GLOBAL IMBALANCES AND DESTABILIZING SPECULATION[1]

HEINER FLASSBECK[2]

MASSIMILIANO LA MARCA[3]

ABSTRACT

Global imbalances have become a major source of systemic risk to the global economy. They can be amplified by short term speculation such as the currency "carry trade", which may prevent the real exchange rate to perform its adjusting role. The paper examines past and recent patterns of destabilizing short term speculative flows that have led to financial fragility and real costs for a number of developed and emerging market economies. Domestic policies aimed at preventing speculation should be coupled with the reestablishment of a cooperative global monetary system.

Keywords: foreign exchange speculation, interest rate parity, global imbalances, carry trade.
JEL Classification F31, F32, G15

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[2] Director of the Division on Globalization and Development Strategies, United Nations Conference on Trade and Development. UNCTAD, Palais des Nations 8-14, Av. de la Paix, 1211 Geneva 10, Switzerland.

[3] Economist at the Macroeconomic and Development Policy Branch, Division on Globalization and Development Strategies, United Nations Conference on Trade and Development. UNCTAD, Palais des Nations 8-14, Av. de la Paix, 1211 Geneva 10, Switzerland. Corresponding author: massimiliano.la.marca@unctad.org.

1.0 Introduction

This paper provides an intuitive account of patterns and characteristics of carry trades which are gaining increasing acknowledgment in the very recent academic and policy oriented literature and relates it to the widening of global imbalances of the last decade.

The paradoxical pattern of global financial imbalances where some overvalued currencies appreciate and some undervalued currencies depreciate represents a major source of systemic risk to the global economy (UNCTAD, 2004, 2005, 2006 and 2007). While some observers have been claiming that imbalances are simply a natural and harmless consequence of an increasingly integrated global economy (Cooper, 2001), others have maintained that the actual pattern and level global imbalances can have adverse repercussions in the short and long term on both surplus and deficit economies due to the potentially disruptive effect of a sudden adjustment. (UNCTAD 2006, 2007 and 2008; UN-DESA/UNCTAD, 2007).

Nonetheless, there is an almost universally shared belief that changes in the overall competitiveness of an economy can be a decisive factor in reversing the sign of its trade balance. Indeed, large corrections of deficits are usually observed to go hand in hand with huge devaluations of the nominal and real exchange rate, and empirical evidence has shown that changes in the real effective exchange rate (REER) – the most comprehensive measure of the overall competitiveness of nations – have the potential to reduce deficits or to induce swings in the trade and current-account from deficit to surplus (Bundesbank, 2007; IMF, 2007; and UNCTAD, 2007).[4] The REER reflects immediately changes in the nominal exchange rate, which responds mostly to price incentives in the international financial market and to domestic monetary policies. Therefore, the real exchange rate can be persistently diverted from its

[4] REER is a comprehensive measure of competitiveness of an economy with respect to its trading partners. It is calculated as the average of bilateral real exchange rates weighted with annual values of trade.

balancing role of the external accounts and speculative capital flows can have a significant cumulative effect on macro aggregates creating systemic risk on both the financial system and real economy.[5]

While external imbalances are undoubtedly affected by the determinants of international competitiveness such as wage and price inflation, productivity growth as shaped by the institutions and regulation in the financial, labour and product markets, there is increasing evidence that capital flows induced by purely financial incentives can reinforce a diverging pattern of the real exchange rate from its external balance equilibrium.

To set up the stage for our discussion, table 1 shows the time pattern of the ratio of the current-account to GDP and the REER up to 2006, the pre-crisis year and heyday of global imbalances. revealing the phenomenon of the "false pricing": the REER is appreciating in some deficit economies, and appreciating in some surplus economies. Countries with large surpluses include not only oil exporters such as the Russian Federation and Saudi Arabia, but also exchange-rate-sensitive exporters of manufactures, such as China, Germany, Japan, Malaysia and Switzerland. Many East Asian and Latin American emerging market economies enjoy small surpluses, while members of the euro area, Mexico and Colombia register a slight deficit. Significant and persistent deficits are observable in South Africa, Turkey, Australia and New Zealand, as well as Hungary and other East European oil importing countries. The United States current account reached a record low of 6.6 per cent of its GDP in 2006, or more than $850 billion.[6]

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[5] The role of the real exchange rate in the international adjustment mechanism is regaining attention from the international financial institutions (see IMF, 2007), yet the policy prescriptions still depend on diverging views as to the sources of the real exchange rate misalignments and the ability of market forces to bring about the required adjustment of the balances. Recent experience tends to reject the case for an effective "market-led" adjustment or the belief that any single economy could independently impose its own correction measures.

[6] In the Trade and Development Report 2006, it was noted that some interpretations of this situation, mostly those blaming an excess of world savings relative to world investment demand, appear to be inconsistent not only

False pricing is particularly evident for a number of surplus economies with officially floating exchange rates: Japan had a significant real depreciation, while Germany and Switzerland had smaller ones. China, the country most under political pressure to float its currency, showed a much stronger tendency towards appreciation than the free floaters. Under a floating regime and high mobility (and low regulation) of capital, the nominal and real exchange rates can move in the wrong direction from a balance-of-payments point of view, thereby hindering the adjustment process and making the constellation of deficits and surpluses unsustainable.

In the past couple of years a widespread and persistent speculative phenomenon involving currencies of developed and developing countries with large short-term interest rate differentials has drawn considerable attention from the media and financial analysts as well as concerns by central bankers. "Carry trade" has become a catchphrase to define the specific financial operation of borrowing and selling a low-yielding currency to buy and lend in a high-yielding currency.[7]

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with policy intuition and common sense but also with actual experience. Indeed, in terms of accounting, global imbalances correspond to a misalignment of national savings with investment, and of national income with national expenditure. However, neither the savings–investment nor the income–expenditure gaps can be considered the direct sources of the trade imbalance and therefore of international real income transfers; rather these are the joint outcomes of income changes and relative price movements, such as shifts in the terms of trade, in the real exchange rate and in relative factor costs.

7 For example, an established speculator such as a hedge fund might borrow 12,000 yen in Japan, buy 100 dollars in the United States, invest this amount in United States bonds and obtain an interest revenue equal to the difference between the borrowing rate in Japan, say 0.25 per cent, and the higher lending rate in the United States, say 5 per cent. Exchange rate changes between the time of borrowing and paying back the funding currency can add to the gains, or induce smaller gains or even losses. But with stable exchange rates, the *interest rate gain* amounts to 4.75 per cent. However, both gains and losses are largely magnified by high leverage ratios, since traders typically use huge amounts of borrowed funds and very little equity. For instance, owning a capital of $10 and borrowing 10 times the equivalent of that value in yen, the leverage factor of 10 leads to a net interest return on equity of 47.5 per cent.

This simple and hardly new form of speculation may appear too straightforward to be possible in highly developed and integrated capital markets, yet it has represented a substantial source of profits, inducing huge amounts of capital flows and pressure on exchange rates since the collapse of the Bretton Woods system in the beginning 1970s. It has gained a new quantitative dimension, since more or less unregulated funds have nearly unlimited access to massive pools of capital from pension funds or wealthy citizens.

Carry trade is fundamentally based on the expectation that, given a sufficiently large interest rate differential between the borrowing and the lending currency – which is quasi fixed by monetary policies in both countries – the exchange rate will either remain stable or move in a favourable direction, or allow a major withdrawal from the currency before profits are fully eroded. On the other hand, in today's markets, the volume of speculative flows stemming from these funds is so large that they have a direct effect on the exchange rate, thereby creating a self-fulfilling expectation of profit in excess of the interest rate differential. In the example cited above, a devaluation of the yen and a revaluation of the dollar induced by carry trade would increase the net return on equity well beyond the leveraged return on the interest rate differential.

The Bank for International Settlements (BIS, 1999) has been the first institution that have identified the yen carry trade as a potential source of volatility and studied its relation with hedge funds earnings (McGuire and Upper, 2007). Burnside *at al.* (2006) show the properties of returns to carry trades based on the so called "forward premium puzzle". The tendency of currency at a premium (discount) to depreciate (appreciate) can be exploited to sell (buy) forward low-yielding (high-yielding) currencies. Burnside *at al.* (2006) and Burnside *at al.* (2008) explore the returns of this strategy for developed country and for developed and emerging market currencies, respectively. The obtained high Sharpe ratios are uncorrelated to traditional risk factors and cannot represent a simple compensation for risk.

Our research is based on the research approach developed in late 2006 for UNCTAD (2007). We use monthly data within overlapping

quarterly periods to obtain the returns from borrowing from low-yielding and targeting high-yielding currency. We intuitively explore the relation between these returns and the inflation and monetary policy stance (also measured within overlapping quarterly periods) for selected developed and developing countries as well as regions. Galati *et al.* (2007) provide the first systemic measure of the size of this form of speculation. Carry trade flows identification and monitoring is problematic because of lack of data and the variety of forms that these flows can take. They compare carry-to-risk ratios (the three-month interest rate differential divided by the implied volatility of the currency option) and confirms part of the evidence of UNCTAD (2007): there is a clear tendency for the currencies of some developing countries like the Brazilian real and the Turkish lira to become increasingly more attractive than traditional carry trade targets such as the Australian and New Zealand dollars and the pound sterling. As in La Marca (2007), the present paper gives a visual association between the process of unwinding of carry trade positions and the increase of exchange rate volatility. These patterns have been confirmed by a series of researches analyzing the shape of the distribution of the carry trade returns (Gyntelberg and Remolona, 2007; and Brunnermaier *et al.* 2008).

The paper is organized as follows. Sections 2 describe the role of "carry trade" positions, broadly defined as highly-leveraged cross-country operations exploiting interest-differentials and low currency volatility, in the current diverging pattern of global imbalances and real exchange rates. The paradox of the current pattern of world trade and financial imbalances, where overvalued currencies may appreciate and undervalued currencies may depreciate, the tendency to appreciation of high-interest rate currency and depreciation of low-yielding currencies, as well as the volatility associated with the unwindings have real costs in terms of real exchange rate volatility and high real interest rates. Section 3 gives a graphical account of these factors.

In section 4, it is pointed out how national and international policies need to address the major sources of imbalance by providing an institutional framework that would reduce the potential for speculative

flows and promote coordinated efforts for exchange-rate adjustment and stable real exchange rates. Section 5 concludes.

Table 1
REAL EFFECTIVE EXCHANGE RATE (1996 = 100) AND CURRENT-ACCOUNT (C/A) BALANCE, SELECTED ECONOMIES, 1996–2006

Economy	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*
Economies with current-account surplus											
Economies with large current-account surplus											
China											
REER	100.0	106.8	112.4	106.3	109.2	114.6	111.9	106.6	105.1	107.5	109.9
C/A balance ($ billion)	7.2	34.4	31.6	15.7	20.5	17.4	35.4	45.9	68.7	160.8	238.5
C/A balance as per cent of GDP	0.8	3.6	3.1	1.4	1.7	1.3	2.4	2.8	3.6	7.2	10.3
Japan											
REER	100.0	94.6	94.8	103.8	107.4	96.3	90.0	89.1	89.4	84.7	78.7
C/A balance ($ billion)	65.7	96.6	119.1	114.5	119.6	87.8	112.6	136.2	172.1	165.7	170.5
C/A balance as per cent of GDP	1.4	2.3	3.1	2.6	2.6	2.1	2.9	3.2	3.8	3.6	3.9
Germany											
REER	100.0	94.1	94.1	91.1	84.8	84.8	85.6	90.1	91.3	90.7	90.5
C/A balance ($ billion)	-14.0	-10.0	-16.3	-26.9	-32.6	0.4	41.0	45.6	117.9	129.0	147.0
C/A balance as per cent of GDP	-0.6	-0.5	-0.7	-1.3	-1.7	0.0	2.0	1.9	4.3	4.6	5.1
Russian Federation											
REER	100.0	109.0	96.2	63.4	70.7	85.3	89.3	92.3	99.1	109.0	119.8
C/A balance ($ billion)	10.8	-0.1	0.2	24.6	46.8	33.9	29.1	35.4	58.6	83.6	94.5
C/A balance as per cent of GDP	2.8	-0.0	0.1	12.6	18.0	11.1	8.4	8.2	9.9	10.9	9.6
Saud i Arabia											
REER	100.0	106.2	112.9	109.8	110.6	114.5	113.0	104.3	97.0	94.2	93.1
C/A balance ($ billion)	0.7	0.3	-13.1	0.4	14.3	9.4	11.9	28.1	52.0	90.8	95.5
C/A balance as per cent of GDP	0.4	0.2	-9.0	0.3	7.6	5.1	6.3	13.1	20.7	29.3	27.0

Table 1 (Continued)
REAL EFFECTIVE EXCHANGE RATE (1996 = 100) AND CURRENT-ACCOUNT (C/A) BALANCE, SELECTED ECONOMIES, 1996–2006

Economy	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*
Economies with current-account surplus											
Economies with large current-account surplus											
Switzerland											
REER	100.0	92.2	96.1	96.0	89.7	92.6	98.1	99.7	97.7	94.1	89.9
C/A balance ($ billion)	22.0	25.5	26.1	29.4	30.7	20.0	23.0	43.0	50.5	61.0	63.5
C/A balance as per cent of GDP	7.3	9.7	9.7	11.1	12.4	8.0	8.3	13.3	14.1	16.5	16.8
Malaysia											
REER	100.0	96.8	79.7	78.9	79.3	83.3	83.2	79.6	76.4	75.5	75.5
C/A balance ($ billion)	-4.5	-5.9	9.5	12.6	8.5	7.3	8.0	13.2	14.9	19.9	25.6
C/A balance as per cent of GDP	-4.4	-5.9	13.2	15.9	9.4	8.3	8.4	12.7	12.6	15.2	16.9
Economies with small current-account surplus											
Brazil											
REER	100.0	105.0	104.8	78.3	93.0	83.9	83.6	91.4	98.5	120.1	130.4
C/A balance ($ billion)	-23.5	-30.5	-33.4	-25.3	-24.2	-23.2	-7.6	4.2	11.7	14.2	13.3
C/A balance as per cent of GDP	-3.0	-3.8	-4.2	-4.7	-4.0	-4.5	-1.7	0.8	1.9	1.8	1.2
Republic of Korea											
REER	100.0	93.0	74.2	82.9	88.5	79.9	82.5	82.1	84.5	93.2	99.2
C/A balance ($ billion)	-23.1	-8.3	40.4	24.5	12.3	8.0	5.4	11.9	28.2	16.6	6.1
C/A balance as per cent of GDP	-4.1	-1.6	11.7	5.5	2.4	1.7	1.0	2.0	4.1	2.1	0.7
Chile											
REER	100.0	104.4	100.6	97.9	102.6	97.0	95.3	94.1	102.4	111.3	119.0
C/A balance ($ billion)	-3.1	-3.7	-3.9	0.1	-0.9	-1.1	-0.6	-1.0	1.6	1.3	5.3
C/A balance as per cent of GDP	-4.1	-4.4	-5.0	0.1	-1.2	-1.6	-0.9	-1.3	1.7	1.2	3.9

Table 1 (Continued)
REAL EFFECTIVE EXCHANGE RATE (1996 = 100) AND CURRENT-ACCOUNT (C/A) BALANCE, SELECTED ECONOMIES, 1996–2006

Economy	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*
Economies with current-account surplus											
Economies with large current-account surplus											
Argentina											
REER	100.0	104.9	107.9	114.0	111.8	117.3	63.8	69.9	68.2	67.5	65.6
C/A balance ($ billion)	-6.8	-12.1	-14.5	-11.9	-9.0	-3.3	8.7	8.0	3.3	5.6	8.0
C/A balance as per cent of GDP	-2.5	-4.1	-4.8	-4.2	-3.2	-1.2	8.9	6.3	2.2	3.1	3.7
Indonesia											
REER	100.0	92.9	48.5	74.5	71.9	69.2	83.4	88.3	82.0	82.9	102.2
C/A balance ($ billion)	-7.3	-3.8	4.0	5.8	8.0	6.9	7.8	8.1	1.6	0.9	9.7
C/A balance as per cent of GDP	-2.9	-1.6	3.8	3.7	4.8	4.3	4.0	3.5	0.6	0.3	2.7
Economy	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*
Economies with current-account deficit											
Economies with small current-account deficit											
Mexico											
REER	100.0	113.5	114.4	125.0	138.1	145.9	147.1	136.8	135.7	142.5	146.4
C/A balance ($ billion)	-2.5	-7.7	-16.0	-13.9	-18.7	-17.7	-13.5	-8.6	-6.6	-4.8	-1.9
C/A balance as per cent of GDP	-0.8	-1.9	-3.8	-2.9	-3.2	-2.8	-2.1	-1.4	-1.0	-0.6	-0.2
Colombia											
REER	100.0	106.4	99.8	90.6	83.1	80.5	79.1	70.5	77.1	87.5	86.1
C/A balance ($ billion)	-4.6	-5.8	-4.9	0.7	0.8	-1.1	-1.4	-1.0	-0.9	-1.9	-2.9
C/A balance as per cent of GDP	-4.8	-5.4	-4.9	0.8	0.9	-1.3	-1.7	-1.2	-0.9	-1.6	-2.2

Table 1 (Continued)
REAL EFFECTIVE EXCHANGE RATE (1996 = 100) AND CURRENT-ACCOUNT (C/A) BALANCE, SELECTED ECONOMIES, 1996–2006

Economy	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*
Economies with current-account deficit											
Economies with large current-account deficit											
Euro area											
REER	100.0	91.4	93.7	91.0	83.6	84.8	87.9	97.9	101.5	100.6	101.3
C/A balance ($ billion)	..	56.9	23.0	-34.0	-91.7	-19.3	50.3	36.6	61.8	-28.8	-20.1
C/A balance as per cent of GDP	..	0.9	0.3	-0.5	-1.5	-0.3	0.7	0.4	0.6	-0.3	-0.2
Hungary											
REER	100.0	108.3	108.8	106.5	106.0	113.0	119.4	121.6	125.5	125.9	122.0
C/A balance ($ billion)	-1.8	-2.0	-3.4	-3.8	-4.0	-3.2	-4.6	-7.2	-8.7	-8.1	-6.2
C/A balance as per cent of GDP	-3.9	-4.5	-7.2	-7.8	-8.5	-6.1	-7.1	-8.7	-8.6	-7.4	-5.6
New Zealand											
REER	100.0	102.0	90.4	86.8	78.0	77.4	86.7	101.7	109.6	115.2	105.9
C/A balance ($ billion)	-3.9	-4.3	-2.1	-3.5	-2.7	-1.4	-2.4	-3.4	-6.5	-9.6	-9.4
C/A balance as per cent of GDP	-5.8	-6.4	-3.9	-6.2	-5.2	-2.8	-4.1	-4.3	-6.7	-8.9	-9.0
South Africa											
REER	100.0	105.7	95.8	92.0	90.6	82.2	73.4	97.6	106.6	107.5	101.5
C/A balance ($ billion)	-1.7	-2.2	-2.4	-0.7	-0.2	0.1	0.7	-2.2	-7.4	-10.1	-16.3
C/A balance as per cent of GDP	-1.2	-1.5	-1.8	-0.5	-0.1	0.1	0.6	-1.3	-3.4	-4.2	-6.5
India											
REER	100.0	104.3	99.5	99.4	101.2	103.5	99.9	99.5	100.5	103.7	100.4
C/A balance ($ billion)	-6.0	-3.0	-6.9	-3.2	-4.6	1.4	7.1	8.8	0.8	-6.9	-19.3
C/A balance as per cent of GDP	-1.6	-0.7	-1.7	-0.7	-1.0	0.3	1.4	1.5	0.1	-0.9	-2.1

Table 1 (Continued)
REAL EFFECTIVE EXCHANGE RATE (1996 = 100) AND CURRENT-ACCOUNT (C/A) BALANCE, SELECTED ECONOMIES, 1996–2006

Economy	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*
	Economies with current-account deficit										
Economies with large current-account deficit											
Turkey											
REER	100.0	101.1	101.1	99.4	107.8	96.0	108.8	118.6	124.6	132.7	128.9
C/A balance ($ billion)	-2.1	-2.1	2.0	-1.3	-9.8	3.4	-1.5	-8.0	-15.6	-23.1	-31.5
C/A balance as per cent of GDP	-1.2	-1.1	1.0	-0.7	-5.0	2.4	-0.8	-3.3	-5.2	-6.4	-8.0
Australia											
REER	100.0	104.0	96.8	97.6	93.5	89.1	92.7	103.2	112.7	119.0	123.6
C/A balance ($ billion)	-15.7	-12.4	-18.4	-22.4	-15.2	-7.7	-16.2	-29.5	-40.1	-42.2	-40.6
C/A balance as per cent of GDP	-3.8	-3.0	-4.9	-5.6	-3.9	-2.1	-3.9	-5.6	-6.3	-6.0	-5.4
United Kingdom											
REER	100.0	114.1	119.0	117.0	114.7	111.5	112.7	109.6	114.5	111.7	111.4
C/A balance ($ billion)	-10.5	-1.4	-5.3	-35.1	-37.6	-31.5	-24.8	-24.4	-35.4	-48.3	-80.0
C/A balance as per cent of GDP	-0.9	-0.1	-0.4	-2.4	-2.6	-2.2	-1.6	-1.3	-1.6	-2.2	-3.5
United States											
REER	100.0	104.5	113.7	113.8	115.0	122.0	122.0	112.7	105.8	102.9	99.8
C/A balance ($ billion)	-124.8	-140.4	-213.5	-299.8	-415.2	-389.0	-472.4	-527.5	-665.3	-791.5	-869.1
C/A balance as per cent of GDP	-1.6	-1.7	-2.4	-3.2	-4.2	-3.8	-4.5	-4.8	-5.7	-6.4	-6.6

Table 1 (Concluded)
REAL EFFECTIVE EXCHANGE RATE (1996 = 100) AND CURRENT-ACCOUNT (C/A) BALANCE, SELECTED ECONOMIES, 1996–2006

Economy	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*
Economies with current-account deficit											
Economies with large current-account deficit											
EU – Central and Eastern Europe[a]											
REER	100.0	104.4	110.6	106.1	111.0	119.5	122.1	121.0	125.9	136.2	142.6
C/A balance ($ billion)	-14.4	-16.6	-18.6	-22.3	-20.3	-16.7	-18.5	-23.8	-37.5	-31.3	-38.8
C/A balance as per cent of GDP	-4.1	-4.7	-4.9	-6.0	-5.5	-4.1	-4.1	-4.4	-5.8	-4.1	-4.7

Source: Calculations based on IMF, Balance of Payment Statistics; and International Financial Statistics databases; and JP Morgan through Thomson Financial DataStream database.

a Czech Republic, Estonia, Hungary, Lithuania, Poland, Romania, Slovakia and Slovenia.

2.0 Speculative flows induced by "carry trade"

Carry trade, as any other form of speculation on international interest rate differentials that is not covered in the forward currency market, involves a currency risk. Speculative capital flows typically respond to short-term current and expected monetary variables, such as the interest rate, the exchange rate, liquidity and risk. A floating exchange regime supposedly increases the risk and discourages such operations, while a fixed exchange regime provides a (partial) guarantee of exchange stability, and therefore encourages speculation. However, specific experience of carry trade in officially floating currencies does not confirm this hypothesis. Indeed, floating currencies under various monetary policy regimes, rather than being immune to speculative operations actually stimulate them if the amounts available to investors are big enough to drive the market in a certain direction.

Integrating risk into the analysis implies fundamental difficulties in assessing attraction for speculative capital flows and their effect on the real exchange rate. One difficulty is related to the definition and measurement of expectations and of perceived risk, because they are very sensitive to arbitrary behavioural assumptions. For the sake of simplicity, we look again at the ex-post uncovered interest rate returns, and take the associated currency volatility as a measure of risk, to figure out what, on average, could be the gains from speculation, bearing in mind that expectations can adapt to past experience under rather stable environments. Therefore even a floating exchange-rate regime can provide a stable and comfortable environment for speculators as long as exchange rates do not systematically offset interest rate margins and the exchange rate movements can be influenced by the herd behaviour of speculators.

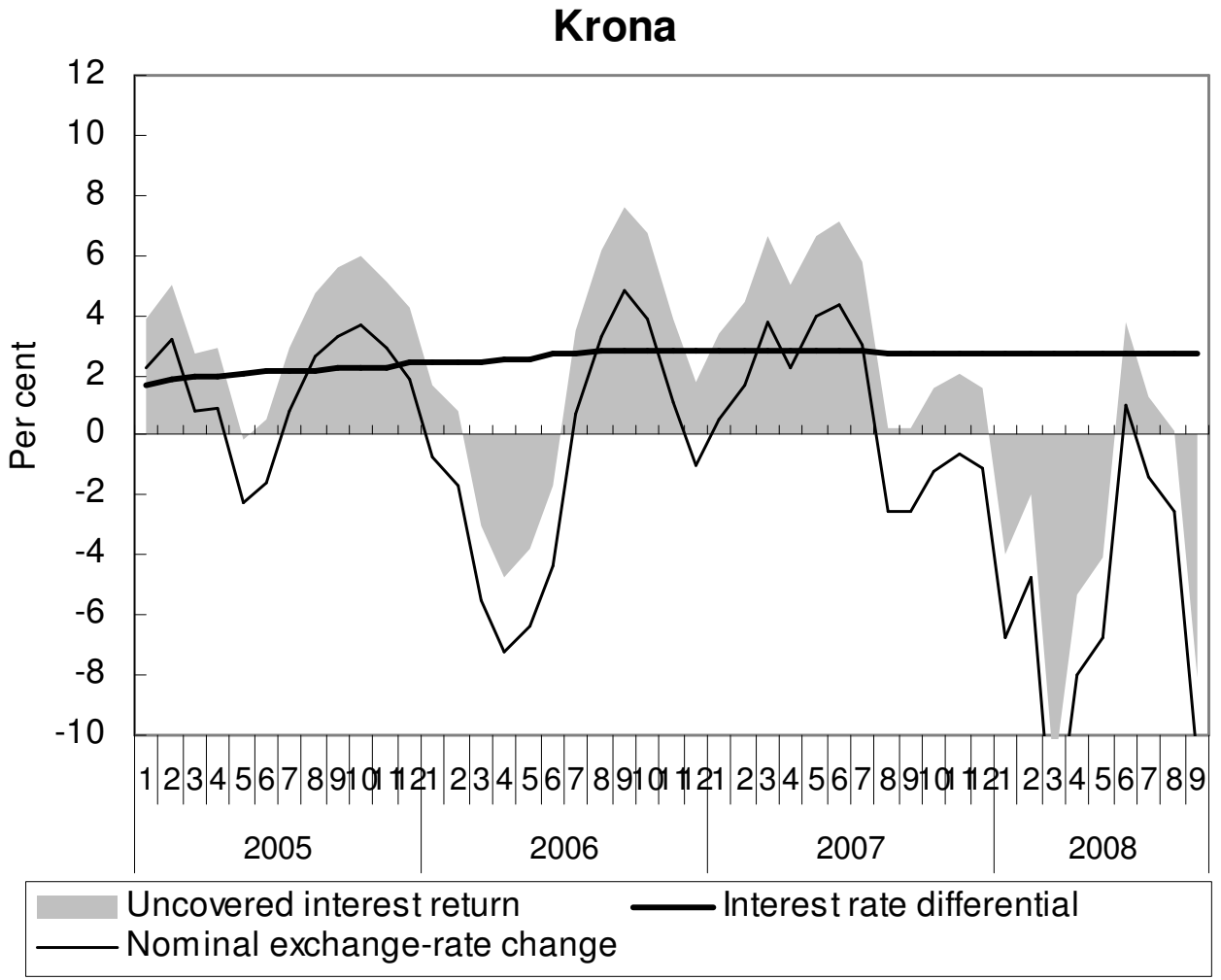
This raises the question of how to come to grips with a central tenet of macroeconomic analysis, the assertion that there are always strong stabilizing forces on the capital market which will tend to quickly remove any systematic source of gain from currency speculation. The UIP

states that capital flows find equilibrium when the expected devaluation of a currency compensates for the interest rate differential obtained by investing in that currency and represents a fundamental tenet of our theoretical conventional wisdom and a building block of standard macroeconomic models. Capital inflows and outflows would find equilibrium if the incentive to buy a currency and invest abroad, driven by an interest rate spread, is completely offset by the potential loss of the currency value, that is, if the positive interest rate spread is compensated by an expected devaluation of the exchanged currency. This implies that assets denominated in a different currency should have the same return so that *no extra profit* can be made by exchanging them. On the other hand, it also implies that it should not be profitable to short- sell or borrow in a currency and lend uncovered in another. The uncovered interest parity condition is therefore an equilibrium condition that rules out excess demand in the international market. Coupled with the assumption that expectations are formed in a fully rational way (market participants use *efficiently all the information* available), it becomes a manifestation of the market efficiency hypothesis that states that any security prices (exchange rate included) reflect all available information, and that no unexploited extra profit is possible.

The literature on the validity of parity has been extensive and has strongly rejected the joint assumptions of UIP and of exchange rate expectations on the basis of "perfect rationality". Attempts to solve the rational-expectation UIP puzzle either by adding a time varying risk premium, or by assuming a transitional learning period, or by adding "noisy traders", have delivered theoretically and empirically controversial results. The carry trade phenomenon, as well as many other profitable speculative activities, not only clearly violate the parity condition, but also give additional support to its related "forward-premium puzzle" (Burnside *et al.*, 2007). The evidence that currencies at a forward premium tend to depreciate while currencies at a forward discount tend to appreciate implies that positive interest rate differentials are systematically associated

with appreciation. The parity can preserve its theoretical relevance for analysing the possible market equilibrium configurations by avoiding any strict assumptions on expectation formation and determination of perceived risk.

Carry trade has recently involved mostly high- to medium-income economies such as Australia, Iceland, Japan, New Zealand, Switzerland and the United States, and a few emerging market economies such as Brazil, Turkey, South Africa, Republic of Korea, as well as some transition economies such as Hungary, Romania, Bulgaria and the Baltic states. Over the past two years, yen- and Swiss franc-funded carry trade operations appeared to be responsible for the large volatility and gyrations of some of the high-yielding currencies, such as the New Zealand and Australian dollars, the Hungarian forint, Brazilian real, Korean won and the Icelandic krona. The latter for instance experienced typical crisis symptoms: prolonged periods of steady appreciation and capital inflows, disrupted by shorter periods of sharp devaluations as carry traders unwound their positions. This happened in Iceland, for example, in March and May 2005, February and April 2006, November 2006, January 2007, August 2007 and September 2008. The experience of the krona is indeed indicative. Figure 1 shows past carry trade potentials driven by the nominal exchange-rate dynamics and the interest rate differentials between the Japanese yen and the Icelandic krona (left panel) and US dollar (right panel). The thick line represents a 3-month interest rate differential between a krona- and a yen-denominated asset; the thin line is the exchange-rate change of the krona vis-à-vis the yen for the same period, while their sum (the shaded area) is the return on a 3-month (uncovered) lending in the Icelandic market by borrowing in Japan in local currencies. Since this return carries the risk of exchange-rate changes, it is hereafter called "uncovered interest return" (UIR).


Krona
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2005
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Uncovered interest return
Interest rate differential
Nominal exchange-rate change

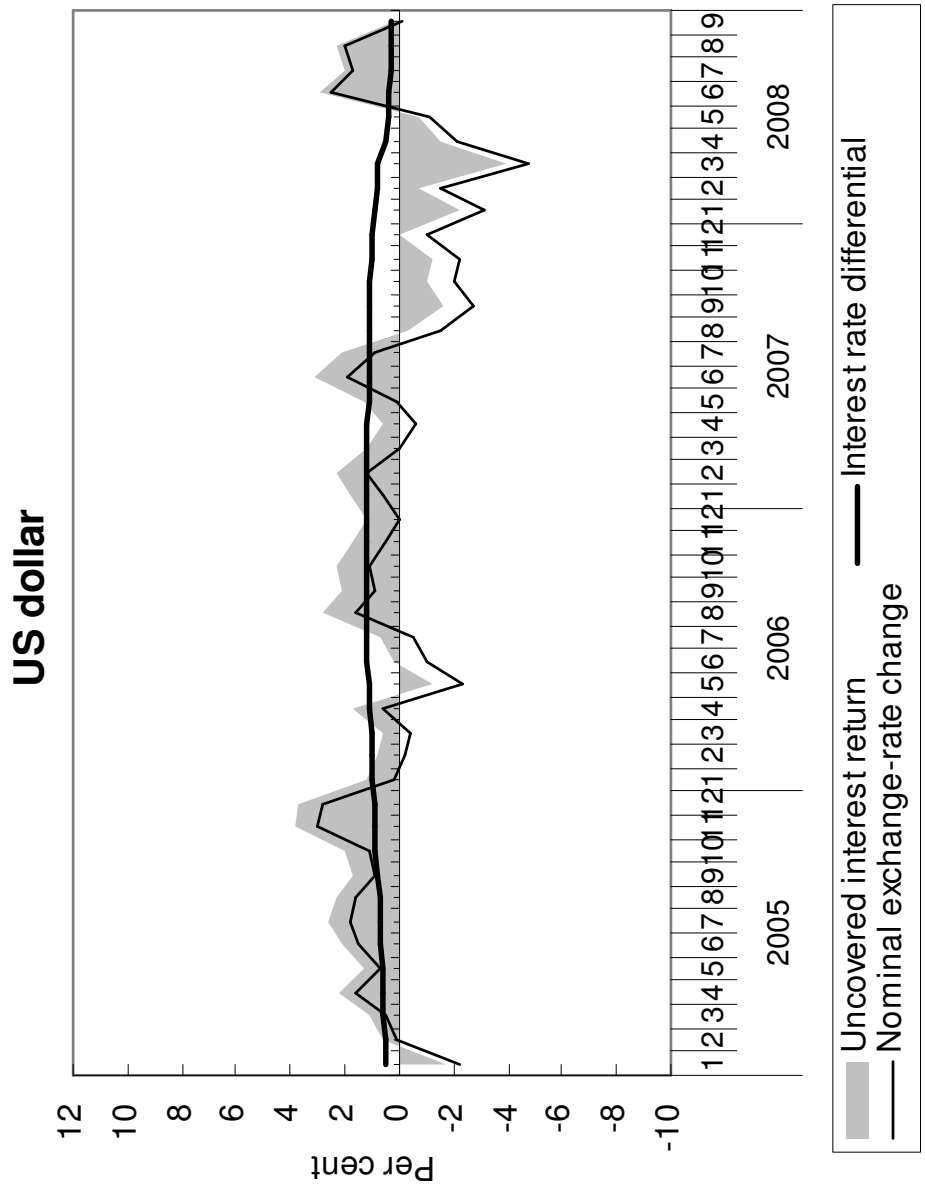


Figure 1: Yen-carry trade on the Icelandic krona and US dollar since 2005, overlapping quarterly returns. Source: Calculations based on IMF, International Financial Statistics database; and national sources. Japan Interbank (offshore) 3-month, offer rate; US Federal funds (effective), middle rate; Iceland 90-day CB notes, middle rate.

Note: A positive change in the exchange rate indicates an appreciation of the currency concerned. For an explanation of differentials, see text.

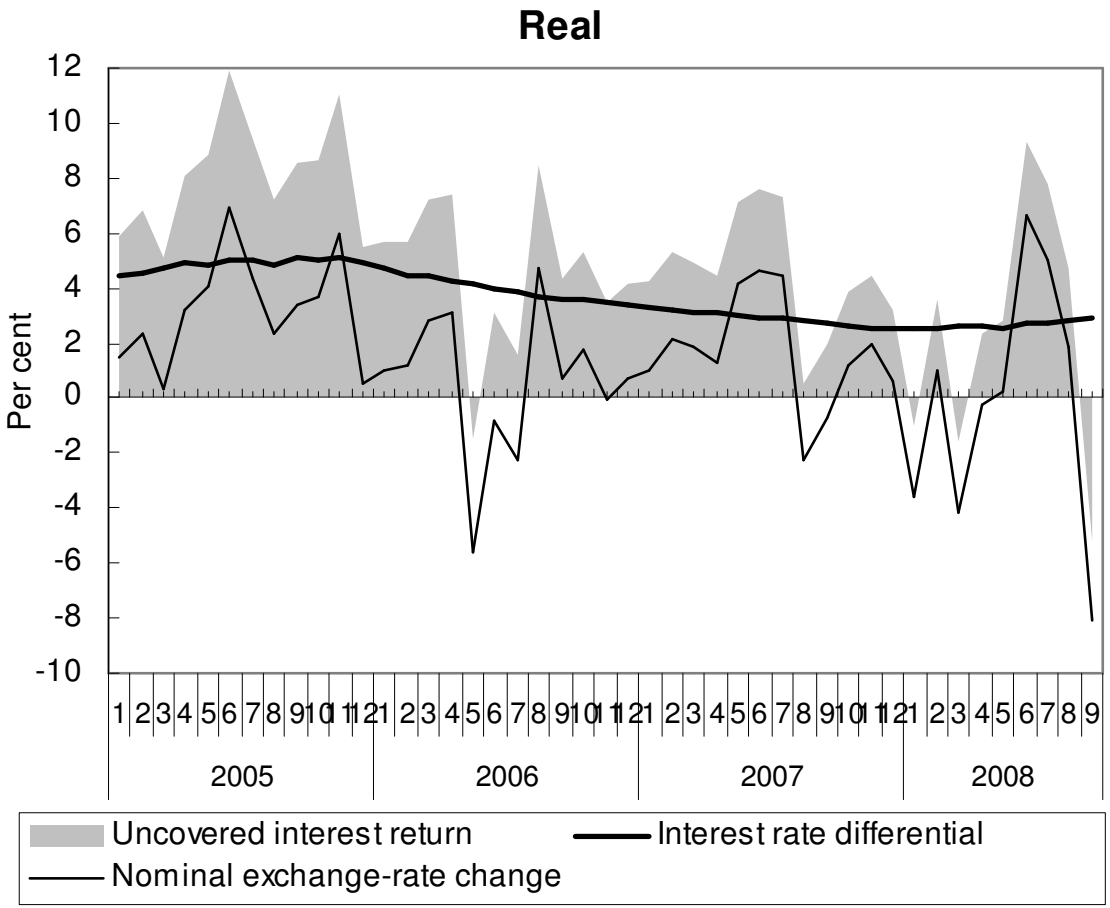
Indeed, the dollar itself has been the target of "yen carry traders" and, to a lesser extent, of traders borrowing in Swiss francs, at least since the rise of the fed funds rate between 2004 and 2006. But the yen carry trade return potentials on the dollar have been low compared to uncovered returns plus real appreciation of a number of developing and transition economies against the dollar itself.

Other countries, such as Brazil and Turkey, have experienced a steady appreciation of their currencies despite fairly high inflation rates. The Brazilian and Turkish real appreciation and large interest rate differentials vis-à-vis the other major currencies and particular the yen have allowed for large gains in carry trade which persist despite the mid-2006 turbulence (figure 2).

The specific episodes of carry trade deserve attention as warning signals that even financially developed medium- to high-income countries are not immune to destabilizing capital flows. Besides that, the phenomenon may be regarded as a "species" of the broader "genus" of potentially destabilizing speculative capital-account operations; it displays numerous similarities with the mechanisms that caused financial fragility in many emerging markets, leading thereafter to currency and financial crises in the mid-1990s. The more general mechanisms of destabilizing speculation, on the other hand, may easily involve emerging markets and small, open developing economies that have access to capital markets and adopt different monetary policies due to differing inflation histories.

While such speculative operations naturally involve a currency risk for speculators, that can be attenuated by diversifying the portfolio of high-yielding currencies, the risk for both the funding and lending currencies cannot be diversified, and can therefore become a source of "systemic risk", spilling over from the financial system to the real economy. The web of different funding and lending currencies of otherwise unrelated economies causes the countries involved to become interdependent and subject to reversals of perceptions and to contagion.

Contagion spreads due to speculators' profit maximization motives: unwinding of positions in one country affects all the web-related economies. Such unwinding may be triggered by "conventional focal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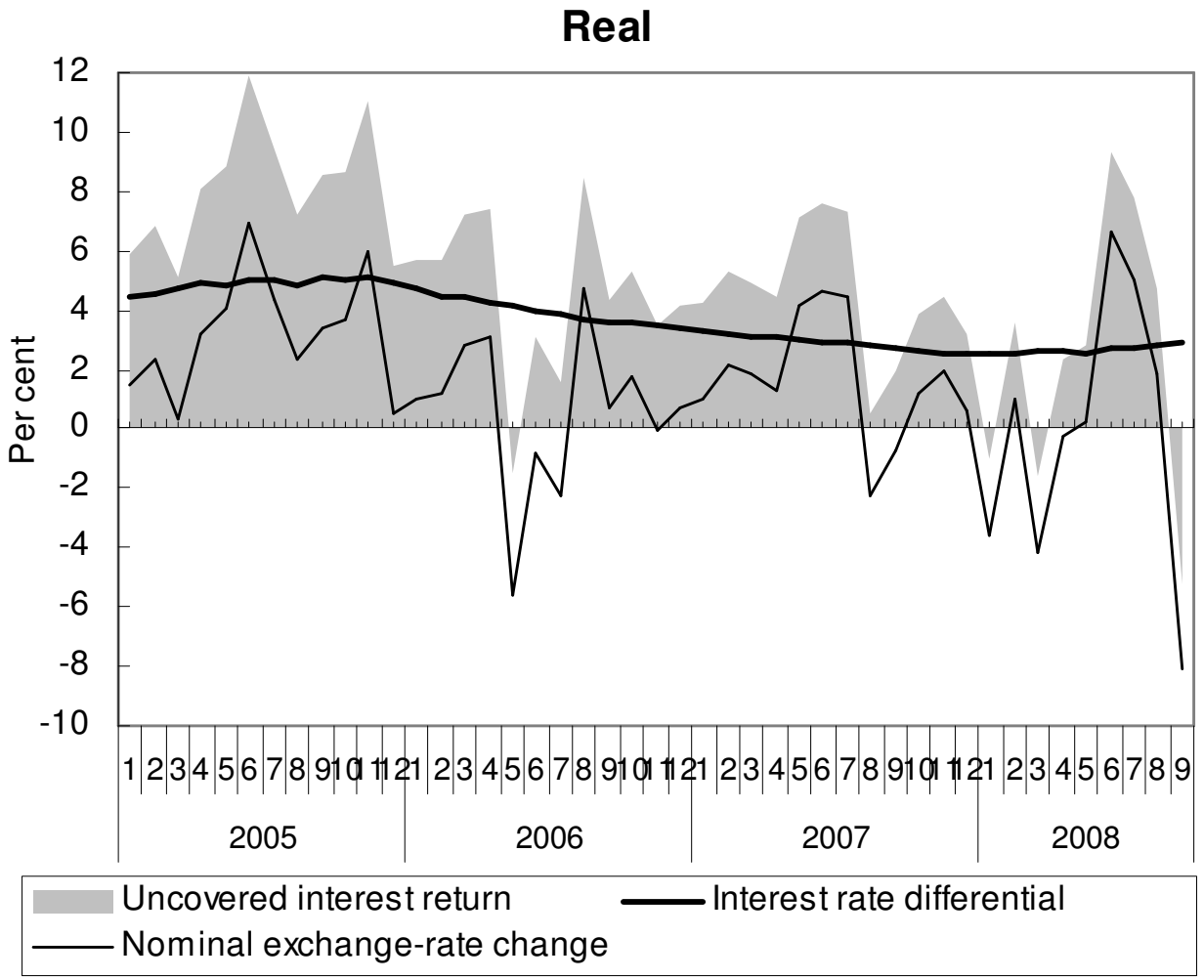
Uncovered interest return
Interest rate differential
Nominal exchange-rate change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Interest rate differential
Nominal exchange-rate change

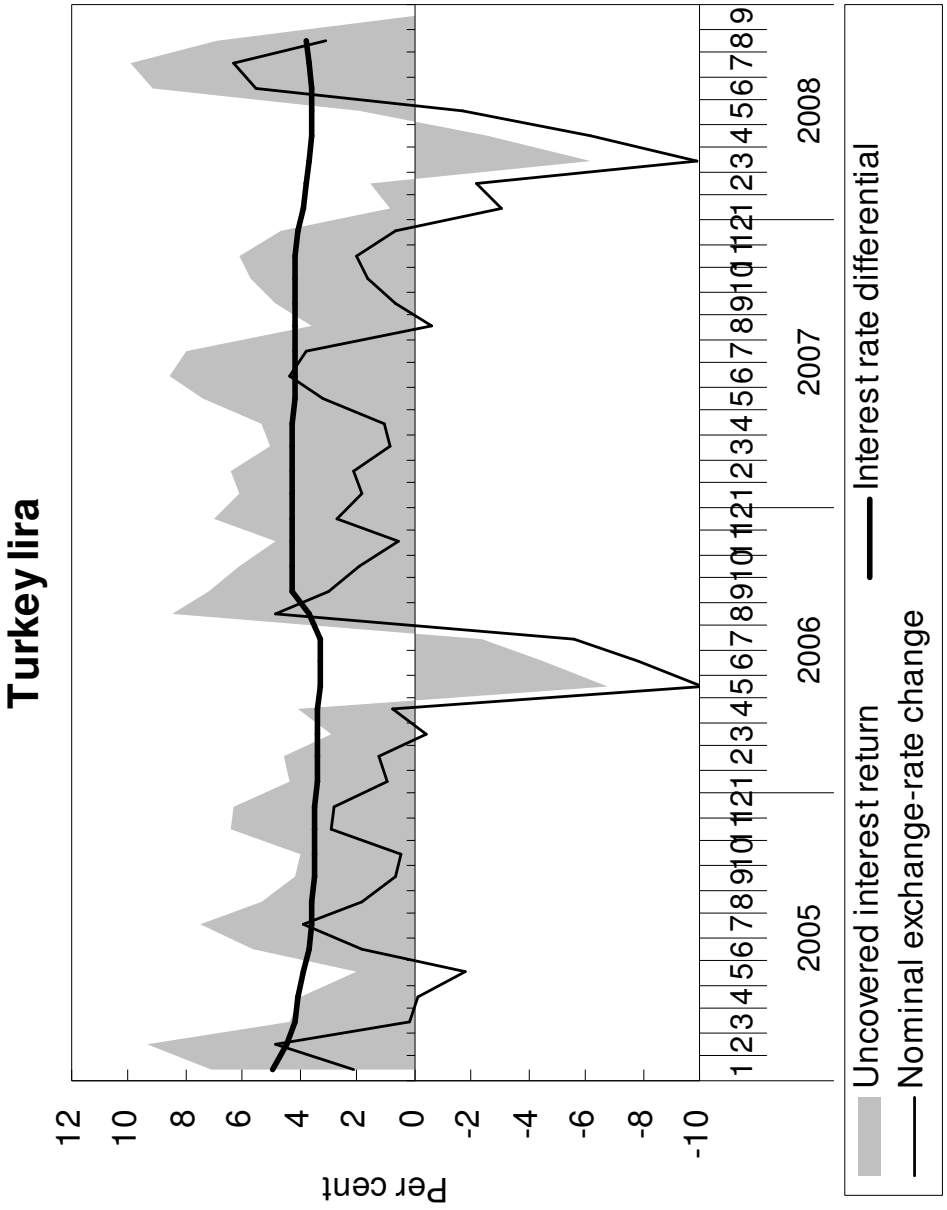


Figure 2: Yen-carry trade on the Brazilian real and Turkey lira, since 2005. Source: Calculations based on IMF, International Financial Statistics database; and national sources. Brazil CDB (up to 30 days), middle rate; Japan interbank (offshore) 3-month, offer rate; Turkey Interbank money market rate.

points" such as the external balance or growth, or the inflation prospects of the funding currency causing fear of an interest correction and an exchange-rate jump. For instance, it has been debated as to whether the speculative run on the Icelandic krona was triggered by the perceived non-sustainability of the huge current-account deficit, by a downgrade from some rating agency, or even by a piece of "good news" related to the funding currency, such as an improvement in the Japanese economy which had the potential of an interest rate increase and an appreciation of the yen. Undoubtedly, the carry trade unwinding from the krona had a significant impact not only on the Icelandic financial and credit system, but also on some third parties involved, namely some emerging markets such as Brazil and Turkey, as traders needed to cash in some of their earnings from well-performing currencies to cover some of their losses from the krona trade (figures 1 and 2).

While uncovered gains and losses can be significant, their volatility depends entirely on fluctuations in the nominal exchange rate. Periods of relative stability and large interest rate differentials provide strong incentive to traders, as in 2005 and late-2006. During that period the dollar appreciated vis-à-vis the two funding currencies, despite high and rising current- account deficits and higher inflation rates in the United States than in Japan or Switzerland. On the other hand, the carry trade is such a psychological game that does not require big changes in the interest differentials to be reversed. The yen and dollar movements are under scrutiny and have become focal points that can trigger wider reversal. A sudden pick up of expected volatility, as in the mid-2006 and in the summer 2007 and 2008, can trigger a large unwinding of investments and spill over to emerging market economies. Currency volatility discourages carry trade operation by raising the risk that gains from interest differentials between the funding and the target currency may be eroded by adverse exchange rate movement. On the other hand, the reversal of the positions generates the volatility and the adverse exchange rate changes that lead to further reversal of the flows.

The summer 2007 turmoil originated in the US subprime credit market and spreading to other segments of the financial and credit

markets worldwide affected carry trade operation and was amplified by sudden carry trade unwinding.

Figures 3 to 5 compares some recent daily exchange rate pairs of funding and target currencies with the VIX index. The latter, the Chicago Board Options Exchange Volatility Index, is a measure of the implied volatility of S&P 500 index options and represents an index of the market's expectation of volatility over the next 30 day period.

Low-yielding funding currencies such as the yen and Swiss franc have long runs of depreciation interrupted by sharp appreciation vis-à-vis high-yielding target currencies such as the US dollar (figure 3) and emerging market currencies such as the Brazilian real (figure 4) and the Hungarian forint (figure 5). Therefore high-yielding target currencies display sharp reversals associated with increased exchange rate volatility (La Marca, 2007). A stricking feature of carry trade unwinding for emerging market currencies (but also major funding currencies like the yen vis-à-vis the dollar) is its association with the general state of "market sentiments" on future market volatility as a measure by the VIX. Although the latter index does not directly relate to the expectation of currency reversals, it indicates a desire to "fly to quality" increasing "risk aversion" and it is associated to periods of falling funding liquidity for speculators. In figures 3 to 5 the shaded areas indicate periods of strong correlation between increase in the VIX index and unwinding of the carry trades. These periods became more frequent with the 2007 crisis and tend to overlap across currencies.

Some more idiosyncratic unwindings, tend to coincide with either with the expectations of lower US rates to ease tight liquidity conditions and slightly increasing rates in Japan reflecting its inflationary pressures (figure 3)

The evidence for the Brazilian real and Hungarian forint is supportive of the hypothesis that, despite a persistently large interest differentials, the scare of increasing exchange rate volatility easily propagates to emerging markets, leading to larger risk aversion and making the currency carry trade less appealing (figure 4 and 5).

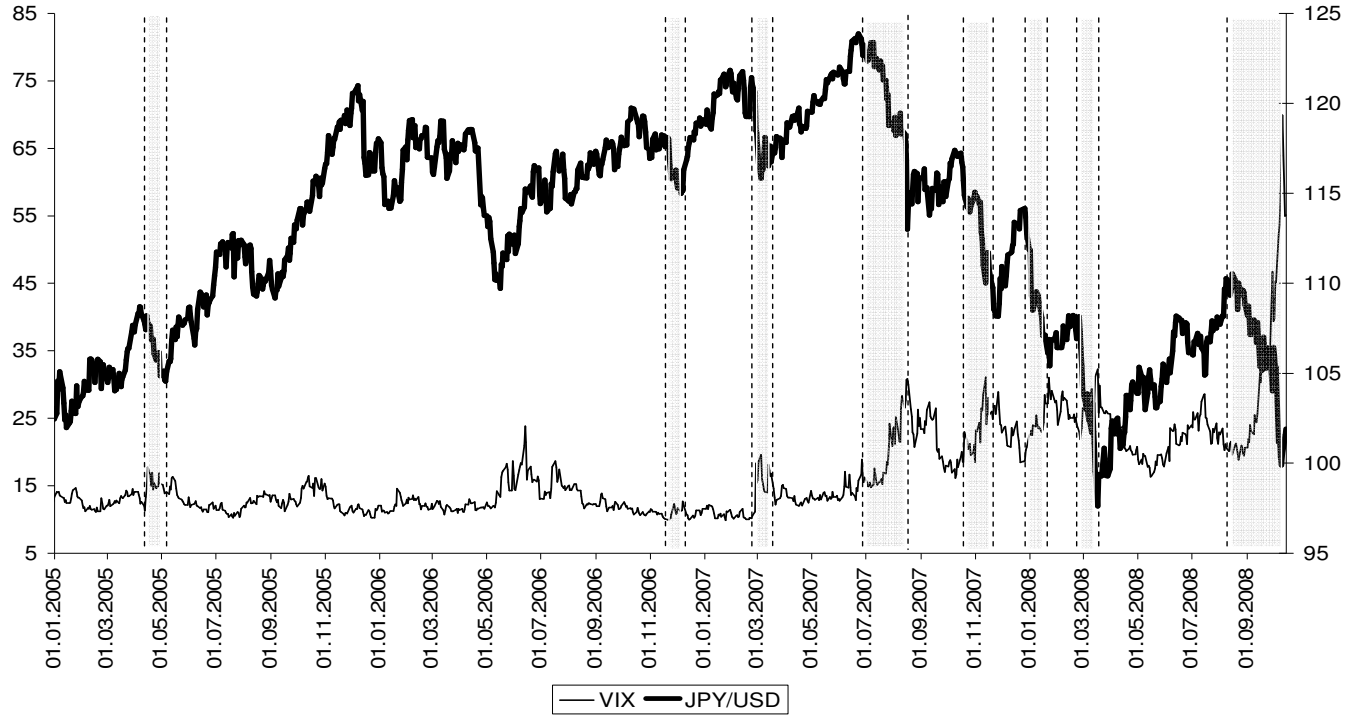


Figure 3: Recent yen-carry trade unwinding and currency volatility with the US dollar. Japanese yen per US $ and VIX. Source: Calculations based Bank of Japan data and Thomson Datastream.

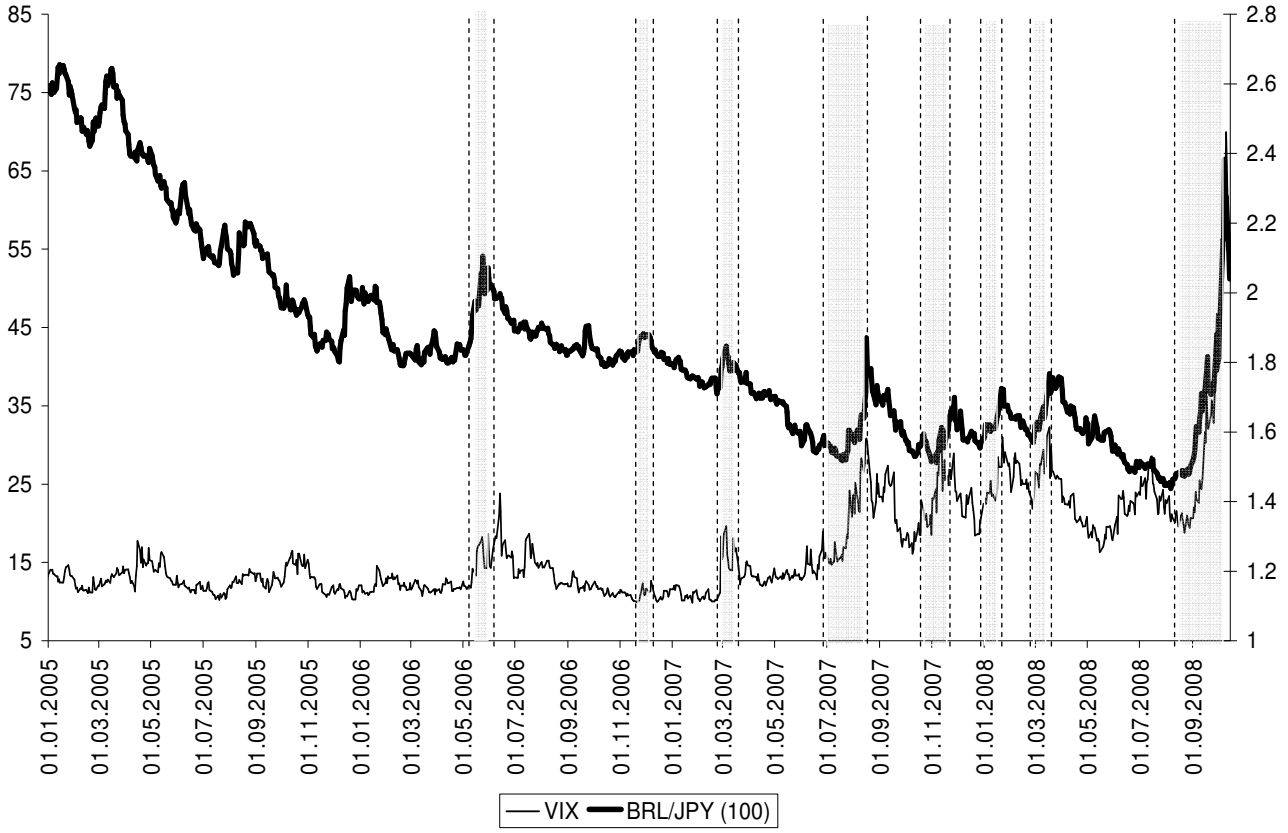


Figure 4: Recent dollar-carry trade unwinding and currency volatility with the Brazilian real. Brazil reals per Japanese yen and VIX. Source: Calculations based on Banco Central do Brazil data and Thomson Datastream.

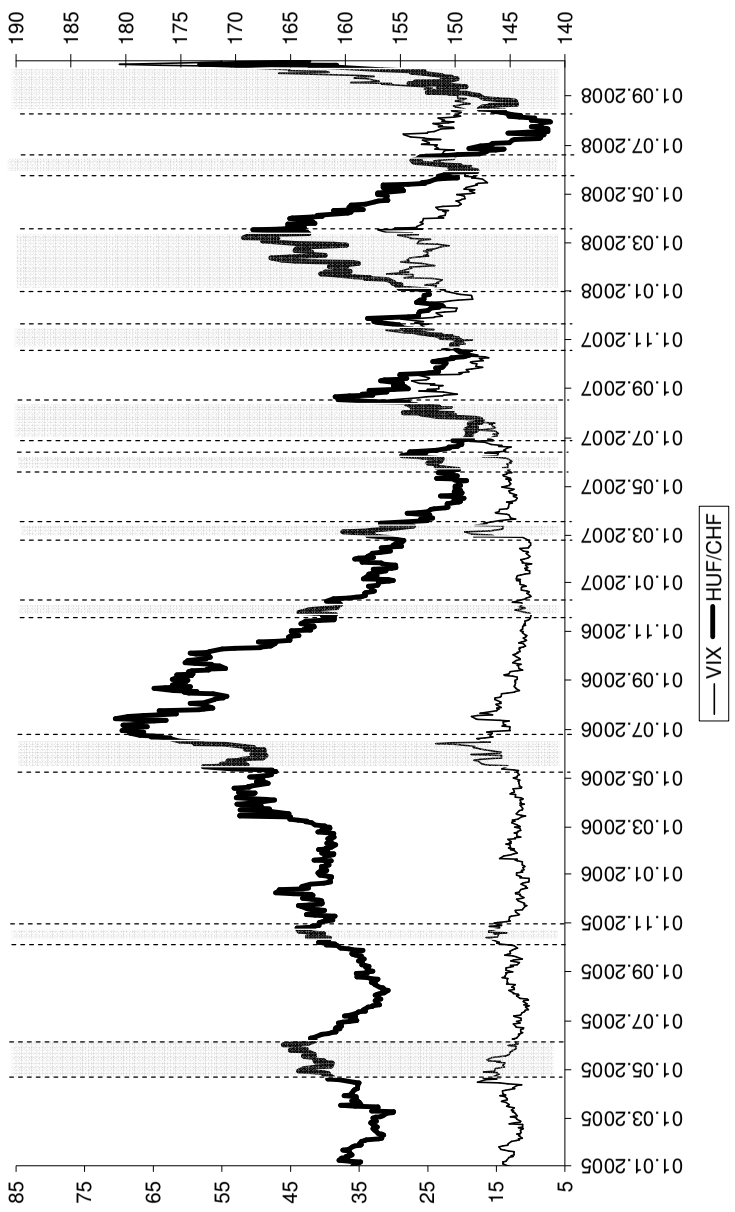


Figure 5: Recent Swiss franc-carry trade unwinding and currency volatility with the Hungarian forint. Hungarian forint per Swiss franc and VIX. Source: Calculations based on Bank of Korea data and Thomson Datastream.

3.0 Domestic policies and speculation opportunities

Figures 6 to 9 below show how alternative exchange-rate regimes and different monetary policies have generated varying degrees of profit opportunities for international speculators in some emerging market economies. They also show how much real appreciation (with a loss of overall competitiveness) can result from speculation that is driven by interest rate differentials.

The short-term speculative potentials defined as above (right charts) are graphed together with the inflation differential and the real exchange rate dynamics (left charts). In the left charts, the solid line represents the inflation rate differential between the selected economy and the United States, while the shaded area is the change in the real exchange rate, that is, the sum of inflation rate differential and the change in the nominal exchange rate vis-à-vis the dollar (thin line in the right charts). Any variable at time *t* represents the quarterly rate obtained between the months *t-3* and *t*. An index of the real exchange rate is plotted on the left panel (dashes) and measured on the right vertical axis.[8] While the dollar is used as reference for comparison between the countries' trends and the rest of the world, it is easy to estimate the potentials of yen-funded carry trade by combining the latter figures with figure 1.[9]

Prior to the 1999-crisis, the situation in Brazil was characterized by an overvalued real exchange rate and a large differential between domestic and international interest rates aimed at maintaining capital inflows (figure 6).

During the same period, Mexico also had high domestic interest rates, while relatively high inflation rates were appreciating the real

[8] To reduce its volatility, induced by monthly nominal exchange rate fluctuations, we use a 6-month moving average of the real exchange rate, with 2000 as the basis year.

[9] For a more detailed country by country analysis see the appendix of UNCTAD (2007) chap. 1 Section D.

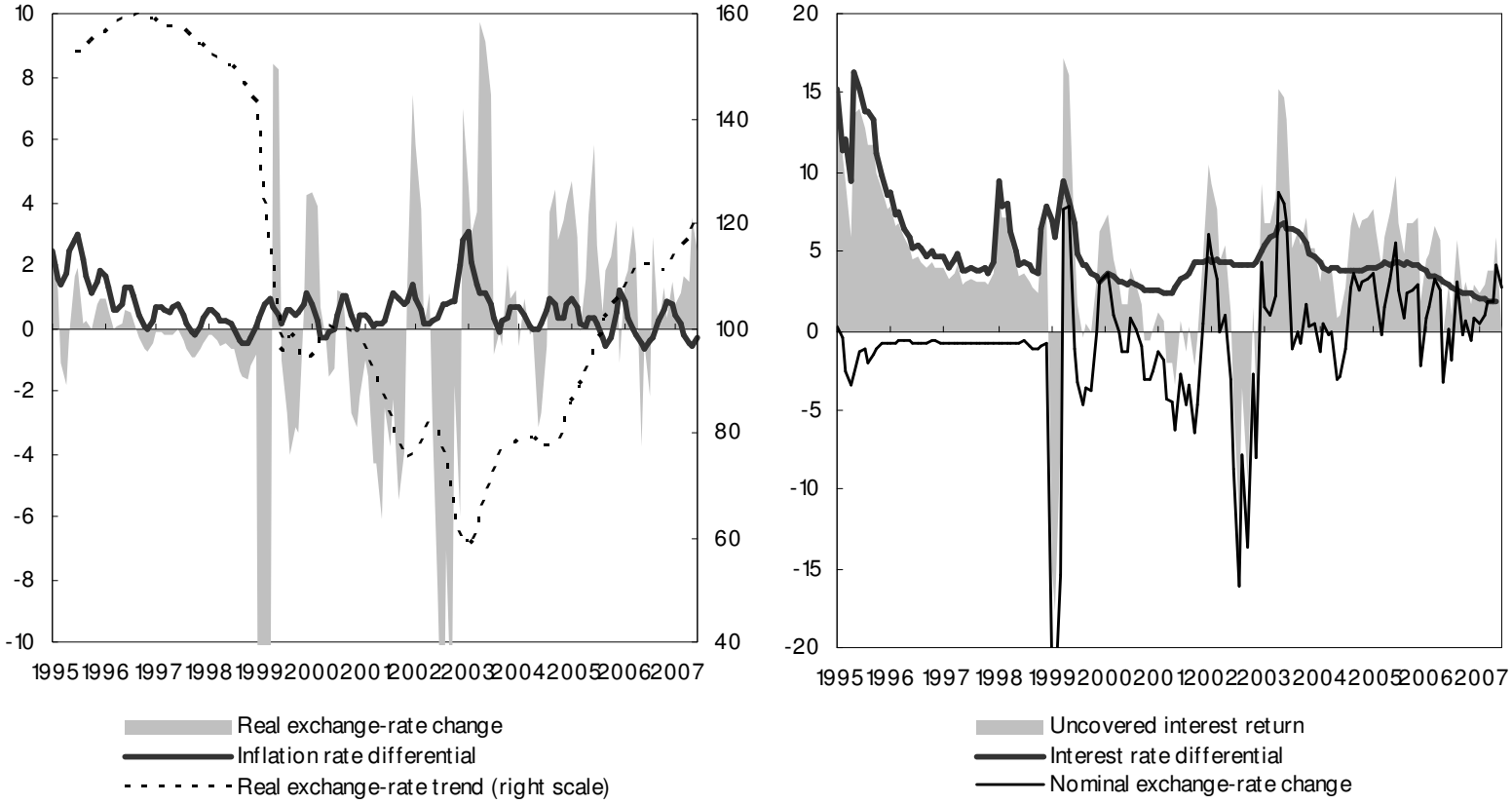


Figure 6: Brazil - Uncovered interest returns, exchange rate changes, inflation and interest rates differentials, 1995-2007. Source: Calculations based on IMF, International Financial Statistics

exchange rate. Brazil's 1999-crisis forced a large nominal depreciation of the real and led to an interest rate hike that also affected interest rates in Mexico and Argentina. After the 1999-crisis, Brazil adopted a floating exchange rate regime and implemented an inflation-targeting monetary policy (Barbosa, 2006). The 2001-crisis in Argentina and the 2002-depreciation of the Brazilian real triggered a surge in inflation rates following by a rise in interest rates. While interest rate differentials aimed at curbing inflation have been significantly reduced in Mexico, Brazil is still offering considerable potential gains for short-term speculation. Argentina, on the other hand, was able to contain real appreciation and succeeded in moderating inflation although preserving low interest rates. As apparent in figure 6, the average real exchange rate of Brazil was about 80 per cent of its pre-1999 crisis level.

Turkey provides an example of frequent changes in the monetary regime, resulting in large and volatile nominal exchange-rate changes and frequent real appreciation (mostly induced by large inflation rate differentials), and constantly associated with large uncovered returns on short-term capital (generated by the large interest rate differentials). Financial turbulence struck the country in 1999 and culminated in November 2000 (figure 7). Despite substantial financial assistance by the IMF (since December 1999) and substantial portfolio capital inflows, the financial situation once again became unsustainable in February 2001. GDP contracted by 5 per cent in 1999, grew by 7 per cent in 2000 and ended up with a fall of -7.4 per cent in 2001, displaying an extreme kind of boom and bust. The central bank officially gave up control of the exchange rate and, since November 2002, the post-crisis IMF stabilization programme has been officially based on two pillars of financial restraint: a primary surplus target for fiscal deficits and an inflation-targeting framework for monetary policy. However, this again has resulted in a strong tendency towards real appreciation and large uncovered interest returns. Only recently has the country managed to significantly reduce the

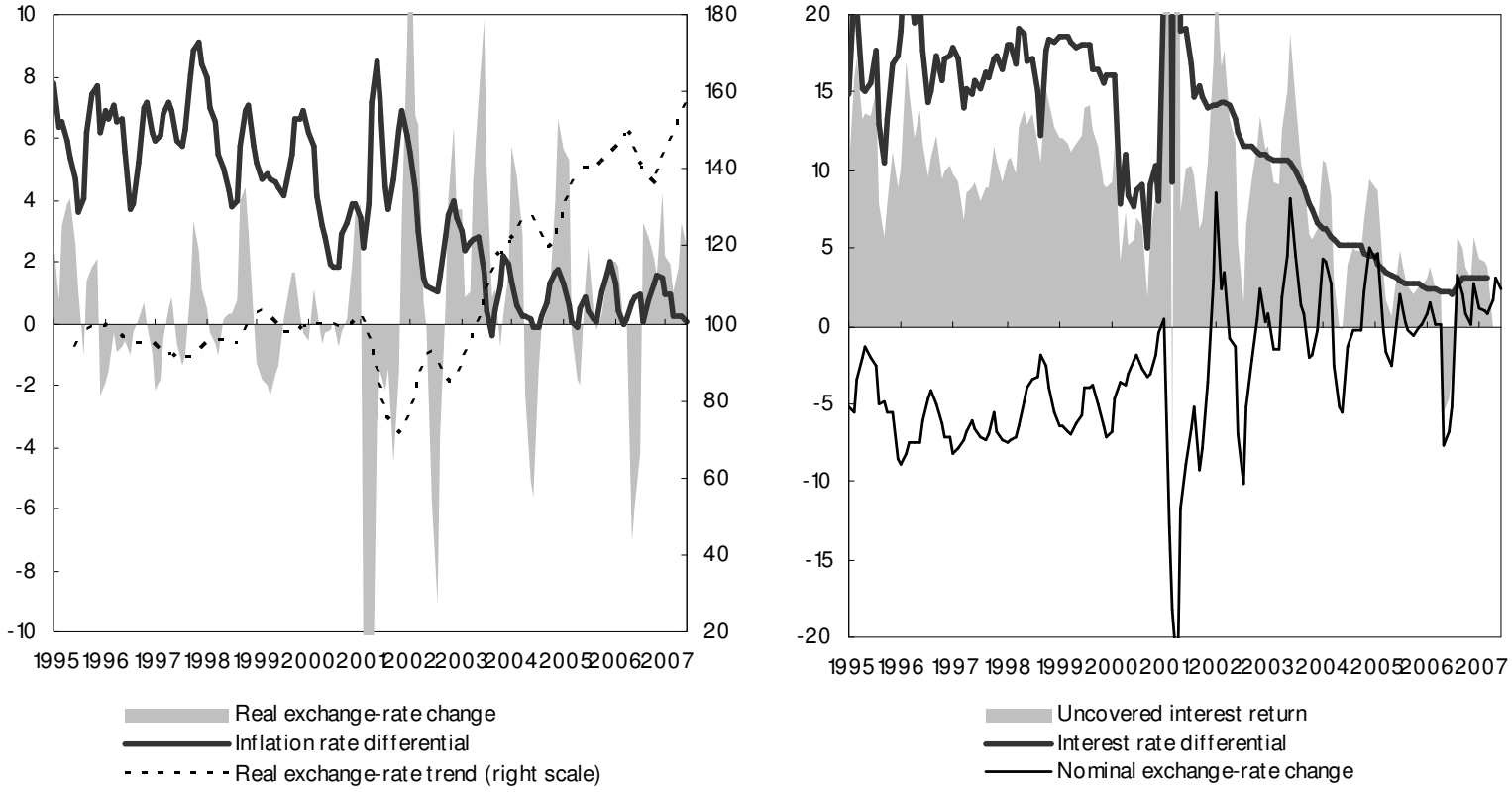


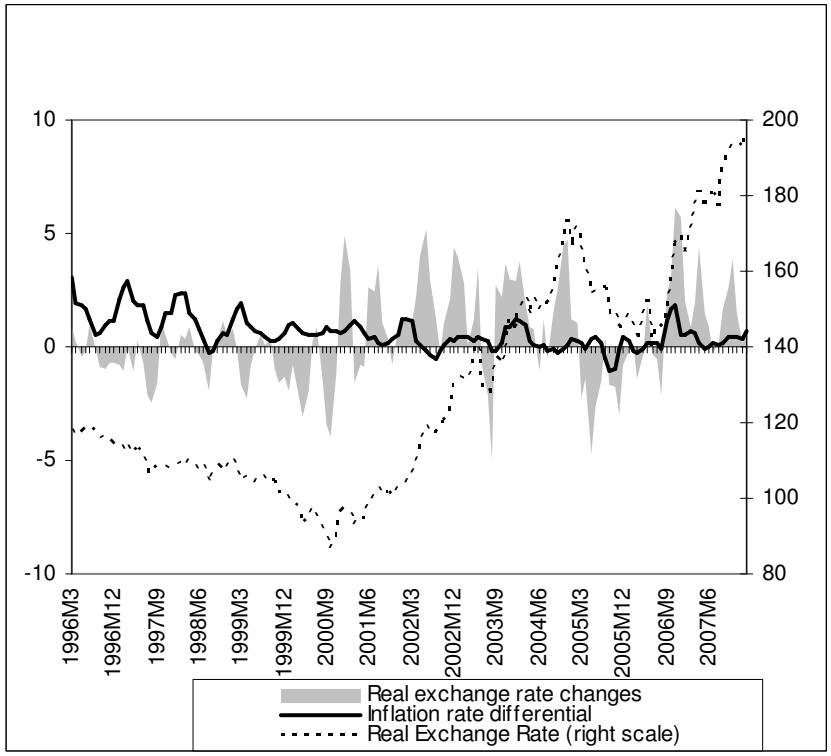
Figure 7: Turkey - Uncovered interest returns, exchange rate changes, inflation and interest rates

interest rate differential, which fell below 3 per cent between July 2005 and March 2006. But with a very high real exchange rate and widening current-account deficits, the value of the currency dropped at the end of 2006 preceded by significant capital outflows. Turkey's frequent boom-bust cycles are clearly driven by the effects of potential and actual short-term capital flows (Telli, Voyvoda and Yeldan, 2007).

The picture for Hungary has been characterized by large interest rate differentials and aimed at controlling inflation and preserving capital inflows or avoiding outflows. The recent decline in the interest rates has not accompanied a reduction in the inflation rates, nor substantial depreciations. The real exchange rate has been persistently rising across the economies in the group.

Chinese exchange rate, capital market and monetary regimes have been very stable over a long period of time (figure 9). A pegged exchange rate, low inflation and low interest rates have led to expectations of stability by investors in fixed capital, and have not attracted short-term carry-trade speculators. Low nominal and real interest rates have caused short-term speculative profit returns to be nil or even negative, thereby discouraging speculative capital inflows of the carry trade type. A slight and consistent tendency towards real depreciation vis-à-vis the dollar has only recently levelled off following some inflationary pressures between 2003 and 2004 and the authorities' decision to allow a moderate nominal appreciation in 2005 and 2006. The other economies of the region have recently experienced exchange rate volatility and real appreciation.

To summarize, in the past, in many cases managed depreciation or pegging of exchange rates, associated with large interest rate and inflation rate differentials, have led to real appreciation and the loss of competitiveness, and have offered opportunities for speculation. This occurred to a large extent in pre-crisis Brazil, Thailand, the Republic of Korea and the Russian Federation in the 1990s. Unfortunately, the regime switch to floating and inflation targeting improved the situation only in those countries that were able to consistently reduce their interest rate



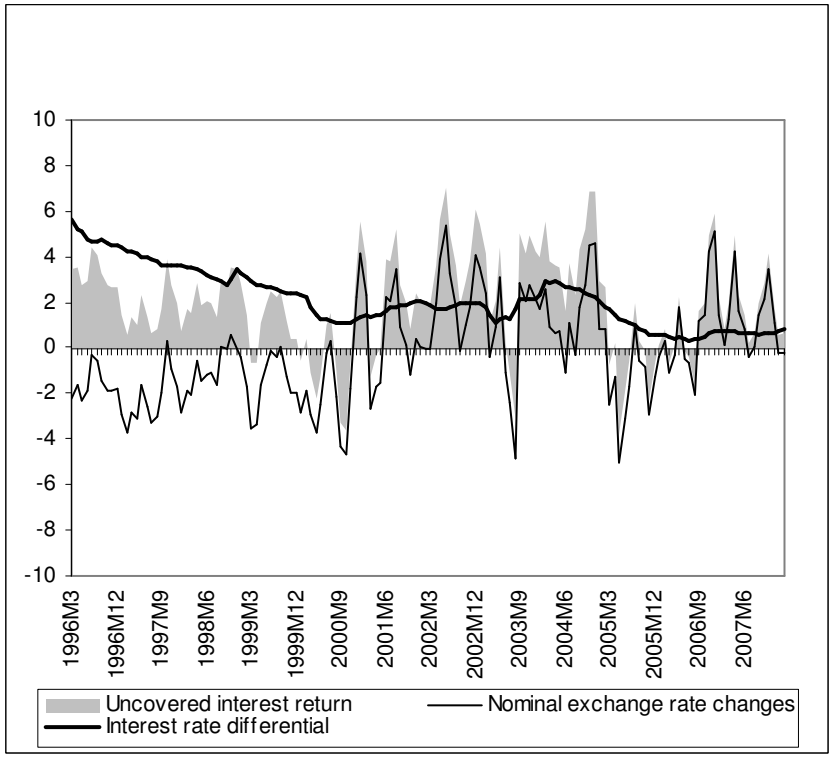


Figure 8: Uncovered interest returns, exchange rate changes, inflation and interest rates differentials in Hungary (March 1996-February 2008). Source: Calculations based on IMF, International Financial Statistics database; and national sources.

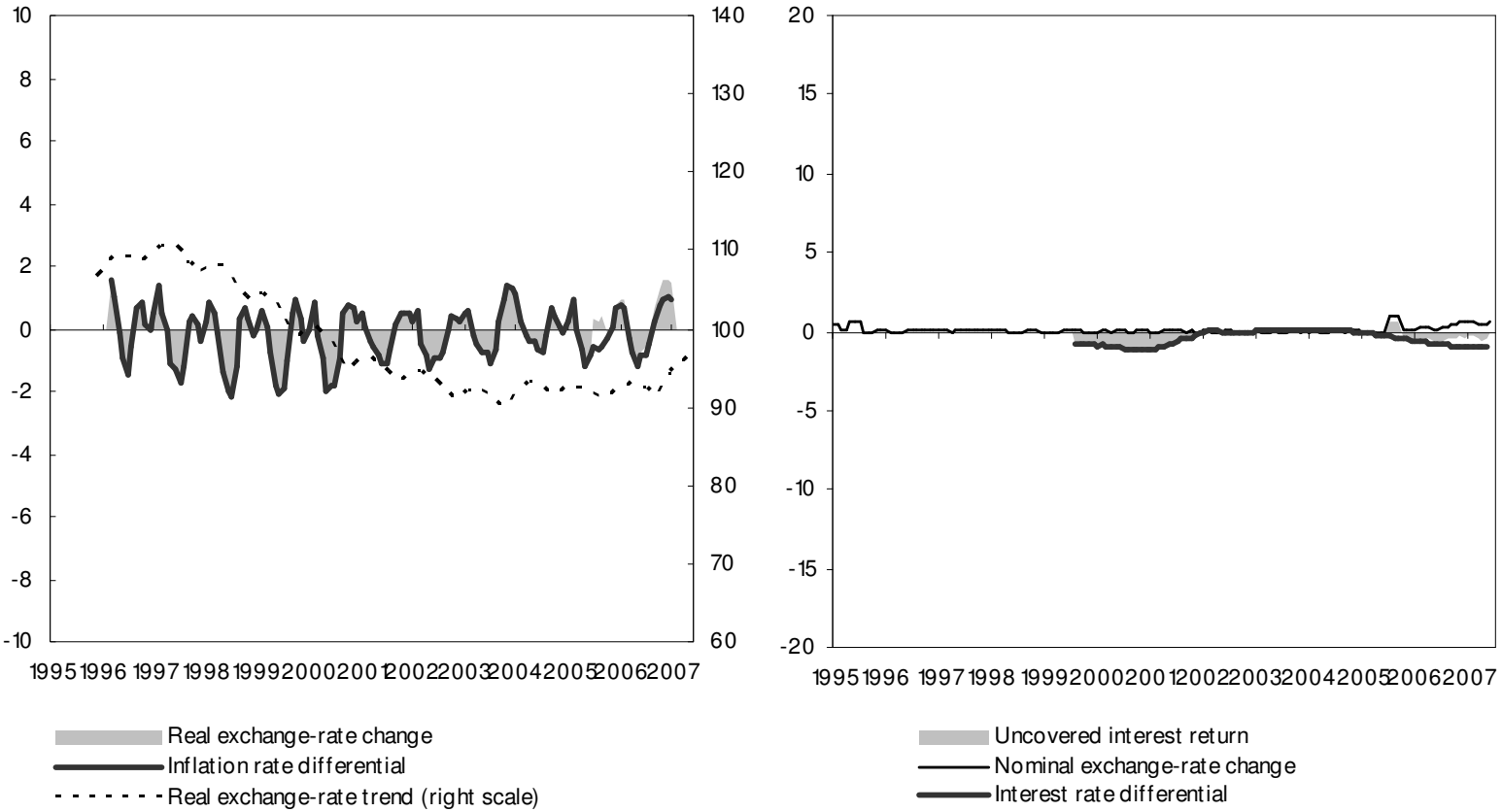


Figure 9: China - Uncovered interest returns, exchange rate changes, inflation and interest rates differentials, 1995-2007. Source: Calculations based on IMF, International Financial Statistics database; and national sources.

differential against the United States. In many other cases, despite slightly lower inflation and interest rate differentials, the tendency towards real appreciation continued unabated. Moreover, the opportunities for international speculation, though subject to larger exchange-rate risk, have not faded; instead, they remain a major source of instability and risk. Short-term interest rates, as the main instrument to combat inflation, have generated new opportunities for large-scale speculation on the currency market. The real costs for the economies will be very high if the restrictive effects of chronic real appreciation add to high real interest rates and penalize non-subsidized domestic capital formation.

4.0 Real cost of speculation

We define $\omega, \rho, \delta, \pi$, and π^* as the uncovered interest return, the real appreciation, the nominal appreciation, the domestic and foreign inflation rates, respectively, and observe that

$\rho = \pi - \pi^* + \delta$, and

$\omega = i - i^* + \delta$,

that is, the rate of real appreciation is the sum of the inflation differential and the nominal rate of appreciation, while the uncovered interest return is the sum of the interest rate differential and the nominal appreciation.

Large returns on uncovered interest rate speculation as well as large real returns for domestic financial investors penalize international competitiveness and capital formation through high levels of the real exchange rate and the real interest rate. Figure 10 shows uncovered interest return, ω (vertical axis), and real exchange rate appreciation, ρ (horizontal axis), for some developed and emerging markets economies aggregated per region and averaged year by year.

The real interest rate $r \equiv i - \pi$ is defined as the difference between the nominal interest rate and the rate of inflation. The difference between the

uncovered return, ω, and the real appreciation ρ is the real interest rate differential $\gamma \equiv r - r^*$, between the observed economy and the United States, with

$$\omega - \rho = (i - i^*) - (\pi - \pi^*) - \delta + \delta = (i - \pi) - (i^* - \pi^*) = r - r^*$$

This is a measure of the relative cost of capital formation (i.e. the cost to start a business or to extend existing businesses by investment in fixed capital in the country concerned). Graphically, the difference to the United States is the vertical distance of any observation point from the bisecting line line in the (ρ, ω) space (the line with dashes in each chart). The further above the bisecting line the scatter points are, the higher the cost of capital compared to the United States. The relation between points in the (ρ, ω) space can be easily captured by identifying the parameters: α and β obtained by regressing the relation

$$i - i^* + \delta = \beta(\pi - \pi^* + \delta) + \alpha,$$

which implies

$$i - i^* = \beta(\pi - \pi^*) - (1 - \beta)\delta + \alpha$$

with β capturing the comovements of $\pi - \pi^*$, $i - i^*$ and δ, and with α measuring a structural tendency of having larger nominal interest rates. The dispersion of the points along the trend line and the length of the dispersion indicate large volatility of the exchange rate and/or inflation and of the interest rate differentials.

For values close to $\beta = 1$ and $\alpha = 0$, returns and the real exchange rate move along the bisecting line. Real rates of return are close to those of the United States, while interest rate differentials closely follow inflation differentials. Nominal exchange rate changes can be significant and induce large changes in the real appreciations, ρ, and the returns, ω, but do not have an effect on interest rates and inflation rates.

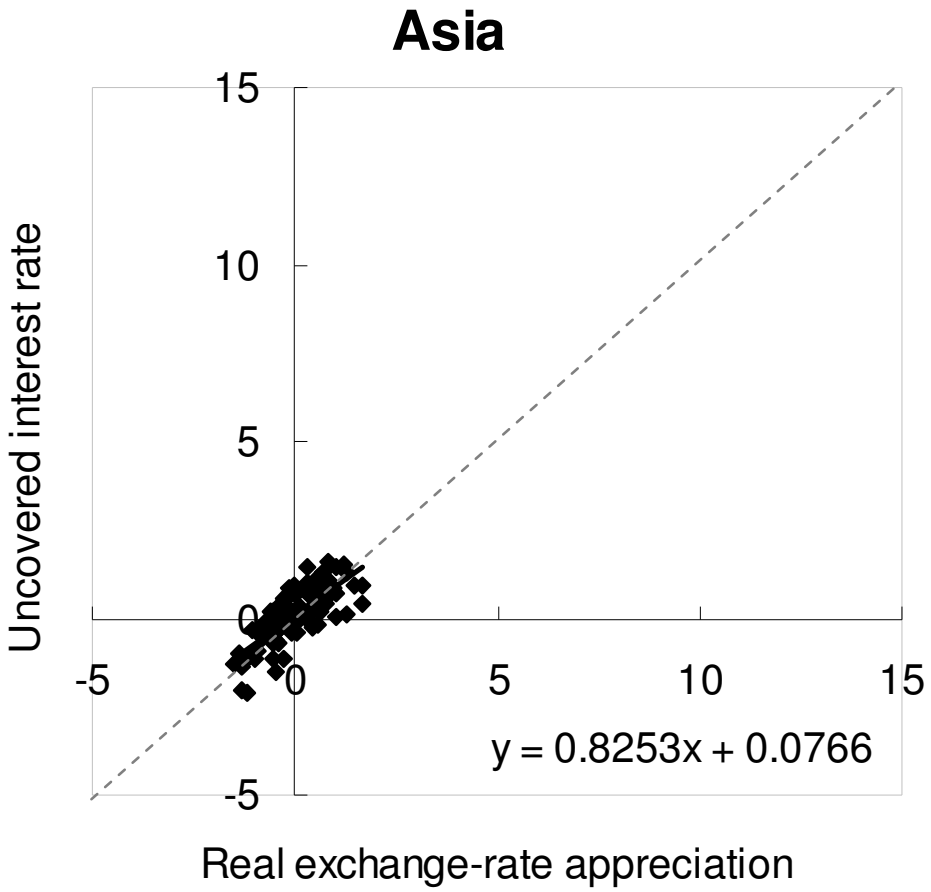
For values close to $\beta = 1$ and for $\alpha > 0$, returns and real exchange rates move on a 45° line, and similar considerations apply to the

relation between the variables; however interest rates tend to be persistently larger than those of the United States. For values of $\beta > 1$, the real interest rate differential γ is greater the larger the values of ρ and ω.

A nominal appreciation is associated with tightening of monetary conditions (with a coefficient $\beta - 1$, for a given inflation rate differential), a nominal depreciation is associated with larger inflation (with a coefficient equal to $(1-\beta)/\beta$, for a given interest rate differential), and monetary policy responds to inflation by changing the interest rates (at a rate equal to β, for a given exchange rate). The larger β, the larger is the pass-through of the exchange rate on prices and the smaller is the effect of a nominal depreciation on the real exchange rate, or, reversing causality, the larger is the nominal depreciation required to preserve a competitive real exchange rate. Large interest changes are associated with smaller inflation rate changes. Large values of ω relative to ρ are also consistent with a state of hyperinflation where large nominal depreciations and interest rate differentials fail to prevent real appreciations and loss of competitiveness. Reverse considerations apply for $\beta < 1$.

In those regions where most of the economies experienced a change in their monetary regime, with or without a crisis, the data points display a larger vertical dispersion due to a reduction of the interest rate differential but not necessarily a reduction in volatility of the exchange rate, inflation rate and interest rate.

Regions whose data points are close to the bisecting line enjoyed low interest rate differentials and displayed a close association of interest rate and inflation rate differentials. This applies to Asia and sub-Saharan Africa. As regional groups, Latin America, Africa, and Eastern Europe have experienced volatile real exchange rates and uncovered interest returns.


Asia
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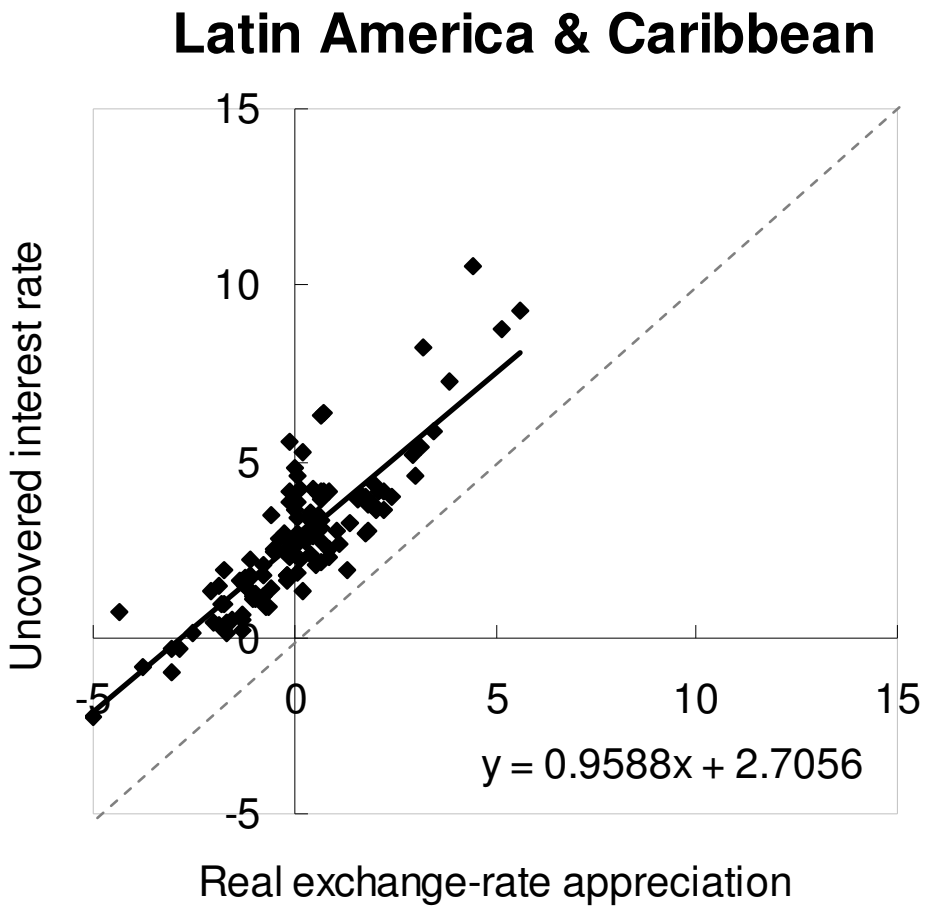
y = 0.8253x + 0.0766
Uncovered interest rate
Real exchange-rate appreciation


Latin America & Caribbean
Uncovered interest rate
Real exchange-rate appreciation
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0
-5
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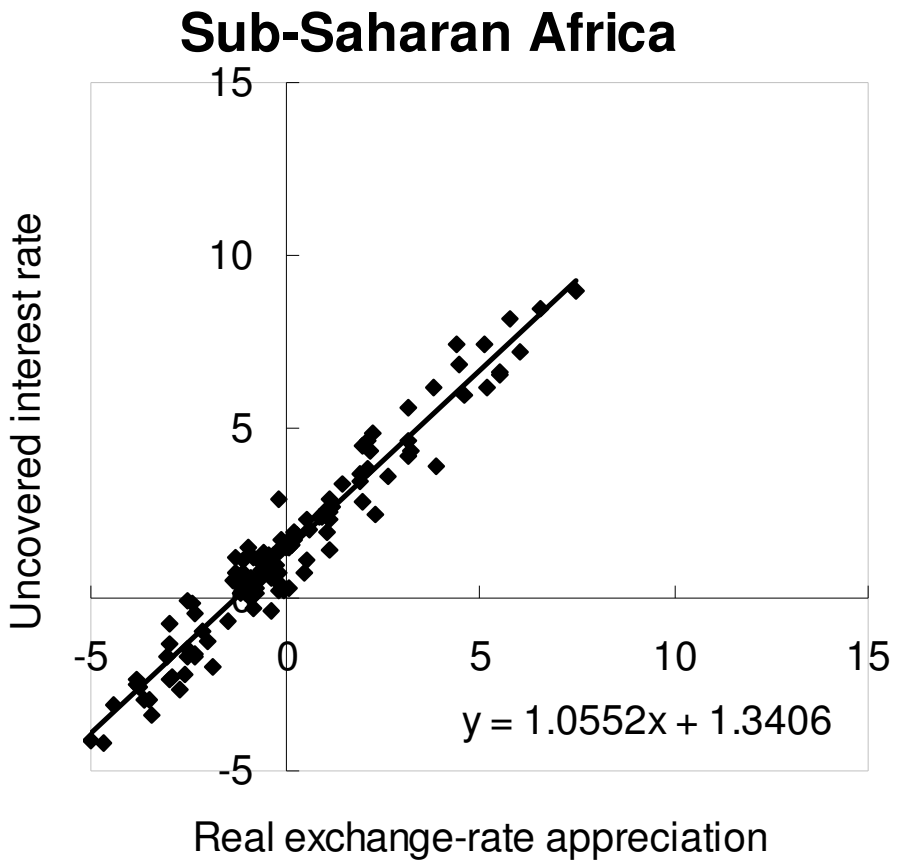
15
y = 0.9588x + 2.7056


Sub-Saharan Africa
15
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-5
Uncovered interest rate
y = 1.0552x + 1.3406
Real exchange-rate appreciation

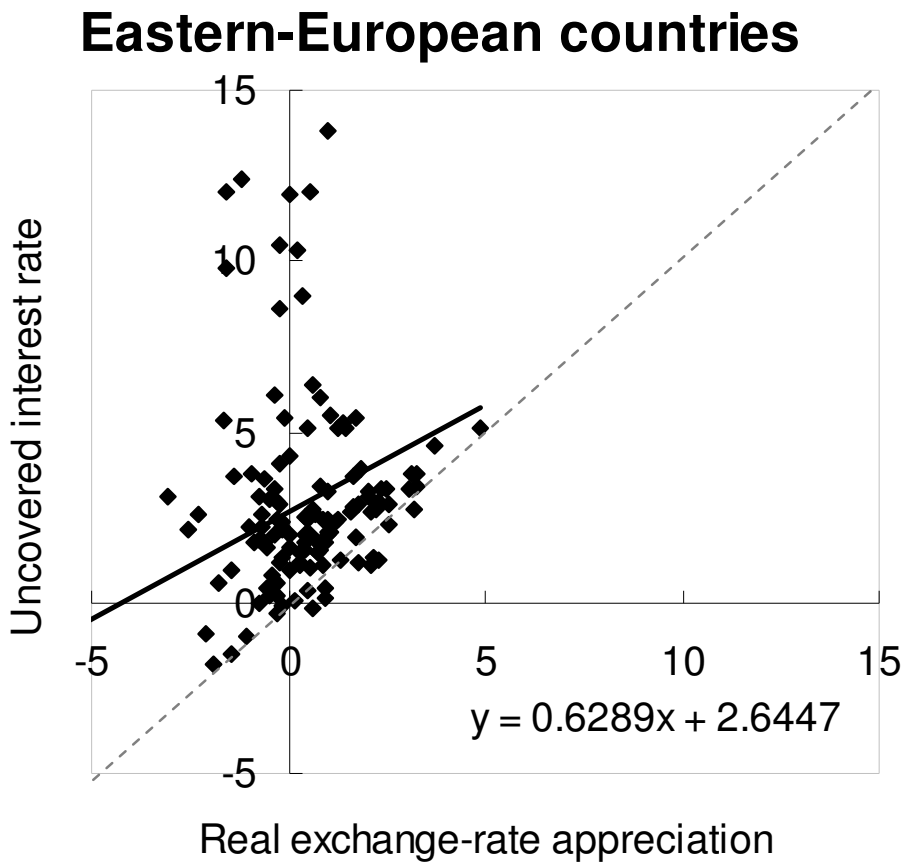

Figure 10: GDP weighted real exchange rate changes and uncovered interest returns per region, 1995-2006. Asia includes: China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Pakistan, Philippines, Singapore, Taiwan Province of China, Thailand. Eastern-European countries include: Czech Republic, Hungary, Lithuania, Russian Federation, Bulgaria, Poland. Latin America and Caribbean include: Argentina, Bolivia, Brazil, Colombia, Dominica, Mexico, Uruguay, Venezuela. Africa includes Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Kenya, Mali, Mauritius, Niger, Senegal, South Africa. Source: Calculations based on IMF, International Financial Statistics database; and national sources.

Regarding specific country experiences, the change in monetary regimes from soft peg to float in Thailand and the Republic of Korea, following the Asian financial crisis in 1997–1998, was accompanied by considerable exchange-rate volatility, but with a tendency towards real appreciation. In Indonesia, increased exchange-rate volatility went hand in hand with an even larger appreciation and no significant reduction in interest rates. Again, China displays a distinctive pattern of negative real interest rates and a fixed exchange rate, which, given a high degree of stability and the very low cost of capital, has been favourable to investment and the creation of fixed capital.

Brazil, Hungary, Mexico, and South Africa have recently adopted an inflation-targeting monetary regime that typically requires a free float of the currency and control of inflation rates through interest rates. Although the post-crisis regime marked deep structural changes for Brazil, Hungary, and Mexico, with a clear shift towards a lowering of interest rates and inflation rate differentials, the level of interest rates is still very high, volatility is large, and the tendency towards real appreciation and a deterioration in overall competitiveness persists for Brazil, Hungary, and South Africa. Their high real interest rate, consistently larger than the United States benchmark, constrains capital accumulation and may generate inflationary pressures by reducing capacity growth in the longer run.[10]

5.0 National and globally coordinated policies to prevent speculation and imbalances

For small open economies, and developing countries in particular, a stable and prospering external sector is crucial. That is why the exchange rate is the most important single price in these economies, as it dominates overall competitiveness and has a strong impact on the national price level. Recent studies have found that a "competitive and stable" real

[10] For a more detailed country by country analysis see UNCTAD (2007) chap. 1 Section D.

exchange rate is a key economic policy tool for developing countries because it enables a persistent pattern of export expansion and investment growth based on a profit–investment nexus (UNCTAD *2004* and *2006*; Rodrik, 1995) allowing to take advantage of favourable fundamentals, externalities and proper institutions (Eichengreen, 2007). The challenge for national policies is to combine the control of inflation rates, which has taken centre stage in many developing countries, with international competitiveness and low exchange-rate variability and in a world of free and volatile short-term capital flows.

The financial and real systemic effects of portfolio capital inflows vary according to the specific institutional, structural and even cyclical situation of the recipient economy. Financial development and intermediation, the size of the inherited internal and external debt, the composition of production and of the trade balance affect the capacity to absorb the flows and their impact on relative prices and on growth. Nevertheless, the scenarios that characterize emerging market financial fragility and volatility share common features. Under a fixed exchange rate or crawling peg regime, capital inflows boost reserves, money creation and credit expansion, which may induce consumption growth and inflation and an import surge. Under an officially floating exchange regime, they can induce nominal and real appreciation and increase reserves to the extent that the central bank, openly or implicitly, is willing to contain exchange-rate changes. There may be a time lag in their effects on the real side of the economy but it may be critical. An overvalued exchange rate penalizes exports and reduces competitiveness, and therefore the growth of firms in the traded-goods sector. This in turn adversely affects income and growth in general. Finally, deteriorating economic conditions may make the country the object of a renewed focus on "bad fundamentals"; the exchange rate may sharply devalue and the central bank's ability to contain inflation may be called into question.

If targeting inflation via interest rates involves serious additional costs by inducing capital inflows, such anti-inflationary strategies have to be weighed against alternatives that might be less tried and tested but may yield significant longer run real benefits. These alternatives may be found

in the new and heterodox national macroeconomic policies applied with outstanding success in most of Asia (UNCTAD 2006, chap. IV, D.). In this approach, monetary policy focuses mainly on the external sector, including the exchange rate. Inflation is controlled by other factors and policies than those controlled by the central bank: typically, well-designed income policies taking into account the existing labour market institutions have played a leading role.

Avoiding large gains for foreign investors from short-term arbitrage operations keeps the *actual* rate of appreciation in check and cuts the link between these capital flows and the real exchange rate, thus maintaining a country's competitiveness. Successful countries were consistently able to prevent persistent real appreciation. This may require policies to restrain short-term capital inflows and outflows through regulation as long as the expected profitability from speculation cannot be reduced by a traditional set of policies like an interest rate reduction. Internal and external debt restructuring may help limit the effect of international speculation by reducing nominal interest rates.

Developing countries in general need flexibility and a sufficient number of instruments to prevent excessive volatility of the whole external sector which threatens long-term investment and successful catching up. Evidence does not support the orthodox belief that, with free floating, international financial markets will perform that role by smoothly adjusting exchange rates to their "equilibrium" level, while with fixed exchange rates, product, financial and labour markets will always be flexible enough to smoothly and rapidly adjust to a new equilibrium. In reality, exchange rates under a floating regime have proved to be highly unstable, leading to long spells of misalignment, with grave consequences for the real economic activity of the countries concerned. The experience with hard pegs has not been satisfactory either: the exchange rate could not be corrected in cases of external shocks or misalignment, adjustments were costly in terms of lost output, and the real sectors of the domestic economy bore the brunt.

Given this experience with rigidly fixed and freely floating exchange rates, "intermediate" regimes have become the preferred option

in most developing countries with open capital markets; they provide more room for manoeuvre when there is instability in international financial markets and enable adjustment of the real exchange rate to a level more in line with a country's development strategy. None of the "corner solutions" offer these possibilities. Developing countries that are not members of a regional monetary arrangement that could deal with the vagaries of the global financial markets thus have to resort to controls of short-term capital flows or adopt a strategy of undervaluation and unilateral fixing (UNCTAD 2004).

To prevent manipulation of the exchange rate, wage rates, taxes or subsidies in the bid for global market shares, and to deter the financial markets from driving the competitive positions of nations in the wrong direction, a new code of conduct is needed that would regulate the overall competitiveness of nations. Such a code of conduct, as part of the global governance system, would have to balance the advantages of one country against the disadvantages of other, directly or indirectly, affected countries.

For example, changes in the nominal exchange rate that deviate from the fundamentals (inflation differentials) affect international trade in exactly the same way as do changes in tariffs and export subsidies. Consequently, such real exchange-rate changes have to be subject to multilateral oversight and negotiations. Reasons for the deviation from the fundamentals and the necessary size of the deviation have to be identified by an international institution and enforced by a multilateral body. Such rules could help protect all trading parties against unjustified overall losses or gains from competitiveness, and developing countries could systematically avoid the trap of overvaluation that has been one of the major impediments to prosperity.

A long-term solution for the international financial system has to start with the recognition that the idea of a cooperative global monetary system is as compelling as the idea of a multilateral trading system. As with multilateral trade rules, a well-designed global financial system has to

create equal conditions for all parties involved and help prevent unfair competition. This could be structured as follows.

i) Present Bretton Woods institutions should be assigned the management of the new financial system.

ii) One or more lead currency(ies) should be identified as gravity centres of multipolar economic system.

iii) The lead currencies should be linked with each other through symmetric managed floating systems with exchange rates automatically adjusted by the PPP and UIP condition.

iv) Regional blocks should be formed to be linked to one of the lead currencies or a group of them. Alternatively, individual countries may choose to be associated with one or more of the lead currencies.

v) The initial exchange rates among participating countries should be determined together with their bandwidths, and

vi) the entry and exit conditions based on domestic monetary and fiscal policy criteria.

Indeed, reasons for which the International Monetary Fund (IMF) was founded more than 60 years ago are still largely valid. Avoiding competitive depreciations and other monetary distortions that have negative effects on the functioning of the international trading system is more important in today's highly interdependent world than at any other time in history.

6.0 Conclusions

The paper provides some evidence on the relation between imbalances, real and nominal exchange rate movement as well as on the gains from cross-currency speculation associated with interest and inflation rate differentials for a number of individual economies and regions. It is argued that the international adjustment mechanism can be undermined by many forms of speculative flows which can be triggered by a combination of global conditions and domestic monetary policies and can lead to financial fragility and to real costs for the affected economies.

It documents how speculative capital flows, diverging exchange rates and the resulting misalignments are induced by short-term interest rate differentials and floating currencies in perfectly open markets. In light of this evidence, both policy targets for exchange rates and a new assignment of monetary and non-monetary instruments at the national level need to be reconsidered.

The policy implication drawn are necessarily related to the literature on open economy macro dilemmas that states the impossibility to control both the exchange rate and have an independent monetary policy with open capital accounts.

National policies aimed at fighting domestic inflation by rising interest rates may end up providing strong incentives to this kind of speculation. Flows moving from low-yielding, low-inflation countries to high-yielding, high-inflation countries would cause the currencies of the latter to appreciate, and provoke the paradoxical and dangerous combination of surplus economies experiencing pressures to depreciate, and deficit countries facing a correspondent pressure to appreciate. The ensuing over- or undervaluation may offset or magnify the effects of the desired monetary policies, generating financial fragility and huge real adjustment costs to the national economy and the global economic system. The fundamental mechanism of real-exchange-rate adjustment that, according to widespread political expectations, would allow a smooth correction of imbalances would be undermined.

This suggests that a shift to floating and capital openness may not provide a solution to the global imbalances, and, more generally, raises questions about the role of the financial system in the determination of capital flows, nominal and real exchange rates and real imbalances.

Domestic policies aimed at preventing speculation should be coupled with the reestablishment of a cooperative global monetary system.

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