

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

**BACKGROUND NOTE:
THE RISING SEA OF GLOBAL FINANCIAL MARKETS**

UNCTAD contribution to the G20 Framework Working Group for the discussion on spillovers (Session 2, New Delhi, 14–15 January 2013)

December 2012



UNITED NATIONS

CAPITAL FLOW SPILLOVERS: THE RISING SEA OF GLOBAL FINANCIAL MARKETS

A structural break in global financial markets

Over the last several years new patterns have emerged in global financial markets. At the global scale, the influence of capital flows on individual economies goes beyond what each capital transaction is meant to achieve, including the way in which prices are discovered, and creates 'spillovers'. While many observers tend to consider these changes as 'one-off' hikes, like tsunamis, in this paper UNCTAD suggests that the world economy is facing a true structural change, like a permanent rise in sea levels that has the potential to flood essential parts of the economic landscape in exposed economies. This implies that policy-makers should devise both 'adaptation' approaches for the exposed economies as well as 'mitigation' approaches by international policy efforts to rein in the sources of the potentially damaging effect of spillovers from global financial markets. While adaptation approaches are facilitated by several studies of specific economies vis-à-vis capital outflows and inflows, mitigation approaches impose a double challenge. First, they require acknowledgement that a structural change has occurred in the behaviour of global financial markets. Second, the root causes have to be identified and have to be addressed in international policy coordination. This paper addresses the first of these challenges.

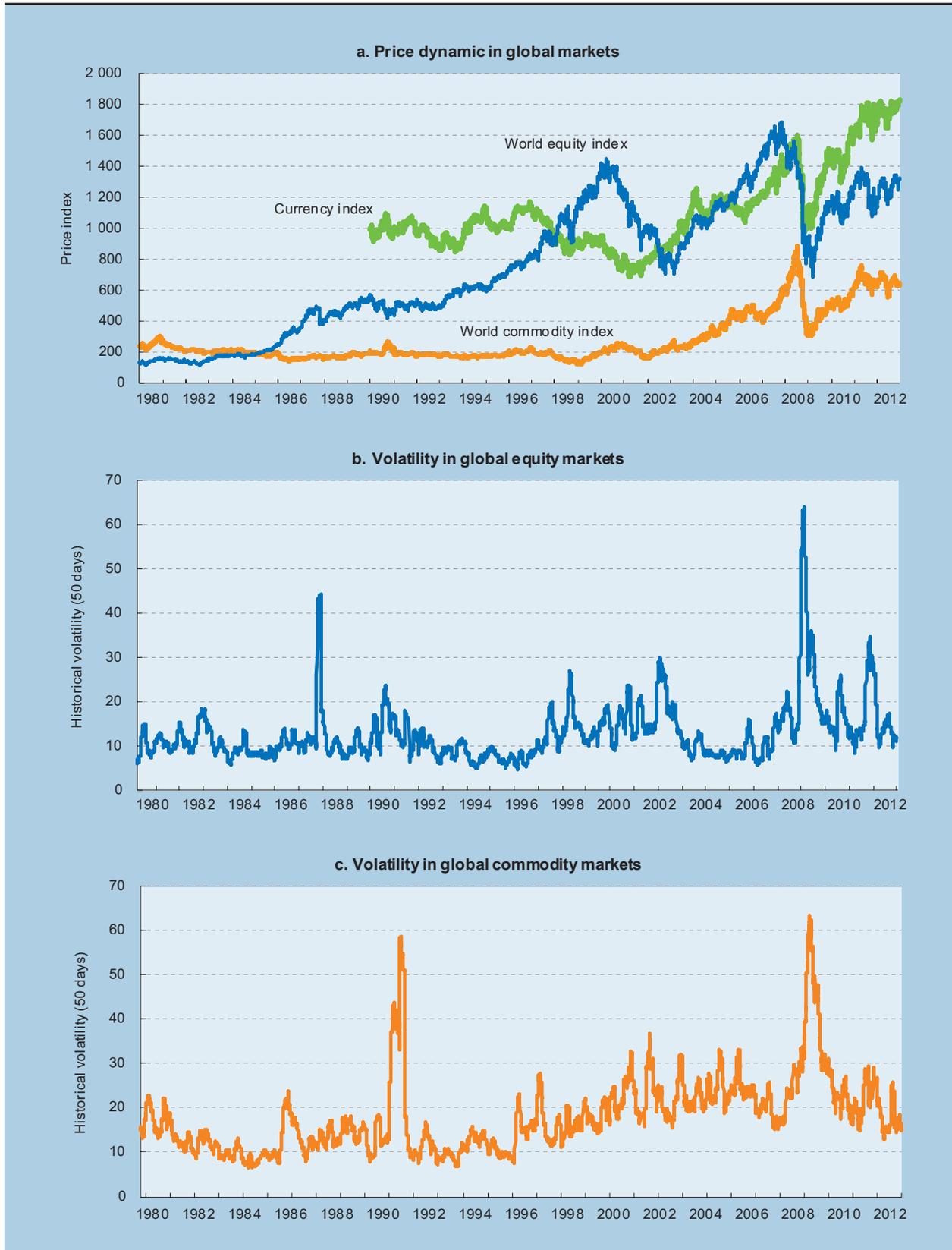
The salient characteristics of the new global landscape: rising cross-asset correlations amidst huge variations in price volatility

Profound changes have taken place in global financial markets during the last decade. The changes are manifested in the emergence of cross-asset correlations between world equities, commodity markets and currencies and of the degree of variations of price volatility. The investigation of the **rise in cross-asset correlation** departs from a first-hand observation about long term price trends of main global aggregates (Chart 1a). Even at such level of aggregation, there is no apparent co-movement of prices between these asset classes during the last decades of the past century. Since 2000, however, a strong common

pattern has evolved (in the form of a "W") that is followed by all the markets represented in the Chart. The sharp drop of all financial prices, shares, commodities and currencies alike during the financial crisis of 2008/2009 uncovered the predominance of a widespread investment behaviour that implies going short as global risks increase.

Such a co-movement among major world indices has persisted at both high and low degrees of price volatility (Charts 1b and 1c), even if the levels of median volatility have been slightly higher in the

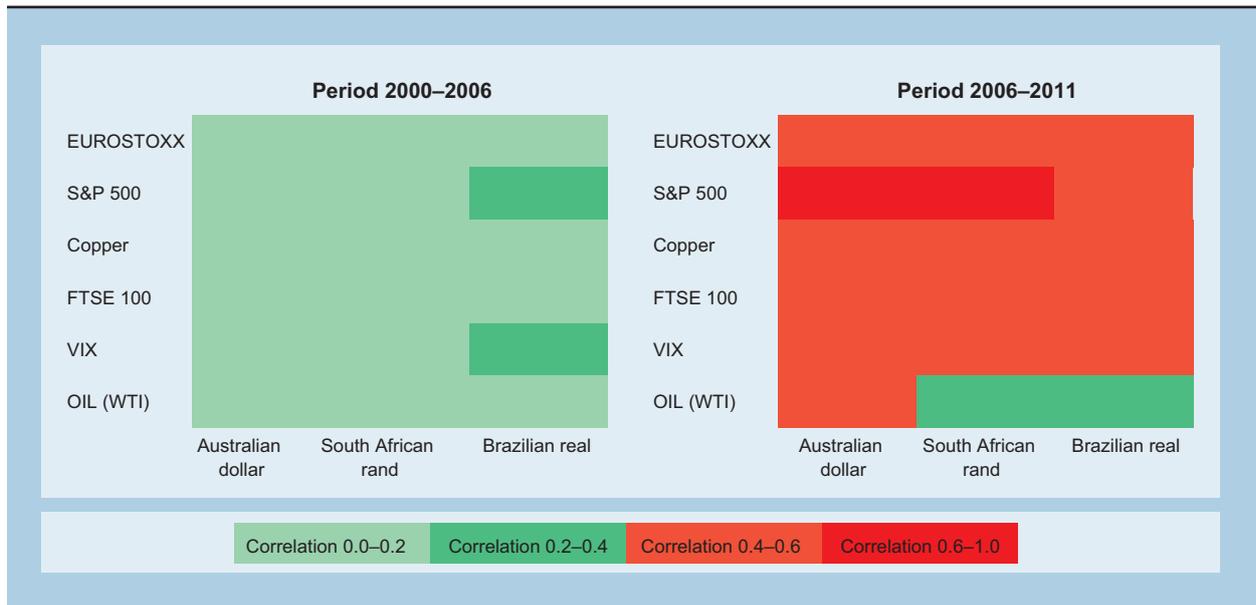
Chart 1
PRICE TRENDS AND VOLATILITY IN GLOBAL MARKETS



Source: UNCTAD secretariat calculations, based on Bloomberg.

Note: World equity index relates to the MSCI world index. World commodity index relates to the S&P GSCI index. Currency index relates to an equally weighted index, which includes the Australian dollar, the Brazilian real and South African rand spot rates (base year 1990). Volatility refers to historical volatility (50 days).

Chart 2
THE RISE OF CROSS ASSET CORRELATION



Source: UNCTAD secretariat calculations, based on Bloomberg.

Note: Correlations coefficients were calculated by using daily data, closing price. Data for the selected currencies relates to spot rate, closing price, London time. Correlation coefficients have been estimated on the return of the selected securities.

period of strong co-movements. While there seems to be a step-wise increase that started in the 1990s, with a more marked increase in the years prior to the global financial crisis that has continued to these days, variations in the degree of volatility are not the most important change characterizing the new era.

A deeper look at the **rise in cross-asset correlation** is provided in Chart 2. It shows correlation matrices of returns of selected financial assets with respect to currencies for the time periods 2000-2006 and 2007-2011 in the form of heat-maps: green tonalities represent low correlations and red tonalities represent mid to high correlations. The heat-maps show that during the period 2000-2006 asset returns have not significantly moved together (green colours denoting correlation coefficients below 0.4), but shifted towards high correlations from 2007 onwards (with more intense red tonalities stressing that the correlations reached above 0.6).

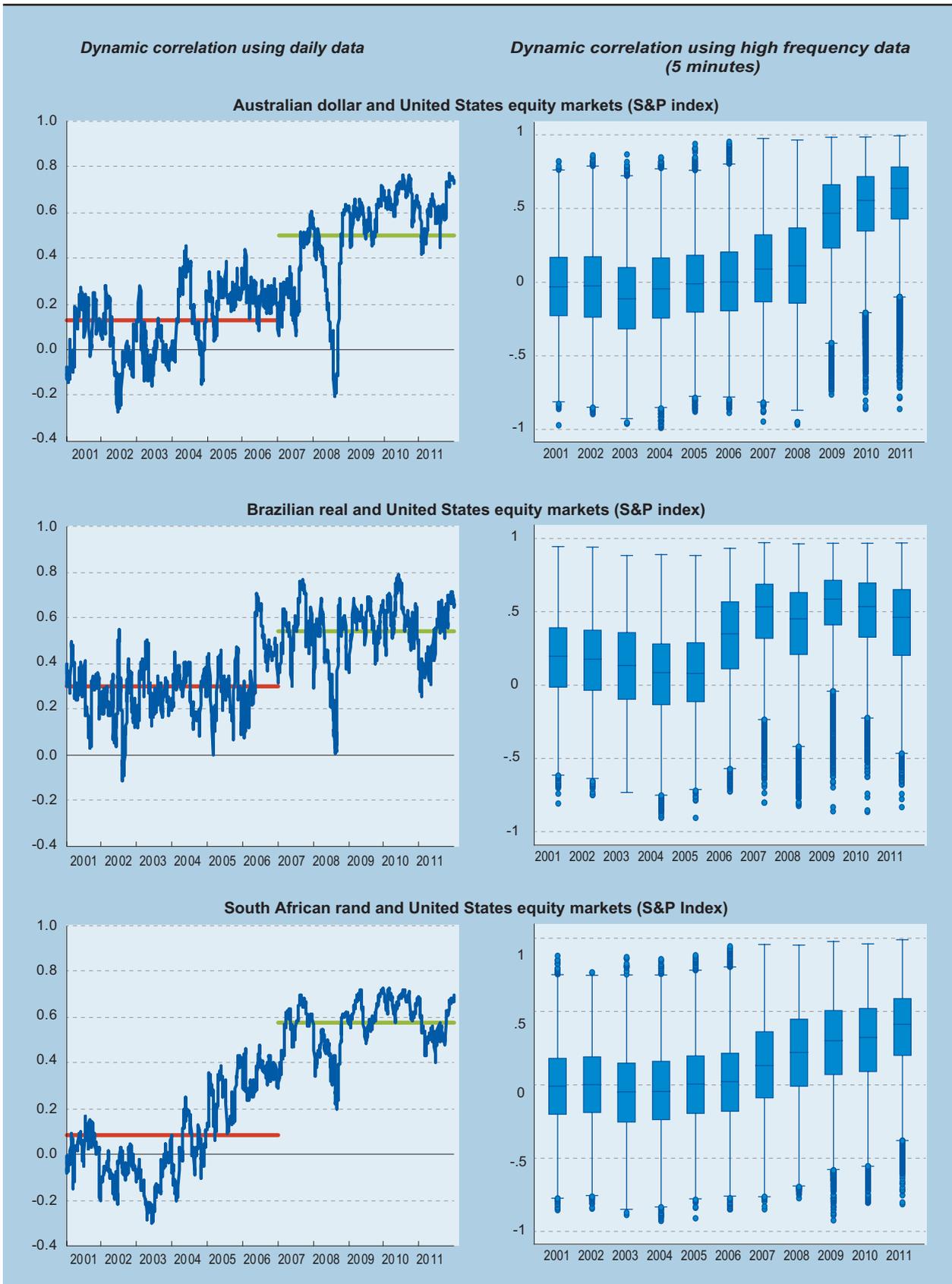
The **rise in cross-asset correlation with a focus on currency markets** is captured in Chart 3. It depicts the evolution of the time-varying correlation coefficient over time of selected currencies spot rates (Australian dollar, Brazilian real and South African rand) with respect to the U.S. equity market (Chart 3.a) and oil prices (Chart 3.b). The estimated coefficients corroborate (for daily and high frequency data) that correlation has been increasing during the last 12 years.¹ This has taken the form of either a structural break in the series in the middle of the 2000s (as it is the case for the correlation analysis between the Brazilian real and the U.S. equity markets) or a tendency towards sustained higher correlation spanning over the period prior to the global financial crisis (as in the case of the South African rand versus the U.S. equity markets).

This evidence suggests rapid changes of investor's expectations but similar risk-on/risk-off

¹ Correlation coefficients estimated by using high frequency data have been presented as boxplots (charts, right side). The boxplots summarize the following statistical measures: the median (represented by the line in the box), the upper and lower quartiles (upper edge and lower edge of the box) and minimum and maximum data values (the ends of the vertical lines). The points outside the ends of the vertical line are suspected outliers. Highly relevant to the presented correlation analysis is the line inside the box, which corresponds to the median value of the sample.

Chart 3.a

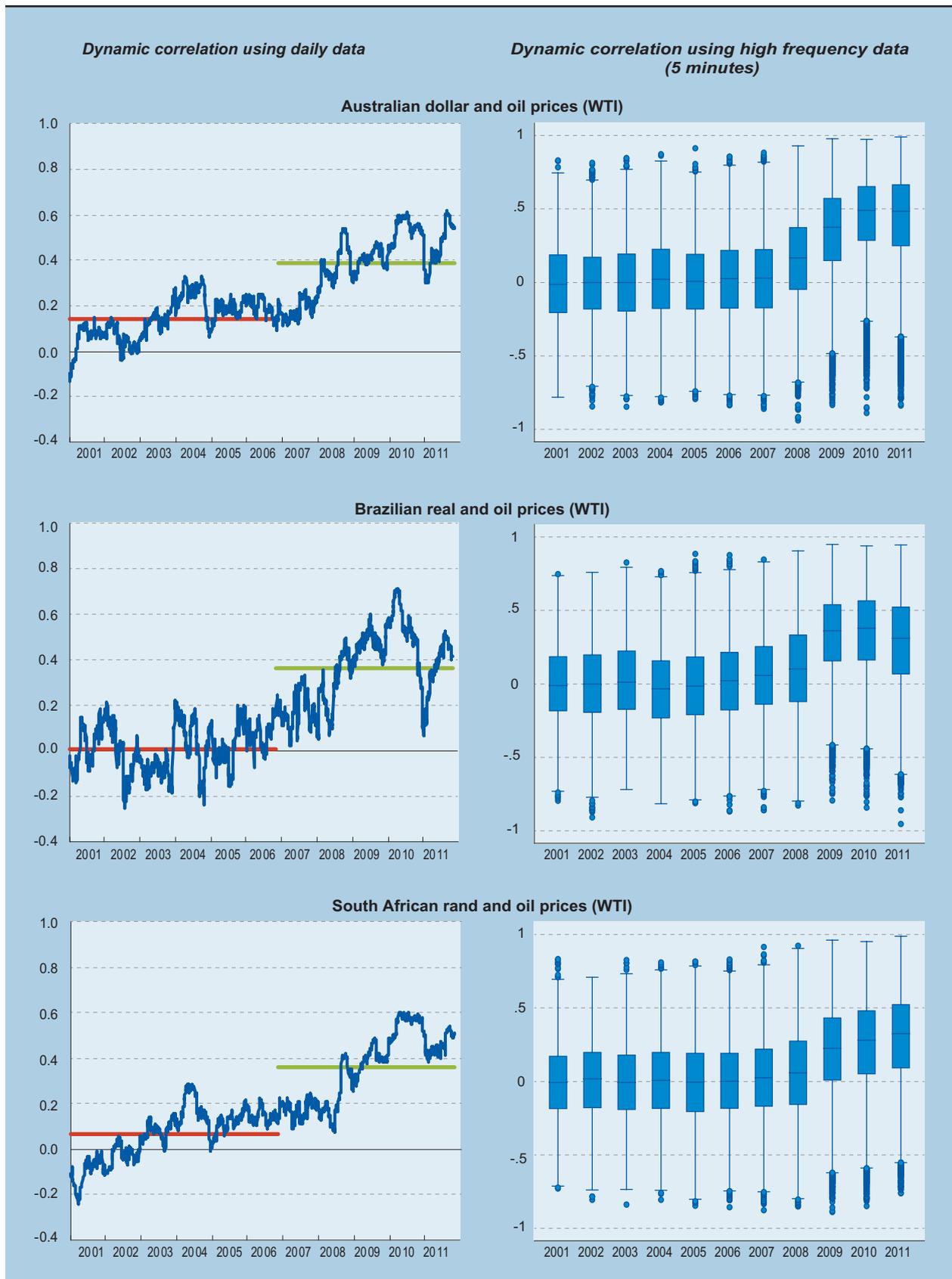
STRUCTURAL BREAKS/TENDENCIES TOWARDS HIGHER CROSS-ASSET CORRELATION IN CURRENCY MARKETS



Source: UNCTAD secretariat calculations, based on Bloomberg.

Chart 3.b

**STRUCTURAL BREAKS/TENDENCIES TOWARDS HIGHER CROSS-ASSET CORRELATION
IN CURRENCY MARKETS**



Source: UNCTAD secretariat calculations, based on Bloomberg.

attitudes in world equity, world commodity and currency markets. Investment strategies now systematically incorporate previously ‘uncorrelated’ portfolio products. The image at hand may well be that of drivers finding themselves in a traffic jam, then opting towards one of the by-passes, secondary roads known to be unaffected by traffic in the main road, but then returning to the main road after finding the

bottleneck caused by similarly behaving drivers in such secondary roads also. In the global financial system the search for formerly uncorrelated assets like commodities and emerging market currencies - with the aim of diversifying investors’ portfolios - tends to build up new links between formerly uncorrelated assets and to demolish the formerly given risk diversification in a kind of self-fulfilling prophecy.

Mispricing and self-feeding portfolio dynamics

“Financialization”, or the growing preponderant quantitative role of financial markets, has changed the way prices are discovered and determined. The fact that prices of financial assets are moving in tandem and causing hikes of volatility in the ways suggested above evidences a fundamental change in the functioning of global financial markets. Similar price dynamics strongly point to the existence of a common source of risk assessment. Prices are less driven by the intrinsic risk associated to the underlying asset, and more influenced by global risks (i.e. financial market sentiments and the risk-on/off trading approach) and by the interplay of rapidly changing expectations of few and ever larger financial players.

This result has major implications for market performance and national policy space, in particular for economies vulnerable to shifts in commodity prices and currency movements. **International asset prices** as well as the prices of commodities and currencies forcefully influence global and national developments. However, due to the quantitative dominance of the financial markets these prices no longer give clear guidance for market participants in the real markets and to policy makers. Information about supply and demand in singular markets is overlaid by the financial markets. As a

consequence, the efficiency of the market in terms of signalling scarcity and intrinsic demand of the commodity or currency is massively reduced. With increasing sophistication of financial participants, the original aim of having free and efficient markets providing undistorted information about a complex set of supply and demand schedules can no longer be achieved. Instead, misallocation of resources is unavoidable to the extent that prices are disconnected from the fundamentals.

In sum, the way prices are discovered in global financial markets has fundamentally changed and the workings of these markets are increasingly disconnected from their original functions. While traditionally the markets for equities, commodities and currencies always had strong ties to finance in terms of hedging and insurance against risks, under the new dynamics of global finance there is no unequivocal relation between equities and returns, or between spot and futures prices.² Under these new conditions, it is the expectation about the movements of asset prices (and often their derivatives) that, from the viewpoint of an “investor”, moves the whole corpus of prices, spot prices and prices of futures alike, forming a new set of signals that are detached from underlying processes in the real economy.

² In the past the fluctuations of prices on financial markets were much less severe and the possibilities to hedge against such movements were still intact. After 2005 however, the overall movements dramatically increased and the futures market lost its hedging function as its prices displayed the same gross movements but with changing signs that show the overall confusion in the markets. In currency markets the forward rates and the futures prices just reflect the interest differential for the two currencies, as otherwise riskless arbitrage would be possible exploiting the interest rate differential.

Herd behaviour, thin liquidity and private-sector deleveraging

The structural break visible in the series of Charts 2 and 3 also reflects a growing importance of day- and high-frequency traders and their investment style. Financial investors in general are using commodity and currency markets more frequently and in larger volumes in exactly the same way as equity markets before, namely by going long and thereby betting on rising prices. With improvements in computer technology this is done in much higher frequency than ever before. The long periods may last only for minutes, seconds or even fractions of seconds. However, the shorter the time horizon of funds flowing into these markets the more the markets adapt a herding behaviour as shown by a number of studies by UNCTAD.

It is more efficient to follow the trend, if investors can devise methods to exit extremely quickly, thus minimizing the risk of long positions by holding them over extremely short periods. Despite the evolution of new methods that may allow rapid responses of each market participant, a herd pattern

predominates because (i) the information used in these models originates exclusively in the financial markets and cannot be, at such high frequency, generated by the specific market of the commodity or the currency concerned; and (ii) the algorithms and models are essentially similar.

Herd behaviour is drying up liquidity because liquidity means that many different motivations are functional in the market. If differentiated investor behaviour is mainly the result of a race to increase the frequency of trades, these higher frequencies do not provide more liquidity even if the markets are flooded by money. Rather, these trades create a veil of self-feeding signals over long positions and are therefore highly susceptible to crises as thin markets usually are. It is therefore no surprise that, following a period of private leveraging to degrees not seen in several decades, the sharp turn-around towards deleveraging of private sectors in major economies at the onset of the global crisis led to the collapse of all asset markets at unison, as shown in Chart 1a.

The role of money and monetary policy

Mispricing and misallocation of resources have also altered the ability of policy makers to conduct efficient macroeconomic policy, most notably monetary policy. As the new shape of global financial markets was taking hold in this century only, offering huge investment opportunities, private leveraging exploded. The growing willingness of banks to create money for these (global zero sum) purposes diminished the need to refinance through the liquidity provision of central banks. When the bubble burst in 2008 and deleveraging was at the order of the day in the private sector, the reverse happened. Central bank liquidity had to compensate for the lack of liquidity in the private sector. Clearly, liquidity creation and direct intervention in bond markets, plus cutting policy rates close to zero, were ultimately addressing the lack of real investment and spending. But as not much was done to avert a resumption of frantic activity of global

finance once the immediate panic had vanished, financial “investment” has had a quick comeback.

For the much-discussed question, as to whether the bulk of the flows are pushed by policies in advanced economies or pulled by the opportunities of emerging markets, there is no easy answer. Spillovers can result from the quantitative easing measures by central banks that started after the crisis but also from the easing originating in the banking sector and its ability to create money as was the case before the 2008 crisis. The evidence presented here suggests that the core problem posed by capital flows refers to the new ways in which global financial markets are operating, superseding the ability of central banks and domestic economies to exert measured responses. Neither monetary policy alone nor national measures alone can prevent the predominance of global finance

that is detached from the real economy but which has the capacity to drive price signals and thus market behaviour in the real world.

Given the deregulation of finance over the last 30 years and the self-centred development

of sophisticated financial markets over many years, adverse spillovers from financial markets to the real economy have to be treated at the root, namely the inability of these markets to reflect the complexity and the differentiations of the real economy in an adequate manner.

The currency dilemma

In general, the power of central banks to determine national interest rates provides the crucial link between the national and 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. However, financial markets characterized by herding and a short time horizon do not deliver such a mechanism in a time span that would be short enough to avoid huge real adjustment costs.

The monetary policy dilemma is obvious: monetary policy dedicated to keeping the inflation rate at a target level by means of interest rate policy is not free to react to excessive currency market "investment" through a reduction in interest rates in an attempt to avoid overvaluation. Countries with systematically higher inflation should have recourse to a devaluation of their currencies over time to compensate for the loss in competitiveness implied by the higher inflation rate.

No stabilizing market mechanism exists because, due to the power of central banks, even 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. Hence, investment in high interest rate currencies is a safe bet for financial investors, resulting in huge real appreciations of the currencies of the target countries. This overvaluation clearly proves that the global currency market is inefficient. Direct intervention is possible but usually seen as

ineffective and - in a monetarist view - potentially inflationary through a money supply channel - even at unchanged interest rates. Moreover, direct intervention is characterised as "currency manipulation" in the political discourse even if it is obvious that the markets do not align exchange rates with fundamentals.

Ensuing complications for monetary policy are not confined to the field of real investment and spending. A rather stable external value of money can be as important for the functioning of a market economy, in particular in very open economies, as the widely accepted notion of a stable value of money over time (low inflation rates). However, while monetary policy normally engages in keeping the latter stable at any price, even huge fluctuations in the external value of money are ignored by central bankers.

For the Brazilian Real, the most traded emerging market currency in the so-called carry trades (trades using the interest rate differentials that reflect the inflation differential by carrying money from low to high interest rate countries), the real appreciation between 2005 and 2010 amounted to 40 per cent. This detached the value of the currency from the fair value. An overvaluation over such an extended time span has dramatic real effects. It hampers the country's ability to contribute to an efficient international trading system and impacts its structural development by artificially constraining the expansion of its manufacturing sector, which may imply huge real cost for very long periods of time.

Conclusion: a global response is needed

The processes described above denote a truly global phenomenon. The markets, their connectedness and their effects on national economies have to be analysed from a global point of view. National policies are needed to smooth adverse development stemming from the financial markets but international coordination would much enhance the power of policy to influence the behaviour of the markets. Given the complexity of today's markets, the tracks of national policy action are not easy to identify as many market

participants have the ability to finance their activities with truly global players in the banking system. While spillovers are of increasing importance it is more often the spillover from the global financial markets that tends to distort the space and the effectiveness of national policies than the other way round. The starting point for a spillover analysis should be the failure of the financial markets to deliver the proper price signals that help monetary as well as fiscal policy to use the traditional channels to stimulate stalling economies.

