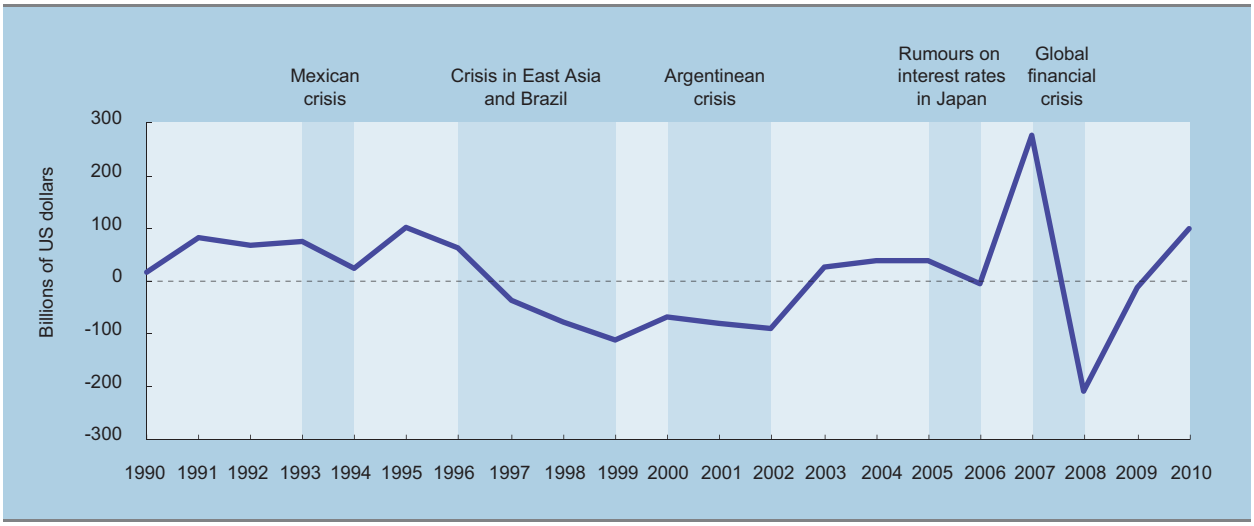
Increasing and self-perpetuating profit margins of financial investors come at a high price for the real economy in the target countries. The investors receive the interest rate differential plus, by exchanging the target currency back into the funding currency at a more favourable rate, they receive a premium if the high-inflation, high-interest currency has appreciated. But overshooting exchange rates as experienced during the last decade in many emerging markets destabilize investment in fixed capital required for sustained development and have distorted trade much more than any protectionist measures taken in this era.

III. The shocks and their consequences

With large, unstable flows in the short and medium term pointing to unsustainable outcomes in the long term the occurrence of major shocks is just a matter of time - "what cannot go on will stop" as once stated by US Presidential advisor Herbert Stein. And stop they did. Chart 4 identifies five big shocks during the last twenty years with clearly traceable results on capital flows. The first was the Mexican crisis in 1994, the second the Asian crisis of 1997 including the Brazilian crisis of 1999. Argentina stands for crisis number four

Chart 4

NET PRIVATE FINANCIAL FLOWS (EXCLUDING FDI) – EMERGING AND DEVELOPING ECONOMIES, 1990–2010



Source: UNCTAD secretariat calculations, based on International Monetary Fund, *World Economic Outlook* database, April 2011.

in 2001 and 2002 while number five was a minor shock due to rumours in the markets that Japan would increase its interest rate. Finally, the last crisis now called the "great recession", brought about the biggest drop ever in capital flows to emerging markets.

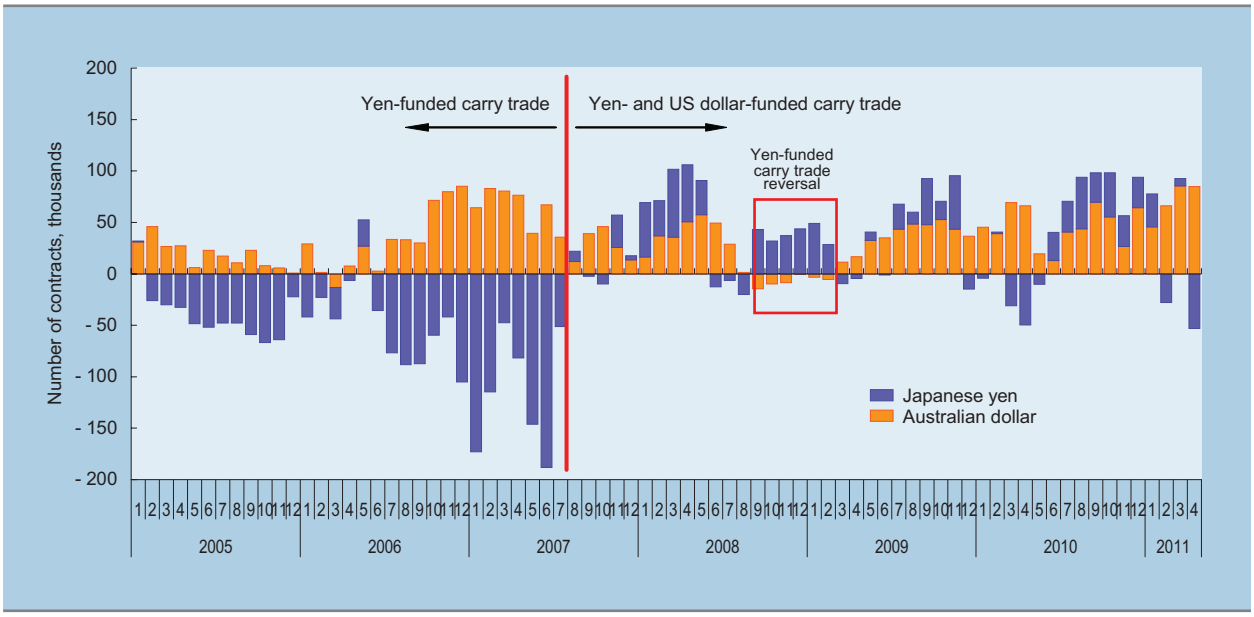
The outcome of these shocks in terms of capital flow volatility is straightforward: In an environment where the exchange rate is moving against the fundamentals (the inflation rate or the interest rate) market participants are always on the go as they are aware of the tail risk of their strategy. In such an environment different events may provide the spark to ignite sudden reversals of flows while herding again intensifies the strength of the move. That is why carry trade or investment in currencies is considered to be as risky as investment in other asset classes like stocks or commodity derivates. Whenever the evidence mounts that the bubble could soon burst, a small event suffices to start the stampede.

IV. Japanese yen and US dollar as funding currencies

Evidence of carry trade activity in the spot markets is difficult to track since detailed data on individual investors' positions and on funds that have been borrowed and deposited simply do not exist. In some futures markets, however, market participants have to report their daily positions at the close of the market. Chart 5 shows the net positions of non-commercial traders (pure financial traders) in currency futures markets in the United States. Since data on *Australian dollars-Japanese yen* currency futures is not available, both currencies have to be considered vis-à-vis the US dollar. The bars show the number of contracts while net long positions are the difference between long and short positions of a

Chart 5

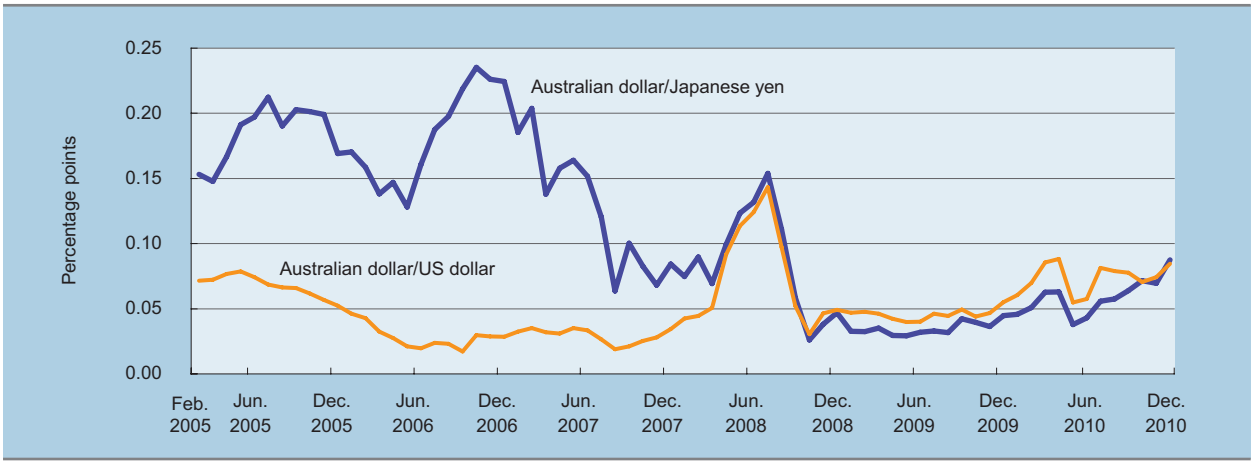
NET POSITIONS OF NON-COMMERCIAL TRADERS ON AUSTRALIAN DOLLAR AND JAPANESE YEN FUTURES, JANUARY 2005–APRIL 2011



Source: UNCTAD secretariat calculations, based on Bloomberg; and United States Commodity Trading Futures Commission database.

Chart 6

CARRY TO RISK RATIO, 2005–2010



Source: UNCTAD secretariat calculations, based on Bloomberg database.

selected currency vis-à-vis the US dollar. Hence, a net long position in Australian dollar has a positive value while a net short position has a negative value.

Overall, the data from this futures market in the United States provide clear evidence for massive yen-funded carry trades activity from January 2005 to September 2007; a yen-funded carry trade reversal as the global crisis unfolded from September 2008 to February 2009 and three alternating periods of net long positions in both funding and target currencies (from November 2007 onwards). These periods of build up and of reversal of carry trade positions confirm the findings presented and discussed below and in previous studies by UNCTAD (e.g. *Trade and Development Report 2008, 2009*).

Additionally, the period since Autumn 2007 when the mirror effect disappears (periods with net long positions in both funding and target currencies) shows the rise of the US dollar as funding currency for carry trades. This is confirmed by the investors' expectations as reflected in the so-called *carry-to-risk* ratio, a popular *ex-ante* measure of carry trade profitability. In this ratio the gains stemming from the interest rate differential are adjusted by the risk of future exchange rate movements.[1] The higher the ratio, the higher is the *ex-ante* profitability of the carry trade strategy.

Chart 6 depicts the *carry-to-risk* ratio between the currency pairs Australian dollar/Japanese yen and Australian dollar/US dollar. Until August 2007 the expected profitability of yen-funded carry trades was much higher than that of US dollar-funded carry trades, and the *carry-to-risk* ratios diverged consistently. However, as the financial crisis unfolded and the US interest rate came down the *carry-to-risk* ratios converged and US dollar-funded carry trades were even perceived as being slightly more profitable than yen-funded carry trades.

This switch of the funding currencies of carry trade in futures markets, firstly, provides clear evidence that interest rate expectations are the key driving force behind investors' decisions on the design of their carry trade strategies in currency markets. Secondly, it proves that the reduction of the short rates in the United States immediately after the crisis was a much more important push factor for short-term capital flow funding in the United States than the two rounds of quantitative easing. However, the fact that more flows originated directly in the United States instead of originating in the United States but being raised in Japan have not changed the fundamental logic and the consequences of carry trade in currency markets.

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1 The ratio is defined as the 3-month interest rate differential between the target and funding currency divided by the 1-month implied volatility of the bilateral exchange rate.

V. The cost of leaning against the bad appreciation wind

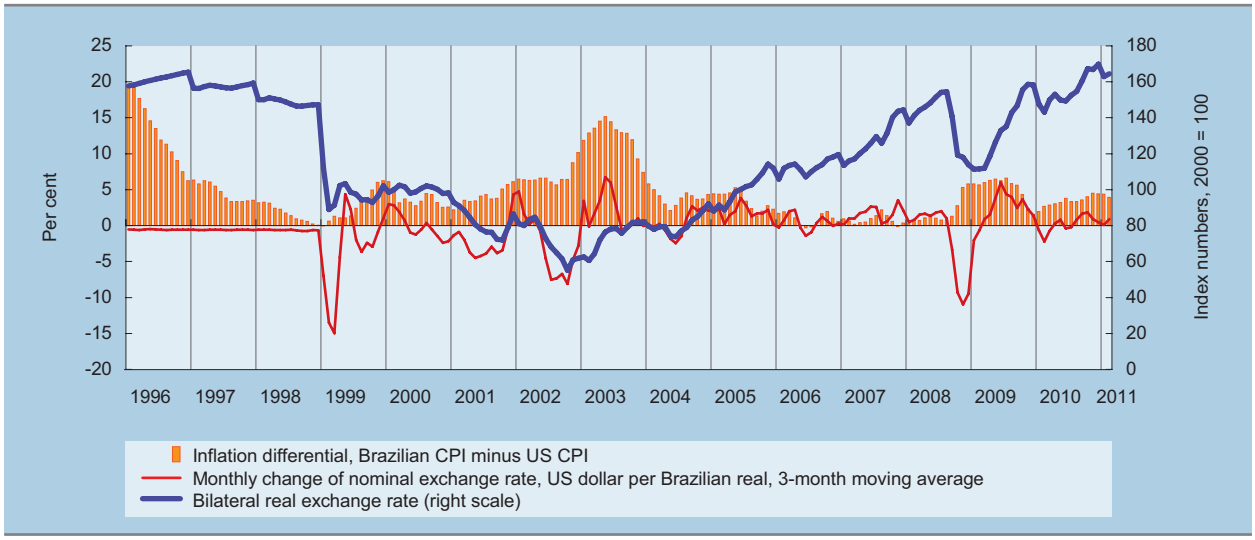
The cost of the destabilizing capital flows can be devastating. During the build-up period the appreciation of currencies poses an enormous burden on the trade flows of developing and emerging economies. For example, between August 2005 and August 2008 the Brazilian real appreciated most of time in nominal terms (percentage change in three months above zero). Accumulated over the three years this resulted in an appreciation in nominal terms of more than 45 per cent. Taking into account the fact that Brazil had higher inflation rates during the whole period than the United States the real exchange rate between Brazil and the United States, which is the sum of the inflation differential and the nominal appreciation of the real even appreciated by more than 50 per cent, as shown in chart 7.

Once the crisis hits and the flows reverse, the central banks try to defend their currency from undershooting by applying restrictive monetary and fiscal policies (see interest rates in chart 1). Such tightening – reminiscent of the pro-cyclical policy response to the Asian crisis – jeopardizes their economic recovery. For example, during the Asian crisis the Asian as well as the Latin American countries experienced dramatic interest rate hikes while the United States immediately after the beginning of the "dot-com recession" in 2001 and after the outbreak of the "big recession" in 2008 cut interest rates to close to zero to stimulate the domestic economy.

IMF assistance – at times combined with swap agreements or direct financial assistance from the EU or the United States – has helped to ease the immediate pressure on the currencies and banking systems of the troubled countries. But as the origin of the problem in many cases was speculation of the carry trade type the traditional IMF approach for tackling such a crisis was inadequate. Raising interest rates to avoid further devaluation is like the tail wagging the dog and traditional assistance packages

Chart 7

INFLATION DIFFERENTIAL AND NOMINAL AND REAL EXCHANGE RATES IN BRAZIL, JANUARY 1996–FEBRUARY 2011



Source: UNCTAD secretariat calculations, based on IMF, *International Financial Statistics* database.

combined with restrictive policy prescriptions – or at least an expectation by donors that the spirit of such belt-tightening exercises will be applied by beneficiary countries – are unnecessary and can be counter-productive.

Indeed, countries that have been exposed to carry trade speculation need a real devaluation in order to restore their international competitiveness. They also need assistance to avoid an undershooting of the exchange rate, which would both hamper their ability to check inflation, increase debt denominated in foreign currency and unnecessarily distort international trade. However, belt-tightening through rising interest rates and falling government expenditure will only worsen matters in the real economy. In such a situation, developing and emerging countries need expansionary fiscal and monetary policies to avoid a recession, at least as long as the expansionary effects of the "orderly" devaluation of the currency have failed to materialize.

To try to stop an overshooting devaluation – which is the rule and not the exception – is very costly if tried unilaterally, but much less so if countries under pressure to devalue join forces with countries facing revaluation. Countries that are struggling to stem the tide of devaluation are in a weak position, as they have to intervene with foreign currency, which is available only in limited amounts even if the stock of reserves is large. If the countries with appreciating currencies engage in a symmetrical intervention to stop the "undershooting", international speculation would not even attempt to challenge the intervention, because the appreciating currency is available in unlimited amounts.

Unless there is a fundamental rethinking of the exchange rate mechanism and the cost involved in the traditional "solution" of assistance packages without symmetrical intervention, the negative spill-over of financial sector crisis into the real economy will be much higher than need be.

VI. Managed floating based on UIP or PPP as a solution

Multilateral or even global exchange rate management arrangements are necessary to achieve and maintain global monetary and financial stability and to combine such stability efficiently with an open trading system. The idea of a cooperative global financial and monetary system would be to ensure, on a multilateral basis, the same rules of the game for all parties, just as multilateral trade rules apply to all trading partners. The main idea behind the creation of the International Monetary Fund was precisely to avoid destructive competitive devaluations. In a well-designed global monetary system, the advantages of currency depreciation in one country would have to be balanced against the disadvantages in another.

Since changes in the exchange rate that deviate from purchasing power parity affect international trade in a very similar way to changes in tariffs and export duties, such changes should be governed by multilateral regulations. A multilateral regime would, among other things, require countries to specify the reasons for real devaluations and the dimension of the necessary changes. If such rules were applied strictly, the real exchange rate of all parties would tend to remain more or less constant, since the creation of competitive advantages for specific countries or groups of countries would not likely be accepted.

Under these conditions **managed floating, strictly along the lines of UIP or PPP,** can be practiced as a unilateral exchange rate strategy or as a bilateral solution. It can also be applied in the context of a framework for regional monetary cooperation. Finally, the UIP or PPP rule could even be used as a guideline for the international monetary system.

As a **unilateral approach** the strategy of UIP or PPP based managed floating can offer individual countries limited protection against the threat of carry-trade in situations even where the domestic interest rate is higher than the interest rate of the pivot country. As the targeted depreciation equals the interest rate difference, the management of the exchange rate along the lines of UIP completely

removes the profit potential of carry-traders. In addition, operation of the UIP rule also removes the incentive for domestic debtors to incur their debt in foreign currency. The advantage of low foreign interest rates is fully compensated by an appreciation of the foreign currency vis-à-vis the domestic currency. The Asian crisis, but also the experience of Iceland and Hungary and some other East-European countries in the last decade have revealed the risk associated with household and enterprise debt denominated in foreign currency. However, the unilateral approach reaches its limit once a currency comes under strong **downward pressure**. Due to the limited amount of foreign exchange reserves, the scope for the management of floating can easily be exhausted.

A **regional approach** to agree on a common exchange rate policy based on the rule of UIP or PPP adjustment is more promising. A group of countries can agree on a matrix of bilateral exchange rate parities, which are modified continuously in accordance with UIP or PPP. The European Monetary System (the predecessor of the European Monetary Union) was such a managed floating system, but adjustments were made discretely instead of automatically.

For the **international monetary system,** managed floating based on the UIP or PPP rule could be established in the form of a multiple hub and spoke system. Major currencies (eg., dollar, euro, renminbi, yen, sterling) could arrange a mutual network of bilateral UIP exchange rate paths. The remaining countries could chose one of the hubs as the pivot of their currency and organize on this basis a bilateral UIP path with the central bank of a hub currency. Depending on the willingness to co-operate in the stabilization of bilateral exchange rates the need to hold precautionary reserve balances could be reduced significantly.