UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

Excessive commodity price volatility: Macroeconomic effects on growth and policy options

Contribution from the UNCTAD secretariat to the G20 Commodity Markets Working Group

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EXECUTIVE SUMMARY

The volume and product composition of a country's commodity trade determines its vulnerability to commodity price volatility. Base metals and fuels have driven recent volatility of countries' commodity export and import baskets, which for most countries peaked in the period 2003–2010. While food prices are likely to keep rising, the widely expected continued subdued growth performance in major advanced countries, combined with the high probability that China's investment boom in infrastructure and commercial real estate cannot compensate the associated decline in aggregate demand growth in a permanent manner, implies considerable downside risks for future price developments in base metals and energy. Given that the increase in global prices of manufactures, which could be observed since about the mid-2000s, may well be gathering speed, price movements in international trade could soon cause a downward structural break in the terms of trade of commodity-exporting countries, similar to what occurred in the period after the First World War and in the early 1980s. Such price developments would pose a downside risk on economic growth in commodity-exporting countries, as past experience shows that external price shocks, especially abrupt declines in the terms of trade, often lead commodity-based short-term growth spurts to collapse.

A country's actual income and fiscal gains and losses from changes in terms of trade are mediated through rent sharing with transnational corporations and associated profit remittances. There is a fundamental need to achieve the right balance between the objective of generating income from the exploitation of natural resource endowments with the help of foreign direct investment (FDI), on the one hand, and government appropriation of a fair share of the rents accruing from the higher prices in the extractive industries, on the other. Governments should avoid engaging in a "race to the bottom" in fiscal as well as environmental rules in order to attract FDI. Evidence indicates large variations in the distribution of the rents from extractive activities across countries and sectors. These variations reflect differences in the role of State-owned enterprises and fiscal regimes. A fair sharing of resource rents between the state and investors (foreign or domestic) may be ensured best by country-specific agreements with room for occasional renegotiation. Both developed and developing countries, as well as some transition economies, have recently modified their fiscal regimes governing rent sharing with a view to benefitting more from windfall profits. Special efforts towards transparency on the spending of resource rents are of crucial importance.

The countries that benefited most from improved terms of trade over the past decade were also those that had faced slow growth and low investment rates over the 1980s and 1990s. The rise in commodity prices helped these countries to improve their fiscal revenues significantly and allowed them to increase current and capital government expenditure, while still reducing their fiscal deficits or, in some cases, even generating a fiscal surplus. Gross fixed capital formation also strongly increased in these countries. These increased investment rates remain well below those that prevailed in the most rapidly growing developing countries but, nonetheless, are at their highest levels since the 1980s.

Managing the risks posed by excessive commodity price volatility requires a combination of mutually consistent policies. While country-specific characteristics

and circumstances affect the specific policy mix, some general principles can be discerned. The main policy challenges regard managing commodity price volatility itself, which can be achieved by promoting market transparency and smoothing out extreme price volatility (such as that caused by financial investors), and minimizing the adverse macroeconomic growth effects of commodity price volatility. Regarding the latter, commodity-importing countries that try to stem commodity-price-related inflationary pressure should apply any monetary tightening very cautiously so as not to exacerbate the current global slowdown. Countries with well-developed institutions can anchor inflation expectations through incomes policy, rather than solely relying on monetary policy instruments.

Commodity-producing countries can adopt revenue stabilization funds not only for ensuring macroeconomic stability and inter-generational equity, but also to minimize real exchange rate appreciation. The risk of Dutch disease can also be addressed by other national policy measures, such as by enhancing linkages from commodity production with a view to creating a more symbiotic relationship between the development of manufacturing and commodities sectors. Tapping the potential for upstream linkages, i.e. the provision of inputs to commodity production, may be a promising route, especially in extractive industries.

Resource-based economies with floating exchange rates that try to stem inflationary pressure by monetary tightening may face an additional problem in the form of currency appreciation exceeding levels that could be expected on the basis of macroeconomic fundamentals. Such overshooting has often been driven by short-term capital inflows on the basis of carry trade speculation that profits from interest rate differentials across different countries. International action creating a system of rules-based managed floating could achieve greater stability of the real exchange rate to enhance international trade and facilitate decision-making on fixed investment in the tradable sector, and at the same time provide sufficient flexibility of the nominal exchange rate to avoid lasting real exchange rate misalignments.

International measures may also be required to address adverse balance-of-payments effects of commodity price instability. A realistic option would be the improvement and scaling up of compensatory financing mechanisms. Any such scheme should avoid pro-cyclicality.

Diversification and industrialization remain the best means in the long run for countries to reduce their vulnerability to the adverse growth effects of commodity price volatility. This can be achieved best by integrating commodity policies into a country's overall macroeconomic and development strategies.

1. Introduction

The opportunities offered by primary commodity production and exports for economic growth have often been considered limited. The reason is the long-run downward trend of the terms of trade between commodities and manufactures and the observation that, even though occasional short-term improvements in the terms of trade may lead to temporary growth spurts, commodity-exporting countries have often been unable to sustain commodity-based growth impulses.

The limited long-run growth impact of buoyant commodity prices and short-term improvements in the terms of trade relates to reduced incentives for economic diversification and industrialization that have proven to be key determinants of sustained long-term growth. Industrialization sustains economic growth more easily than the production of commodities because (i) manufactures have a larger scope for productivity gains; (ii) the income elasticity of demand for manufactures exceeds that for primary commodities, so that manufactures usually face more favourable global market and price conditions, while expanding commodity production often faces a risk of oversupply and declining prices; and (iii) a country's domestic demand for manufactures increases as income rises, so that it will face a balance of payments constraint unless domestic production of manufactures expands. Ensuing national policy measures towards industrialization have been supported by the international community through a variety of schemes trying to stem commodity price declines and compensate related shortfalls of export earnings.

The remarkable magnitude and duration of the increase in commodity prices over the past decade, and the sizeable volatility that have accompanied these price developments, would appear to pose significantly different policy challenges for both resource-based economies and the international community. The reason is that not only has there been a change in trend of commodity price development, as least temporarily, from declining towards rising prices but also that this upward movement in commodity prices has been accompanied by a decline in world prices of certain manufactures, especially the labour-intensive manufactures that have come to play an important role in developing countries' export baskets.

The combination of these price movements resulted in a sizeable improvement in the terms of trade between commodities and manufactures and allowed economic growth in commodity exporting countries to grow at least as fast as in other countries, despite the already rapid growth in this second group of countries, for each year over the past decade, except in 2009 when commodity prices had collapsed from earlier record levels.[1] On the other hand, the upward trend in commodity prices, combined with

[1] Regarding Africa, simulations undertaken in 2005 indicated that rapid growth in commodity demand from China could allow the continent's exporters of primary commodities to find markets which are growing and large enough to absorb greater volumes without a decline in prices (Mayer and Fajarnes, 2008). Basing the calculations on data for the year 2000, the study argues that income growth in Africa that is high enough to achieve the internationally agreed development goals implies a rise in the region's per capita income by the early 2020s to about Latin America's level in 2000. Its simulations show that such income growth would be associated roughly with a nine-fold increase in Africa's manufactured exports, but also with a tripling of its primary exports, which in absolute terms would account for two-thirds of the increase in the region's total exports. Over the period 2000–2010, primary exports from Africa (both Africa as a whole and sub-Saharan Africa) actually grew by a factor of 3.5, but its manufactured exports increased by a factor of only about 2.8, implying that Africa's resource

sizeable price volatility, triggered concerns in many commodity-importing industrialized countries about commodity-price related inflationary pressures and continued secured access to commodity supply at affordable prices.

The objective of this contribution is to promote a better understanding of the impact of commodity price movements on growth and the opportunities for economic growth that commodity production presents. It examines the macroeconomic growth effects of excessive[2] commodity price volatility focusing on the terms of trade and exchange-rate effects in commodity exporting countries, and on inflationary pressure in commodity-importing countries. Given the often significant difference between short-term and long-term macroeconomic impacts on growth, this examination combines issues related to commodity price volatility measured over a few months with those based on measures referring to much longer time spans.[3]

In its policy conclusions – highlighted in a series of boxes – the study underlines that to ensure global commodity supply to respond as efficiently as possible to demand and price signals, an exclusive focus on policy measures addressing constraints on production expansion may be misguided, especially regarding base metals. Instead, there is a need to better assess the sustainability of the pre-crisis demand drive, so as to avoid over-expanding commodity supply and consequent rapid and sharp price movements. The study also outlines national and international policy measures that could be adopted to deal with the macroeconomic effects of price volatility and foster inclusive growth in commodity producing countries, as well as with potential inflationary effects of rising commodity prices in commodity-importing countries.

2. Commodity price volatility – recent evidence for individual countries and country groups

Much of the recent focus on commodity price volatility has focused on commodity-specific evidence (UNCTAD, 2009: 71; G20, 2011: 9–10). This section examines the volatility of commodity export and import baskets for specific countries and country groups and the period 1960–2010. The evidence refers to country-specific and group-specific commodity price indices, which are based on monthly prices of 48 commodities that cover about 85 per cent of developing countries' (and an average of about 75 percent of world) commodity exports over the past 15 years.

The evolution of these indices indicates that the volatility of commodity price indices has increased over the past 50 years. In the period 2003–2010, it was significantly

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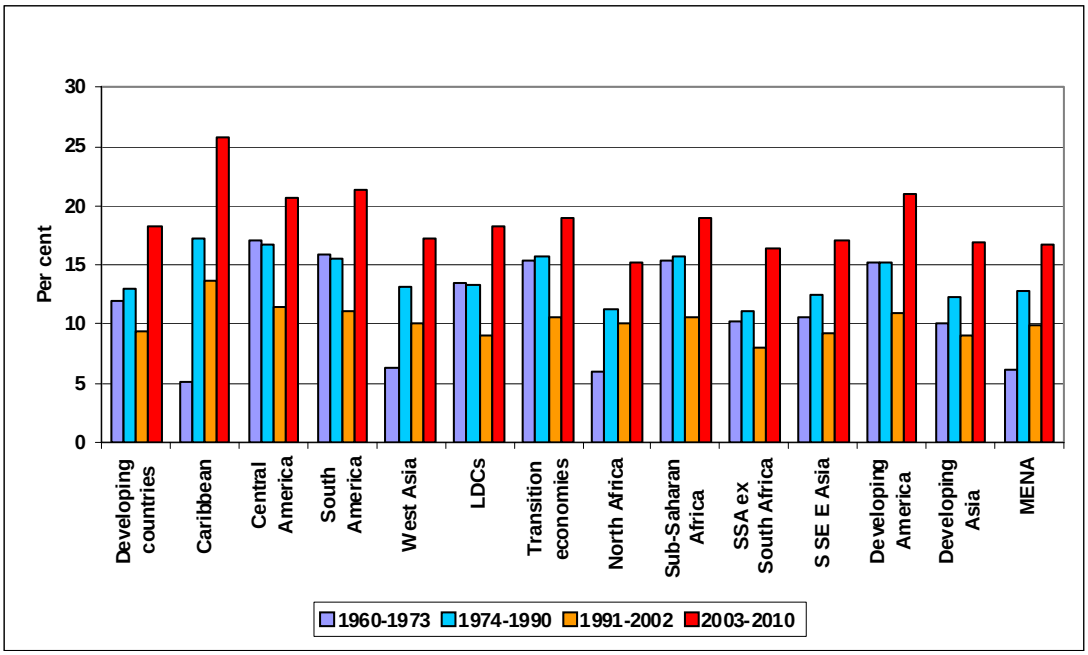
dependence increased, rather than decreased. This may explain at least in part why, over this period, per capita income in sub-Saharan Africa grew only by factor of 1.6, i.e. only about half of the growth rate required to meet the internationally agreed development goals.

[2] No attempt is made here to define excessive volatility. The reason is that any given size of price volatility it unlikely to become an issue for concern and for possible policy responses for all stakeholders at the same time. Rather, price volatility becomes 'excessive' when it creates problems that are beyond the capacity of market participants – producers, consumers or nations – to cope. Hence, when price volatility becomes 'excessive' is very much a context-specific issue.

[3] Depending on what specific time horizon is examined, concerns about volatility are closely related to concerns about price levels. Indeed, the commodity price increase over the past decade may simply represent the upward phase of a commodity price super-cycle, rather than the beginning of a secular price boom.

higher than in earlier decades.[4] This is true for developing countries as a group, as well as for all major groupings of developing countries (figure 1).[5] Commodity price volatility in the period 1974–1990 was generally higher than during 1960–1972. However, this increase is not surprising, given that the commodity price booms that occurred in 1973–74 and 1979–81, as well as the two major oil price shocks of the 1970s, are part of the second period. Volatility subsequently declined and during 1991–2002 was at its lowest level across the four sub-periods for the group of developing countries taken together, as well as for the vast majority of the major developing country groupings. This period broadly covers the years of the so-called "great moderation", i.e. the period during which the world economy experienced high, stable and non-inflationary rates of economic growth.[6]

Figure 1
Volatility of commodity export baskets, selected country groups. 1960–2010



Source: UNCTAD secretariat calculations based on data from UNCTADstat and IMF International Financial Statistics.
Note: For details on the calculation of volatility, see Annex 2.

The level of commodity price volatility differs across countries, depending on the composition of a country's commodity exports and especially the degree to which these exports are diversified. However, contrary to what might be expected, figure 1

[4] Given that variability in the value of the dollar may explain part of the volatility of the nominal price indices, particularly for the post-1973 period, i.e. following the breakdown of the Bretton-Woods exchange-rate regime and the adoption of widespread floating, the nominal commodity price index was deflated by the United States producer price index to get a set of real commodity price indices. Deflation generally reduces the contrast between the period 2003–2010 and the earlier periods but does not affect the results otherwise. Annex 2 further discusses the calculation of the index.

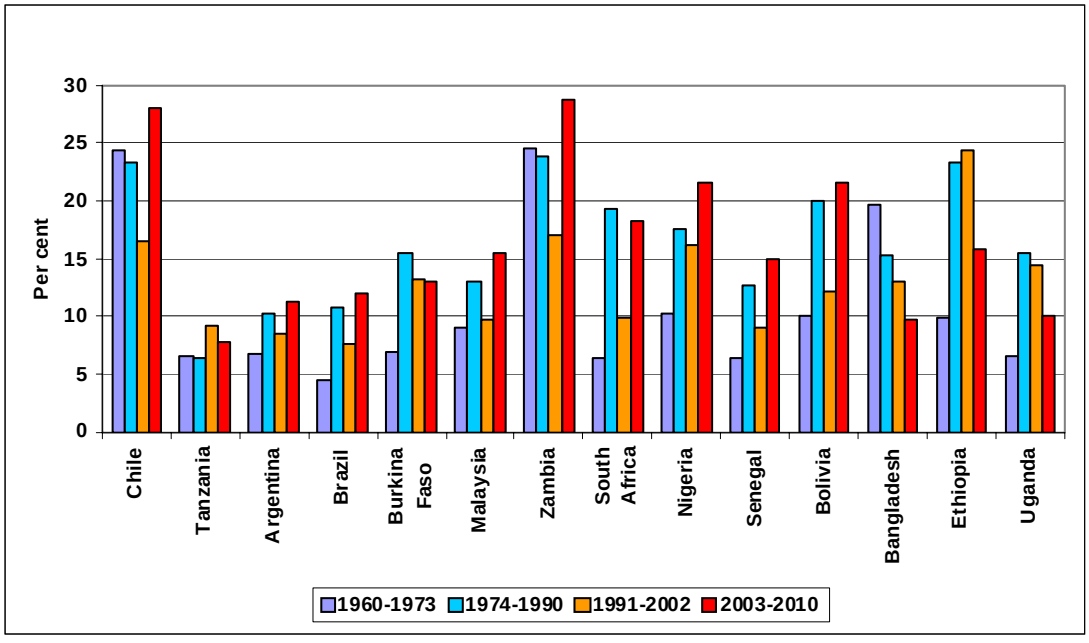
[5] Central America and South America are the two exceptions to this general pattern. However, high price volatility measured for these two regions during the period 1960–1973 is largely due to sharp price declines in January 1965, August 1966 and April 1968 of coffee, copper and sugar, i.e. three commodities that are important elements in these regions' export baskets.

[6] The period 1991–2002 also covers the, albeit relatively modest, commodity price boom of the mid-1990s.

does not suggest that a more diversified commodity export basket is associated with a lower level of commodity price volatility. In the period 2003–2010, volatility in those country groups – North Africa, sub-Saharan Africa excluding South Africa, and West Asia – in which oil and gas account for a very large proportion of exports was lower than in those groups of countries whose export baskets are more diversified, such as Developing America and Developing Asia.

Country-specific evidence further nuances the picture and shows that the incidence of price volatility strongly depends on the importance of specific products in a country's commodity export basket, independently of the concentration of that basket on one or two commodities (figure 2). Countries (such as Bolivia, Chile, Nigeria and Zambia) for which copper, oil or gas account for a large share of their commodity export basket have experienced high price volatility, with the peak registered in the period 2003–2010. Countries (such as Ethiopia and Uganda) whose main export commodity is coffee have also experienced relatively high levels of price volatility, though with a sharp drop for the period 2003–2010. The same is true for Bangladesh whose main export commodities are crustaceans and jute. By contrast, countries (such as Argentina, Brazil and the United Republic of Tanzania) that have a more diversified commodity export basket experienced relatively low levels of price volatility, yet still with a peak in the period 2003–2010. This country-specific evidence on the relationship between diversification and price volatility deviates from that regarding country groups, referred to above. On the other hand, it supports the finding that volatility of an export basket is strongly determined by what commodities are included, rather than by how concentrated that basket is.

Figure 2
Volatility of commodity export baskets, selected countries, 1960–2010



Source: See figure 1.

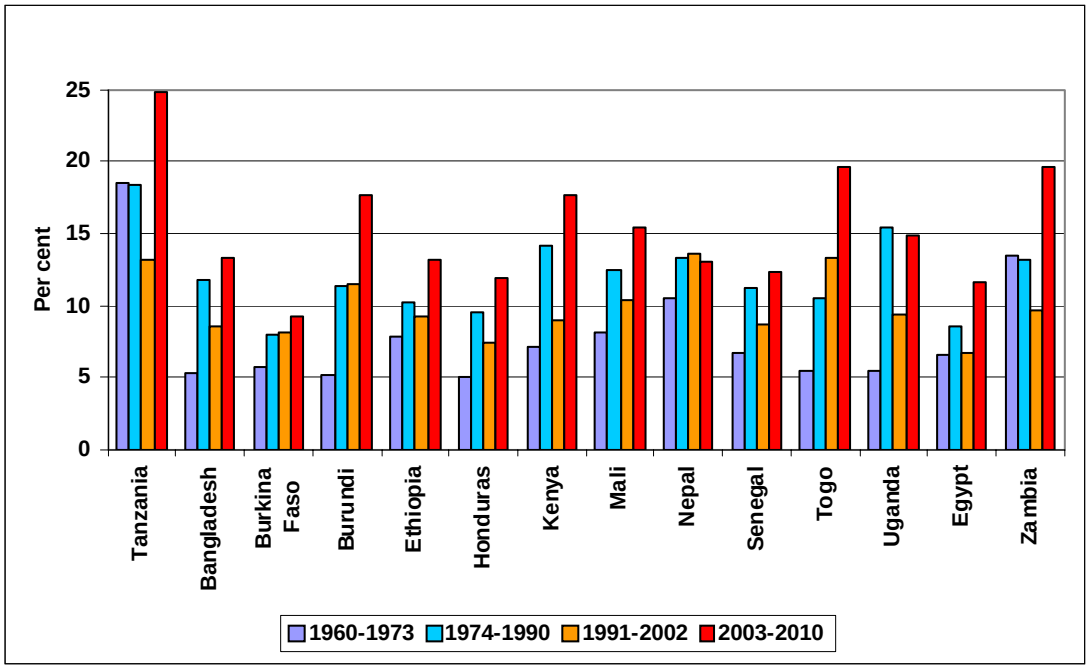
Note: See figure 1.

While the above concentrated on export-based commodity price indices, the price volatility of commodity imports may be of greater importance for low-income food-

deficit countries (LIFDCs).[7] LIDFCs have experienced a significant deterioration of their agricultural trade balance over the past two decades and the growth of these countries' food import bills has consistently outstripped that of GDP and of total merchandise exports.

All of the countries selected from the group of LIFDCs experienced the highest (or in the case of Nepal and Uganda almost the highest) level of price volatility in the period 2003–2010 (figure 3). Among these countries, price volatility is highest where oil and wheat account for an important share of commodity import baskets.

Figure 3
Volatility of commodity import baskets, selected countries, 1960–2010



Source: See figure 1.
Note: See figure 1.

3. The evolution of the terms of trade

Price movements of internationally traded goods, as well as changes in the volume and product composition of trade, affect the gains an individual country can reap from international trade. These gains are traditionally measured by the terms of trade (the evolution of a country's export prices relative to its import prices) and the purchasing power of its exports (defined as the total export value deflated by import prices). The impact of price movements on both these measures is determined, in the short term, by the composition of a country's imports and exports, and, in the medium term, by its flexibility in being able to adapt the composition of its exports and imports to changing international demand and supply conditions. Clearly, the impact of a change

[7] The FAO determines the category of low-income food-deficit countries, which currently includes 66 countries, on the basis of four criteria: per capita income, net food import position, self exclusion from the category, and persistence of position (see: http://www.fao.org/countryprofiles/lifdc.asp).

in the terms of trade on an economy increases with the relative importance of external trade in its GDP.

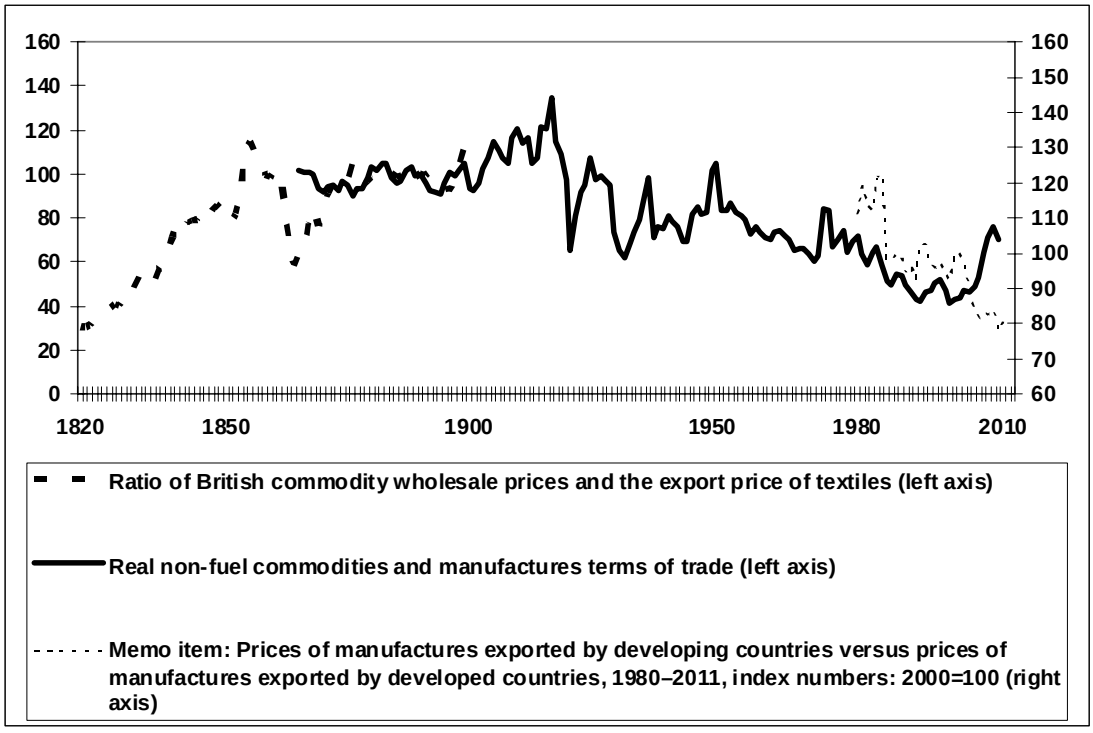
Given that a theme common to the various attempts to calculate the terms of trade is the distinction and interaction between long-term trends and short-term cycles, this section first examines long-term trends in the aggregate terms of trade referring to prices of commodities relative to prices of manufactures, before turning to evidence spanning the past three decades for individual countries and groups of countries.

3.1 Trends in the aggregate terms of trade

The empirical debate on the long-term development of the aggregate terms of trade has come to broadly agree on six salient features (Hadaas and Williamson, 2003; Ocampo and Parra, 2007, 2010; Farooki and Kaplinsky, 2012), as reflected in figure 4[8]:

Figure 4

Aggregate terms of trade, 1820–2009, index numbers (1890=100)



Source: Ocampo and Parra (2010) and UNCTAD secretariat calculations based on United Nations International Trade Statistics Yearbook (various years).

- Between 1820 and the end of the First World War, commodity prices markedly improved relatively to the prices of textiles, which was the main manufactured product imported by developing countries at the time. It is well documented that

[8] The data underlying figures 4 and 5 were kindly provided by Mariangela Parra. Figures 5a and 5b slightly differ from the figures in Ocampo and Parra (2010) because of an improved weighting methodology (private communication with Mariangela Parra).

this improvement in the terms of trade helped economic catch-up in countries in the New World (Argentina, Australia, Canada, Uruguay) (e.g., Williamson, 1996).

- The twentieth century saw a long-term decline of the commodity terms of trade – the decline amounted to about 50 per cent between the first two decades of the twentieth century and the year 2000, which corresponds to a rate of slightly below 1 per cent per year, and to about 30 per cent between the middle of the nineteenth century and the last two decades of the twentieth century, which corresponds to a rate of decline by 1.3 per cent per year (Cashin and McDermott, 2002).

- The decline in the terms of trade in the twentieth century was not continuous but is attributable to two downward structural breaks and, equally important, no upward structural break. One of the two downward shifts occurred after the First World War and the other in the 1980s. These adverse shifts probably reflect the delayed effects of the sharp slowdowns in the world economy that took place after the First World War and at the end of the "golden age" of the post-Second World War period. Indeed, "breaks or jumps [in the terms of trade] tend to occur at times of dramatic changes in the rate of growth of manufacturing output" (Bloch and Sapsford, 2000: 478);

- The terms of trade of specific commodity categories may deviate substantially from the evolution of the aggregate terms of trade: the decline of the non-oil terms of trade during the twentieth century appears to have been strongest for agricultural products, and especially tropical agricultural products for which the major downward shifts after the First World War and during the 1980s were very pronounced (figure 5a); the terms of trade of metals were fairly stable over most of the twentieth century, yet also experienced major downward shifts during the two World Wars and during the 1980s, i.e. with the slowdown of world manufactured production; the sharp improvement in the terms of metals during the 2000s is most probably due to industrialization and urbanization in emerging economies, especially China and India (figure 5b).

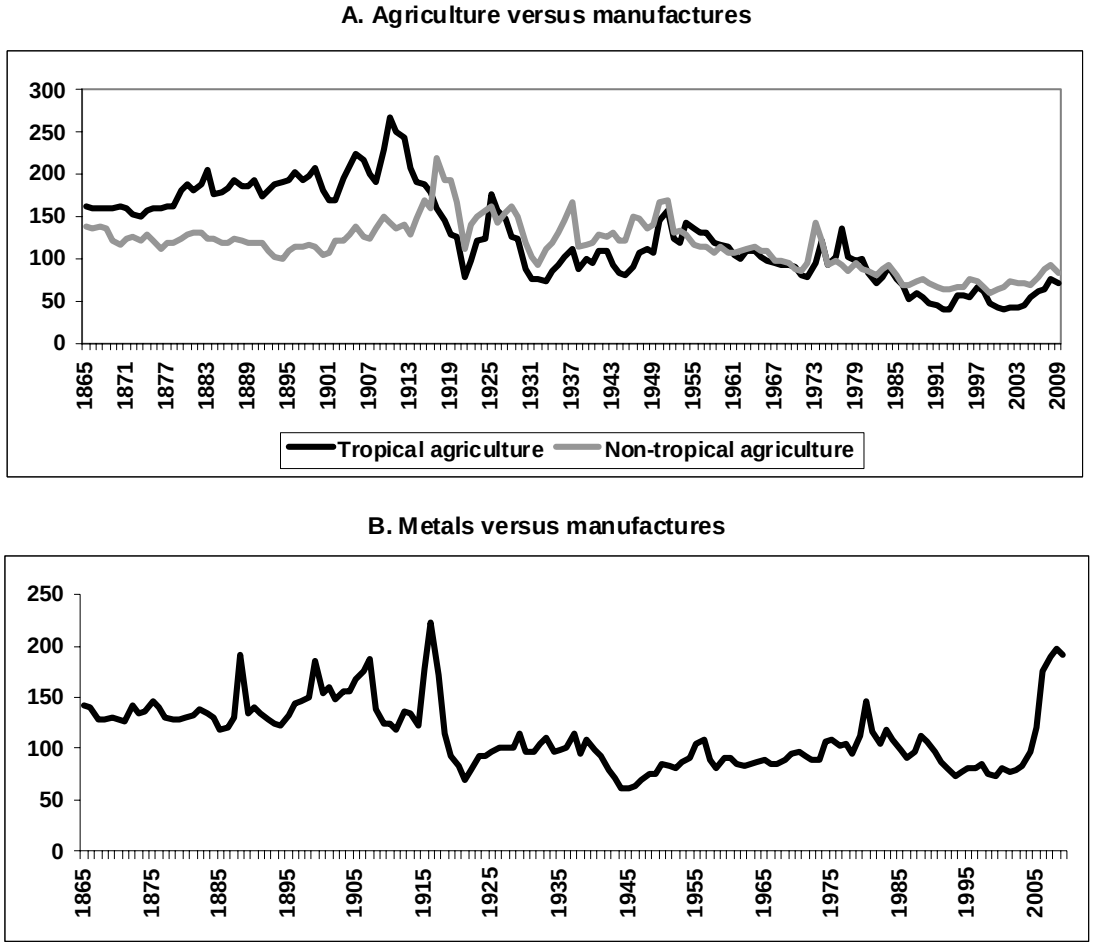
- The downward shift in the terms of trade in the early 1980s occurred not only in terms of prices of commodities relative to those of manufactures but also in terms of prices of manufactures exported by developing countries relative to those exported by developed countries, i.e. what has been called "the manufactures-manufactures terms of trade" (figure 4).[9] In an extension to the original Prebisch-

[9] As discussed by Farooki and Kaplinsky (2012), prices of manufactures taken as a group grew steadily, but at a low rate, between 1950 and 1970 when they embarked on a rapid growth path that lasted about two decades and was interrupted only for a few years in the early 1980s. This growth path between 1970 and the early 1990s, when prices for manufactures grew by about 435 per cent, was interrupted for more than a decade and it was only in the mid-2005 when manufactured prices regained their price levels of 1992. Prices of manufactures rose again after 2006, but at a slower pace than during the 1970s and 1980s, before declining again in the aftermath of the onset of the current global economic crisis. However, the prices of different types of manufactures have developed differently. In particular, labour-intensive manufactures produced within international production networks with the labour-intensive activities undertaken in low-wage economies, especially in East Asia, are unlikely to have experienced the post-2006 price increase observed for manufactures as a whole. Farooki and Kaplinsky (2012) use China's export to the European Union, Japan and the United States to highlight the impact of rapidly growing manufactured exports from low-wage economies on the global price of manufactures.

Singer hypothesis, Sarkar and Singer (1991) argue that some manufactures exported by developing countries share some characteristics of commodities: if all, in particular large, developing countries try to substantially increase exports of labour-intensive manufactures, there will be a risk that they encounter rising protectionist resistance from developed countries and/or the terms of trade decline to such an extent that the benefits of any increased volume of exports is more than offset by losses due to lower export prices. This does not imply that industrialization has become a self-defeating exercise. Many developing countries have been able to industrialize and diversify their production and export structures. Yet it shows that the development of the terms of trade crucially depends on favourable aggregate demand conditions, particularly in developed and the advanced developing countries.

- The commodity price boom between 2003 and 2008 marked a spectacular rebound in the terms of trade (figure 4). However, it is not yet fully clear whether the beginning of the current economic crisis, and the associated commodity price collapse in 2008, merely punctuated this rebound or whether the associated decline in advanced countries' manufacturing activity marks a shift similarly to the downward structural breaks experienced after the First World War and in the early 1980s.

Figure 5:
Terms of trade by commodity category, 1865–2009; index numbers (1970–1979=100)



Source: Ocampo and Parra (2010)

The commodity price boom that started in the early 2000s has come to be considered a new super-cycle, i.e. a trend rise in real prices of a broad range of commodities that lasts for one to two decades and is driven by urbanization and industrialization of at least one major economy. A high and rising intensity of metals use, i.e. the volume of metals consumed per unit of output, is often used as an indicator for a commodity super-cycle (UNCTAD, 2005: 46–51). Looking at the period 1865–2010, Erten and Ocampo (2012) identify four super-cycles and show that the average price of all non-oil commodity categories has significantly declined from one price cycle to the next.

The upward phase of the current commodity super cycle which has been driven by rapid and resilient economic growth in major developing countries is still ongoing. However, there are increasing concerns that its dynamism, which has been instilled mainly by China's commodity demand, may be fading away rapidly. There is disagreement whether China's high rate of fixed investment will be maintained with the intensity of commodity demand growth per unit of output growth just slowing or whether the expected slowdown in China's infrastructure and real estate sectors will mark a rapid end to the commodity super cycle (Credit Suisse, 2012). More generally, the widely expected continued subdued growth performance in major advanced countries is likely to transform the post-crisis slowdown in China's export growth into a more permanent feature, and it is unlikely that China's investment boom in infrastructure and commercial real estate, much of it due to the Government's post-crisis stimulus package (Cai, Wang and Zhang, 2010), can compensate the associated decline in aggregate demand growth in a permanent manner.[10] This means that China's contribution to the favourable conditions in global non-food commodity markets, and especially in base metals markets, may not last for much longer.

There is a continuous need for investment in infrastructure and construction also in other developing economies. Increased commodity demand by these countries could compensate any decline in China's demand. Nevertheless, all countries in the world economy have experienced a deteriorating external economic environment. More importantly, concerns about the sustainability of the growth recovery in the world economy cause considerable uncertainty about the sustainability of buoyant demand conditions on world commodity markets. This is because commodity price rallies in the past were positively correlated with robust growth episodes in the world economy (Erten and Ocampo, 2012). If this past experience is any guide to the future, the global growth slowdown, combined with the lag in investment that may now come to generate an increase in commodity supplies, will cause the pressure on commodity prices to ease.

As a result, it is rather uncertain whether the combination of sustained demand growth and constraints to supply expansion on which the commodity super-cycle has been based – and whose price effects have been amplified by financial investors in commodity markets through their search for yield – will last for much longer, in particular as base metals, and perhaps also energy, are concerned. In this uncertain situation, concentrating policy measures on rapid supply expansion could easily cause

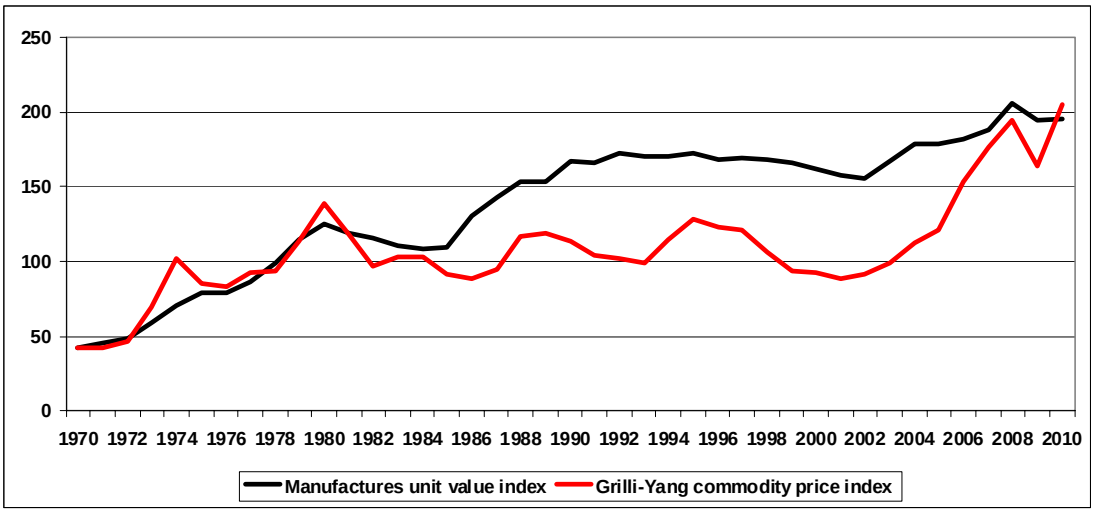
[10] Maintaining the post-crisis investment drive would risk creating overcapacity and non-performing loans. As noted by Akyüz (2012), China's commercial real estate sector risks heading towards a bust and local governments appear to face difficulties in servicing their debt.

a collapse of commodity prices with serious adverse growth implications for producing countries.

This uncertainty on the near-term evolution of the commodity super cycle is compounded by uncertainty as to the further evolution of the prices of manufactures. While between 1970 and 1992, the global price of manufactures increased more than fourfold, it subsequently declined for more than a decade and took until the mid-2000s before regaining its level of 1992 (figure 6). After 2006, the price of manufactures started to rise again, but at a slower pace than during the period 1970–1992. This relatively modest rise in the price of manufactures combined with the steep rise in commodity prices explains the recent sharp increase in the terms of trade between commodities and manufactures, as shown in figure 4 above. There is widespread perception that, similarly to the development of commodity prices over the past decade or so, the development of global prices of manufactures since the early 1990s reflects to some extent China's entry into global trade (Wood and Mayer, 2011). If this is correct, the rapid rise in Chinese wages over the past few years may suggest that the increase in global prices of manufactures that could be observed since about the mid-2000s will gather speed (UNCTAD, 2010). Therefore, uncertainty as to the future development of the terms of trade between commodities and manufactures relates not only to global prices of primary commodities but also to global prices of manufactures.

Figure 6

Prices of commodities and manufactures, 1970–2010, index numbers (1977–1979=100)



Source: Pfaffenzeller, Newbold and Rayner (2007); updates from http://www.stephan-pfaffenzeller.com/
Note: The commodity price index shown here includes fuels, while fuels are excluded from the terms of trade data shown in fig. 4.

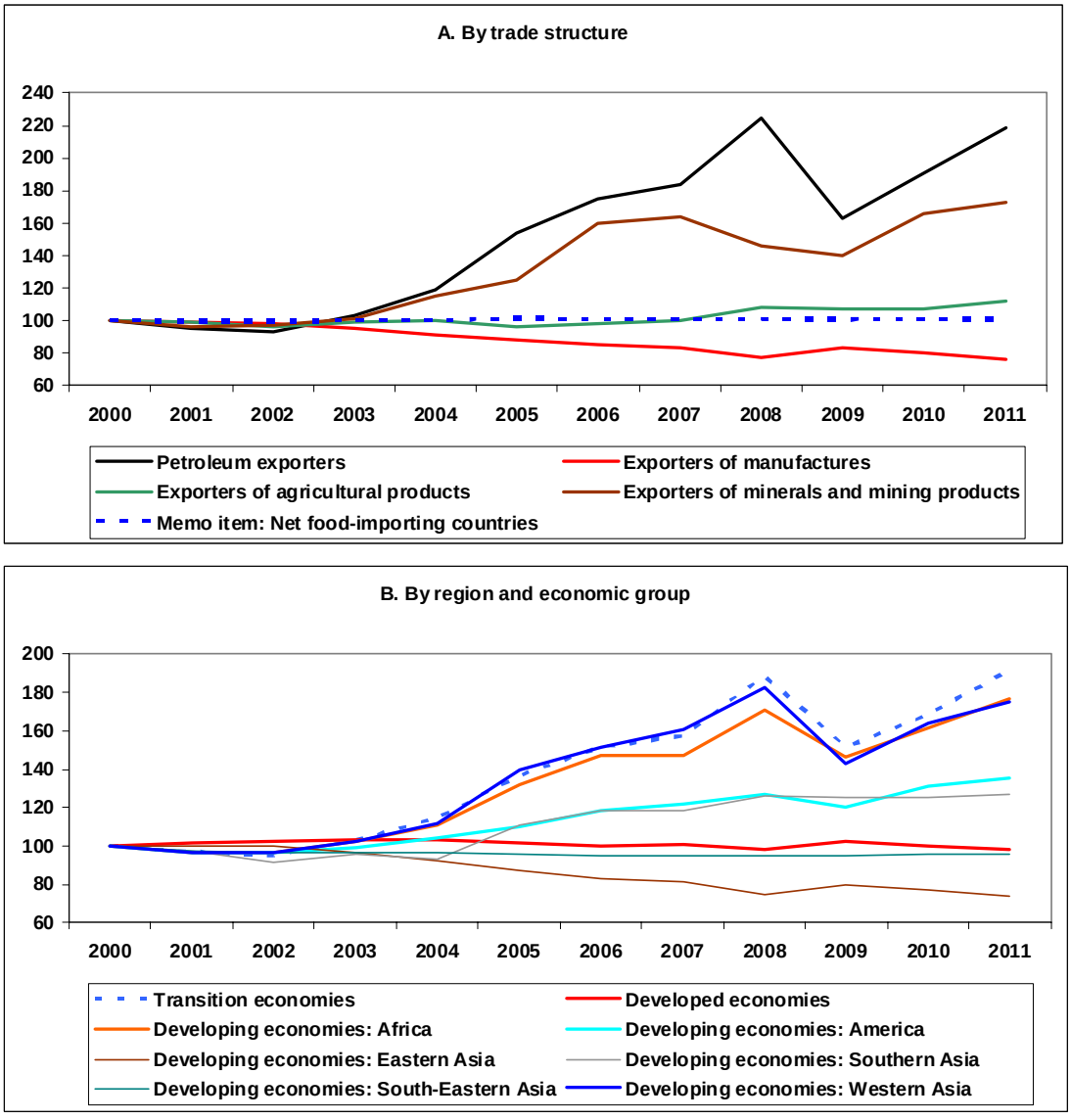
3.2 Recent trends in country-specific terms of trade

Trends in the terms of trade of individual developing countries and country groups vary, depending on the composition of their exports and imports. Over the past few years, these trends have increasingly diverged across different groups of developing countries. Since 2002, developing economies with a high share of oil and minerals and mining products in their total merchandise exports have gained the most from recent developments in international product markets (figure 7A). Given that most of

these countries are transition economies or located in Africa, Latin America or West Asia, it is not surprising that the terms of trade of these country groups have improved most (figure 7B). The terms of trade of countries with a dominant share of fuels exports more than doubled between 2002 and 2011. The stronger improvement in the terms of trade of fuels exporters is due not only to the sharp increase in international oil prices, but also to the fact that fuels exporters have, on average, a less diversified export structure than exporters of minerals and mining products. By contrast, developing economies with a high share of manufactures in their exports, many of which are located in Eastern or South-Eastern Asia, have experienced deteriorating terms of trade. The reason is likely to be not only the increase in their bill for commodity imports, but also the decline in the price of manufactures exported by developing countries relative to manufactures exported by developed countries, as shown in figure 4 above.

Figure 7

Terms of trade of developing economies, 2000–2011, index numbers (2000=100)



Source: UNCTAD secretariat.

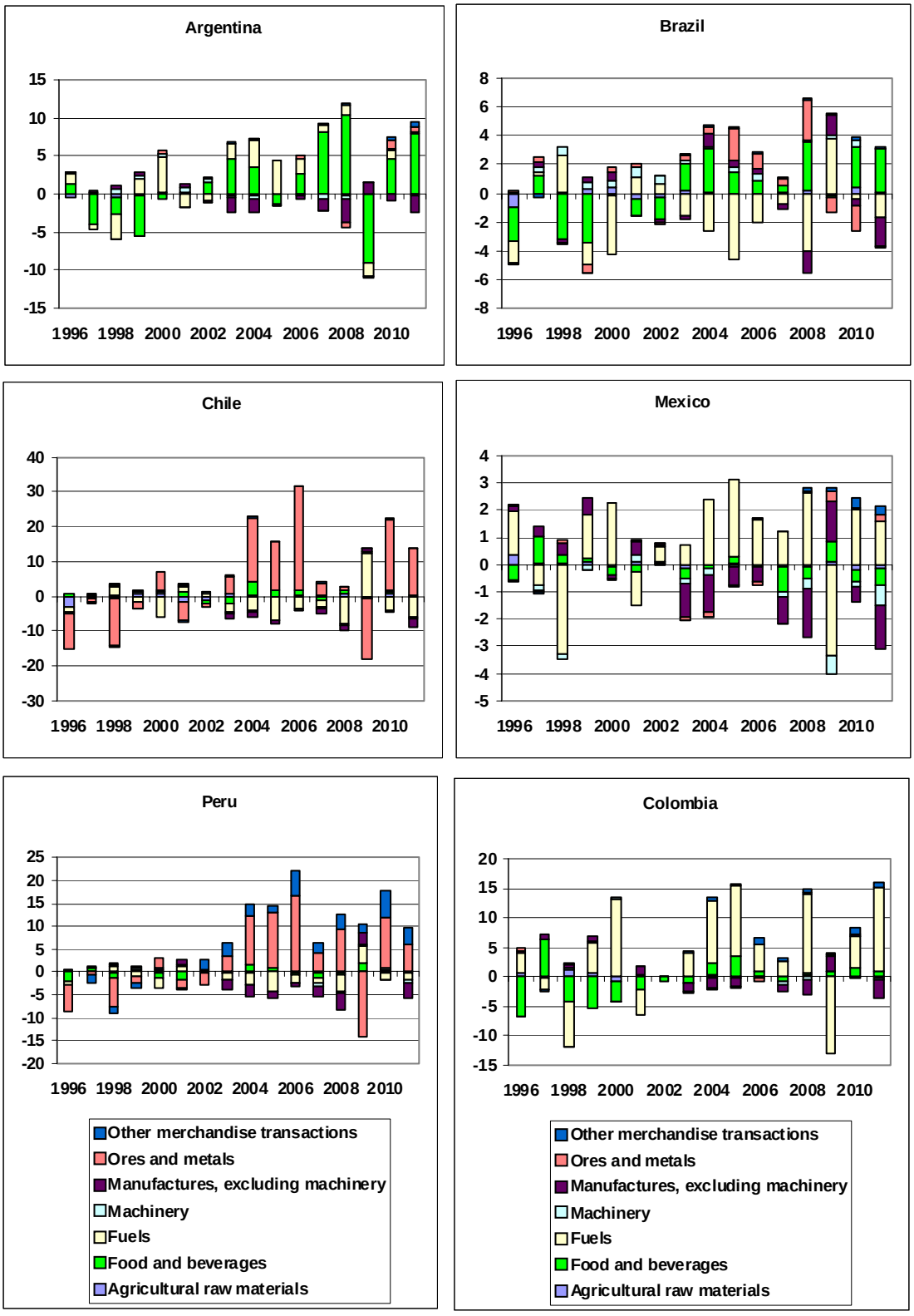
Turning to country-specific evidence, among the countries with a dominant share of exports of minerals and mining products, exporters of copper (e.g., Chile and Peru) saw a very strong improvement in their terms of trade (see figure 8 for a decomposition of the changes in the terms of trade of selected countries, including Chile and Peru). Gold exporters (such as the Republic of South Africa) also experienced significant improvements since 2004 (except for 2009). For these countries, the positive effect of the surge in the international prices of copper and gold exceeded the combined negative effects of rising oil prices and adverse movements in the prices of manufactures.

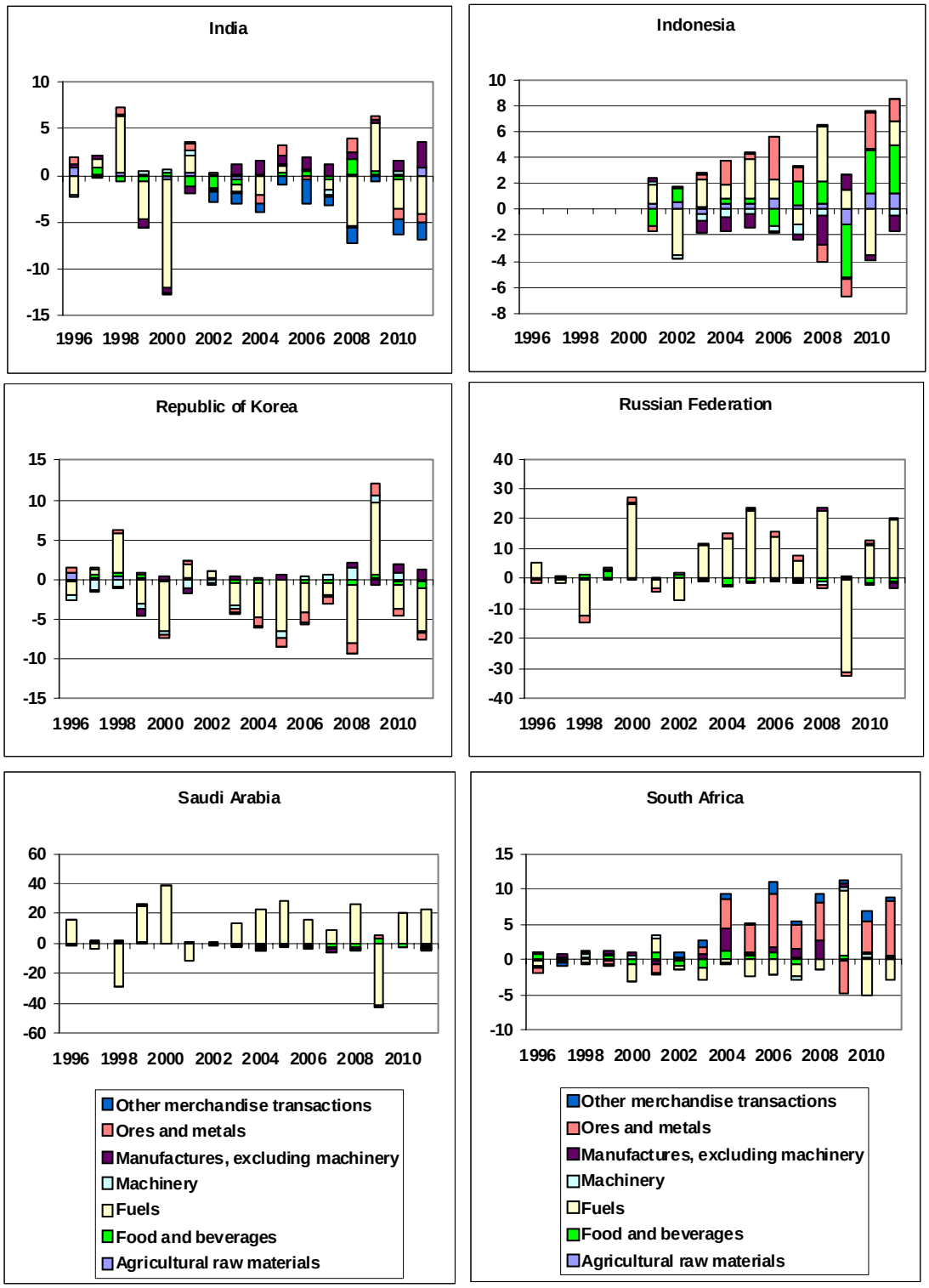
Terms-of-trade developments have varied strongly among economies where agricultural commodities have dominated their total merchandise exports. The reason is a combination of three factors: (i) differences in the movement of prices for specific products within this category; (ii) differences across countries in the share of other primary commodities in total exports; and (iii) differences in the share of oil in their imports. Two countries in the group of agricultural exporters that witnessed increases in their terms of trade, Argentina and Uruguay, benefited from higher prices for soybeans, beef and some cereals. In Argentina, this trend was strengthened when the country was a net exporter of oil and mining products, although the impact of higher prices of these product categories was dampened by an increase in import prices of manufactures (figure 8).

On the other hand, some fuel-importing developing countries with a dominant share of manufactures in their merchandise exports have suffered from a deterioration in their terms of trade, such as India and the Republic of Korea. The losses were largely due to the heavy dependence of these countries on fuel and metal imports, and sometimes to the relative decline in the prices of their manufactured exports.

The combined effect of the lower prices of labour-intensive manufactured exports and higher prices of commodity imports was less pronounced in countries that have become exporters of manufactures but remain sensitive to fluctuations in the prices of specific primary commodities. This is the case in particular for some countries in Latin America (e.g., Brazil, Colombia, and Mexico) and East Asia (e.g., Indonesia), as well as South Africa. In many of them, price movements in the different product categories neutralized each other in their impact on the terms of trade. In Brazil, for example, recent movements in the prices of primary commodities and manufactures have not changed the positive long-term trend in its terms of trade. Since 2003, higher prices of food exports compensated for the effect of increasing oil import prices on Brazil's terms of trade (figure 8). In Mexico, the Russian Federation and Saudi Arabia, where fuels account for a sizeable part of total merchandise exports, the positive contribution of higher fuel prices largely compensated for the negative impact of trade in food and manufactures on their terms of trade (figure 8).

Figure 8
Estimated contribution of different product categories to terms-of-trade changes, selected developing countries, 1996-2011





Source: UNCTAD secretariat calculations based on UNCTADStat.
Note: The data shown are UNCTAD estimates based on internal data for prices and trade weights. The data shown here slightly diverge from aggregate terms of trade data published in the UNCTAD Handbook of Statistics because of differences in aggregation methods.

These examples illustrate the diversity in the impact of recent international price movements on the terms of trade of developing countries. The variations in the global pattern of demand and their impact on individual countries has led to a redistribution of income, not only between developing and developed countries, but also, to an

increasing extent, among different groups of developing countries. This does not necessarily imply absolute losses in real income for countries that have experienced a deterioration in their terms of trade, as long as global demand and, hence, export volumes of all countries, are expanding. Over the past few years, most developing countries have indeed gained from the expansion of global demand. However, for some countries, less buoyant demand or unfavourable supply conditions of primary commodities have affected their export prices; this, combined with rising prices for fuel and food imports, has resulted in a severe deterioration in their terms of trade, which has not been redressed by higher export volumes.

Although continuing growth in East and South Asia and recovery in other regions of the developing world are likely to put a floor under the demand for primary commodities, it is unlikely that future commodity price developments will show a stable upward trend. It should also be recalled that the pre-crisis price boom was part of a global economic environment characterized by unsustainable global imbalances. Taken together, this indicates that the basic problem of instability in these prices and their long-term tendency to deteriorate in real terms vis-à-vis the prices of manufactures, especially those exported by developed countries, remains unresolved. Therefore, it is imperative for commodity producing countries not to take rising commodity prices for granted and become complacent about policies towards diversification and industrialization.

There is a risk that the recent recovery of primary commodity markets could lead to a shift away from investment – both domestic and foreign – in the nascent manufacturing sectors of commodity-exporting countries in favour of extractive industries. While higher investment in that area may be beneficial in terms of creating additional supply capacity and raising productivity, this should not be at the expense of investment in manufacturing. Exporters of primary commodities that have recently benefited from higher prices and, in some cases, from higher export volumes, have to continue their efforts towards greater diversification within the primary commodity sector, as well as upgrading their manufacturing and services sectors. The recent windfall gains from higher primary commodity earnings provide an opportunity to step up investment in infrastructure and productive capacity – both essential for boosting development.

4. The impact of commodity price volatility on economic growth

A key feature of the growth process in many developing countries is its lack of persistence (Pritchett, 2000; Hausmann, Pritchett and Rodrik, 2005). The fact that all countries, even many of the poorest among them, have seen temporary periods of rapid growth indicates that growth may be relatively easy to start but difficult to sustain.

A prominent study on economic growth instability in the developing world shows that a large part of the variance in these countries' growth performances, even over relatively long periods such as a decade, can be directly explained by external shocks, where instability in the terms of trade plays an important role (Easterly et al., 1993). In addition to these direct growth effects, external shocks have an indirect growth impact by inducing policy changes that often further contribute to poor growth

performance. In has been shown for Africa, for example, that following an adverse commodity price shock, the continent's terms of trade deteriorated sharply after the early 1980s and that by the mid-1990s this shock may have cost Africa 0.7 percentage points of its annual growth rate (Elbadawi and Ndulu, 1996).

While adverse terms of trade shocks are important for growth collapses, another recent study points to the role of income distribution in the duration of growth spells (Berg, Ostry and Zettelmeyer, 2011). The study shows that changes towards more equal income distribution prolong the expected duration of the growth spell.

Hence, a key challenge is to deal with two potentially offsetting forces: "Over the short run, positive terms-of-trade shocks will always (ceteris paribus) raise GDP, and the empirical issue is only how much. Over the long run, however, a positive terms-of-trade shock in primary product-producing countries will reinforce comparative advantage, suck resources into the export sector from other activities, and cause deindustrialization" (Hadass and Williamson, 2003: 640–641). Using improvements in the terms of trade and the resulting increase in government revenues to reduce income inequality and avoid deindustrialization can be done through public investment and transfer payments that target those parts of the population that do not directly participate in resource revenues or via policies that spur industrial production, such as maintaining a competitive exchange rate and pursuing monetary policy that stimulates private investment. These issues will be the focus of this section.

4.1 Commodity-related growth effects

The strength of the short-run impact of terms-of-trade changes on real national income depends on a number of factors. First, the income effects depend on whether a change in the terms of trade is accompanied by, or is even the result of, productivity growth that enables domestic exporters to reduce their prices. A deterioration in the terms of trade due to lower export prices associated with, or resulting from, productivity growth in the exporting industries, does not mean an absolute loss of real income; yet part of the productivity gains, rather than accruing to the domestic economy, benefits, instead, the consumers, traders or producers of the importing countries. Similarly, for rapidly growing economies that face a rise in import prices resulting, at least in part, from their own growing demand (as China and other large fast-growing Asian economies), the consequent deterioration in the terms of trade needs not lead to a net loss of real income. For most of the fast growing exporters of manufactures that have recently witnessed a deterioration in their terms of trade these two elements were combined. By contrast, suppliers whose export prices come under pressure but whose productivity is increasing less than that of their foreign competitors, tend to lose real income from exports, either due to lower export volumes (reducing profits and employment) or lower export prices (reducing profits and wages).

A second important determinant is the economy's openness to international trade. While terms-of-trade changes have a relatively minor impact on income in economies where exports and imports are small relative to GDP, even moderate terms-of-trade changes have a sizeable impact on national income in very open economies. Finally, secondary income effects from changes in the terms of trade depend on the use of

income gains (or the form of adjustment to income losses), which, in turn, is influenced by the distribution of the gains or losses among the domestic private firms, employees, consumers and the State, as well as foreign investors.

4.1.1 The distribution of resource rents

Income gains or losses from the terms of trade explain the difference between gross domestic product (GDP) in constant prices and gross domestic income (GDI).[11] A central aspect in the distribution of these income gains and losses from the terms of trade is captured by the distinction between GDI and gross national income (GNI). The difference is accounted for by net factor payments abroad; it is often considerable when the income effects of terms-of-trade changes are associated with changes in profit remittances by TNCs. Since the beginning of the 1990s many developing countries have strengthened their efforts to attract FDI, and the most successful have been some fast growing exporters of manufactures and exporters of fuels and mining products. Especially in some of the latter countries, a large proportion of export activities are controlled by TNCs, and changes in their domestic income as a result of higher terms of trade may be partly absorbed by an increase in profit remittances. The inverse is of course, theoretically, also true. However, the reaction pattern is unlikely to be symmetrical; given the labour market situation in most developing countries, higher export prices (or falling prices for imported inputs) will more likely translate into higher profit remittances rather than higher wages, while lower export prices will more likely translate into lower wages rather than lower profit remittances (United Nations et al., 1993: 405).

Evidence for the beginning of the recent commodity price boom indicates that oil exporters saw 25 per cent of their relative income gains vanish through higher net income payments abroad. The outcome was even worse for the exporters of primary commodities other than oil: on average, 75 per cent of their relative income gains from terms-of-trade improvements were absorbed by higher net income payments abroad (UNCTAD, 2005: 104–108).

Among other issues, at the national level, this raises the question of the sharing of export revenues from extractive industries. Resource exploitation generates rents (i.e. the difference between the sales value and the cost of exploitation of these resources) which, if effectively used, can serve as a basis for structural change and fixed capital formation, and hence the creation of employment opportunities. Thus, managing the

[11] The System of National Accounts defines the income effect of terms-of-trade changes as follows: "GDP in constant prices, plus the trading gain or loss resulting from changes in the terms of trade, equals real gross domestic income" (United Nations et al., 1993: 405). Trading gains or losses (T) are measured by the formula:

$$T = \frac{X - M}{P} - \left(\frac{X}{P_x} - \frac{M}{P_m} \right)$$

where X and M are exports and imports at current prices; P_x and P_m are the price indices for exports and imports, and P is a price index expressed in a selected numeraire. For the analysis here the numeraire is P_m (which is one of the most frequently used), and the reference year for the price indices is the previous year. The formula thus becomes $T = X/P_m – X/P_x$ (i.e. the difference between the purchasing power of exports and the volume of exports).

distribution and use of the rents generated by the extractive industries needs to be integrated into the national development strategies of the producing countries, so that they contribute to the process of diversification out of the natural resources sector, as these finite resources will eventually be depleted (Sachs, 2007; Auty, 2007; Pineda and Rodríguez, 2010).

Sources of fiscal revenue from primary export-oriented activities may be royalties, taxation, joint ventures, or full public ownership of the operating firms. In this context, and quite independently of short-term price developments, there is a fundamental need to achieve the right balance between the objective of generating income from the exploitation of natural resource endowments with the help of FDI, on the one hand, and government appropriation of a fair share of the rents accruing from the higher prices in the extractive industries on the other. In particular, governments should avoid engaging in a "race to the bottom" in fiscal as well as environmental rules in order to attract FDI (see UNCTAD, 2005, 2007).

The boom in prices of oil and mineral and metal products between 2003 and 2008 led governments in the developing countries producing these commodities to increasingly re-examine the fiscal treatment of companies in the extractive industries (UNECA-AfDB, 2007; UNECA, 2009). There were growing concerns that while the returns on investment of these companies were soaring as a result of higher prices, the share of the rents that stayed in the country remained unchanged, or even fell.

The analysis of the distribution of these rents is complicated due to the scarcity and fragmentation of data on government revenues and the costs of production in this sector. But the data available for a number of countries may give an approximate idea of the magnitudes involved, and enables drawing some conclusions (table 1).

Table 1

Share of government revenues in rents from extractive industries, selected commodities and countries, 2002–2009

(Per cent)

	2002	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*
Oil								
Angola	72.7	76.1	72.8	61.7	69.3	66.3	62.4	48.7
Azerbaijan	..	41.5	30.0	27.6	29.6	31.6	58.2	..
Bolivarian Republic of Venezuela	59.0	62.0	62.0	58.0	69.0	67.0	75.0	..
Chad	..	28.8	19.6	16.2	36.5	43.1	55.9	31.3
Copper								
Chile	43.2	72.8	49.0	53.3	50.2	44.3	62.6	..
Indonesia	46.0	44.0	42.0	45.0	42.0	..	..	..
Zambia	..	..	..	1.0	3.0	7.9	12.0	..
Gold								
Mali	..	..	20.9	18.3	11.1	34.4	33.3	..
Peru	21.8	27.9	26.3	30.0	28.5	29.7	27.4	..
United Republic of Tanzania	19.2	13.1	18.7	32.0	10.1	13.2	16.3	10.3

Source: UNCTAD (2010: table 5.2).

Note: Rent is defined as the difference between the sales value and the cost of production, including capital depreciation. 2008 data for Chad include anticipated 2009 payments to the Government.

There are large variations in the distribution of the rents from extractive activities across countries and sectors, reflecting differences in the role of State-owned enterprises and fiscal regimes. In countries where State-owned enterprises play a major role in the extractive industries, such as Angola, the Bolivarian Republic of Venezuela, Chile and Mexico, the share of the rents captured by the government is much higher than in countries where these companies have been privatized and where the fiscal treatment is relatively liberal, such as Peru, the United Republic of Tanzania

and Zambia. In particular, government revenues in the form of income taxes have been low as a percentage of the total rent from oil and mining.

The distribution of the rents, especially in mining, tends to be biased in favour of transnational corporations (TNCs). This is because many governments offered very favourable fiscal regimes in order to attract FDI in mining, particularly during the period of privatization of the sector in the 1980s and 1990s. It was also due to the imbalances of bargaining power in the negotiations of the contracts between the governments of poor countries and powerful TNCs. The latter often enjoyed low royalty rates,[12] and benefited from lower tax rates and shorter depreciation periods than domestic firms. In addition to these advantages, TNCs can also reduce their taxable income by using certain accounting practices, such as transfer pricing. Since all these factors bear on investment decisions taken with a relatively long time horizon, the contractual arrangements between governments and TNCs are often difficult to adjust to changing market conditions (see, for example, OSISA et al., 2009). In general, therefore, a significant proportion of the sharply rising proceeds of the extractive industries, as a result of the commodity boom since 2002, was mostly repatriated to the TNCs' home countries or reinvested in the same mines; only a small share would revert to the country in the form of government revenues to be used for the development of other industrial activities and domestic employment creation.

Only since 2006 have the governments of a number of countries partly been able to revise their fiscal regimes and renegotiate contracts with TNCs in the extractive industries.[13] Such renegotiations have been an issue especially in Africa (Custers and Matthysen, 2009), but also in Latin America[14] and a number of developed countries, such as Australia and the United Kingdom.[15]

[12] An IMF study on mineral taxation in developing countries found that royalty rates varied between 2 per cent and 30 per cent; the most common range was 5–10 per cent (Baunsgaard, 2001). A number of countries in Africa applied rates that were well below that common range.

[13] For instance, the Democratic Republic of the Congo revised its mining licences and renegotiated contracts which did not meet required standards. In Zambia, in 2008 the Government raised the effective royalty rate paid by TNCs from 0.6 per cent to 3 per cent of the value of production, and the income tax from 25 per cent to 30 per cent (Ley, 2010; and Lungu, 2009). It also introduced a windfall tax and a variable profit tax, and reduced the capitalization allowance from 100 per cent to 25 per cent. In the United Republic of Tanzania, in April 2010 royalties payable on minerals were raised from 3 per cent to 4 per cent, and in new projects the Government will become a shareholder. In Ghana, the Government passed new mining laws that double royalties on mining to 6 per cent. In Madagascar, the new Government moved to suspend all mining contracts and in 2009 announced a review of all tax and royalty arrangements. Sierra Leone also passed new laws in December 2009 which increased royalties and community benefits. In Namibia, the Government established a State-owned company to take advantage of the mineral wealth. In South Africa, profit-based royalties were introduced only in 2009, and there has been a political debate on the nationalization of the mining sector (see Mining Weekly, 2010; Mining Journal, 2010; OSISA et al., 2009; UNCTAD, 2007; Johnston, 2008).

[14] The Chilean Government established a royalty-like fee in 2006, of 0.5–5 per cent of the production value (depending on the volume of production); and a new royalty scheme was established for funding, on a voluntary basis, reconstruction from the earthquake in early 2010. In Ecuador, the Government plans to renegotiate oil contracts to convert them into service arrangements (see La Hora, El Gobierno de Ecuador prevé comenzar renegociación contratos petroleros en julio, 10 May 2010; for a more detailed account of mineral tax reforms in Latin America, see Christian Aid, 2009).

[15] In early May 2010, the Government of Australia announced the introduction of a new Resource Super Profits Tax of 40 per cent to be applied from 2012 (*Fiscal woes drive resource nationalisms*, Oxford Analytica, 17 January 2012). In the United Kingdom, the North Sea Oil tax regime was changed in 2006 when the supplementary charge levied on oil and gas production was raised, given that the earlier strong increase in oil prices implied that "the oil companies are making unexpected

An equitable distribution of the rents from the extractive industries between governments and TNCs is a necessary, but not sufficient, condition for the benefits from the exploitation of the natural resources to be translated into higher incomes and improved employment conditions for the population, especially in highly commodity-dependent economies. It is equally important that the revenues accruing to governments from these activities, in the form of either profits of State-owned enterprises or royalties and taxes paid by private companies, are used efficiently Strategic spending of these revenues could create a link between the extractive industries, which often operate in enclaves, and the rest of the economy.

Government revenues from the extractive industries could be used not only for public investments in infrastructure, health and education, but also for the provision of fiscal incentives and improved public services under industrial policies aimed at diversification of economic activities. This would reduce countries' dependence on natural resources – which are finite and the prices of which are volatile – while enabling an expansion of activities in manufacturing, services and agroindustry, where employment elasticities are much higher (UNECA, 2010).

4.1.2 External price shocks and growth instability

Explanations of the disappointing long-term growth experiences of commodity producing countries is often framed in terms of the so-called "resource-curse hypothesis". This hypothesis is usually based on the observation that many countries with important natural resource sectors have tended, on average, to do less well than other countries in terms of economic growth, the incidence of poverty and the distribution of income. In an influential study, Sachs and Warner (1995) provide evidence suggesting that economies with a high share of natural resource exports in GDP in 1970 subsequently had a worse average growth performance than economies with little or no natural-resource exports.

Commodity price volatility can affect long-term growth because strongly fluctuating prices increase uncertainty and risk, which discourages investment. For example, a recent examination of the growth performance of 35 countries during the period 1870–1939 concluded that (i) countries that specialize in commodities with substantial price volatility have more volatility in their terms of trade, enjoy less foreign direct investment, and experience lower growth rates than countries that specialize in commodities with more stable prices or countries that are industrial leaders, and that (ii) countries in the periphery with volatile commodity prices and undiversified economies fall behind in economic development (Blattman, Hwang and Williamson, 2007). The adverse effects of commodity price fluctuations on non-commodity sectors is heightened if such volatility occurs in periods of commodity price booms that are combined with real exchange rate appreciations. In this case, export baskets may be highly concentrated in commodities and government budgets may strongly depend on fiscal revenues from commodity activities. This causes substantial difficulties in macroeconomic management and increases the share of

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profits on oil prices that are far higher than those they based their investment decisions on" (UK Chancellor George Osborne, quoted in http://ftalphaville.ft.com/blog/2011/03/23/524836/osbornes-windfall-tax-on-oil/).

economic activity and fiscal revenues exposed to adverse price shocks. The result may be unanticipated and abrupt changes in output growth.[16]

In a recent study, van der Ploeg and Poelhekke (2009) combine the natural resource literature with Ramey and Ramey's (2005) investigation of the link between volatility of unanticipated output growth on the one hand and growth performance on the other. In a first step, they show that the significance of the variable that reflects natural resource dependence in studies that follow the lines of Sachs and Warner (1995) disappears once a variable is introduced that controls for output volatility.[17] In a second step they show that commodity price volatility drives the volatility of the share of natural resource exports in a country's GDP which, in turn, results in volatility of unanticipated output growth and depresses output per capita growth in countries that heavily depend on natural resources. Taken together, van der Ploeg and Poelhekke (2009) show that the share of natural resources in GDP has a positive effect on economic growth, while the volatility of this share has a negative growth effect.

4.1.3 Changes in the terms of trade, investment and income distribution

Commodity exporting countries that obtain significant gains from terms of trade changes, and whose governments capture a significant share of the associated windfall revenues, enjoy an enlargement of their policy space stemming from favourable developments in both the balance of payments and fiscal revenues. The challenge arises as to how this greater policy space can be used best to bolster long-term growth and development. Governments will need to find a balance between translating the supplementary income into higher productive investment and a better income distribution, on the one hand, and pursuing counter-cyclical policies, and therefore save part of the windfall as long as the terms of trade improve, on the other. Concentrating on the former strategy would support long-term growth by strengthening both domestic supply and demand, while the latter one would emphasize macroeconomic stability.

Finding the right balance between these policy strategies is not only a matter of favouring long-term or short-term policy concerns, but it also depends on specific economic circumstances. If commodity price increases are considered temporary and part of a cyclical upswing, at least part of the associated gains in the terms of trade should be saved in order to be able to adopt counter-cyclical measures once prices start to decline. But if the improvements in the terms of trade are expected not to be reversed, it would be irrational not to spend a significant part of the additional revenues, especially in developing countries with huge investment needs.

In fact, the groups of countries that benefited most from improved terms of trade over the last decade (Africa, Latin America, West Asia and the transition economies; see figure 7B above) were also those that had faced slow growth and low investment rates over the 1980s and 1990s. The rise in commodity prices helped these countries to improve their fiscal revenues significantly, in some cases by 8 to 12 percentage points

[16] It may also be price cycles that cause the governance problems observed by studies such as Mehlum, Moene and Torvik (2006)

[17] This result mirrors a more general finding in the recent literature, namely that resource abundance, i.e. resource wealth, has a positive effect on economic growth (e.g., Brunnschweiler and Bulte, 2008).

of GDP between the late 1990s and 2010 (UNCTAD, 2011a: table 2.1). These improvements resulted partly from non-tax revenues, which include royalties and income from property, but also from higher taxes generated by the recovery of GDP growth. These countries could increase current and capital government expenditure, while still reducing their fiscal deficits or, in some cases, even generating a fiscal surplus. Public investment, in particular, expanded by two to three percentage points of GDP in Africa, Latin America and West Asia while, at the same time, public debt and interest payments declined as a percentage of GDP. Fixed investment rates increased in Latin America by 6 percentage points of GDP between 2003 (when it corresponded to 16.8 per cent of GDP) and 2011 (amounting to 22.9 per cent of GDP).[18] Similar increases in gross fixed capital formation corresponding to 4–6 percentage points of GDP were also achieved in Africa, West Asia (excluding Turkey) and the transition economies between 1999-2000 and 2009-2010. While these investment rates remain well below those that prevailed in Eastern (42 per cent of GDP), Southern (28 per cent of GDP) and South-Eastern Asia (27 per cent of GDP) in 2010, they nonetheless are at their highest levels since the early or mid-1980s.

Much of the improvement in the fiscal situation between 2002 and the onset of the current crisis was reversed with the collapse of commodity prices in 2008–2009. Yet, these countries – with the exception of the transition economies – were able to cushion the adverse shock in the terms of trade in 2009 by using the previously gained room for manoeuvre in terms of higher international reserves and low public debt for conducting strong counter-cyclical fiscal policies. In the case of Latin America, for example, economic growth was rapidly restored without causing a severe negative impact on fiscal balances (in 2011, the average fiscal deficit in the region was about 1.5 per cent of GDP) or public debt.

Looking more closely at the distributional effects of changes in the terms of trade, it has often been argued that terms-of-trade effects favouring natural-resource sectors cause adverse distributional effects. One reason is that, unlike manufacturing industries and services, natural-resource activities do not generate much employment (UNCTAD, 2010). Another reason is that the ownership of natural resources is typically less equally distributed than other assets.

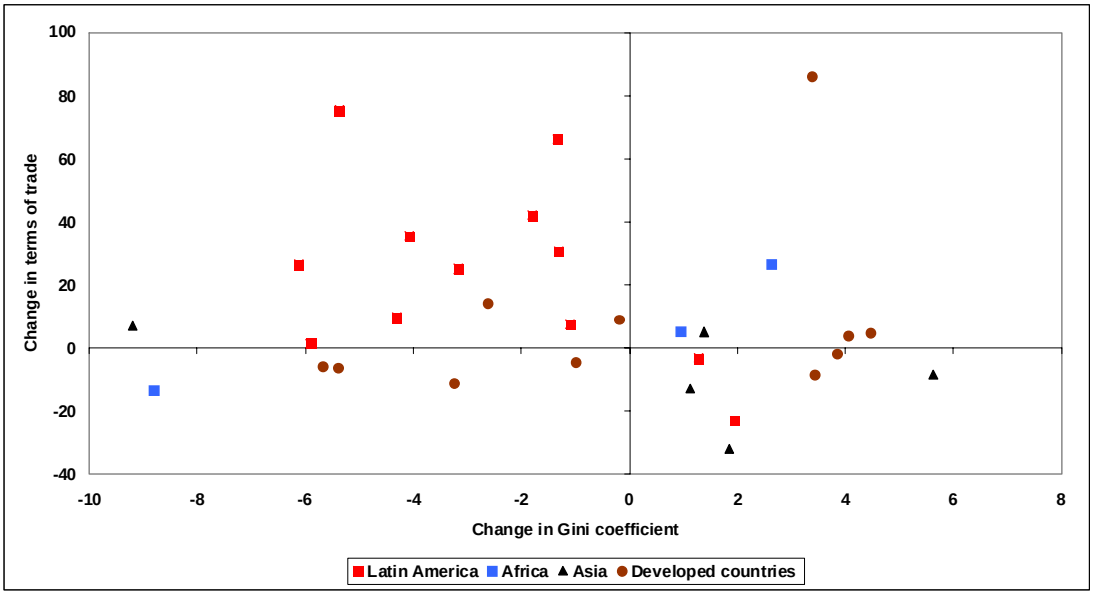
On the other hand, direct and indirect revenues from commodity exports have often constituted an important part of governments' fiscal revenues. Regarding Latin America, it has been calculated that the increase in fiscal space after 2002 was crucially due to rising commodity prices, with revenues from commodity taxes, profits and loyalties accounting for as much as 50 per cent of some countries' total increase in the fiscal revenues as a share of GDP, with much of the other revenue growth stemming from a new emphasis placed on progressivity in tax design (Cornia, Gomez-Sabaini and Martorano, 2011).

Figure 9 indicates that Latin American countries have succeeded in combining the improvement of their terms of trade with an improvement in income distribution. While the lack of coverage regarding income distribution in Africa makes comparisons difficult, the figure also shows an apparent increase in income inequality in Africa in spite of an improvement in the terms of trade.

[18] See ECLAC, Preliminary Outlook for Latin America and the Caribbean, 2011.

Figure 9:

Terms of trade and income distribution, selected countries, 2000–2010



Source: UNCTAD secretariat calculations based on SWIID, UNCTADstat and WEO-database.

It is clear that many, and often country-specific, factors have contributed to these diverge outcomes. However, part of the reason probably resides in the fact that large-scale income distribution programmes have emerged in many middle-income developing countries, especially in Latin America, while, perhaps due to the way they are designed, their adoption in low-income countries has been less widespread (Barrientos, 2012). The government generally uses its fiscal revenues to finance these programmes which provide cash or in-kind assistance to individuals or households, contingent on the beneficiaries' regular attendance of school and/or regular medical check-ups. It may well be that low-income countries have had problems in pursuing such programmes because of lack of sufficient fiscal revenues or because of the limited availability of required education and health infrastructure. Indeed, in Latin America, the improvement in the governments' fiscal positions has allowed for an increased provision of public goods, including education. Public expenditure on education in the region increased from 3.9 per cent to 4.4 per cent of GDP between 2000 and 2008, accompanied by an increase in secondary school enrolment rates from 54.8 per cent to 64.7 per cent and an increase in the number of years of education of the workforce from 7.4 to 8.2 years (Cornia, Gomez-Sabini and Martorano, 2011: 24).

4.2 Macroeconomic channels of long-term growth implications

4.2.1 Inflation

The recent spikes in commodity prices have pushed up consumer prices in many countries, prompting calls for central banks to take pre-emptive action against an acceleration of inflation. However, it may well be that the risk of galloping inflation is considerably overestimated, especially in developed countries, as the probability of a

wage-price spiral occurring is much smaller today than it was in the episode of rising oil prices in the 1970s.

Monetary policymakers face several challenges in dealing with commodity price surges. These challenges are associated with the question as to whether headline inflation will persist or converge back to core inflation once the effects of food and energy prices subside.[19] If the increase in headline inflation turns out to be transitory, overly aggressive policy tightening will create unduly large output costs. In the 1970s, higher oil prices induced an increase in nominal wage rates, and higher wage rates then resulted in a further increase in consumer prices, as higher wage costs were passed on by employers to consumers. The wage-price spiral ultimately ended in stagflation and rising unemployment, because central banks in the leading developed consumer countries stopped this spiral through highly restrictive interest rate policies.

Empirical studies for recent years have found that strong second-round effects of higher commodity prices on inflation have generally been absent in a majority of countries and that headline inflation has converged to core inflation (Cecchetti and Moessner, 2008; Liu and Weidner, 2011). This is not surprising because even though high commodity prices are exerting an upward pressure on prices, a rise in the consumer price index (CPI) due to a one-off increase in import costs resulting from structural changes is not the same as inflation, which implies a continuous increase in all prices. Whether higher relative prices cause a once-and-for-all increase in the CPI or trigger an inflationary process largely depends on the response of wages.

In countries where inflation pressure is increasing because of a combination of rising commodity prices and unit labour costs that exceeds the inflation target, tighter monetary policies may ultimately become necessary. The central banks of several developing countries, including Brazil, Chile, Colombia, India, Indonesia, Mexico, the Philippines, Peru and Viet Nam, increased interest rates amid inflation fears. Such fears may be justified in some of these countries, due to second-round effects of rising wages. However, the early moves by central banks of the G-7 countries could be more damaging than beneficial for macroeconomic stability. The reason is that in many countries concerns about inflation and the associated calls for tighter monetary policies may not be well founded, while many observers seem to be underestimating the risk of a global economic downturn. As Krugman (2008) commented, "the only thing we have to fear … is the inflation fear itself, which could lead to policies that make a bad economic situation worse". Following strict inflation targets and tightening monetary policies could indeed turn out to be the wrong strategy, given the fragile state of the global economy.

The experiences with oil price explosions and the global recessions in the 1970s offer a clear policy message: efforts to prevent a decline in real wages as a result of commodity price increases can cause second-round effects and inflationary acceleration. But a strict tightening of monetary policy, which seeks to slow down inflation but causes economic recession, can make matters worse. In this situation, only a cooperative approach by labour unions, employers, governments and central banks can prevent a wage-inflation spiral and a counterproductive economic downturn.

[19] The concept of "core inflation" removes the most volatile components (such as food and oil) from a broad price index like the consumer price index (CPI). Because food and oil prices can change quickly, it can be difficult to detect the long-run trend in price levels when those prices are included

To avoid strong second-round effects, inflation expectations must be anchored. Most G-20 countries, as well as many other countries, have well-developed institutions and can do this through incomes policy. Following such an approach requires a standstill agreement between labour unions and employers when the risk of inflation is acute. At the same time, it requires commitments by governments and central banks to actively pursue the objective of full employment. Furthermore, governments must be prepared to help the poorest households that are the hardest hit by the fall in real wages, with transfer payments that enable these households to satisfy their basic needs. The main policy target of this approach should be to keep nominal wage growth within a range determined by the sum of productivity growth and the official target rate of inflation (rather than the actual inflation rate). In addition, fiscal policies could also be used to compensate for any negative effect on domestic demand growth.

4.2.2 Exchange rates

Policies adopted to counter inflationary pressure from rising commodity prices are also of crucial importance for the development of real exchange rates. To the extent that commodity price pressure translates into inflation, countries with a fixed nominal exchange rate will experience an appreciation of their real exchange rate with adverse consequences for the international competitiveness of their non-commodity sectors, i.e. "Dutch disease".[20] Indeed, over the past few years, some commodity exporting countries have experienced a real appreciation of their currencies stemming from fast increases in commodity export earnings that could not be absorbed quickly by the purchase of imports. As a consequence, the producers of manufactures in the countries concerned lost competitiveness on both domestic and external markets. This caused a setback to the process of further industrialization and diversification, increasing their economic vulnerability.

Today's experience of capital flows and currency misalignment has much in common with the "Dutch disease" experience of some commodity exporting countries in the past.[21] In this case, the disease is provoked by the international carry trade rather than from commodity exports, as the phrase has been more commonly used.[22] Yet, the effects of the disease are the same: distorted exchange rates and frustrated efforts of countries' trying to develop their manufacturing industries and diversify domestic production and exports. While a multitude of factors is responsible for the movements of short-term capital flows, one factor clearly stands out in explaining the persistent inflows and the resilience of these flows after shocks: nominal interest rates that are persistently high in the countries receiving these flows compared to rates in the countries in whose currencies they are funded.

[20] The term "Dutch disease" refers to the phase of industrial decline – both in terms of the absolute size of the industrial sector and its share in national income – experienced in the 1970s by the Netherlands after the discovery and exploitation of its natural gas fields. Australia had experienced a similar process in the 1960s when the exploitation of gold undermined profitability in agriculture (Farooki and Kaplinsky, 2012: 61).

[21] For a comprehensive discussion and empirical evidence, see UNCTAD (2011b).

[22] Carry-trade speculation is a strategy whereby an investor sells a currency that yields a relatively low interest rate (i.e. the so-called "funding currency") and uses those funds to purchase short-term assets denominated in a different currency that yields a higher interest rate.

Such carry trade activities involve huge amounts of funds invested by highly leveraged financial institutions like hedge funds and banks. They have become the single most important determinant of cross-border capital flows, but are completely unrelated to the financing of trade or fixed investment in the destination economies. The trade is also self-reinforcing. As carry trade displays the usual pattern of herding behaviour that is characteristic for financial markets, the investment strategy of a single investor is quickly perpetuated as others follow his example. A large movement of flows into a target country – like Iceland before the crisis of 2009, or Brazil and Turkey more recently – leads to an appreciation of the respective country's currency and a depreciation of the currency of the funding country. This movement reinforces the flows as it increases the profit margin of the investor, who, in addition to interest rate differential, also expects a gain from the appreciation of the target currency.

The policy conclusion from these observations is straightforward: without a strategy to align exchange rates better to the fundamentals of all the countries involved, it is hardly possible to reduce the levels of these speculative and unproductive capital flows or their volatility. National governments may intervene in currency markets in pursuit of national policy objectives, either to offset market failures and prevent exchange rate misalignment or to attain a competitive advantage. However, exchange rates are intrinsically a multilateral issue that requires multilateral management.

5. Policy options

Several factors contribute to commodity price volatility and its macroeconomic impact on growth. This section argues that dealing with the related challenges requires a combination of mutually consistent policies. While country-specific characteristics and circumstances affect the specific policy mix, some general principles can be discerned. One of the main challenges regards managing commodity price volatility. The associated policies will attempt to minimize the adverse macroeconomic growth effects of commodity price volatility, such as by improving market transparency and smoothing out extreme price fluctuations, with a view to reducing uncertainty. Another challenge regards dealing with the macroeconomic effects themselves. The policies addressing this challenge will attempt to use favourable commodity price developments for sustained and inclusive growth, such that commodity-price-related benefits are shared fairly between the state and private investors (both domestic and foreign), as well as domestically between all parts of the population. In the long run, this goal is achieved best by policies that foster economic diversification and industrialization.

5.1 Policy options to manage commodity price volatility

(i) Promoting market transparency and data availability – towards a Base Metal Market Information System (BAMIS)

A lack of reliable and timely information on the current situation of commodity supply, demand and stocks, and their short-term evolution, hampers the formation of price expectations and contributes to price volatility. Weaknesses in the availability of consistent, accurate and timely commodity market data and analysis has contributed

to recent events of excessive price volatility that discourages decisions to increase capacity through new capital investments, in both commodity and non-commodity sectors, and adversely affects producer countries' growth performance.

Price volatility of food commodities is highly influenced by the supply side and by external factors such as extreme weather events. Therefore, a key element in managing price volatility in food markets is sustained investment to increase the productivity and resilience of food production, as highlighted by the inter-agency report to G20 agriculture ministers (FAO et al., 2011).

By contrast, price movements for metals and minerals, industrial raw materials and energy are strongly determined by demand, and are closely linked to global industrial and economic activity.[23] Buoyant global economic activity prior to the start of the current crisis and, more generally, rapid economic growth and urbanisation in large emerging economies over the past decade or so have strongly increased global demand for all commodity categories. This has given rise to a new commodity price super-cycle. An extrapolation of pre-crisis demand growth and comparisons with earlier episodes of rapid industrialization and urbanisation might suggest this super-cycle to continue for a decade or two. Hence, strong and sustained supply growth would go a long way in addressing associated price pressures.

However, there is substantial uncertainty as to whether such extrapolations describe the future path of commodity demand in any realistic way, especially regarding base metals and energy. As discussed in section 3, there are increasing uncertainties as to the dynamism of current commodity demand and price developments and its attendant effects on the evolution of supply-demand balances. Experience regarding commodity price cycles in the 1950s and 1970s shows that acting on perceived, rather than actual, supply shortages can lead to very sharp price movements. Moreover, the benefits of any rapid expansion of supply in extractive industries need to be weighted carefully against the risk of major environmental damage caused by a large-scale application of yet little-used extraction methods. A lack of market transparency, especially regarding stocks, is a further source of uncertainty. As a result, an exclusive focus on policy measures addressing constraints on production expansion may be misguided. Instead, there is an additional need to better assess the sustainability of the pre-crisis demand drive so as to avoid over-expanding supply and consequent rapid and sharp price movements.

Improved market transparency and data availability can promote an efficient supply response on commodity markets in line with realistic expectations on the future evolution of supply-demand balances. While for oil the Joint Oil Data Initiative (JODI) was launched in 2001[24] and for food commodities the G20 Ministers of Agriculture launched in 2011 the Agriculture Markets Information System (AMIS), nothing of the

[23] In the particular case of oil, geopolitical uncertainties also influence price volatility.

[24] JODI was launched by six international organizations (APEC, Eurostat, IEA, OLADE, OPEC, UNSD) whose membership composition results in over 90 countries and economies to be included in this producer-consumer energy dialog, AMIS is managed by a joint Secretariat located in FAO, composed of nine international organizations (FAO, IFAD, OECD, UNCTAD, WFP, the World Bank, the WTO, IFPRI and the UN HLTF) and aims to address food price volatility through the provision of more timely, accurate and transparent information on global food markets,

kind exists for metals. Yet, as indicated in section 2 above, countries with important extractive industries are particularly vulnerable to price volatility.

While data on production, consumption, trade and mining projects regarding base metals are available from a variety of sources, all of the related publications, except those from the commodity study groups, are provided on a commercial basis. Moreover, the fact that analyses on commodity market developments provided by investment banks and other financial institutions have become increasingly popular and influential indicates that available data are insufficient for market monitoring and analysis (Fajarnes, 2011). The objectivity of commodity market analysis from financial market actors is open to question. The reason is that they usually base their findings on models that are proprietary knowledge and therefore impossible to verify. Moreover, unless investment banks keep research and trading departments completely independent of one another, their market analyses are subject to a conflict of interest because their market predictions may well be an attempt to instil "information" which, combined with their analysts' prior position-taking, can provide handsome returns on investment.

This need for greater market transparency and availability of objective, more timely, accurate and consistent data and analyses on metal markets is compounded by the fact that it is especially in these markets where financial market actors have come to account for an increasingly large share of physical inventory holdings, as discussed in Annex 1.

Taken together, the above indicates the need for action designed to increase the capacity of commodity producers and consumers to undertake more frequent and systematic monitoring of the state of fundamentals, especially information on stocks, in base metal markets. International cooperation could redress this situation and ensure that reliable information on global base metal stocks becomes widely available. Similar to action undertaken under AMIS, a first step could be an audit and assessment of available information, identifying gaps and proposing ways in which they could be filled. This exercise would involve a range of existing institutions. This first step could be undertaken with a view to creating a Base Metal Market Information System (BAMIS) building on the model of JODI and AMIS. It could also involve a commitment by G20 governments to enable relevant national statistical agencies to provide timely and accurate data on base metal production, consumption and stocks. International organizations, with the involvement of relevant producer and consumer countries, could commit to undertake monitoring, analysing and reporting current conditions and expected developments in major markets.

Box 1: Promoting market transparency and data availability

The capacity of international and national commodity market information providers to monitor market developments and disseminate timely and accurate information should be strengthened, especially for base metals. This is because growth in mineral economies has been particularly vulnerable to price volatility and because uncertainty on demand prospects and existing stock holdings is particularly high for base metals.

The G-20 governments could commit to enable relevant national statistical agencies to provide timely and accurate data on base metal production, consumption and stocks, as well as call on other major producing and consuming countries to take similar commitments.

The G-20 could call on international base-metals information providers to launch a base-metals market information system (BAMIS) to encourage information sharing, improve data reliability and enhance data analysis and market transparency.

(ii) Smoothing extreme commodity price volatility

In the past, international commodity agreements that included provisions relating to internationally held buffer stocks and/or supply controls were often used to stabilize prices. It is commonly believed that these mechanisms were not very successful in reducing price volatility. They were more effective in moderating downward price movements than price surges.

As an alternative measure, designed to reduce the impact of financial investors without affecting fundamentals-driven price trends, market authorities in charge of surveillance could be mandated to intervene directly in commodity exchange trading on an *occasional* basis by buying or selling derivatives contracts with a view to deflating price bubbles and stopping distress selling.[25] Such intervention could be considered a measure of last resort to address the occurrence of speculative bubbles if reforms aimed at achieving greater market transparency and tighter market regulation were either not in place or proved ineffective. It could also be deployed if a possible use of margin calls (which would need to be better coordinated across exchanges) to deal with price bubbles were judged as having strongly adverse impacts on the participation of small commercial users of commodity exchanges and as posing serious risks of unintended ripple effects.

While most of the trigger mechanism could be rules-based, and therefore predictable, such intervention would necessarily have some judgemental components. This is because one source of commodity price bubbles is the increased impact on commodity markets of the evolution of other asset markets, which is due to the financialization of commodity trading, and because a speculative bubble may occur gradually rather than as a result of a sudden, abnormally high price hike. If this raises doubts about the ability of market authorities or government agencies to understand and follow the market, there is no reason for those doubts, because there is no reason why their understanding should be any different from that of other market participants; in financial markets that are prone to herd behaviour, all market participants have access to similar information. Such an intervening authority or agency could break the informational cascades that underlie herd behaviour by announcing when, in its view, prices are far out of line with fundamentals.[26] Hence, as in the case of currency

[25] The costs of such interventions could probably be easily funded from financial transaction taxes.

[26] With regard to judging when such an occasional intervention should actually occur, it may be useful to draw another parallel with currency-market interventions. As expressed many years ago by Emminger (1982: 16–17), a former president of the Deutsche Bundesbank, who could hardly be considered as entertaining anti-market sentiments: “I wholeheartedly agree that the monetary

markets – and, recently, the bond markets – it should be possible for market authorities or another agency to undertake occasional targeted interventions in asset markets to shock the market once it becomes evident that prices have gone into an overshooting mode.

Box 2: Smoothing extreme price movements caused by financial actors

The report of the G-20 Study Group on Commodities under the French presidency noted that financial investors have affected price dynamics over short time horizons. The increased correlation of commodity derivatives markets and other financial markets suggests a higher risk of spillovers.

The G-20 governments should consider applying in commodity markets tools designed to reduce the impact of financial investors without affecting fundamentals-driven price trends. In addition to regulatory measures, such tools could include those already employed in financial markets and, for example, mandate market authorities in charge of surveillance to intervene directly in commodity exchange trading on an occasional basis by buying or selling derivatives contracts with a view to deflating price bubbles and stopping distress selling, similar to the interventions frequently undertaken by central banks on foreign-exchange markets.

5.2 Policy options to deal with the macroeconomic effects of price volatility

5.2.1 *Coping with inflationary pressure*

The anticipated moderation in global commodity price increases due to lower global growth can be expected to decelerate inflation in developed and most developing countries. In the current fragile condition of the global economy, measures to tighten monetary policy would exacerbate the global slowdown. Given the need to contain the adverse macroeconomic impact of the current crisis and to raise domestic demand in surplus countries to ensure a smooth redressing of the global trade imbalances, any policy with contractionary effects will have to be applied very cautiously.

In an environment of rising commodity prices, a cooperative approach involving trade unions, employers, governments and central banks seems to be more appropriate for preventing a wage-inflation spiral than the use of restrictive monetary policy alone. An exclusive reliance on restrictive monetary policy that pushes domestic nominal interest rates beyond those in countries with major financial markets risks triggering short-term capital inflows and exchange-rate appreciation with adverse consequences for the international competitiveness of domestic producers in non-commodity sectors, i.e. creating Dutch disease.

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authorities have no way of knowing exactly what is the 'right' exchange rate. But in most cases one can recognize when an exchange rate is very much out of line, is destabilizing and distorting, and is likely to turn round again" (emphasis in original).

Developing countries could consider combining a broader range of policy instruments in responding to increasing food and energy costs, which are a much heavier burden on most household budgets in these countries than in developed countries and create an understandably strong pressure for wage increases. Indeed, the dramatic social and humanitarian consequences of the surge in food prices had much to do with the food riots in 2008 and in some countries are jeopardizing progress towards meeting the Millennium Development Goals (MDGs), especially that of halving poverty by 2015. This calls for a combination of monetary and incomes policy measures with specific income transfers targeted to the most vulnerable households. Yet many of the concerned countries cannot afford such additional social expenditure unless they reduce spending for other purposes, including urgent infrastructure investments. This dilemma suggests the need for additional foreign assistance to overcome this distribution problem in poor countries. It also demonstrates the importance, from both a macroeconomic and social perspective, of new measures aimed at achieving greater commodity price stability and of quick-response instruments to mitigate the impact of sharp commodity price fluctuations.

Box 3: Coping with commodity-price inflation

Commodity price spikes often prompt calls for central banks to take pre-emptive action against an acceleration of inflation. However, the current anticipated moderation in global commodity price increases due to lower global growth can be expected to decelerate inflation in developed and most developing countries. As a result, any monetary tightening will have to be applied very cautiously so as not to exacerbate the global slowdown.

In an environment of rising commodity prices, the adoption of specific measures to stem inflationary pressure will depend on country-specific circumstances. Nonetheless, there are strong arguments for central banks to focus on core, rather than headline, inflation, including the observation that headline tends to converge to core inflation, that shocks to commodity-price inflation are typically beyond the control of policymakers and hard to predict, and that targeting headline inflation risks exacerbating output volatility with adverse effects for investment. Moreover, maintaining high levels of nominal interest rates can risk giving rise to speculative short-term capital inflows with adverse exchange-rate effects.

Most G-20 countries, as well as many other countries, have well-developed institutions and can anchor inflation expectations through incomes policy.

5.2.2 *Coping with risks of Dutch disease:*

5.2.2.1 <u>National policy measures: adopting revenue stabilization funds, creating linkages, and pursuing macroeconomic policies supportive of investment in the real economy</u>

Commodity export revenues lead to increased inflows of foreign exchange which, due to the volatility of commodity prices, usually expose a high degree of volatility. Revenue stabilization funds that monitor the pace at which these revenues translate

into domestic spending are often used as an instrument to avoid exchange-rate appreciation and build buffers to tackle volatility such that resource revenues yield a sustainable flow of income. Such funds have proven most useful when spending regulations have supported non-resource related revenue and spending patterns by incorporating counter-cyclical elements, i.e. absorbing windfall profits and releasing revenues in times of economic downturns with a view to fostering macroeconomic stability. These funds also monitor inter-generational income distribution by providing a means for long-term savings and revenue stabilization through investment in financial assets on global capital markets, while responding to legitimate demands for current consumption.

The risk of Dutch disease can also be addressed by enhancing linkages from commodity production with a view to creating a more symbiotic relationship between the development of manufacturing and commodities sectors. Production linkages have usually been seen as downstream linkages, but efforts towards enhanced growth and development through commodity processing and resource-based industrialization have mostly been unsuccessful. Tapping the potential for upstream linkages, i.e. the provision of inputs to commodity production, has recently been suggested as more promising, especially in mining. To the extent that transnational mining companies attempt to concentrate on their core competencies and search for suppliers of other inputs, taking advantage of local outsourcing opportunities could be a mutually beneficial area of cooperation between transnational enterprises on the one hand and local governments and enterprises on the other (Farooki and Kaplinsky, 2012: 190–191). Indeed, extractive industries require enormous quantities of supplies, services and equipment, as detailed by Gall (2011) for deep sea oil extraction in Brazil.

However, the development of such upstream linkages and, indeed, continuing efforts towards diversification and industrialization requires fixed investment in production capacities. While high interest rates and currency appreciation help tame inflationary pressure, these policies usually do not produce an appropriate macroeconomic environment to encourage firms' investment in productive capacity. This would imply, for example, reducing policy interest rates to levels closer to the real return than can be earned from investment in the real economy and addressing inflationary pressure through incomes policy by preventing an overshooting of unit labour costs and maintaining a steady increase in domestic demand.

5.2.2 International policy measures: reform of the international monetary system

Currency appreciation poses a challenge for many countries, especially resource-based economies whose growth rates have been supported by buoyant commodity exports. While stronger currencies can help on the import side to reduce inflation, this advantage can be more than offset by the associated reduction in the competitiveness of export sectors and the social costs of higher unemployment rates.

Resource-based economies with floating exchange rates that try to stem inflationary pressure by monetary tightening may face an additional problem in the form of currency appreciation exceeding levels that could be expected on the basis of macroeconomic fundamentals. Such overshooting has often been driven by short-term capital inflows on the basis of carry trade speculation that profit from interest rate

differentials existing between different countries. Such short-term capital flows does not only cause exchange-rate overvaluation and jeopardize the competitiveness of the countries manufacturing sector, but it also increases the probability of sudden stops in capital flows and abrupt reversals in exchange-rate trends. In the third quarter of 2011, for example, emerging market currencies that had experienced sustained appreciation pressure suffered a precipitous fall in their values in a very short time owing to turbulence on international financial markets related to problems in the Euro area and a heightened recognition of the possibility of a global recession.

National governments may intervene in currency markets to prevent exchange rate misalignment and to accumulate large liquidity buffers to deal with sudden, large capital flow reversals. However, accumulating vast reserves as a form of self-protection may come with opportunity costs. Most importantly, questions related to short-term capital flows and exchange rates are inherently a multilateral issue.

As explained in greater detail in UNCTAD (2011a), a system of rules-based managed floating could achieve greater stability of the real exchange rate to enhance international trade and facilitate decision-making on fixed investment in the tradable sector, and at the same time provide sufficient flexibility of the nominal exchange rate to avoid lasting real exchange rate misalignments. Under this scheme, which may be regarded as a dynamic version of the Bretton Woods system, a country that saw a sharp rise in unit labour costs would be allowed to depreciate its exchange rate to maintain its competitiveness, while one that saw a fall in unit labour costs would have to allow its exchange rate to strengthen.

While the concrete terms of a system of rules-based exchange rate management would need to be discussed and elaborated further, a start could be made through regional initiatives, which could then be linked together. The model for this kind of regional arrangement is the Chiang Mai initiative, which was launched in 2000 but subsequently expanded to include the 10 members of the Association of Southeast Asian Nations, China, Japan and South Korea. It was intended to give individual members access to a large pool of foreign exchange reserves with which to intervene in the foreign exchange markets, and prevent a repeat of the currency crises of 1997 and 1998. More of these regional mutual-assistance agreements – and especially one for Latin America – could help manage exchange rates globally, and lead to fewer misalignments.

The other tool that could be used more widely is controls on short term capital flows, such as those driven by carry trades. These capital flows place an impossible burden on monetary policy in many developing economies, since any increase in interest rates to tackle high inflation immediately attracts capital flows that lead to an overly rapid appreciation in the exchange rate. Non-remunerated reserve requirements and withholding taxes on short-term capital flows have proven quite useful in this context (Epstein, Grabel and Jomo, 2004).

Box 4: Coping with Dutch disease

Resource-based economies have often been faced with currency overvaluation resulting from fast increases in commodity export earnings that could not be absorbed

quickly by the purchase of imports. The resulting loss of competitiveness by producers of manufactures caused a setback to the process of further industrialization and diversification, increasing their economic vulnerability.

Revenue stabilization funds that monitor the pace at which commodity export revenues translate into domestic spending have proven useful to avoid exchange-rate appreciation and smoothen commodity-earnings volatility. These funds can also foster macroeconomic stability and monitor inter-generational income distribution. Another national measure to deal with the risk of Dutch disease is tapping the potential for upstream linkages, i.e. the provision of inputs to commodity production, with a view to raising demand in non-commodity sectors.

A new form of "Dutch disease" has been caused by international carry-trade speculation, driven by the attempt of financial market participants to profit from nominal short-term interest rate differentials existing between different countries. While national governments may intervene in currency markets to prevent exchange rate misalignments, short-term capital flows and exchange rates are inherently a multilateral issue. A multilaterally agreed system of rules-based managed floating could achieve greater stability of the real exchange rate to enhance international trade and facilitate decision-making on fixed investment in the tradable sector, and at the same time provide sufficient flexibility of the nominal exchange rate to avoid lasting real exchange rate misalignments.

5.2.3 *Coping with commodity-price related balance-of-payments problems: anti-cyclical lending facilities*

If there is a sharp fall in commodity prices, it may be difficult for a commodity exporting country to maintain the level of its imports of essential goods, and uncertainty about price developments translates into perceptions of a higher country risk by potential trading partners and international lenders. The same holds for commodity importing countries in the case of sharp commodity price rises. In this way, commodity price volatility adds to the difficulties in maintaining a sustainable domestic and external public debt. This mechanism has been identified as a major factor behind the growth collapse during debt crises of the poorest countries (Cohen, Jacquet and Reisen, 2007).

Regarding international measures to address adverse balance-of-payments effects of commodity price instability, a realistic option would be the improvement and scaling up of compensatory financing mechanisms in light of past experiences. In order to contribute to sustained development and global macroeconomic stability, such compensatory financing schemes would need to be equipped with much more financial resources than were available for this purpose in the past. They should not only cover shortfalls in export earnings resulting from sharp dips in prices of export commodities but also, similar to the concept of the Compensatory Financing Facility of the IMF, sharp increases in the import bill resulting from higher prices for essential commodity imports, particularly food and energy.

Different external shocks may require different forms of compensatory payments. In the case of a decline in prices that is likely to be reversed, compensatory payments might take the form of concessional loans for balance-of-payments support from international financial institutions. These can be repaid eventually, once prices rise and exceed a certain threshold. By contrast, when compensatory financing is provided for income support, either to producers of certain agricultural commodities or to consumers suffering from soaring prices for imported basic energy and food items, compensatory payments in the form of grants would appear to be more appropriate, because these payments aim at helping parts of the population to maintain a certain level of consumption. However, such grants should not be at the expense of current ODA provided in support of economic infrastructure and productive sectors.

A compensatory financing scheme that is more effective and administratively less cumbersome than previous schemes would certainly need to avoid procyclicality. One way of achieving this would be to envisage automatic payouts made at predetermined trigger prices. Another would be to include deferred repayment options in case of external shocks, including commodity price surges or collapses, as recently proposed by Jacquet (2011). In terms of eligibility, in principle it should be sufficient that a country has no control over the cause of the shock that led to its need for compensatory financing. Conditionality, if any, should be linked directly to the way in which the financial resources provided under the scheme are used. If they are provided as grants, it would be justified to require their pass-through to producers in the form of income support, while pass-through to consumers should be the aim of conditionality attached to compensatory financing for food or energy import stress. On the other hand, when compensatory financing is provided in the form of loans, decisions by creditors and beneficiary governments about the actual use of those loans should take into account the need to produce a return from which the future debt service can be paid, rather than relying on an uncertain future price reversal to enable such repayment. In this case, it would seem more appropriate to channel the financial resources into investment in support of productive capacity in other sectors so as to reduce commodity dependence.

At the national level, institutional arrangements that serve as a buffer between prices on international commodity markets and incomes received by domestic producers may be useful. Their aim would be not only to influence domestic income distribution and reduce existing or avoid future poverty, but also to enable producers to carry out necessary investments to maintain steady productivity growth. Experience with systems of income support, for example in many developed countries, could provide useful lessons, but the costs of these systems normally exceed the budgetary possibilities of developing countries. However, in situations of high primary commodity prices, an institutional arrangement whereby developing countries retain part of the windfall gains from high commodity prices in national funds for release when international market conditions are unfavourable would be helpful, as already mentioned.

Obviously, different measures, both national and international, should be complementary.

Box 5: Coping with commodity-price related balance-of-payments problems

International measures may also be required to address adverse balance-of-payments effects of commodity price instability. A realistic option would be the improvement and scaling up of compensatory financing mechanisms. Any such scheme should avoid pro-cyclicality. Another option would be to include deferred repayment options in case of external shocks, including commodity price surges or collapses

5.2.4 *Using terms-of-trade improvements to foster the inclusiveness of growth*

5.2.4.1 Ensuring a fair sharing of resource rents

For commodities production to be sustained and contribute to producing countries' economic growth, a fair sharing of resource rents between the state and investors (foreign or domestic) needs to be ensured.

One important issue in this context is whether revenue sharing contracts should follow internationally recognized rules that would govern all contracts in all countries the same way. This solution would have the advantage of providing minimum standards towards a stable and certain environment for investors that would not easily be disrupted by perceived needs for renegotiations. However, it would raise issues of national sovereignty. Moreover, from a development perspective it would be clearly desirable for such contracts to capture country-specific characteristics and take account of the size and time profile of resource extraction, as well as of the producer country's economic, institutional and social development. They should also recognize that a country's objectives can change over time due to, for example, changes in fundamental supply-demand relationships on world markets, additional resource discoveries in the producer country or changing priorities in terms of social development. All these factors would call for country-specific agreements with room for occasional renegotiation.

Irrespective of what terms are specified in contracts governing the sharing of resource rents, special efforts towards transparency on what happens with resource rents are of crucial importance. The reason is that, by themselves, citizens may be less demanding with regard to accountability of spending revenues that do not arise from taxation. Moreover, some commodity production, especially in extractive sectors, is geographically concentrated and therefore fundamentally captive to specific locations in a way that other economic activities are not. Yet, all citizens should share in the benefits of resource extraction.

There are various ongoing, non-mandatory initiatives to promote transparency and accountability in extractive sectors. Two well-known approaches are the Publish What You Pay" campaign, which is an initiative launched by a coalition of non-governmental organisations in 2002, and the Extractive Industries Transparency Initiatives, which is a multi-stakeholder process launched by then British Prime

Minister Blair at the World Summit on Sustainable Development in Johannesburg in 2002.

5.2.4.2 Reducing income inequality

The growth effects of commodity price developments have often been accompanied by adverse distributional effects. The reason is the often limited employment creation associated with commodity production, especially in extractive industries, and the fact that the ownership of natural resources is typically less equally distribution than other assets. Making resource-based activities a source of inclusive growth therefore faces the challenge of pursuing policies such that all part of the population share the benefits of resource earnings.

Grounding fiscal spending in medium-term objectives rather than following swings in revenues in a pro-cyclical manner is one important part addressing this challenge. Another is transmitting resource earnings through redistributive policies, such as through public investment addressing the massive needs in terms of health, education and physical infrastructure that exists in many commodity producing countries and that helps stimulate productivity and raise productive capacity in the economy as a whole while providing jobs.

A more targeted approach that has enjoyed increasing popularity in developing countries regards conditional cash transfer programmes. The adoption of such programmes appears to have been an integral part in the desire of many countries in Latin America to use the increase in their fiscal space stemming from buoyant commodity export earnings to address concerns of income distribution. The G20 could examine to what extent donor support could help successfully pursuing such programmes also in the most vulnerable countries that themselves may not have the required fiscal means or institutional infrastructure.

Box 6: Spending revenues for inclusive growth

For commodities production to be sustained and contribute to producing countries' economic growth, a fair sharing of resource rents between the state and investors (foreign or domestic) needs to be ensured. This may be achieved best by country-specific agreements with room for occasional renegotiations.

Governments will need to find a balance between translating commodity revenues into higher productive investment and a better income distribution, on the one hand, and pursuing counter-cyclical policies, and therefore save part of the windfall as long as the terms of trade improve, on the other. The former strategy emphasizes long-term growth, while the latter one focuses on macroeconomic stability. The right balance between spending and saving also depends on the extent to which commodity price increases are considered temporary. If the improvements in the terms of trade are expected not to be reversed, it would be irrational not to spend a significant part of the additional revenues, especially in developing countries with huge investment needs.

The rise in commodity prices helped many resource-based countries to improve their fiscal revenues significantly and step up current and capital government expenditure. Many Latin American countries have succeeded in combining the improvement in their terms of trade with an improvement in income distribution, including by fiscal support to contingent cash transfer programmes.

5.2.5 *Diversification and industrialization*

Diversification and industrialization remain the best means in the long run for countries to reduce their vulnerability to the adverse growth effects of commodity price volatility and unfavourable price trends. Diversification and industrialization are complex processes achieved over a long period of time, as they require a stable macroeconomic policy environment that supports capital formation and skill acquisition, where macroeconomic policy support itself depends heavily on stable earnings from primary commodity exports. Investment in fixed capital is strongly influenced by growth in demand for the output that is produced with that capital, on the one hand, and on the conditions to finance such investment on the other. Public policies can support investment on both sides.

To foster diversification and industrialization, it is necessary to reassess the priorities of macroeconomic policies and to enlarge the range of policy instruments. There is a need not only for appropriate counter-cyclical fiscal and monetary policies, but also for an incomes (or wage) policy that will influence wages and the demand for wage goods in support of inclusive growth. Together, monetary, fiscal and incomes policies – supported by an exchange rate policy that avoids over-valuation – would then provide considerable scope for demand management to stimulate growth and industrialization while keeping a lid on inflation. In the current situation of subdued global economic growth and policy interest rates being constrained by a lower zero bound, pursuing expansionary macroeconomic policies may be of particular importance in the major advanced economies (DeLong and Summers, 2012).

Box 7: Fostering diversification and industrialization

Diversification and industrialization remain the best means in the long run for countries to reduce their vulnerability to the adverse growth effects of commodity price volatility. This can be achieved best by integrating commodity policies into a country’s overall development strategy.

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Annex 1. The increasing encroachment of commodity markets by financial actors

The report of the G20 Study Group on Commodities under the French presidency noted that "a growing body of research supports the view that financial investors have affected price dynamics over short time horizons. Some episodes of large and sudden commodity price movements are consistent with the view that amplification mechanisms familiar from other financial markets … can also affect commodities futures markets" and that "large financial flows associated with herding behavior of financial investors can sometimes amplify commodity price movements and may sometimes cause prices to deviate temporarily from values consistent with physical supply and demand conditions" (G20, 2011: 31, 6). The debate on futures-spot market relationships is further discussed in UNCTAD (2011a) and Mayer (2012) who also shows the importance of distinguishing between the impact on price formation of index traders and that of other financial investors with a more active trading strategy; regarding the latter, Bicchetti and Maystre (2012) show that increased participation of high-frequency traders in commodity markets may be an important factor behind the increased co-movement at short time intervals between commodity and equity markets since 2008.

An increasingly important channel through which financial institutions impact physical commodity markets regards investment banks' accumulation of physical stocks of commodities. The accumulation of physical commodities for financial reasons may also provide a false sense of supply shortages.

In recent years, major investment banks have purchased a large number of warehouses. As a result, in June 2011, one third of the about 600 warehouses licensed by the London Metal Exchange (LME) to store non-ferrous metals for delivery against LME-traded futures contracts was owned by Goldman Sachs and JPMorgan. Concentrating warehouses in a specific city, such as in Detroit where in June 2011 over 40 per cent of inventory arrivals and over 25 per cent of inventory deliveries recorded for aluminium took place, provides large profit opportunities enabled by specific LME-regulations: when LME-traded futures contracts reach maturity, the contract owner receives a warrant for a specific LME-approved warehouse to take delivery of the metal and becomes liable to cover the metal's storage cost. However, warehouse owners are obliged to release stocks only up to a certain quantity by city, rather than by warehouse. As a result, buyers have at times been faced with long delays in receiving physical metal supplies "that has resulted in the perverse situation of higher prices at a time when the world was awash in the metal."[27] The resulting storage revenues have proven to be so large that warehouse owners are reported to have paid incentives to "attract metal away from their end users".[28] The profit margins of such deals relies on the ready availability of physical supplies and low interest rates, which lower storage costs, and a rising forward curve.

While very profitable, being active on both the physical and derivatives markets causes a conflict of interest because by storing other people's physical stocks,

[27] http://uk.reuters.com/article/2011/07/28/uk-lme-warehousing-idUKTRE76R1O720110728; http://online.wsj.com/article/SB10001424052702304186404576389680225394642.html
[28] http://uk.reuters.com/article/2011/06/23/lme-warehousing-idUKLDE75L18620110623

investment banks gain material non-public information on which they can base their trading activities – a practice that in equity markets is illegal.

Concerns about these trading practices have led to an increase in the minimum level that owners of LME-licensed warehouses are required to release in one city which, however, some observers criticize as still being too low. There is also a debate in the United States between the Federal Reserve and investment banks as to the banks' involvement in physical commodity markets. The conversion of Goldman Sachs and Morgan Stanley to Bank Holding Companies in September 2008 made them regulated banks that according to the Federal Reserve's "long-standing stance … should not own commercial enterprises to avoid distorting the real economy", while the banks argue that "the right to own such assets is 'grandfathered' in from their lightly-regulated investment banking days". The Federal Reserve is to take a decision on this issue in 2013.[29]

Annex 2. Calculating the volatility of commodity export and import baskets

The price index used in section 2 refers to monthly prices of 48 commodities, including 16 food commodities (beef, other meat, fish, fishmeal, crustaceans, wheat, rice, barley, maize, meal and flour of wheat and flour of meslin, fruits and nuts, sugar, coffee, cocoa, tea, and spices), 13 agricultural raw materials (tobacco, hides and skins, oil seeds for soft fixed oils, oil seeds for other fixed oils, rubber, rough wood, sawn wood, cotton, jute, vegetable textile fibres, wool, fixed vegetable fats and oils, and other fixed vegetable fats and oils) 13 minerals and metals (crude fertilizers, iron ore, copper ores, nickel ores, aluminium ores, ores and concentrates of other base metals, silver, copper, nickel, aluminium, lead, zinc, and tin) and 6 energy commodities (cola, crude petroleum, refined petroleum, residual petroleum products, liquefied propane and butane, and natural gas).[30] Each commodity represents a product group at the three-digit level of the Standard International Trade Classification (SITC).[31] The 48 commodities represent half of the 96 commodity product groups in the SITC-

[29] http://www.reuters.com/article/2012/03/02/us-fed-banks-commodities-fb-idUSTRE8211CR20120302

[30] For 12 of these 48 commodities, price data are available only starting in January 1970. These commodities (other meat, fish, crustaceans, barley, rough wood, sawn wood, coal, refined petroleum, petroleum products, liquefied gas, natural gas, and silver) are not included in the calculations for the 1960s. Not included in this list of 48 commodities are diamonds and gold, i.e. two product groups that may be considered as commodities, although they are not usually categorized as such. However, there is no world price for diamonds and the price of gold is strongly influenced by inflation expectations and the use of a store of value by both individuals and central banks, rather than by fundamental production and consumption relationships.

[31] Previous studies that used country-specific commodity price indices (e.g., Dehn, 2000; Dehn, Gilbert and Varangis, 2005; and Gilbert and Morgan, 2010) are based on trade data at the level of narrow individual commodities. Proceeding at the 3-digit level of the SITC classification, as done in this study, allows for a significant widening in the country coverage. For many low-income countries, i.e. those for which commodity exports often are of key importance, trade data are either incomplete or simply unavailable from standard trade databases, such as the United Nations Comtrade database, which rely on reported data. This study uses trade data from the UNCTAD database, which makes reported data mutually consisted (divergences may arise from cross-country differences in the treatment of trade related to export processing zones, variations over time in the categorization of trade as 'special transaction', etc.), and includes estimates to guarantee wide data coverage.

classification and cover about 85 per cent of developing countries' (and an average of about 75 percent of world) commodity exports over the past 15 years.

The price indices are geometric Laspeyres (i.e. base-weighted) indices, as introduced by Deaton and Miller (1995) and subsequently also used by Dehn (2000) and Dehn, Gilbert and Varangis (2005).[32] They are constructed as follows:

$$Index = \prod_i P_i^{W_i}$$

where P_i is the international price for commodity i expressed in dollar and the weighting item W_i is the value of commodity i as a share of the total value, n, of a country's (or country group's) exports of the 48 commodities in the base period j. The base period is set to 1995.[33] The percentage change in the index is a weighted average of the percentage change in the prices of the 48 commodities. Choosing country- or group-specific weights ensures that each index is unique. The index can be calculated in terms of nominal prices (expressed in dollar) or in real terms, e.g. deflated by a standard dollar deflator (such as the United States producer price index).[34]

[32] The advantages of using geometrically weighted indices are that each country-specific index is (i) unique, as it reflects the composition of a country's export basket, and (ii) exogenous, i.e. it does not include any supply responses to changes in world prices. The disadvantage of using the same set of world prices for all countries is that it ignores the fact that different countries may receive different prices for their products, for example, because of quality differences. However, there is no reason to believe that such quality-related price differences introduce an additional element to price volatility.

[33] Given that the recent commodity price boom was broad based, setting the base period to the end of the sample period affects the weights of individual commodities only marginally, except for a few countries that have started to export energy commodities. Indeed, sharp changes in export basket weights arise only with substantial diversification at the extensive margin, such as through the discovery and exploitation of fossil energy or mineral resources.

[34] Deflating may also be based on import unit values, as proposed by Dehn, Gilbert and Varangis (2005). However, monthly data on import unit values are available (e.g., from the IMF's International Financial Statistics database) only for a small number of countries. Dehn (2000) uses quarterly indices and deflates by the unit value index of developed country manufactured exports, which is similar to Deaton and Miller's (1995) use of the index of imports of manufactured goods by developing countries.