



# COMMODITIES AND DEVELOPMENT REPORT

Perennial problems, new challenges and evolving perspectives





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## EXPLANATORY NOTES

### **Classification by country or commodity group**

The classification of countries in this *Report* has been adopted solely for the purposes of statistical or analytical convenience and does not necessarily imply any judgement concerning the stage of development of a particular country or area.

In this *Report*, commodity-dependent developing countries (CDDC) are defined as countries whose total commodity exports account for more than 60 per cent of total merchandise exports. Commodity exports for each country are reported as a percentage of total national merchandise exports as at 2009-2010, the latest years for which international trade statistics are currently broadly available.

The major country groupings used in this *Report* follow the classification by the United Nations Statistical Office (UNSO). They are distinguished as:

- Developed or industrial(ized) countries: the countries members of the OECD (other than Mexico, the Republic of Korea and Turkey) plus the new EU member countries and Israel.
- Transition economies refers to South-East Europe and the Commonwealth of Independent States (CIS).
- Developing countries: all countries, territories or areas not specified above.

The terms “country” / “economy” refer, as appropriate, also to territories or areas.

References to “Latin America” in the text or tables include the Caribbean countries unless otherwise indicated.

References to “sub-Saharan Africa” in the text or tables include South Africa unless otherwise indicated.

For statistical purposes, regional groupings and classifications by commodity group used in this *Report* follow generally those employed in the *UNCTAD Handbook of Statistics 2011* (United Nations publication, sales no. B.11.II.D.1) unless otherwise stated. The data for China do not include those for Hong Kong Special Administrative Region (Hong Kong SAR), Macao Special Administrative Region (Macao SAR) and Taiwan Province of China.

### **Other notes**

The term “dollar” (\$) refers to United States dollars, unless otherwise stated.

The term “billion” signifies 1,000 million.

The term “tons” refers to metric tons.

Use of a dash (-) between dates representing years, e.g. 2001-2010, signifies the full period involved, including the initial and final years.

An oblique stroke (/) between two years, e.g. 1991/92, signifies a fiscal or crop year.

A dash (-) or a zero (0) indicates that the amount is nil or negligible.

### **Product classification**

Exports are valued FOB and imports CIF, unless otherwise specified.



For analytical purposes, merchandise exports and imports have been classified, where appropriate, according to main products groups. Following the codes used in Standard International Trade Classification (SITC), revision 3, product groups as follows:

- Agricultural products: All food items + Agricultural raw materials
- All food items (SITC 0 + 1 + 22 + 4)
- Agricultural raw materials (SITC 2 less 22, 27 and 28)
- Minerals, ores and metals (SITC 27 + 28 + 68 + 667 + 971)
- Fuels (SITC 3)
- Manufactured goods (SITC 5 to 8 less 667 and 68)
- Primary commodities, precious stones and non-monetary gold (SITC 0 + 1 + 2 + 3 + 4 + 68 + 667+ 971)

### ***What are commodities?***

In this Report, a commodity is defined as any homogenous good traded in bulk. Commodities are most often used as inputs in the production of other goods or services. The quality of a given commodity may differ slightly, but it is essentially uniform across producers. Historically, various terms have evolved to make a distinction between the different commodities that are internationally traded, for example: 'traditional' and 'non-traditional' commodities; 'tropical' and 'non-tropical' commodities. However, a more useful distinction is probably between the 'soft' commodities and 'hard' commodities. For the purposes of this report, the emphasis is essentially on the 'soft' and 'hard' commodities as recognized by UN Resolution 93 (IV) II of the Integrated Programme for Commodities (1976).<sup>1</sup>

Table A presents a range of soft commodities: mainly agricultural products such as cereals, tropical beverages, agricultural raw materials, vegetable oils and oilseeds. The table also contains 'hard' commodities which denote products derived from mining and other similar extractive industries, such as crude oil, bauxite, diamonds, gold and copper.

Soft commodities can also be categorized according to the region of production, tropical or temperate zone products; although some products span both zones (e.g. rice and cotton). Table B. groups products by temperate and tropical zone depending on which zone is the most important source of exports to the world market.

<sup>1</sup> According to the resolution "the commodity coverage of the Integrated Programme should take into account the interests of developing countries in bananas, bauxite, cocoa, coffee, copper, cotton and cotton yarns, hard fibers and products, iron ore, jute and products, manganese, meat, phosphates, rubber, sugar, tea, tropical timber, tin and vegetable oils, including olive oil, and oilseed, among others it being understood that other products could be included, in accordance with the procedure set out..."

**Table A. Primary commodities classification by categories**

Primary sector	Commodity categories	Sub categories	Examples of individual commodities
Hard commodities	Energy commodities	Petroleum products	Crude oil Gasoline
			Natural Gas Coal Renewables Nuclear
	Non-energy commodities	Industrial metals	Aluminium Copper Zinc, Lead
		Rare metals	Plutonium, cobalt
		Ferrous metals	Iron ore
		Precious metals	Gold, Silver Platinum and palladium
		Minerals	Diamonds
	Soft commodities	Livestock	Cattle, Dairy products, Poultry, Pigs
Grains		Wheat Maize, Rice Soybeans,	
Agricultural and industrial crops		Sugar Timber Cotton Roots and tubers Tea, coffee, cocoa Vegetable oils	
Fisheries		Prawns, Cod, Tuna	

Source: Adapted from Farooki and Kaplinsky, 2012.

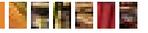
**Table B. Soft commodities grouped by temperate and tropical zone**

Temperate Zone	Sub-tropical and temperate zone products	Tropical Products
<ul style="list-style-type: none"> <li>● Citrus fruit</li> <li>● Dairy products</li> <li>● Hides &amp; skins</li> <li>● Maize</li> <li>● Meat</li> <li>● Non-tropical timber</li> <li>● Nuts</li> <li>● Oilseeds</li> <li>● Potatoes</li> <li>● Temperate zone fruit &amp; vegetables</li> <li>● Wheat</li> <li>● Wine</li> <li>● Wool</li> </ul>	<ul style="list-style-type: none"> <li>● Cotton</li> <li>● Millet</li> <li>● Rice</li> <li>● Soybeans</li> <li>● Tobacco</li> </ul>	<ul style="list-style-type: none"> <li>● Bananas</li> <li>● Cocoa</li> <li>● Coffee</li> <li>● Hard fibers</li> <li>● Jute</li> <li>● Millet and sorghum</li> <li>● Palm oil</li> <li>● Pineapples</li> <li>● Rice</li> <li>● Rubber</li> <li>● Spices</li> <li>● Sugar</li> <li>● Tea</li> <li>● Tropical timber</li> </ul>



## GLOSSARY OF TERMS

- **Backwardation and Contango:** If the market is in backwardation, it means that the futures price of contracts with later maturity dates is lower than the price of futures in the nearby maturities. In this case, positive yields are earned in the roll period, as the price of the current futures contract (which is sold) will be higher than the next futures contract (which is then bought). Conversely, in a contango market, negative yields are earned in the roll period.
- **Commodity index investment:** an activity typically characterized by a passive strategy designed to gain exposure to commodity price movements as part of a portfolio diversification strategy. Exposure to commodity price movements can be based on investment in a broad index of commodities, a sub-index of related commodities, or a single-commodity index.
- **Commodity index traders (CITs):** these are institutional investors engaged in commodities futures trading strategies that seek to replicate one of the major commodities indices by following that index's methodology. They buy exposure to commodities in futures markets and maintain their position through pre-specified rolling strategies - buy and hold.
- **Derivatives:** are types of investments where the investor does not own the underlying asset, but makes a bet on the direction of the price movement of the underlying asset via an agreement with another party. There are many different types of derivative instruments, including options, swaps, futures and forward contracts. Derivatives have numerous uses as well as various risks associated with them, but are generally considered an alternative way to participate in the market.
- **Excessive Speculation:** amount of speculation beyond that which is necessary or normal relative to hedging needs.
- **Exchange:** a central marketplace with established rules and regulations where buyers and sellers trade futures and options contracts or securities.
- **Futures contract:** an agreement to purchase or sell a commodity for delivery in the future: (i) at a price that is determined at initiation of the contract; (ii) that obligates each party to the contract to fulfill the contract at the specified price; (iii) that is used to assume or shift price risk; and (iv) that may be satisfied by delivery.
- **Hedger:** a trader takes a position in a futures market that is opposite to positions held in the cash market to minimize the risk of financial loss from an adverse price change; or who purchases or sells futures as a temporary substitute for a cash transaction that will occur later. Hedging can take the form of either a long cash market position (e.g. with ownership of the cash commodity) or a short cash market position (e.g. plan to buy the cash commodity in the future).
- **Long Hedge:** a hedging transaction in which futures contracts are bought to protect against possible increases in the cost of commodities.
- **Long:** (1) one who has bought a futures contract to establish a market position; (2) a market position that obligates the holder to take delivery; (3) one who owns an inventory of commodities.
- **A money manager:** is a registered commodity trading adviser (CTA), a registered commodity pool operator (CPO), or an unregistered fund identified by the Commodity Futures Trading Commission (CFTC). Money managers are engaged in managing and conducting organized futures trading on behalf of clients.
- **Option:** a contract that gives the buyer the right, but not the obligation, to buy or sell a specified quantity of a commodity or other instrument at a specific price within a specified period of time, regardless of the market price of that commodity / instrument.
- **Over-the-counter trading (OTC):** the trading of commodities, contracts or other instruments not listed on any exchange.
- **Roll period:** Commodity futures contracts typically specify a delivery date for the underlying physical commodity. As this date approaches, investors may replace the contracts having near-term expirations with contracts having more-distant expirations. This process is known as "rolling." For example, a coffee futures contract bought and held in September may specify a December expiration date. As the expiration date approaches, the contract expiring in December may be replaced



by a contract for delivery in February. For the S&P Goldman Sachs Commodity Index the hedge roll period is defined as the fifth through ninth business days of a month. During this five-day “roll period,” the index mechanically rolls from one contract to the next at a uniform rate.

- **Short Hedge:** selling futures contracts to protect against possible decreased prices of commodities.
- **Short:** (1) the selling side of an open futures contract; (2) a trader whose net position in the futures market shows an excess of open sales over open purchases (see Long).
- **Speculative bubble:** a rapid increase in prices caused by excessive buying that is unrelated to any of the basic, underlying factors affecting the supply or demand for a commodity or other asset. Speculative bubbles are usually associated with a “bandwagon” effect in which speculators rush to buy the commodity (in the case of futures, “to take positions”) before the price trend ends, with an even greater rush to sell the commodity (unwind positions) when prices reverse.
- **Speculator:** in commodity futures, a trader who does not hedge, but who trades with the objective of achieving profits through the successful anticipation of price movements.
- **Spot price:** is the price that is quoted to buy a commodity today. Similarly, a spot commodity is a commodity traded on the spot market with the expectation of actual delivery, as opposed to a commodity future that is usually not delivered.
- **Traders:** In the futures market, The US Commodity Futures Trading Commission identifies three types of **traders:** 1) commercial traders or hedgers who use futures to reduce the risk of future unfavorable changes in the price of commodities that they handle; 2) non-commercial traders or speculators who aim to benefit from future price movements; and, 3) arbitrageurs who attempt to profit by locking into more than one market.
- **Volume and open interest:** volume represents the total amount of trading activity or contracts that have changed hands in a given commodity market during a single trading day. The greater the amount of trading during a market session, the higher will be the trading volume. Open Interest is the total number of outstanding futures contracts that are held by market participants at the end of each day. It is the total number of futures contracts, long or short, in a market that has been entered into and not yet liquidated by an offsetting transaction or fulfilled by delivery. Where volume measures the pressure or intensity behind a price trend, open interest measures the flow of money into the futures market.



## ABBREVIATIONS

AMIS	Agricultural Market Information System
APTERR	ASEAN Plus Three Emergency Rice Reserve
ASEAN	Association of Southeast Asian Nations
BRICS	Brazil, Russian Federation, India, China and South Africa (group of emerging countries)
CDDC	commodity-dependent developing country
CFTC	Commodity Futures Trading Commission
CPI	consumer price index
ECOWAS	Economic Community of West African States
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FDI	foreign direct investment
G20	Group of 20
GDP	gross domestic product
GHG	greenhouse gas
GNI	gross national income
GVC	global value chain
HIPC	Heavily Indebted Poor Countries (initiative)
ICA	international commodity agreement
IFI	international financial institution
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
ITC	International Trade Centre of UNCTAD/WTO
LDC	least developed country
LIFDC	low-income food-deficit country
MDG	Millennium Development Goal
MEP	minimum export price
NBTT	net barter terms of trade
NEPAD	New Partnership for Africa's Development
NFIDC	net food-importing developing country
ODA	official development assistance
OECD	Organisation for Economic Co-operation and Development
OPEC	Organization of the Petroleum Exporting Countries
OTC	over the counter
R&D	research and development
REER	real effective exchange rate
SAARC	South Asian Association for Regional Cooperation
SADC	Southern African Development Community
SAP	structural adjustment programme
SITC	Standard International Trade Classification
SWF	sovereign wealth fund
TNC	transnational corporation
UNCTAD	United Nations Conference on Trade and Development
UNFCCC	United Nations Framework Convention on Climate Change
USDA	United States Department of Agriculture
WDI	World Development Indicators (of the World Bank)
WFP	World Food Programme
WTO	World Trade Organization



## OVERVIEW

### 1. INTRODUCTION

The commodities sector remains an essential source of employment, income and government revenues for most developing countries. The aim of this Commodities and Development Report is to consider the factors that have shaped this sector in recent years and in particular, the implications of the commodity boom of 2003–2008 for commodity-dependent developing countries (CDDCs)<sup>1</sup>. The Report stresses that to the extent these countries have gained from the commodities price boom, in terms of foreign exchange earnings, increased capital flows and a growth spurt, positive spillovers to other sectors of their economies have often been limited.

There have undoubtedly been structural shifts on both the demand and supply sides of a number of commodity markets which are likely to have a lasting effect on prices. However the recent volatility of prices has also been heavily influenced by the financialization of many commodity markets and by the strategic decisions of commodity transnational corporations (TNCs), including in the context of global commodity value chains. Thus whilst there remains an important role for domestic policy in both the macroeconomic management of capital inflows and the organization of their supply chains, there is a clear need to focus on the role played by international financial markets if CDDCs are to reap their share of the gains of the commodities boom.

Much of the policy dialogue on economic management of the resource sector is still framed by the experience of the second half of the twentieth century. However, more recent factors suggest the need to reframe this policy agenda. These include strong resource-intensive growth in larger developing countries such as China and India, the growing asymmetry between more concentrated buyer power and reduced producer power in many agricultural commodities<sup>2</sup>, the growing influence of standards in many commodity value chains which disadvantage small-scale producers and reinforce the power of leading international firms, changes in corporate strategy in many minerals and metals commodities with large producing firms actively seeking local suppliers, and climate change and growing demand for biofuels. All of these factors call for a new approach towards policy in resource-intensive countries, addressing not only domestic conditions and policies but also the organization of global exchanges and financial markets. Thus, the time is ripe for a review of the “commodity problem” and for developing new explanatory frameworks that could help provide a better understanding of the challenges facing developing countries that depend on the commodities sector to attain their development objectives.

The ongoing commodity price boom provides an opportunity for commodity-exporting developing countries to embark on a sustainable growth path. But to achieve this objective they need to gain a larger share of the price windfall and to adopt investment strategies that enhance the diversification of their

economies as a basis for self-sustaining development, resulting in increased employment and rising incomes for all. However, major impediments to this process persist. These include the unequal distribution of resource rents, high commodity price volatility, and food and energy insecurity. Without appropriate policy responses, a significant improvement in the terms of trade of CDDCs may entrench their existing commodity dependence by drawing additional resources into the commodity export sector and away from other important activities. Moreover, it is uncertain how long the commodity boom will last, which makes medium-term savings and investment decisions critical to the formulation of development policy.

Particular developmental challenges arise in the agricultural sectors, where although exporters have benefited from high commodity prices since 2003, many of these developing countries are at the same time net importers of food and/or energy, and have therefore not fully benefited from the high prices. Even where countries may be self-sufficient in food production, many small farmers (approximately 50 per cent in sub-Saharan Africa and in South Asia) are in food deficit and stand to lose from rising prices of agricultural commodities.

The dependence of many commodity producing economies on a few primary products has remained unchanged and perpetuates a commodity-dependent poverty trap, which makes it difficult for low-income countries to achieve long-term growth, in particular through an industrial growth strategy, which is an essential means of escape from poverty. The export of factors such as low productivity, low value added primary products (that is, commodities) extracted with few linkages to the local economy are often endogenous to the poverty trap. Moreover, with China being a major importer of raw commodities from other developing countries that it uses as inputs in its manufactures for export to developed countries, there is a risk that this deepening trade relationship with China may further entrench CDDCs in the low end of the international division of labour.

There are at least three key features of today's commodity markets that threaten to keep commodity-dependent countries stuck in a poverty trap despite their recent growth spurts. First is the unpredictability and increased volatility of international prices. This volatility has become an intrinsic feature of commodity markets – a feature which was amplified during the 2003–2008 commodity boom as a result of the growing linkages between commodity and financial markets, with commodities increasingly traded as financial assets. Second, the belief that, over the long term, prices of commodities fall in relation to prices of finished goods or higher value-added goods (the Prebisch–Singer theory of the secular decline of commodity prices), has meant that many CDDCs have failed to “make the most of commodities”. That is, they have failed to adopt policies which allow them to maximize the linkages to other sectors. This is one of the key factors explaining the weak long-term growth performance of many poor countries, and particularly the least developed.



Third, there is a tendency towards greater concentration of international commodity production and trade in global value chains dominated by TNCs. Sometimes this dominance is reflected in equity control over productive assets in commodity producing economies, but it is more common for commodity producers (particularly in agricultural commodities) to be locked into buyer driven chains which are controlled by global retailers and category buyers. Globally, there is a growing concentration of trade and vertical integration of large firms (for example, TNCs and supermarket chains). For example, four TNCs control over 60 per cent of the global coffee market, while three control 85 per cent of the world's tea market. Financial institutions (for example, banks and hedge funds) are also increasingly becoming players in physical commodity markets across the range of agricultural, hard and energy commodities. Mergers and acquisitions have led to dramatic reductions in the number of firms having significant market shares of commodities such as cocoa, vegetable oils, grains and bauxite. In many of the poorest CDDCs, the ability of international trade to act as an engine of growth and poverty reduction is being short-circuited by the high volatility of world commodity prices and by the organization of global value chains.

The fact that the majority of CDDCs are locked into a trading structure that in the past has subjected them to secular terms-of-trade losses and volatile foreign exchange earnings severely encumbers their effective macroeconomic management. It also stunts capital formation, hampering their efforts to diversify into more productive activities while adding to their debt overhang. The persistence of the so-called commodity problem due to the CDDCs' dwindling capacity to withstand large commodity shocks effectively causes them to bear a disproportionate share of the global adjustment costs of commodity market volatility. It is a situation that has strong economy-wide ramifications for CDDCs, and is likely to be a major factor hindering their efforts to reduce their vulnerability to external shocks, particularly due to their failure to build greater resilience.

Thus, the organization of global commodity value chains has major implications for domestic policy in CDDCs on a range of fronts. Since many of these policy constraints are determined by factors exogenous to individual commodity-dependent economies, this highlights the need to address the functioning of these commodity markets at the global level. But it is not only for the sake of the CDDCs that these issues need to be addressed. Many resource exporting economies which have gained from the commodities price boom have become increasingly important sources of demand for the exports of higher income and non commodity dependent economies. The persistence of their poverty poses a threat to an already fragile global economic recovery.

International financial institutions have constantly objected to establishing appropriately structured global mechanisms for the improved functioning of global commodity markets. However, it behoves the international community to assume its share of responsibility in the light of the Millennium Development Goals (MDGs) by supporting a coherent policy framework to bolster CDDCs' own efforts at economic restructuring and diversification. It is now necessary to move beyond debate, and

to undertake concerted action and policies at the international level to stabilize commodity prices.

The broad aim of this Commodities and Development Report is to reconsider received policies on the management of commodities production in CDDCs and on the operation of global trading markets and value chains in the light of the commodity boom of 2003–2008. The commodities price boom clearly contributed to high growth rates in most commodity-exporting countries. This was a result of an increase in the value of exports, (a positive direct effect). But it also arose as a consequence of a series of indirect effects. For some countries, the boom attracted foreign direct investment (FDI) and other capital inflows, spilled over into domestic financial development, it increased trade between neighbouring economies, and increased production and incomes in the commodities sectors led to Keynesian demand multipliers in the domestic economy. Beyond the impact on CDDCs, the commodity price boom also contributed to growth in neighbouring economies boosting their demand for commodities.

On the other hand, there have also been negative direct effects on many low-income countries, particularly those which are net food importers: the rising prices of food and fuel doubled their import bills for these commodities, increased domestic food prices and poverty, and in some instances fuelled social unrest and riots. They may also have inhibited economic development and diversification via Dutch disease and other "resource curse" effects, and increased the volatility of commodity prices by attracting speculative investment, all of which are negative indirect effects.

This Report attempts to place in perspective the persistence of many perennial problems faced by commodity producing economies in the context of changing demand and supply conditions by addressing the following issues:

- Is the commodity problem still relevant to today's development challenges?
- To what extent has the ongoing commodity boom yielded sustainable economic development for CDDCs?
- What enduring issues and new twists have influenced the way CDDCs translate the commodities price boom into durable development and growth?

The Report also examines various international and national policy measures that may facilitate sustainable development in CDDCs. In particular, it seeks to address the following issues:

- Introduce specific measures designed to promote food security;
- Prepare for the possibility of lower commodity prices and a consequent decline in commodity export earnings, government revenues and economic demand;
- Strengthen existing or create new regional economic blocs and preferential trade arrangements to reduce vulnerability to global shocks and an excessive dependence on commodities;



- Harness the windfall revenues from higher commodity prices to facilitate wider economic transformations in order to boost economic growth that is not driven by commodities alone.

An evidence-based assessment of these questions is provided by tracing the direct and indirect effects of the commodities boom through a review of the available empirical literature on the issues at stake, and by analysis of a data set constructed specifically for this purpose. Distinctions are made between commodity-dependent and other developing countries, between food and non-food commodity-dependent economies, and between net food importers and exporters.

The Report notes that commodity markets are increasingly dominated by lead TNCs coordinating global value chains and by financial investors. This has important implications for countries pursuing an export-led development model. This situation in commodity markets is in line with a more general change in the nature of globalization from being based on a productivity-driven model to a finance-driven one. A major impact of this change has been that CDDC governments have used export earnings to repay their foreign debt, set up sovereign wealth funds (SWFs) and build their foreign exchange reserves. While these foreign capital transactions are important in demonstrating solvency and stability to foreign investors, they do not automatically contribute to the real sectors of these economies, at least in the short term.

The experience of CDDCs represents a deviation from the export-led development model of some successful East Asian and South-East Asian economies, whose governments reinvested earnings from exports of oil or agricultural products in industrial or infrastructure projects or in domestic capital markets in order to diversify their economies, improve productivity and increase available capital. The Report argues that one way to make the most of windfall incomes from commodities would be to adopt a development approach which makes the most of commodities and ensures that those incomes are used to help alleviate domestic supply constraints, including the financing of productivity-increasing investments. An appropriate macroeconomic policy framework would ensure that such investments promote structural transformation, including economic diversification, and in turn unleash the foreign exchange earnings potential of their economies to foster sustainable growth and development. This should be supported by an improved governance architecture for international commodities shaped by representatives of all developing countries, including the G77, and not just the G20. Beyond macroeconomic policies, domestic policies designed to make the most of commodities also need to explicitly target the productive linkages needed to encourage economic diversification and this may involve the introduction of industrial and innovation policies that had in previous decades been undermined through the implementation of structural adjustment policies.

## 2. THE “COMMODITY PROBLEM” IN THE CURRENT CONTEXT

The Prebisch–Singer hypothesis, developed in the United Nations during the 1950s, cast doubt on the prevailing conventional wisdom that commodity prices rise at a greater rate than those of manufactures. Prebisch and Singer sought to under-

stand how an overdependence on commodity exports affected the development prospects of countries in Asia, Latin America and colonial Africa, having observed that underdevelopment and poverty persisted in these regions in the aftermath of the Second World War. Singer added a further concern with what he observed was the inherently enclave nature of commodity extraction in minerals and metals, and oil and gas, thereby limiting spillover effects.

In their analyses of historical data aimed at identifying the long-term trend in the terms of trade (that is, the ratio of commodity prices to prices of manufactures), Prebisch and Singer noted that from the latter part of the nineteenth century to the eve of the Second World War there had been a secular decline in the prices of primary goods relative to the prices of manufactured goods. This was identified as the major development problem facing CDDCs, as it meant limiting the supply of foreign exchange and finance required to fund development, hence obstructing policies designed to industrialize, and thus creating the danger of a permanent state of underdevelopment. This is a process that we have now come to understand as “the poverty trap”. This came to be perceived in the 1960s and 1970s as the core of the commodity problem in the context of the quest for economic growth and development by CDDCs.

Historically, commodity price cycles involved a short, rapid price increase, followed by a steep fall, and then a long period of stagnation before the next spike. Moreover, even during periods of commodity price spikes, this seldom affected the full range of commodities. By contrast, the current boom has been characterized by relatively sustained price increases since 2003 across a wide range of commodities interrupted only very briefly, though significantly, in 2009.

Since the mid-twentieth century, there have been only two previous major commodity booms, which occurred during the early 1950s and early 1970s. The short-lived commodity price booms of the 1950s and 1970s were based on a combination of temporary interruptions to supply (anticipated threats to supply due to the Korean war in the 1950s and the actions of OPEC in the 1970s) and unrealistic expectations of a sustained growth in demand. But neither of these circumstances endured.

By contrast, the post-2002 commodity price boom has resulted from a combination of events which make it likely that prices will remain high and in many cases grow for some years to come. Unlike the 1970s, the expectation of rapid demand growth is not an illusion since the resource-intensity of growth in China, India and other developing economies is high. Heavy investments in infrastructure, rapid growth in manufacturing, a switch in food consumption from vegetable foodstuffs to (land-intensive) pork and beef are likely to be sustained. Moreover, the growing demand for biofuels could also persist with the concerns around a warming world. On the supply side, most of the low-cost sources of minerals and metals, and oil and gas (notwithstanding the shale revolution) have already been tapped, and expanded production of agricultural commodities is



likely to be disrupted by climate change and climate variability, to which must be added a slowdown in agricultural productivity growth and the need for very large scale and costly investments in irrigation.

An important common feature of the price booms of the 1970s and after 2002 is that they coincided with periods of real depreciation of the United States dollar and low global interest rates. In the 1970s, the breakdown of the Bretton Woods system of fixed exchange rates permitted substantial monetary expansion in the United States of America. This was associated with a real depreciation of the dollar by 50 per cent between 1971 and 1980 and a lowering of global real interest rates. Similarly, between 2001 and 2010, the dollar depreciated by 26 per cent but this was unable to prevent a growing United States trade deficit that was financed by significant capital inflows from emerging countries. These inflows provided a source of cheap capital and have helped to maintain low interest rates that (first lowered by action from the US Federal Reserve following the 2001 economic slowdown) put pressure on commodity prices.

One of the channels through which low interest rates lead to higher commodity prices is linked to the search for higher yields by the holders of United States Treasury bills (T-bills). Indeed, as T-bills can be used as collateral against futures positions, according to the United States Commodity Futures Trading Commission, investors can earn interest on the T-bills while simultaneously speculating on commodity prices. This behaviour has been stimulated by some of the large investment banks and brokers/dealers that are involved in open market operations with the Federal Reserve in the context of monetary expansion. These investors seek higher returns than T-bills alone can yield when interest rates are low. Lending to investors involved in equity and commodity index funds is less risky than lending to non-financial firms or consumers. Since investment in commodity index funds is heavily concentrated on the buy (long) side of the commodities futures market, this substantial influx of investment gives rise to futures price bubbles. These in turn affect spot prices by altering price expectations and providing incentives to hoard – a phenomenon that could largely explain the synchronized increase in equities and commodity prices since 2008.

The real depreciation of the dollar contributed to the upward pressure on commodity prices. As commodities are generally priced in dollars, depreciation of the dollar increases the purchasing power of non-United States buyers. It also reduces the relative returns on dollar-denominated financial assets. Hence it made commodities more attractive as an asset class for investment, fuelling speculative behaviour in commodity markets. Dollar depreciation further leads to monetary expansion in countries whose currencies are pegged to the dollar. Since 1960, it is only during periods when supplies have been limited – in the 1970s and during the past decade – that there has been a significant positive correlation between dollar exchange rates and commodity prices. Empirical analysis shows that exchange rate effects are particularly significant for oil, gold and some metals such as aluminium and copper. At the same time, the benefits accruing to producing countries have not been as

great as suggested by the increase in dollar prices, since the purchasing power of the dollar has, as noted, declined.

The historically high price levels of many commodities in recent years may have increased the revenues of several commodity-exporting countries, but they have not alleviated the deeper development challenges faced by them. Price volatility has increased in the past decade, most tellingly illustrated by a price peak in 2008, followed by a crash in early 2009 and a rapid rebound in the two subsequent years. This price instability, combined with the pervasive financialization of commodity markets, especially since 2000, has brought the commodity problem to the forefront of the development agenda after decades of relative neglect. Consideration of this problem today must take into account not only the breadth of theoretical work on this issue, but also the current global economic context, which is marked by major changes occurring in the global balance of economic power, the increasing financialization of commodity markets, the growing role of TNCs in these markets, a better understanding of the structural economic vulnerability of least developed countries (LDCs), and greater accessibility and diversity of risk mitigation instruments.

### **Commodities: blessing or bane?**

In some early models of economic development, it was thought that developing countries, could use their relatively abundant land and labour endowments to mobilize the resources needed to pursue economic diversification and growth. In particular, it was believed that countries could benefit from agricultural production, notably by developing linkages to low-technology manufacturing sectors such as the production of agricultural inputs and building capabilities to process primary products.

While these strong linkages of primary production with the rest of the economy are important for domestic agriculture, historically they may not necessarily have been relevant for commodity exports. In addition, there have been important structural and financial drawbacks to development based on commodity exports. Historically, the structural dependence on primary-sector earnings may have hampered the economic diversification that is a prerequisite for long-term economic growth and development. The terms of trade of non-oil-exporting developing countries have generally resulted in a deterioration of revenues until recently, and it is not clear whether the recent commodity boom represents a durable change in this trend.

Moreover, to the extent that commodity exports provided substantial foreign exchange earnings, the consequence for some producing economies was an appreciation in the real exchange rate, which had the effect of disadvantaging other traded goods sectors (the Dutch disease effect). Inflows of finance that were not “sterilized” also contributed to inflationary pressures in some of the poorest CDDCs, which reinforced the harmful impact on non-commodity sectors. Furthermore, for CDDCs, the desired policy response to declining terms of trade, of moving up the commodity value chain and diversifying into manufacturing, has become more difficult as commodity value chains



have become more concentrated. The greater control exercised by processors, traders, and retailers has effectively curtailed CDDCs' policy space and limited their ability to participate in global value chains at levels that would guarantee them more equitable shares in the profits. CDDCs have generally struggled to use commodity revenues to promote structural change and sustainable development (through investments in productive capacity building, including in infrastructure) and poverty reduction (through increasing social expenditure).

A further feature of commodity markets since the mid 1990s, especially affecting agricultural commodities, has been the growing pressure towards certification, standards and traceability in exports destined for high income markets. In many of these markets, retailing is highly concentrated (the median share of the five largest retailers in European economies in 2003 was more than 80 per cent). These high profile firms are vulnerable to scares over the provenance of what they sell, and require very intensive levels of documentation and standards compliance. This has been reinforced by policies such as the European Union's farm-to-fork guidelines. There have been two consequences of these standards-intensive chains. First, the introduction and monitoring of standards has been an important vector for learning by developing country producers. But second, the capacity to meet standards has often tended to be confined to large scale and formal sector producers, thus excluding many small and poor producers from global value chains.

Finally, many CDDCs have not been able to appropriate the full gains from rising commodity prices. To the extent that commodity prices are determined by supply and demand, the market price of the commodity will be determined by the production costs of the least efficient producer. This provides major resource rents to low cost suppliers, but few resource rents to new suppliers. Given the high cost structure of extracting commodities in new producers – increasingly in CDDCs which have poor infrastructure and are often fragile states – the real level of resource rents available may be considerably lower than those suggested by rising commodity prices. Moreover, many CDDCs have had major difficulties in appropriating what rents are available, in many cases as a result of the special deals with commodity TNCs which were contracted during the period of structural adjustment.

It is sometimes argued that as a consequence of these various factors, natural-resource-rich countries are inherently slower growing than resource-poor countries. This has been dubbed the natural resource curse. This notwithstanding, it is important to note that many of the described channels are not, as the term "curse" might suggest, intrinsic to commodity production. Rather, they are problems that can be eliminated or alleviated through appropriate macroeconomic and sectoral policies. If the revenue generated by commodity exports can be allocated in such a way that macroeconomic stability is maintained and that the other sectors of the economy benefit rather than suffer, and that they contribute to the diversification and enhancement of productive capacities, natural resources can become a blessing rather than a curse.

### 3. NEW TWISTS TO PERENNIAL COMMODITY PROBLEMS

The recent episode of high commodity prices has improved the revenues of most commodity-exporting developing countries. Conventional responses to this increase in revenues have emphasized good governance and appropriate policies for the efficient allocation of the revenues (for example, investment in productive capacities) and management of the potential macroeconomic risks (for example, sterilizing commodity windfall income). These responses have minimized some of the negative features (for example, the Dutch disease) that can accompany a revenue windfall. However, several new elements have complicated the management of the commodity sector.

The first of these new factors is the impact of growing demand from latecomer economies in East and South Asia in the context of a slowdown of growth in traditional high income economies. The rapid development of China's export-oriented manufacturing, which has focused on electronics, and textile products has fuelled demand for industrial metals, cotton and wool. Its rapid economic growth has also been accompanied by large investments in infrastructure that make heavy demands on minerals, metals and energy. Rapid income growth and changing food consumption patterns, with increasing spending on meat and fish products have led to higher demand for cereals as animal feedstock. Indeed, this Report shows that China's demand (from a relatively low base) during the period 1995–2010 accounted for a growing share of global demand for a number of commodities compared with other major economies. However, given that Chinese demand for many other commodities (for example, wheat and maize) have been countercyclical to those of the United States, it is unlikely that China contributed significantly to boosting the prices of all commodities.

Major developing economies (such as China and India) have also begun to have an impact on global commodity value chains in two important respects. The shift in exports from northern markets to final markets in China, India and other developing economies (a phenomenon experienced in many agricultural commodity producers) has diminished the importance of standards and compliance in value chains. This has often had harmful impacts on the environment (for example, in the logging sector) and has reduced one of the conduits for learning in CDDCs. But at the same time it has provided a greater space for small scale and informal sector producers to participate in commodity export sectors. The second emerging impact of these shifting markets has been a tendency to reduce forward processing in many value chains. Many buyers in high income markets had been content to allow some limited forward processing to take place in commodity producing countries, particularly where this involved environmentally sensitive and labour intensive processes.

A further dynamic factor which has assumed growing importance in commodity markets, and seems set to continue exerting a strong influence, is the financialization of these markets. Indeed, the rise in commodity prices since 2003 has been accompanied by the increasing presence of financial investors in commodities futures markets. Financial investors differ from producers or traders in that they are not concerned with the



physical delivery of products, but rather invest in commodities for portfolio diversification. As these financial investors pulled their funds out of troubled bond and equity markets, the number of commodity futures contracts traded worldwide and the value of the commodity derivatives trade, including both futures and options, rose dramatically between 2003 and 2010.

This financialization of commodity futures, which is a symptom of a broader trend of growth of markets for financial assets and wealth, has brought about a fundamental change in the conduct and outcomes of commodity markets in general. In a much broader context of finance-driven globalization, developing-country governments have been encouraged to accumulate foreign assets (official reserves and sovereign wealth funds) as buffers against increased financial instability at the expense of growth of output and productivity.

A growing feature in this pattern of financialization of markets is the fast growing role of TNCs in global commodities trade, including huge commodity trading companies and financial institutions. This has resulted in an increase in market concentration and has been associated with growing oligopolistic/market power, which may be responsible for creating price distortions in several commodity markets. This development has not been without costs to commodity producers or companies in most developing countries, as they lack the necessary financial muscle and expertise to compete on an equal footing with TNCs.

An additional, albeit incipient, new and little-noticed dynamic affecting the commodities sector is the changing attitude of commodity producing firms to acquiring inputs locally. As observed earlier, one of the primary contributions of Singer to our understanding of the commodities sector was the enclave nature of production, leading to few spillovers to the local economy. However, from the mid-1990s industrial production has been characterized by a growing fragmentation through the spread of global value chains as firms seek to concentrate on their core competences. At the same time, the demand for flexibility and low inventories has placed a premium on locally based suppliers. This approach to outsourcing and local supply has also begun to affect the resource sector in recent years, particularly in minerals and metals and in energy sectors and provides new opportunities for backward linkages and for creating synergies between the resource and industrial sectors. This was a dominant feature of the growth of the industrial and commodities sectors as occurred in the United States and Canada in the nineteenth century.

A final new development of note in the current commodities boom is the increasing use of crops for biofuels. In the 2003/04 harvest year, 5 per cent of maize crops were used for the production of ethanol, which is mixed with gasoline and marketed as an alternative to fossil fuel. This proportion had tripled to 15 per cent by the 2010/11 harvest year. Generous subsidy programmes in the United States and Europe provided a major inducement to farmers to use maize and sugar crops for the production of biofuels instead of food. Competition from biofuels is estimated to have accounted for 15–20 per cent of the increase in export prices of cereals. More fundamentally, biofuels link cereal markets with energy markets, weakening the strength of demand and supply signals on cereal prices.

#### 4. POVERTY AND FOOD INSECURITY IN THE MIDST A COMMODITY BOOM

Beyond changes in the fundamental supply and demand of commodities, the increase in financialization of commodity markets and especially the large sums invested in futures markets have contributed to pushing up commodity prices. Indeed, these factors have caused food prices to more than double since 2006.

The rapidity and amplitude of price movements have harmed many developing countries. Volatility is inherent in agricultural commodity markets, as supply is largely dependent on natural factors such as weather patterns that cannot be accurately predicted, and neither demand nor supply can be easily or rapidly modified. The growing financialization of commodity markets adds a dimension to this inherent and often climatically determined volatility. The presence of financial actors in many cases smooths out small day-to-day variations in price, but exaggerates price swings during periods of global crisis when the herding instinct of traders leads to massive investments or flight from commodity markets, as occurred in 2008. Several studies have concluded that commodity prices have exhibited higher volatility in the decade since 2000. The period from 2006, in particular, has been characterized by severe price volatility. High but unstable prices can have negative impacts on developing countries, be they net exporters or net importers of commodities. Sharp price increases of imports exacerbate inflationary pressures and current account imbalances in net importing countries. And strongly fluctuating prices undermine macroeconomic management in net commodity-exporting countries as they increase the difficulties of financial planning and discourage investment due to growing uncertainty.

High and unpredictable food prices have adversely affected health and social well-being in many of the poorest areas of the world. Rapid price hikes during the period 2007–2008 and over the course of 2011 led to episodes of public unrest and riots in more than 30 developing countries. It is estimated that an additional 44 million people have fallen below the \$1.25-per-day poverty line as a result of higher food prices since June 2010, which represents a severe blow to the attainment of MDG 1 by 2015.

Sharp rises in food prices place a heavy burden on poor households, in particular, as they spend the largest proportion of their incomes on food. It can translate directly into undernourishment, reduced expenditure on health and education, and a loss of capacity to earn a living. Nonetheless, it should be noted that domestic price movements in developing countries do not necessarily follow international price movements. Indeed, food subsidy policies, variations in transport and storage costs, and variations in profit margins of food value chains are among the factors that result in an incomplete pass-through of international prices to domestic food prices. Using domestic food prices to assess the poverty impacts of rising food prices reveals that, although there are large regional variations, the negative impact on consumption clearly outweighs any positive income effects that have accrued to producers, in part because most



of them are net food buyers – approximately half of all sub-Saharan African and Indian farms are in food deficit. Similarly, it appears that the ability of developing countries to respond to higher food prices by expanding production has been insufficient to offset the negative price effects, given the low investments in the sector over the past couple of decades.

For CDDCs, the direct impacts of rising commodity prices between 2003 and 2011 have varied widely according to the composition of the exports and imports of individual countries. Some CDDCs, especially those that are net fuel and food exporters, saw their terms of trade improve in the six years leading to 2008. However, several other CDDCs, including some of the poorest countries, suffered a deterioration in their terms of trade. Although they export other primary commodities, many of the latter group of CDDCs are net food and fuel importers. For some of them, the increase in the prices of the tropical agricultural products that constitute the bulk of their exports was not sufficient to compensate for the increase in the import costs of food and fuel. The concrete outcome for these CDDCs has been a severely worsening trade balance while their populations have suffered from the higher costs of food, thereby increasing the incidence of food insecurity.

### **Deficiency of current food security strategies necessitates reconsideration of emergency food reserves**

The food crisis of 2008 exposed weaknesses in the international food system with disproportionate effects on the world's poor and malnourished populations. The response of some national governments to rising prices exacerbated the effects of the crisis. Notably, the unilateral decisions of many food-exporting countries to restrict their exports compounded the threat of high food prices by raising fears of limited physical access to essential foodstuffs. This had adverse consequences for both net exporters and importers of food commodities. For food-exporting countries, the protectionist measures delayed the transmission of higher food prices to consumers, leading to large hikes in price inflation when the measures were repealed. For food-importing countries, restricted supplies and skyrocketing prices resulted in severe fiscal imbalances and, in some cases, to food shortages.

The experience of the 2008 food crisis has led policymakers to search for mechanisms to better address and cope with future crises in the context of the changed international food system. The crisis clearly demonstrated that food security strategies based on a combination of spot market food purchases and financial reserves have been insufficient and unsustainable for poorer countries. Furthermore, it has become clear that net food-importing countries can no longer depend on international trade to meet their requirements during global food crises without severely compromising their food security. Together, these elements point to the need for some form of supranational grain reserve. Given regional specificities and logistical constraints, it seems that a regional institution would be best placed to provide cost-effective and responsive management of such a multilateral grain reserve.

Several such initiatives are under way, notably in Asia and Africa. Indeed, some forms of reserves have existed for several decades. A review of the experiences of these various schemes highlights four main challenges in establishing an effective grain reserve: setting achievable objectives, finding the appropriate scale and components, identifying the right mix of commodities to stockpile, and aligning the interests of the different members participating in the initiative/scheme.

In terms of objectives, grain reserves vary in ambition. Their most basic aim is to stock essential food grains that will be used to feed vulnerable populations during times of acute crisis. Some grain reserves also aim to smooth consumption by improving the distribution of food grains across time as well as geographically, stocking grains at times and in places where they are more plentiful and then distributing them at times and places of relative scarcity. The most ambitious grain reserves aim to stabilize prices through direct purchasing and selling of grain to prevent volatility and price extremes. Naturally, the more ambitious the scheme, the greater will be its operating costs. In general, a food reserve for emergency supply purposes is considerably cheaper to operate than a price stabilization scheme. Furthermore, the track record of grain reserves in terms of price stabilization has been mixed at best. The complexity of price formation in commodity markets and the small size of reserves relative to the market as a whole limit the ability of reserves to significantly affect price levels. Indeed, most reserves with price stabilization objectives have failed within a decade or two of their creation. In contrast, those designed for use as emergency stocks have displayed a higher survival rate in recent times. This suggests that emergency response is a more feasible mandate for regional grain reserves. Should a reserve initiative contemplate a price stabilization mandate, its regular operating budget will need to be underwritten by emergency funding facilities of sufficient size and responsiveness to protect its defined price band.

A mix of components operating at different scales can offer the best outcome for regional grain reserves. An independent physical reserve equivalent to approximately 5 per cent of food aid flows using existing national and local storage infrastructure and designed exclusively for emergency response could help address the threat of malnutrition during food crises. At the same time, a virtual reserve – that is, a notional commitment to stabilize prices – could be used to limit price volatility on futures markets.<sup>3</sup> The latter, being only notional, has the advantage of incurring much lower costs than any intervention through physical buffer stock management.

The commodity mix that is stockpiled by the regional grain reserve will naturally depend on the specificities of each region. In East Asia, for example, rice is the only commodity used in regional stockpiles, while in some African regions up to four commodities are stockpiled. Stocking multiple commodities increases the complexity of operations and reduces the economies of scale, as purchasing power is split among several commodities. On the other hand, stocking multiple commodities also presents some opportunity for internal arbitrage, as it offers the possibility to take advantage of varying price movements of the different grains.



Aligning the different interests of the countries participating in a regional food grain reserve is crucial to the success of such a scheme. Clearly, the means and goals of participants vary according to many factors, such as their relative wealth and whether they are net importers or exporters of food grains. While these varying interests pose a challenge in setting up regional food grain reserves, they can also lead to synergies among the members. Identifying and building upon such synergies will be an important factor in the success of such reserves.

As these considerations demonstrate, there is no one-size-fits-all blueprint for designing regional food reserves. The important questions to resolve are where stocks should be located and at what level they should be controlled. High-level policies and schemes have the advantage of scale but can suffer from blind spots at the local level and slow response times. A mix of different instruments operating at different levels may represent the best approach: stocks and storage could be primarily a matter of national or subnational policy with regional reserves serving as an important backstop.

## 5. LIMITED OVERALL IMPACT OF THE RECENT COMMODITY PRICE BOOM ON COMMODITY-DEPENDENT DEVELOPING COUNTRIES

Beyond the direct effects of poverty and food insecurity, there are a number of indirect effects which capture the nature and magnitude of the impact that the changes in commodity revenues have had on various social and economic variables in CDDCs.

Overall, there is some indication that, on average, increased foreign exchange inflows from commodity export earnings led on average to moderate income growth for CDDCs, but with strong growth surges in some cases. Also, the non-commodity sectors of the economy do not seem to have been adversely affected by the commodity price boom. In many cases, both the industrial and services sectors exhibited faster growth rates, albeit often from a low base as a result of decades of structural adjustment programmes. Due to a much higher growth rate of the primary sector, however, the shares of these other sectors in GDP fell. As a result of these trends, the commodity price boom does not appear to have promoted much economic diversification during the period 2002–2009. The industrial and innovation policies which might have promoted this diversification have largely been precluded by the legacy of structural adjustment policies introduced during the 1980s.

In order to establish to what extent these and other observable trends in developing countries could be attributed to the effects of the commodity price boom, this Report has created a measure of countries' exposure to commodity revenue growth based on the degree of commodity dependence and the extent to which a country is experiencing growth in commodity revenues. This variable is termed commodity growth exposure. Countries with very high commodity growth exposure include oil and gas exporters such as Azerbaijan, Chad, Iraq and the

Sudan; countries with very low commodity growth exposure include Bangladesh, Cambodia, China and the Philippines.<sup>4</sup> Generally, the price boom had a greater positive impact on the poorer countries of the sample due to their less diversified economies and higher share of commodities in their total exports.

Domestic financial development does not appear to have been stimulated by the level of commodity growth exposure. Both money and credit, as shares of GDP, have declined as commodity growth exposure has increased. This is also true for stock market capitalization in those countries of the sample for which this indicator is relevant. There is also little evidence of exchange rate pressures that might be expected in a Dutch disease scenario. This may be due to the build-up of foreign assets and the decline of foreign liabilities as commodity inflows were increasingly channelled to international financial markets during the period 2003–2009.

### Increased resource rents have not been translated into productive investments in the domestic economy

One of the striking features of the commodity price boom has been the strong growth in commodity-exporting developing countries' foreign assets, especially in the form of official reserves, and in sovereign wealth funds. It is remarkable that even low-income developing countries that have continued to run current account deficits throughout the 2000s have been increasing their reserves. This may have been an attempt to follow the advice of donors and international financial institutions to create buffers against the increased volatility of international financial markets.

Even during the boom years, most developing countries did not move into positions of current account surplus – a finding that is confirmed by other research. It also seems that the increased revenue was not channelled towards building fixed capital formation and upgrading productive capacity in order to enhance productivity. Instead, it was used to accumulate financial assets in both government and private accounts. As a result, reserves rose tenfold in nominal terms between 1992–1997 and 2003–2008. This accumulation of reserves should be regarded as a net outflow of liquidity from the domestic economy. While such reserves may serve as useful buffers against volatility, the opportunity costs in terms of foregone investment in fixed capital or on spending on health and education and for real (domestic) sector growth, and therefore development, could be substantial. For example, production costs in Africa and other CDDCs are raised by the high costs of infrastructure in which these economies have experienced major problems in financing new investments. The body responsible for promoting infrastructure development in Africa, the Programme for Infrastructure Development in Africa (PIDA) estimates that \$68 billion is required for regional infrastructure between 2012 and 2020, of which only \$38 billion is currently funded. The World Bank estimates Africa's needs for infrastructure development – both at national and regional levels – as \$93 billion per annum until it makes up its infrastructural deficit.



Further, it is striking that even during the commodity boom years, commodity revenues were dwarfed by net external financial inflows, so that it was the capital account rather than the current account that determined countries' financial balance. This means that for many countries the availability of finance for investment and for maintaining financial stability is now dependent on their ability to attract and retain capital flows that include but go far beyond export revenues. This phenomenon is in line with an observable shift in developing countries' policy emphasis from real-sector investment for growth to financial stability as a prerequisite for growth. It explains much of the financial asset growth and the simultaneous decoupling of commodity revenues from real sector development for growth in the poorer developing countries.

In this context, sovereign wealth funds have mushroomed in recent years and have served to direct developing economies' windfall gains into foreign bond and stock markets. Of the \$4.7 trillion held in such funds, it is estimated that 82 per cent are owned by developing countries and within this share, an estimated \$2 trillion are in commodity-based sovereign wealth funds. These have contributed strongly to the delinking of financial inflows, including commodity revenues, from the real economy of these countries.

## 6. PERENNIAL PROBLEMS, NEW CHALLENGES: SOME EVOLVING POLICY PERSPECTIVES

### Facing the challenge at the global level

The challenges posed by recent developments in commodity and financial markets have received considerable, albeit uneven attention at the international level in the last couple of years, most visibly within the framework of the G20. An interagency consultation mandated to provide inputs to the G20 process brought together 10 international organizations, including UNCTAD, to debate the issue and identify policy directions. A major outcome of this process has been a consensus that the excessive influence on commodity markets of trading motivated by financial and not commercial considerations should be curbed, at least for some key commodities. Accordingly, a number of financial market regulations have been proposed, some of which are already being implemented. These include measures aimed at greater transparency in futures trading and the imposition of position limits to prevent excessive price fluctuations over a given trading period. Other disruptive factors beyond financial markets (such as trends towards concentration in global value chains, the impact of climate change and the impact on CDDCs of changing final market destinations) received less attention in these G20 discussions.

Considering that there is more or less general agreement that the financialization of commodity markets has contributed significantly to price volatility, many policy prescriptions necessarily relate to financial markets and their regulation. There have been calls for greater transparency on over-the-counter and derivative commodity markets, as well as for tighter regulation of financial investors. Policymakers in many countries are still debating

whether to impose tighter limits on positions taken by financial investors in commodity markets. Any such decision should be based on the net impact of the actions of financial investors on these markets for two reasons. First, prior to 2000 commodity markets were partially segmented from financial markets, which therefore meant that the increasing presence of commodity index investors had the potential to improve the sharing of commodity price risk. This could result in lower risk premiums and therefore higher prices, on average, for producers. Second, their presence has introduced a conduit for financial market volatility to spill over into commodity markets. Thus, any regulations on position limits should take care not to curtail the price discovery and commodity risk sharing functions of financial investors.

There appears to be limited appetite for new international action on the use of buffer stocks and active market intervention to stabilize prices – areas that were a traditional concern of international commodity bodies and which were central to the Integrated Programme for Commodities.<sup>5</sup> Academic analyses have shown that commodity agreements were not able to reduce price volatility and that compensatory financing tended to be too slow to have a stabilizing effect. In any case, given the financialization of commodity markets, it is unlikely that any intergovernmental bodies could command sufficient funds to “face down the market”.

When the food crises of 2008 prompted international concern about the rapidly rising commodity prices, policy discussions on this issue were led by the G20. However, none of the world's poorest countries, defined by the United Nations as the least developed countries (or even those defined by the World Bank as low-income countries), are represented on this group. Yet they are among the countries that tend to be the worst affected by high commodity prices. Future policy discussions on international trade in commodities therefore need to incorporate the views of those countries. This suggests that the G77 should be directly involved as well as regional organizations of the South. The United Nations, and especially UNCTAD, the Food and Agriculture Organization of the United Nations (FAO) and the Common Fund for Commodities, which have considerable expertise on commodities issues, should also play a leading role.

### Beyond the global level: action is also required at the national level

The failure of the prevailing international economic system to resolve commodity-related problems at the global level is one of the main reasons why CDDCs' economies lack resilience. Nevertheless, there are a number of policy measures that can be implemented at the national level. The management of resource rents should seek to channel revenues in order to find a balance between two objectives: to keep debt levels and fiscal balances at a sustainable level, and to invest in the domestic economy, particularly in productive sectors, and stimulate domestic demand in order to achieve social and economic development goals in line with overall development objectives.

CDDCs should also seek to enhance their share of the rents generated in commodity production. For minerals and fuels and oil and gas, this entails, among other things, revising existing



investment or mining contracts. This may include putting in place a more equitable and efficient form of taxing extractive industries, such as the imposition of progressive taxation on profits and differentiated production and taxes.

Beyond ensuring a greater share of resource rents, CDDCs should seek to build value added by targeting the broadening and deepening of linkages from commodity production as a prime policy objective. This requires that countries address the conditions under which linkages from the commodities sector may be extended and this, in turn, requires active industrial and infrastructure policies to both increase local inputs and to extend forwarding processing. Unlike issues of taxation where there are in general win–lose outcomes between governments and foreign investors, the enhancement of linkages to the commodities sector provides greater scope for joint action designed to deliver win–win outcomes, and in so doing, to promote local employment and domestic value added.

A range of synergistic policies designed to promote linkages can be identified, some of which are relevant across sectors (for example, improvements in infrastructure and the introduction of incentives to promote training, investment and innovation). Other policies are sectorally-specific. For example, for agricultural commodities, countries could help producers improve their bargaining power in global value chains by encouraging collective action (cooperatives and farmers' associations). Market-based institutions, primarily warehouse receipt systems and physical commodity exchanges, could help farmers obtain better prices for their produce. Furthermore, greater market transparency and the use of risk-management strategies could transform small-scale farms into more efficient agricultural enterprises with increased profit margins. Small scale farmers could also be assisted to achieve the standards required to participate in global value chains, and to cope with the particular demands of participating in unfamiliar markets (for example, in value chains which sell into new middle and low income markets such as China and India).

Given the gaps in existing domestic policies towards the commodities sector in the light of the new challenges and opportunities confronting this sector, this Report recommends a four-pronged strategy for the CDDCs' consideration as an accompaniment to earlier recommendations in the international architecture that would be required to support that strategy:

- a. Introduce specific measures designed to promote food security;
- b. Prepare for the possibility of lower commodity prices and a consequent decline in commodity export earnings, government revenues and economic demand;
- c. Strengthen existing or create new regional economic blocs and preferential trade arrangements to reduce vulnerability to global shocks and an excessive dependence on commodities;
- d. Harness the windfall revenues from higher commodity prices to facilitate wider economic transformations in order to boost economic growth that is not driven by commodities alone.

### **(a) Introduce specific measures to promote food security**

In order to avoid a repeat of the severe food crises of 2008, poor countries urgently need to put in place some form of food reserve. For example, they could establish local food storage facilities backed by a regional reserve in order to guarantee future supply, or a virtual reserve with the objective of keeping prices within a narrow band on futures markets (that is, to curb price volatility). Indeed, particularly in Africa, a regional policy for food reserves to help safeguard food security against any future global food price shocks is necessary. However, experiences and negotiations concerning regional initiatives in Africa and Asia reveal that the following four major issues would need to be resolved:

- (i) Setting achievable objectives;
- (ii) The scale and components of a reserve system;
- (iii) The mix of commodities to stockpile;
- (iv) Aligning the interests of exporters, importers, rich and poor neighbours.

Nonetheless, any developing country programme, especially in Africa, should aim to rely as much as possible on smallholders' surpluses for supplies for positive developmental effects.

At the same time, it would be useful to reduce reliance, as elaborated below, on the main globally traded crops (maize, rice and wheat) that have acted as transmission belts for price shocks, even in countries that have generally secure food supplies. It is also necessary to reduce imported inputs for agriculture, such as mineral fertilizers and oil, through the pursuit of agroecological farming practices which do not absorb scarce foreign exchange. In support of this, investment is needed in research and development of agricultural technology to raise food production levels in developing countries.

Food security could also be promoted by increasing the technological and financial viability of smallholder agriculture and encouraging food production for local use in addition to cash crops. Also, policymakers should engage with smallholders as a means of empowering them. Furthermore, research into alternatives to fossil-based agricultural inputs and commercially viable agroecological techniques would go a long way towards promoting sustainable agricultural practices, particularly in marginal areas. In the longer term there needs to be a more resilient global food system to enable households and communities to better cope with shocks.

Clearly, these economic policy tools should be combined with social measures, including social safety nets, in order to protect the most vulnerable and insecure sections of the population.

### **(b) Prepare for the possibility of lower commodity prices and a consequent decline in commodity export earnings, government revenues and economic demand**

Whatever may be the general level of commodity prices in the future, their volatility itself constitutes a serious danger and



benefits nobody except hoarders and speculators. Developed and developing countries have a shared interest in addressing price volatility, having experienced higher inflation as a result of commodity price hikes.

It is not recommended that central banks control domestic inflation by taking positions on commodity markets in order to influence price movements. Both the public and private sectors have considerable experience in smoothing out prices at critical points along commodity supply chains. They can make use of physical or virtual stocks, exercise controls over production and trade, and initiate marketing arrangements so as to meet the specific goals pursued and the possibilities provided by each market and value chain.

This suggests a major role for international commodity bodies, which can research what kinds of reforms will provide the best possible defence against price volatility in each particular case without according any initial preference to one type of reform or another. The United Nations could play a wider role in developing innovative thinking in this area and in coordinating the work of reform of individual commodity value chains.

To provide urgent relief in the event of an import price shock, a global countercyclical financing facility should be established with the capability to disburse funds rapidly to support food-insecure countries, particularly LDCs.

**(c) Strengthen existing or create new regional economic blocs and preferential trade arrangements to reduce vulnerability to global shocks and an excessive dependence on commodities**

Over the past 50 years, regional trade arrangements have contributed to the prosperity of the European Union and, more recently, to rapid growth in East and South-East Asia. Indeed, trade arrangements among neighbouring countries which are at similar levels of development help them to develop domestic businesses and domestic accumulation of capital – in other words, they can foster genuine, autonomous self-sustaining economic development. Similar preferential or free trade arrangements as in Europe and parts of Asia should be promoted in other developing regions.

The following institutions and architecture would be needed for this purpose:

- (i) Stronger regional economic blocs with harmonized policies and standards, common external tariffs and preferential treatment for regionally produced and traded goods;
- (ii) Increased domestic and regional budgets to support agriculture and food policies.;
- (iii) The creation of regionally based agricultural development banks or agencies, which would pool the resources of member States to facilitate proactive agricultural policies. Alternatively, existing regional development banks could be encouraged to commit a certain minimum percentage of their loan portfolios (for example, 5

or 10 per cent) to the agricultural sector. A global agency should also be set up to explore and coordinate the new directions of agricultural and food policies based on a revival of traditional agricultural practices and the development of agroecological methods. These actors should work closely with farmers and farm workers' organizations, both at the regional and global levels, to help reduce reliance on imported fuels, mineral fertilizers and agrochemicals.

In developing this architecture, it would be necessary to ensure its compatibility with existing international trade disciplines, including those of the World Trade Organization, while also considering the need for possible reforms of those rules where appropriate.

**(d) Harness the windfall revenues from higher commodity prices to facilitate wider economic transformations in order to boost economic growth that is not driven by commodities alone**

This traditional approach towards these issues focused on two areas of potential growth that remain of considerable importance:

- The development of downstream commodity processing and commodity-related industries;
- The stimulation of wider domestic trade and new economic sectors, including manufacturing.

However, this approach needs to be augmented by paying greater attention to the possibility of broadening and deepening upstream backward linkages (the supply of inputs into the commodity sector) and to encourage lead commodity-producing firms to use local sources of supply as they seek to outsource those elements on the value chain which are outside of their core competences.

Several developing countries have attempted strategies to achieve these objectives by relying on their earnings from commodity exports. Lessons can be drawn from the successful experience of Botswana, Malaysia, Mauritius, and particularly in recent years, Brazil with regard to downstream linkages, and Chile and Nigeria with regard to increasing local content.

In brief, at the international level the new architecture, or set of institutions, recommended to support the above-mentioned goals would be as follows:

- (i) The establishment of economic development agencies alongside regional trade organizations. Economic development strategies could then be pursued concomitantly with the development of regional trade;
- (ii) UNCTAD could serve as the lead global agency to provide guidance and coordination for this process, drawing on nearly 50 years of experience in linking economic development with trade and, in particular, its expertise on issues relating to the commodity sector.;



(iii) Revisit commodity-specific mechanisms aimed at ensuring that exporting countries obtain an equitable share of the income from commodity value chains. For example, Mauritius benefited from such extended support through over 50 years of export guarantees for sugar under the European Union–African, Caribbean and Pacific Group of States (ACP) Sugar Protocol and its predecessor, the Commonwealth Sugar Agreement.

The empirical evidence reviewed in this report suggests that in the global context the overall impact of the commodity boom on CDDCs has been limited. Thus, there is a need to (re-)establish the link between higher commodity prices, growth in real sectors and sustained growth of incomes through policies that give

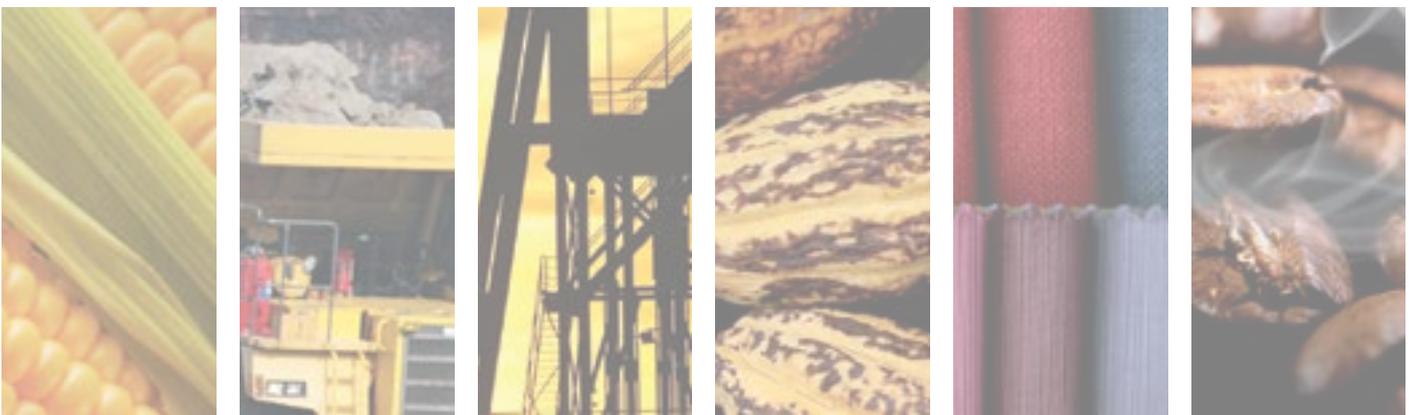
greater priority to national development than to the investment of windfall incomes abroad.

The commodity problem of the past half century is likely to persist, in particular considering recent developments in global financial markets. It is now time to involve all the stakeholders to find solutions, since past experience suggests that markets alone are not able to solve the problem. All possible ways and means should be considered, with no ideological preferences or preconceptions of what constitutes the “right” method or outcomes. It is only in this spirit that the majority of CDDCs will be able to make the most of commodities, which remain very important to their economic growth and development and to the livelihoods of their populations.

## NOTES

1. CDDCs are defined as countries that depend on commodities for at least 60 per cent of their export earnings, constituted 100 of the 151 developing countries in 2009.
2. Some countries particularly in sub-Saharan Africa have also lost market share in traditional agricultural commodity exports due to increased competition from other developing regions.
3. A virtual reserve is a fund which would normally consist not of actual budget expenditures, but of promissory, or virtual, financing by a group of States (for example, the G20). The fund, which would be drawn upon by a high-level technical commission only when needed for intervention in the futures market, is thus a notional commitment to stabilize prices which has the effect of limiting price volatility on those markets.
4. The empirical analysis of the impacts of the commodity price boom on developing countries is based on data for a sample of 142 developing and emerging countries over the period 1995–2009. The model does not disaggregate the data or introduce dummy variables according to type of economy (for example, small island State, landlocked country, least developed country) or export specialization (minerals, metals, oil or non-oil), as this is beyond the scope of this Report.
5. The UNCTAD Integrated Programme for Commodities (IPC) was negotiated in 1980, leading to the creation of the Common Fund for Commodities (CFC) in 1989. The CFC, is comprised of thirteen Intergovernmental Commodity Bodies (for example, the International Coffee Organization) and ten FAO subsidiary commodity bodies. These organizations emerged as part of the UNCTAD IPC.

# REVISITING THE “COMMODITY PROBLEM”



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## 1. INTRODUCTION

Throughout the 1940s, what has been termed the “Cambridge doctrine of the terms of trade” prevailed (Toye, 2000). According to this doctrine, the terms of trade (i.e. the ratio of commodity prices to those of manufactures), would tend to increase over time in favour of commodities. While the Cambridge doctrine was later questioned by some classical economists, it was not until the 1950s that the Prebisch-Singer hypothesis, developed in the United Nations, challenged the belief that commodity prices rise at a greater rate than those of manufactures. Their interest in the terms of trade was part of a broader interest in why poor countries were constrained in their efforts to develop. In their analyses of historical data relating to the long-term trend in the terms of trade, they observed that from the latter part of the nineteenth century to the eve of the Second World War there had been a secular decline in the prices of primary goods relative to the prices of manufactured goods (Toye and Toye, 2004; see also box 1.1).<sup>1</sup>

This secular decline was identified as the major development problem facing commodity-dependent developing countries (CDDCs),<sup>2</sup> as it meant a loss of capacity to absorb foreign financing for development (Toye and Toye, 2004), caused severe difficulties in generating domestic savings and in financing development, and thus more or less perpetuated the state of underdevelopment. This came to be perceived as the core of the “commodity problem” in the context of the quest for economic growth and development by CDDCs.

Commodity dependence has too often been associated with sluggish growth and low levels of economic and social performance (Sachs and Warner, 1997), and with the so-called “Dutch disease”. This latter phenomenon refers to the tendency for large windfall revenues of foreign exchange to result in an uncompetitive exchange rate, which consequently weakens the export sector and perpetuates aid dependence (Killick, 2004). When low growth of an economy and of social expenditure, along with the Dutch disease, are accompanied by rent seeking and an overconfident government, it is plagued by the “resource curse” (Gylfason, 2001). However, a number of studies have challenged the resource curse thesis. In particular, it has been argued that resource endowment is neither “a curse nor a destiny” (Lederman and Maloney, 2007). Instead, at best there has been “resource disappointment.”<sup>3</sup> Taking the argument further, some studies have contended that causality goes from the quality of institutions to commodity dependence rather than the other way around, placing greater emphasis on the use of resource rents as key to development outcomes (Brunnschweiler and Bulte, 2008). While there remains controversy over the chain of causality, the fact remains that

many commodity-dependent countries have failed to generate broad-based growth. The “commodity problem” refers to the toxic combination of Dutch disease and resource curse effects, accompanied by a secular decline in real commodity prices in a context of volatile international prices, greater concentration of commodity production and trade in transnational corporations (TNCs), and exposure to external shocks accompanied by increasing vulnerability to such shocks.

This chapter briefly discusses the relationship between commodity dependence and poverty traps (section 2), and reviews a wide range of theoretical and empirical literature concerning the “commodity problem”. Section 3 begins with a review of Ricardo’s theory on commodities contrasting it with the Prebisch-Singer hypothesis, and then highlights key conceptual differences between the commodity and manufacturing sectors and the corresponding development implications. Finally section 4 reviews some of the recent literature on the “commodity problem” in the context of new and evolving development paradigms.

## 2. COMMODITY DEPENDENCE, POVERTY TRAPS AND VULNERABILITY

Commodity dependence is particularly acute in sub-Saharan Africa, South America, Central Asia and the Middle East, which highlights the limited diversification of these economies (figure 1.1).<sup>4</sup> Although commodity exporters have benefited from very high commodity prices since 2003, many developing countries are also net importers of food and/or energy, and have therefore not fully shared in these benefits. The commodity sector is not only the major economic activity in most CDDCs, it is also their main source of foreign exchange earnings, fiscal revenues, income growth and livelihood sustenance. To some extent, for many of these countries dependence on primary commodities has defined their economic policy (making commodity exports the primary driver of growth) and development trajectory.

Indeed, their dependence on a few primary products has remained unchanged, and perpetuates a commodity-dependent poverty trap. The poverty trap may be defined as a situation in which poverty has effects which also serve as causes of poverty. The poverty trap makes it difficult for low-income countries to achieve long-term growth, in particular via industrialization which is an essential means for escape from the trap, as industrial products are less subject to price volatility (Gore, 2003). Factors such as low productivity, low value-added and the export of primary products (i.e. commodities), which, due to technological progress, represent a decreasing unit

*Commodity dependence has too often been associated with sluggish growth and low levels of economic and social performance.*

*Three key features of commodity markets that keep CDDCs in a poverty trap: (i) unpredictability and volatility of international prices; (ii) the secular decline of commodity prices; and (iii) a tendency towards greater concentration of trade and production in TNCs.*



share of GDP are often the main factors contributing to poverty traps. Moreover, arguably, the current commodity trade relationships between China and the South as a source of demand for commodities, which are then used by China to produce manufactures for the North, may further entrench CDDCs in this lower end of the international division of labour. Indeed, UNCTAD has highlighted the fact that “international poverty traps” in commodity-dependent countries, combined with international trade and finance relationships, reinforce boom and bust cycles, which, in turn, reinforce the negative impact of external relationships. UNCTAD (2002) has argued that globalization tightens the poverty trap due to the creation of closer linkages between energy and agricultural commodity markets, and commodity and financial markets, which increase both price volatility and instability, and thus uncertainty, with negative impacts on government financial management and investment.

There are at least three key features of commodity markets that can keep those that are dependent on commodities in a poverty trap. First is the unpredictability and increased volatility of international prices. This volatility is an intrinsic feature of commodity markets, which was amplified during the 2003–2008 commodity boom because of the growing linkages between commodities and financial markets, with commodities increasingly traded as financial assets. Second is the belief that over the long term, prices of commodities decline (in relation to prices of finished goods or goods to which value has been added), stemming from the Prebisch-Singer theory of the secular decline of commodity prices. This explains slow economic growth and the persistence of underdevelopment in low-income countries. And third, there is a tendency towards greater concentration of international commodity production and trade in transnational corporations (TNCs). Globally, there is also increasing vertical integration of large firms (whether TNCs or supermarket chains).

The detrimental effects of commodity dependence on development are closely related to economic *vulnerability*, which is caused by the reliance of a country on commodities as the main conduit for participating in world trade resulting in its high degree of *exposure* to shocks. This vulnerability to exogenous shocks is at the heart of this analysis and highlights the need for establishing commodity-related stabilization mechanisms to address both income and price shocks facing CDDCs. However, these mechanisms have never been fully realized because international financial institutions have consistently failed to resolve commodity-related problems at the global level by establishing appropriately structured global facilities for alleviating income and price shocks.

Hence, the persistence of the “commodity problem”, which is the outcome of the CDDCs’ dwindling capacity to withstand large commodity shocks, effectively forces them to bear a large share of the global costs of commodity market volatility. This mechanism operating at the macro level has powerful economy-wide ramifications. And it is likely to be a major factor hindering a country’s efforts to reduce structural vulnerability, resulting from its undiminished exposure to shocks, combined with a failure to build greater resilience.

These are uncertain times for primary commodity producers, traders and markets. Commodity prices, although volatile, are currently high, and there are a number of countries (e.g. Australia, Botswana, Canada, Chile, Indonesia, Malaysia and Norway) that have succeeded in adopting a commodity-based development strategy which has generated economic growth and employment and helped reduce poverty. However, many other developing countries have been unable to translate their higher revenues into real development gains. The majority of CDDCs are locked into a trading structure that subjects them to secular terms-of-trade losses and volatile foreign exchange earnings. This severely encumbers effective macroeconomic management and stunts capital formation, hampering efforts to diversify into more productive activities while adding to these countries’ debt overhang. As a result, despite an unprecedented commodity boom during the period 2003–2008 most developing countries remained commodity-dependent. Current debates revolve around the question of whether the 2003–2011 commodity boom<sup>5</sup> was simply a spike in the longer term trend of declining terms of trade, or whether this secular trend has been durably reversed (box 1.1).

In 2009, out of 153 developing countries, 92 depended on commodities for at least 60 per cent of their export earnings. In the same year, half of the countries in Africa derived over 80 per cent of their merchandise export income from commodities.<sup>6</sup> The persistence of established patterns of export concentration and a lack of diversification in many CDDCs is reflected in figure 1.2, which shows the export concentration index<sup>7</sup> for primary commodities<sup>8</sup> regressed against merchandise exports for two periods: 1999–2000 and 2009–2010. The upper right quadrant of each chart shows those developing countries where total commodity exports account for more than 60 per cent of total merchandise exports and an above sample average concentration index. From this, it appears that commodity concentration has marginally declined over the past decade, from 56 to 51 countries. However, commodity dependence, where terms-of-trade of commodity exports account for more than 60 per cent of total merchan-

*There is a need to establish commodity-related stabilization mechanisms to address income and price shocks for CDDCs.*

*In 2009, out of 153 developing countries, 92 depended on commodities for at least 60% of their export earnings.*

**Box 1.1. Terms of trade for commodities versus manufactures**

Until the end of the Second World War the assumption was that the terms of trade would favour commodities. Prebisch and Singer who challenged this view working independently, analysed the evolution of prices of the United Kingdom's exports (predominantly of manufactures) and imports (predominantly of commodities) for the period 1870 to 1945. They found that commodity prices had in fact fallen relative to the prices of manufactures. The underlying causes of this finding are discussed in detail in section 2 of this chapter. Given the various policy implications of these findings, the relative prices of commodities and manufactures have been under scrutiny ever since.

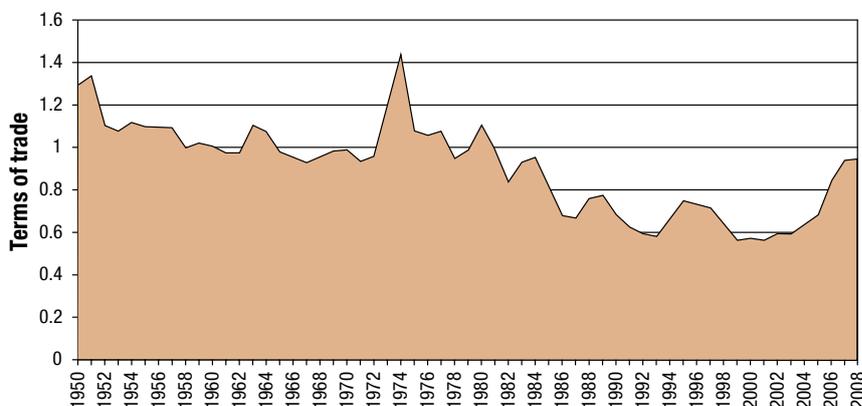
As to whether the commodity booms of the 1950s and 1970s altered long-term demand, and thus the prices of these products, remains a topical research question. It is argued that in both periods price hikes were mainly "a response to a combination of perception of sustained demand growth and [short-term] constraints to supply", and were not due to a sustained structural imbalance between the supply of and demand for commodities (Farooki and Kaplinsky, 2012: 55). Prices thus declined rapidly when supply again increased and real demand was reestablished. Most studies conducted on this subject have concluded that in the long run commodity prices fall relative to manufactures. The following list shows the conclusions of various studies concerning the terms of trade for commodities.

Results	Studies
Negative trends	Spraos (1980), Thirlwall and Bergevin (1985), Sapsford (1985), Grilli and Yang (1988), Ardeni and Wright (1992), Bleaney and Greenaway (1993), Cashin and McDermott (2002), Erten and Ocampo (2012).
No trends	Cuddington and Urzua (1989), Powell (1991).
Structural break – 1950	Sapsford (1985).
Structural break – 1920	Cuddington and Urzua (1989).
Structural break – 1921, 1938 and 1975	Powell (1991).

Source: Adapted from Farooki and Kaplinsky (2012).

Few studies, however, include data for the recent 2003–2011 commodity price boom. During this period there were rapid increases in commodity prices, combined with falling and then slowly rising prices of manufactures. These trends were much longer than those observed in previous commodity booms. This raises the question as to whether there has been a structural break, that is, a long-term and durable change in the relative prices of commodities and manufactures. Farooki and Kaplinsky (2012) provide insights into this question through their compilation of a data series up to 2008 which is based on an update of the Grilli and Yang Commodity Price Index (1988) presented in Pfaffenzeller et al. (2007). The update presents terms-of-trade data from 1949 to 2003 using 24 commodities (excluding oil) and the manufacturing unit value index (MUV-G5), which is a trade-weighted index of the exports of manufactured commodities to developing countries by the five major developed countries – France, Germany, Japan, the United Kingdom and the United States. While it is recognized that the MUV-G5 is far from perfect, "it is the only readily available trade-based manufacturing price measure over a suitably long time horizon" (Pfaffenzeller et al. (2007: 7). Farooki and Kaplinsky (2012) find that from 1949 to approximately mid-2000 the terms of trade for commodities were indeed trending downwards but that in the last few years, starting from 1999, they have seen an upward trend (box chart 1).

Farooki and Kaplinsky (2012) analyse this phenomenon by focusing on China, given that this country has become one of the leading global manufacturing centres. They estimate that the prices of manufactures are likely to remain low and competition intense, despite rising wages in the coastal areas of China where the bulk of its export-oriented manufacturing industries are located. Firms could relocate production to China's interior, which is increasingly connected to major ports, or they may even relocate to other developing countries that have surplus labour. Regarding the outlook for commodity prices, upward pressure is likely to be sustained due to real demand from China and from other fast growing developing countries which have followed resource-intensive growth strategies. However, the authors concede that continued expectations of rising commodity prices may trigger a supply response of commodities, which would lead to lower prices and reverse the terms of trade in favour of manufactures. For soft commodities, this seems rather unlikely to occur, given the existing,


**Box 1.1. Terms of trade for commodities versus manufactures (continued)**
**Box chart 1. Evolution in the ratio of terms of trade of commodities to manufactures, 1950–2008**


Source: Farooki and Kaplinsky, 2012 (compiled from data from Pfaffenzeller et al., 2007).

persistent and increasing supply constraints (OECD-FAO, 2008). Farooki and Kaplinsky (2012) also see limited scope for an increase in the low-cost supply of energy, while noting that the supply of hard commodities is more difficult to estimate. However, they maintain that the supply of new and large volumes of hard commodities is unlikely to occur at least until 2020–2025, when current investments in exploration and mine construction will start increasing volumes. In their view, it is likely that “the terms of trade reversal that began in 1999 will be sustained for some time in the future” (Farooki and Kaplinsky, 2012: 187). Whether this will lead to a long-term structural break remains to be seen, but at least it indicates a potential commodity super-cycle.

However, Erten and Ocampo (2012), in a recent analysis of four super-cycles since the mid-nineteenth century, assume that the last of these cycles which started in 1999 peaked in 2010. Their analysis shows a long-running downward trend in the terms of trade in line with the Prebisch-Singer hypothesis (i.e. the mean of each super-cycle of non-oil commodities being generally lower than for the previous cycle). If their assumption that the ongoing cycle peaked in 2010 turns out to be correct, then the view that there has been a structural break in the decline in the terms of trade would have to be reconsidered.

In this context, it is perhaps worth mentioning that a recent study by the International Trade Centre of UNCTAD/WTO (ITC, 2011) on the terms of trade of the least developed countries (LDCs) covering the period 2007–2010 found that in 2009 the terms of trade showed average declines against major partners (Japan, the EU-27 and the United States), ranging from 17 to 36 per cent relative to 2006 levels. Significant declines were also recorded against gains made in 2008, at the peak of the 2003–2011 commodity boom. Although trade (in value terms) with Brazil, the Russian Federation, India, China and South Africa (BRICS) proved more resilient than with developed countries, for LDCs the terms of trade still deteriorated with all partners analysed. Thus the debate on the secular decline in real commodity prices vis-à-vis those of manufactures and other traded products is likely to rage on for some time yet.

dise exports, increased from 85 to 92 countries during the period 1999–2000 to 2009–2010.

Almost half of all 92 CDDCs are in sub-Saharan Africa (figure 1.1). Differentiating between regions and types of commodity product dependence, the rate of dependence for oil-producing countries is on average 85 per cent, compared with 77 per cent for non-oil-producing CDDCs. Most of the oil-producing CDDCs are based in West Asia (9 out of 27 CDDCs).<sup>9</sup>

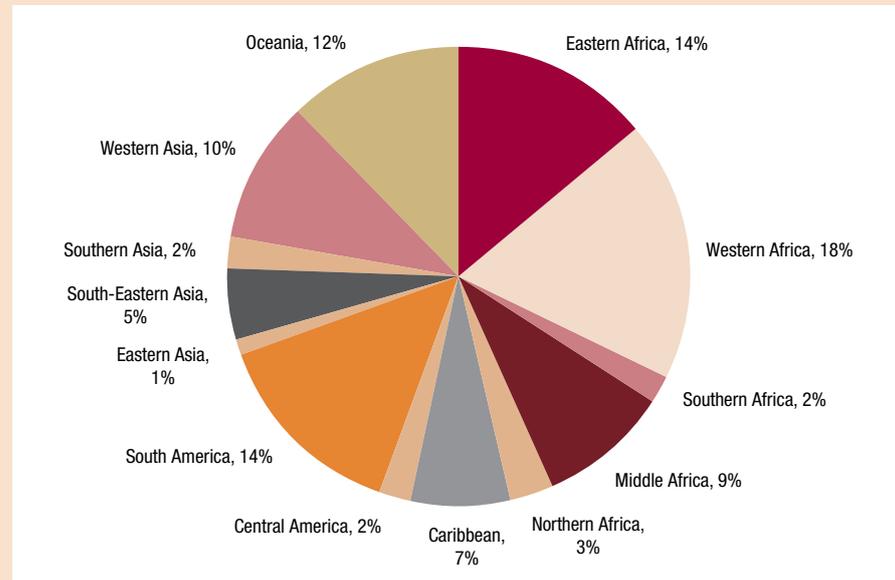
Whereas most of the non-oil-producing CDDCs are located in sub-Saharan Africa (36 out of 65 CDDCs).

Given that many developing countries, especially LDCs, are heavily dependent on commodities (box 1.2), the international community cannot effectively attain the Millennium Development Goals (MDGs), including poverty reduction, without taking into account the importance of commodities to their trade and development prospects.



*Commodity dependence increased 1999-2000 and 2009-2010.*

**Figure 1.1. Regional distribution of CDDCs, 2009-2010 average**



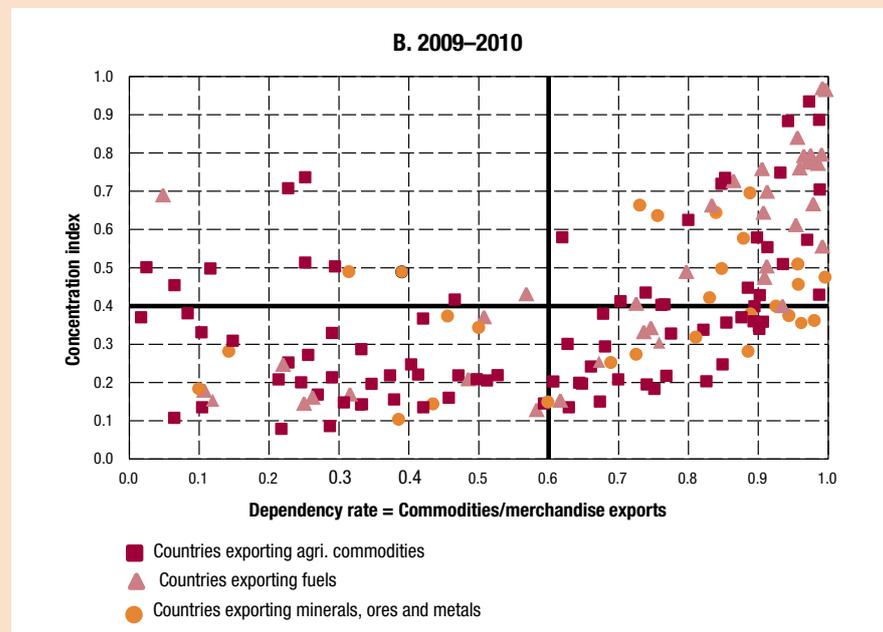
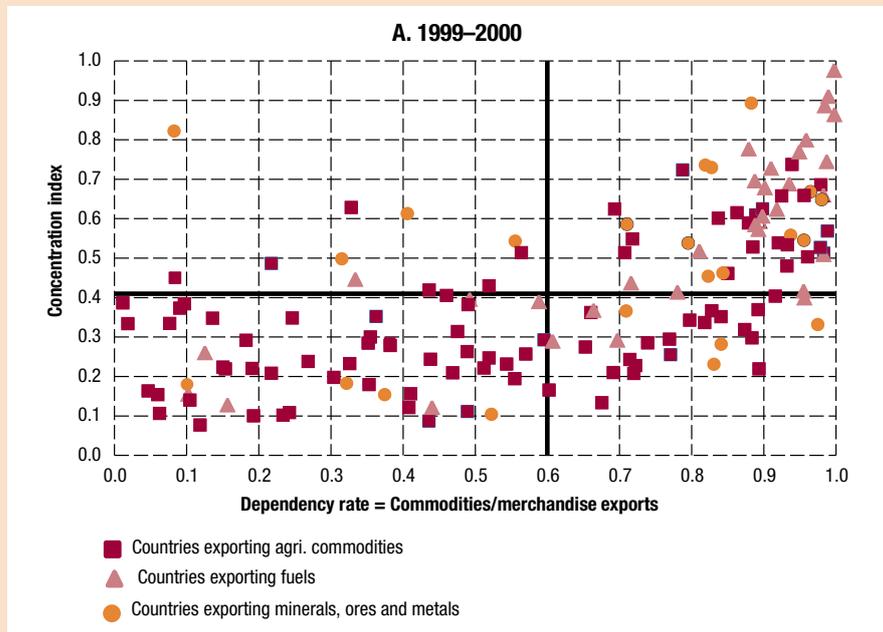
Source: UNCTAD secretariat calculations, based on UNCTADstat.

During the 1960s and 1970s, the “commodity problem” was a major concern for developing countries emerging from colonialism, as well as for donors and international organizations, but it was largely absent from the development discourse during the 1980s and 1990s. However, as a consequence of sharp increases in commodity prices since 2002, this “problem” has returned to the top of the international development agenda (e.g. in G20 discussions during 2011). Today, debates about the “commodity problem” and the impact of market volatility on developing countries

and the global economy are taking place against the background of the following major changes: (i) shifts in the global balance of economic power (Kaplinsky, 2006); (ii) the increasing financialization of commodity markets (UNCTAD, 2011); and (iii) the greater accessibility and diversity of risk mitigation instruments, as well as initiatives by the G20 (see FAO et al., 2011).). These debates would be better informed by improving an understanding of the causes and effects of structural economic vulnerability of developing countries and LDCs (Guillaumont, 1999).



**Figure 1.2. Commodity dependence and export concentration in CDDCs, 1999–2000 and 2009–2010 averages**



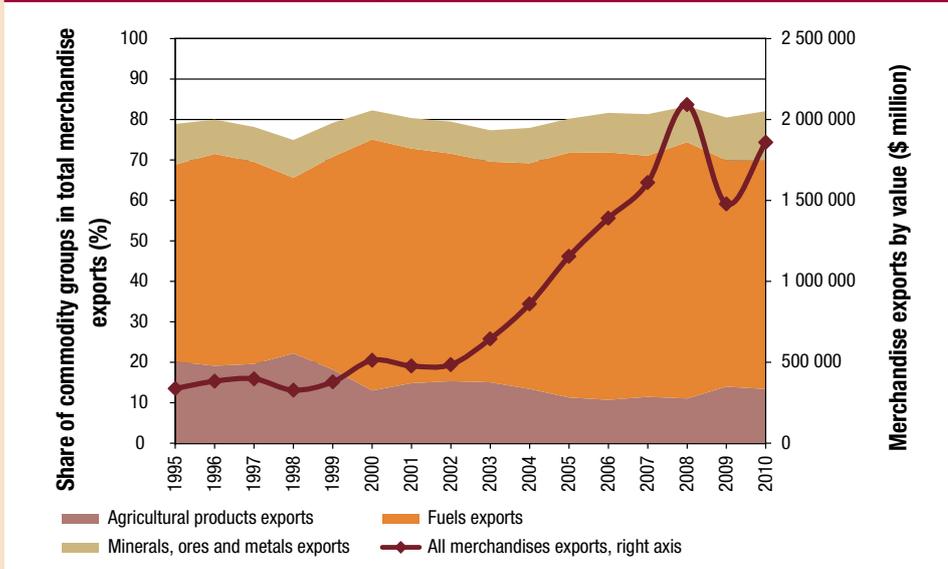
Source: UNCTAD secretariat calculations based on UNCTADstat and IMF, *International Financial Statistics*.  
 Note: The horizontal line shows the average concentration index for the period on both graphs. The vertical line shows commodity exports vs. merchandise exports above 60 per cent. The sample comprises 151 developing countries. The CDDCs are on the right half of the chart.



**Box 1.2. Commodity dependence, structural change and growth**

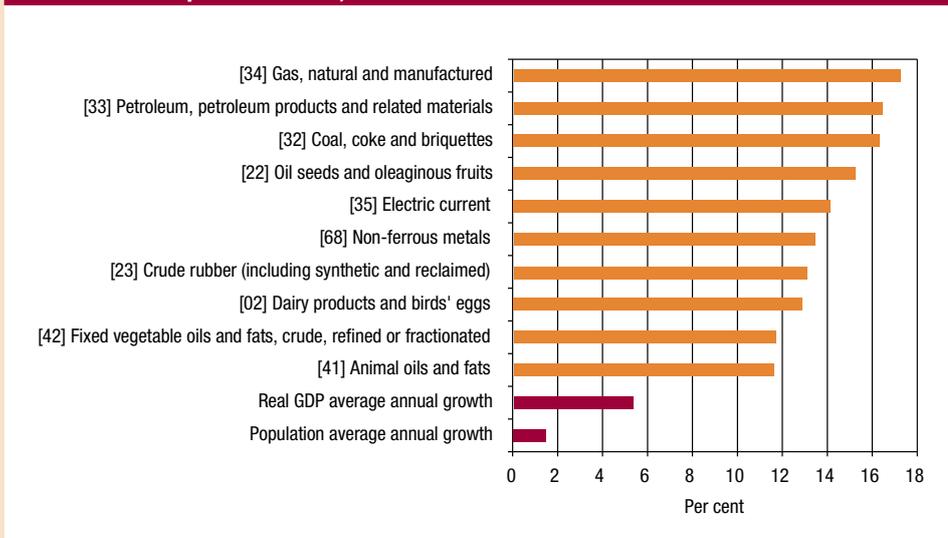
Box chart 2 shows that the share of commodities in total merchandise trade has changed dramatically in sectoral terms since 1995, with the share of fuel exports rising by 16 per cent between 1995 and 2010 at the expense of agricultural exports. Exports of minerals, metals and ores maintained their share in merchandise trade at around 9 per cent. The long-term demand for the CDDCs' leading commodity exports over the period 1995–2010 has grown more rapidly than their real GDP and population growth rates (1.5 per cent). Thus it could be argued that the commodity intensity of GDP has been increasing, especially after 2003. The chart shows that this is mainly focused on minerals, ores, metals and energy commodities. However, it may well be primarily a function of higher prices, as discussed earlier.

**Box chart 2. Share of commodity groups in merchandise trade, 1995–2010**



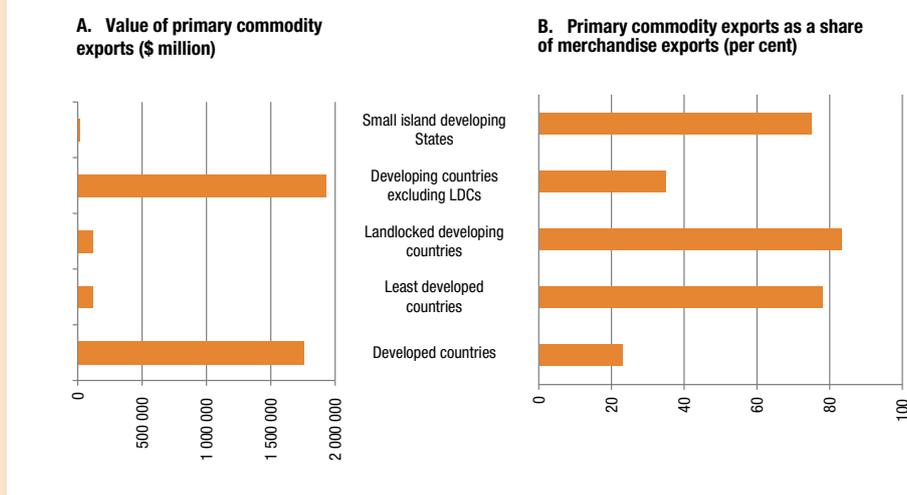
Source: UNCTAD secretariat calculations, based on UNCTADstat.

**Box chart 3. Average annual growth rate of the 10 leading commodity exports of CDDCs, 1995–2010**



Source: UNCTAD secretariat calculations, based on UNCTADstat.

Note: The figures in brackets denote the codes used in STIC, revision 3, product groups.


**Box 1.2. Commodity dependence, structural change and growth (continued)**
**Box chart 4. Exports of primary commodities by country groups, 2009–2010 average**


Source: UNCTAD secretariat calculations, based on UNCTADstat.

It is argued that developing countries with a heavy dependence on commodity exports tend to grow more slowly than those with diversified economies. This situation is perhaps more a reflection of significant structural economic weaknesses and low GDP per capita, coupled with a high dependence on natural resources as a source of national income, rather than the quantity or quality of available natural resources in CDDCs. Box chart 4 shows that in terms of the value of exports, developed countries tend to be as resource rich as developing countries but far less dependent on natural resources due to their greater economic diversification. In landlocked developing and least developed countries the shares of primary commodity exports in total merchandise exports were 83 per cent and 78 per cent, respectively, in 2009–2010 whereas in developed countries the share averaged 23 per cent. For CDDCs as a group, the comparative ratio was 68 per cent.

McMillan and Rodrik (2011) show that since 1990 structural change has been resulting in a slowdown of growth in both Africa and South America, with the most striking changes taking place in Latin America. However, the situation is different in Asia. They argue that most of the differences between Africa and South America are due to differences in productivity performance, while in Asia they are mainly due to the pattern of structural change (primarily labour moving from low- to high-productivity sectors). They maintain that in countries with a high degree of dependence on exports of natural resources, structural change typically has been growth-reducing and has reduced the ability to absorb surplus labour from the agricultural sector.

### 3. COMMODITIES, RICARDO AND THE PREBISCH-SINGER HYPOTHESIS

Adam Smith (1776) explained the existence of increasing returns to scale in manufacturing based on rising labour productivity resulting from the division and specialization of labour in production. Ricardo (1815) argued that in contrast to manufacturing, for a given level of technology, agricultural and mining production was subject to diminishing marginal returns as more marginal and less fertile lands were brought into use and less productive mines were developed. This could potentially raise the marginal costs of production, and therefore increase

the relative prices of agricultural and mining commodities over time. Fundamentally, the fact that manufacturing is subject to increasing returns to scale, whereas agriculture and mining are subject to diminishing marginal returns, has profound implications for overall economic growth (Kaldor, 1966; Young, 1928). Rising prices of commodities would push up economic rents, and higher food prices, in particular, would place pressure on wages to rise, and both would be at the expense of profits in the manufacturing sector.<sup>10</sup> The lower the rate of profits and thus investment in the manufacturing sector, and the higher the primary sector rents, the slower would be the rate of growth in the economy. Ricardo (1815) recognized that the potentially limiting factor

*The Prebisch-Singer thesis suggests that without major changes in the structure of the global economy, the gains from trade will continue to be distributed unequally between CDDCs exporting mainly primary products and those exporting mainly manufactures; hence its enduring significance.*

of higher food prices could be overcome by technological progress in the primary sector, which would then lower commodity prices and land rents.

Following from Ricardo's proposition of diminishing marginal returns from commodity production versus increasing returns to scale and greater productivity growth in manufacturing, the net barter terms of trade (NBTT) (i.e. relative unit prices) between commodities and manufactured goods should, in theory, lead to an improvement in the terms of trade for commodity producers over time. From an international trade perspective, the policy implication for commodity-exporting countries was that they need not industrialize; they could benefit from the gains of technical progress in foreign manufacturing industries through trade. However, on analysing data for the NBTT of the United Kingdom from 1876 to 1947, Prebisch (1950) and Singer (1950) both found that in the long run the NBTT had in fact deteriorated for commodity-exporting developing countries, thereby refuting the classical hypothesis. Further, given the greater productivity growth in manufacturing, the double factorial terms of trade<sup>11</sup> had worsened for the commodity exporters. Table 1.1 outlines the main causes of deterioration of the terms of trade according to different authors.

The explanations for the deterioration in the terms of trade given by Prebisch and Singer differed slightly. Prebisch explained the phenomenon as cyclical: a cycle of decline in the terms of trade, where, in an upswing, wages and profits – and therefore prices – rise more in the North (industrialized countries) than in the South (developing countries) due to stronger labour unions and cost-plus pricing<sup>12</sup> by firms in

the North. In the downswing, industrialized countries' profits and wages do not fall much due to the nominal rigidity of wages. Therefore, the burden of adjustment falls on the raw material exporters of the South; their prices would fall more than the prices of manufactures in cyclical downturns (Engel, 1857; Prebisch, 1950). Singer argued that the distribution of the gains from technical progress could be distributed either to producers through higher incomes, or to consumers through a decline in prices.

According to Singer, in the case of manufactures in the more developed countries, technical progress would result in higher incomes rather than falling prices, whereas in the production of food and raw materials in the less developed countries, technical progress would lead to falling prices. In international trade, therefore, consumers in developed countries would benefit from lower import prices as a result of technical progress in developing countries, whereas rising incomes and cost-plus prices of manufactures from developed countries would create an absolute burden on developing countries that rely on imports of manufactures from the North.<sup>13</sup> Thus Singer contended that the unequal distribution of productivity was mainly a result of a lower elasticity of demand for raw materials than for manufactured products. Prebisch, on the other hand, believed it was largely a result of a lack of unionized labour in the South compared with established, organized labour unions in the North capable of negotiating wage increases. Lewis (1954) expanded on Singer's hypothesis, arguing that, fundamentally, it is the availability of surplus labour and the near perfect elasticity of supply of labour in developing countries that holds

**Table 1.1. Causes of deterioration in the terms of trade of CDDCs, according to different authors**

Causes of deterioration in the terms of trade	Authors
<b>Supply side</b>	
Wages for organized workers in developed countries rise.	Prebisch (1950), Singer (1950), UNCTAD (1982)
Wages and earnings in CDDCs' export sectors remain stable because of unlimited supply of labour.	Prebisch (1950), Lewis (1954)
Structural rigidity in primary production in CDDCs.	Kindelberger (1956), Myrdal (1957)
<b>Demand side</b>	
Engel's law, where the income elasticity of demand for food decreases with increasing income. Falling demand in developed countries due to: (a) technological progress that reduces primary inputs in manufacturing, and (b) use of artificial substitutes.	Engel (1857), Kindelberger (1950), Prebisch (1964), Porter (1970)  Singer (1950), Kaldor (1963), UNCTAD (1982)
(c) protectionism in developed countries that reduces imports from CDDCs and LDCs.	Prebisch (1964), UNCTAD (1982)

Source: Adapted from Daviron and Ponte (2005).



down wages in production despite increases in labour productivity; and assuming a constant overall profit rate, export prices from developing countries would experience a systematic decline relative to developed-country manufactured exports.

Taylor (2004), Prebisch and Singer, among other authors, who belong to the structuralist school of development economics, endorsed the objective of industrialization for CDDCs as a means of escaping the lower end of the international division of labour. Although this was not specifically a recommendation of the structuralist school, several countries adopted import substitution strategies which aimed to substitute imports with locally produced manufactures (Rodrik, 1997). Most of the CDDCs that pursued this strategy, financed their industrialization strategies by heavily taxing the primary sector based on the flawed assumption that farmers had a low propensity to save and were relatively price insensitive (Kaldor, 1963). However, many of these countries began to develop major balance-of-payments problems in the 1950s when international commodity prices declined sharply (Furtado, 1970). Also, during the 1950s and 1960s several international debates promoting multilateral action for managing commodity markets led to the creation of the United Nations Conference on Trade and Development (UNCTAD) and of several international commodity agreements (ICAs) as tools for stabilizing export revenues through price support measures (Maizels, 1992).

However, the global political and economic landscape has changed considerably since the UNCTAD Integrated Programme for Commodities (IPC) was negotiated in 1980, leading to the creation of the Common Fund for Commodities (CFC) in 1989. As observed by UNCTAD (2003: 33) “With recession in the world economy in the 1980s and the subsequent overall decline of commodity prices, combined with the breakdown of multilateralism in international economic relations and the ascendancy of market-oriented strategies, intervention in markets (at least in favour of developing countries) was no longer deemed acceptable or feasible.” Moreover, the intervention role of the ICAs was undermined by the long bear market of the 1970s and later in the context of the multilateral disciplines of the World Trade Organization (WTO), which succeeded the General Agreement on Tariffs and Trade (GATT) in 1995.

The Prebisch-Singer hypothesis has been the subject of much debate on empirical grounds. For example, Spraos (1980) recognized that the theoretical validity of the Prebisch-Singer hypothesis based on labour market asymmetry is limited to the production of labour-intensive commodities, such as tropical agricultural products, that are predominantly produced in developing countries. Primary commodities produced in developed countries are not typically subject to the same asymmetry due to the

existence of trade unions and alternative employment opportunities.

A further qualification to the Prebisch-Singer hypothesis concerns extractive commodities such as oil, gas, minerals and metals, the mode of extraction of which is highly capital-intensive, often involving foreign direct investment (FDI) and/or imported capital equipment from industrialized countries. In their case, a relatively small proportion of the costs of production is determined by local labour costs. Moreover, the extractive sector can yield above-average profits due to limited resource availability and diminishing marginal productivity in the development of marginal mines/oil wells, giving rise to higher market prices. Therefore, over time, the terms of trade can turn in favour of mineral and fuel commodities, which is in line with Ricardo’s hypothesis (Ocampo and Parra-Lancourt 2010). However, any improvement in NBTT is counterbalanced by the rate of technical progress in extractive industries, the income elasticity of demand for these commodities and the development of new and better quality manufactured goods.

Given the relatively long gestation periods in developing oil and gas fields or mining, episodes of strong demand can lead to medium-run shortages which allow scarcity or absolute rents to be earned even in the least productive extraction areas (areas which yield no differential rents), as prices rise above marginal costs (World Bank, 2000). A key policy issue in the extractive sector is therefore the distribution of differential and absolute rents<sup>14</sup> between foreign investors and developing-country governments, an issue discussed in greater detail later in this report.

#### 4. COMMODITY REVENUES AS A DRIVER OF DIVERSIFICATION

The canonical Lewis (1954) model of economic development depicts developing countries as abundant in unskilled labour but short of capital. External injections of capital may set an economy on the road to drawing ever more labour into manufacturing, transforming from an agricultural/traditional into an industrial/modern economy. Since in agrarian economies, capital goods need to be imported, the export earnings necessary to finance this transformation were traditionally highlighted as the engine of growth. With developing countries having a comparative advantage in the primary sector, this translated into an emphasis on generating commodity earnings to support the pursuit of economic diversification and growth. In addition, exported commodities have the advantages outlined in “vent-for-surplus” theory (Myint, 1971), which suggests that large foreign markets stimulate investment via the mobilization of domestic resources that would otherwise remain idle or underused.

*A key policy issue in the extractive sector concerns the distribution of rents between foreign investors and developing-country governments.*



*As agriculture is a relatively labour-intensive sector, it enables countries to economize on scarce capital and imports.*

Proponents of this school of thought, such as Johnston and Mellor (1961), maintain that as agriculture is a relatively labour-intensive sector, it enables countries to economize on scarce capital and imports. It aids growth through several channels, providing cheap food, raw materials, employment, savings and demand for non-agricultural goods. More broadly, agricultural growth is considered a key determinant of food security and nutrition, poverty reduction and political stability. Food production for the domestic market increases real wages and boosts demand for incipient industries, and often has strong linkages to industries and services in the areas of agricultural inputs, as well as processing and trading of food and fibres. These are industries that developing countries are often best placed to develop. A good illustration of economic diversification in low-income countries is the clothing and textile industry, which took off in a "flying geese"<sup>15</sup> fashion, first in the Republic of Korea and Thailand during the 1970s, followed by Bangladesh in the 1980s, and then Viet Nam and India in the 1990s and Cambodia in the 2000s.

In sum, because of important externalities, the argument was made that agriculture's contribution to growth is significantly larger than its share of GDP would suggest. In a recent literature review of cross-country studies that gauge the sectoral sources of aggregate growth in LDCs, agricultural productivity gains were seen to have the strongest linkages of all sectors relative to growth in other sectors (Bezemer and Headey, 2008).

*For some CDDCs, the mining and minerals sector have low employment, and weak downstream and upstream linkages.*

Many of these advantages are relevant to domestic agriculture, but do not accrue to commodity exports; they refer to domestic linkages, employment and food security effects as well as lower food prices and higher real wages. In addition, there are well-known drawbacks from export-led growth in general and commodity-led growth in particular, both structural (resource curse) and financial (commodity revenue windfalls). The UNCTAD *Trade and Development Report* (UNCTAD, 2010a) outlined a number of other drawbacks of the export-led growth model for developing countries, particularly that it exposes them to adverse international shocks and increases their dependence on the international system. Moreover, export-led growth in most developing countries has failed to generate dynamic linkages within their economies, partly due to TNCs and foreign ownership of export activities, such as mining or plantation agriculture, which tends to result in a transfer of profits out of the exporting country.

Although the mining and minerals sector is of critical economic importance for some CDDCs, in general it has relatively low employment, and weak downstream and upstream linkages. Nonetheless, the growth in world consumption of energy, metals and

mineral commodities that have fed infrastructure and industrial growth has contributed significantly to CDDCs' export revenues during the recent boom (UNCTAD, 2012a).

Structurally, dependence on primary sector earnings may turn into a "resource curse" when it quells incentives to invest in the diversification of an economy. Diversification – the development of the secondary and tertiary sectors – is a prerequisite for longer term economic growth. A commodity boom may hinder diversification by providing an easy source of revenues, thereby discouraging investment in other sectors where the immediate returns are likely to be lower. And to the extent that commodity revenues flow to domestic elites or foreign investors, it reinforces inequality and thus hampers growth. This is a common occurrence in most countries with large land inequalities that rely on the production and export of metals and minerals and food and fibres (de Janvry, Sadoulet and Wolford, 1998; Lipton, 2009).

The short-term and direct effects of commodity dependence can be positive for commodity exporters, at least in terms of average foreign exchange inflows, and could, in principle, translate into development benefits if the revenue windfalls were to be used to diversify the economy. But the longer term and indirect effects are mixed. On the negative side, it has long been recognized that due to Engel's Law – which states that as nations grow richer, a declining share of income is spent on food – countries that specialize in food production (and primary output generally) are in effect "specializing in being poor" (Reinert, 2008). The overwhelming share of the world's growth in value added is in the manufacturing and services sectors, with the primary sector showing a steadily declining share of global GDP. Reflecting this, until recently non-oil commodity-exporting LDCs have seen much steeper declines in their terms of trade since the mid-1970s. However, recent research suggests that this depends on the kind of commodity and its level of sophistication (World Bank, 2009a).

Meanwhile, the traditional response to declining terms of trade was that CDDCs should attempt to process more of their primary output in order to capture a greater share of the value added of the final product. However, globalization has added a new dimension, as value chains have become both more fragmented and more internationalized, and control by processor, trader and retailer multinationals of the industrialized countries has extended upstream in the value chain (see chapter 2 for a further discussion of this issue).<sup>16</sup> This has the potential to open up some new opportunities in high value-added activities, such as in horticulture (e.g. the rapidly expanding production of roses from Kenya and Ethiopia and peas from Egypt); but it also decreases CDDCs' pol-



icy space to shape value chains in their own interests through investment, subsidization and taxation (Davis, 2006). Globalization and the role of the newly emerging economies of Asia has also manifested itself in increased FDI in natural resource industries, and in the purchase of productive resources such as land, although the beneficial effects of these are less clear or have yet to be proved (see chapter 4 for a further discussion of this issue).

## 5. MANAGING COMMODITIES

### 5.1. Commodity revenues as a “resource curse” revisited

Many countries that have a wealth of natural resources have failed to grow more rapidly than those without such resources – a phenomenon sometimes referred to as the “natural resource curse” (Frankel, 2010). This phenomenon has been borne out in econometric tests of the determinants of economic performance across a comprehensive sample of countries. Frankel (2010) suggests six possible reasons why natural resources might possibly lead to sub-standard economic performance. These are: (i) long-term trends in world commodity prices, (ii) excessive price volatility, (iii) crowding out of manufacturing, (iv) political instability (possibly leading to civil war), (v) poor institutions, and (vi) the Dutch disease (currency appreciation).

Similarly, Gylfason (2001) has highlighted four potential reasons why natural resource abundance can inhibit economic growth: (i) the Dutch disease (like Frankel); (ii) failure to adequately address rent-seeking behaviour, particularly in an environment of weak governance and institutions; (iii) as natural-resource-rich countries can live off their earnings for extended periods of time, there are often reduced public and private incentives to build human capital (education). This may result in too many people being locked into low-skill, low-return natural-resource-based activities (e.g. agriculture or mining), as well as low incentives to invest in education to advance future earning power; and (iv) natural resource abundance may dampen incentives to save and invest, thus leading to slow economic growth. Each of these would depress growth, diversification and economic development in the long run, in spite of increased commodity revenues.

Nonetheless, one of the key factors that determine whether a natural resource boom will be a “blessing” or a “curse” appears to be the level of governance, particularly the existence of “sufficiently good institutions” (Collier and Goderis, 2007). The main “channels” of the curse are: (a) high public and private consumption; (b) low and often inefficient in-

vestment; and (c) an overvalued (strong) currency (Dutch disease). However, what is significant is that all of these “channels” can be neutralized or ameliorated through appropriate policies and strategies. Indeed, the resource “curse” can become a “blessing” through deployment of the resource rents for enhancing productive capacities and economic diversification.

Sceptics have questioned the natural resource curse hypothesis, highlighting examples of commodity-exporting countries that have done well and arguing that resource endowments and booms are not exogenous. Frankel (2010) notes that better outcomes may depend on the adoption of policies and institutions, and that some commodity producers have tried to overcome the pitfalls of the “natural resource curse” through various policies. These include the indexation of oil contracts to global commodity prices, hedging of export proceeds, denomination of debt in terms of oil, Chile-style fiscal rules (see box 8), a monetary target that emphasizes product prices and transparent commodity funds (e.g. sovereign wealth funds). Similarly, Van der Ploeg (2011) notes that the empirical evidence suggests that either outcome (“curse” or “blessing”) is possible. He surveys a variety of hypotheses and supporting evidence for why some countries benefit and others lose from the presence of natural resources. Negative effects arise if the resource bonanza induces appreciation of the real exchange rate, deindustrialization and bad growth prospects (Dutch disease effects).<sup>17</sup> These effects could therefore be overcome by improving the institutional and legal environment.

An extension of the resource curse theory is that a resource boom reinforces rent grabbing and civil conflict, especially if institutions are poor. Moreover, it may also induce corruption, especially in non-democratic countries, and keep in place erroneous policies (Van der Ploeg, 2011; Collier and Goderis, 2007). It remains a big challenge for resource-rich developing economies to successfully convert their depleting, exhaustible resources into other productive assets.

### 5.2. Extractive sectors: ensuring an equitable distribution of windfall gains

A review of the literature on how best to avoid the negative effects of the “natural resource curse” in developing countries highlights some differences between the extractive sector (dealt with in this subsection) and the agricultural sector (addressed in the next subsection). For example, in the extractive sector, some welfare-based fiscal rules are often needed (that support incremental consumption to be

*Structurally, dependence on primary sector earnings may turn into a “resource curse” when it quells incentives to invest in economic diversification.*

*Indeed, the resource “curse” can become a “blessing” through deployment of resource rents for enhancing productive capacity and diversification.*



paid with interest from sovereign wealth funds) for harnessing resource windfall gains in developed and developing economies (Van der Ploeg, 2011). For developing countries to ensure an equitable distribution of gains from resource extraction, particularly where FDI is involved, appropriate taxation and royalty policies should be implemented (UNCTAD, 2009a).

The World Bank (2009b) advocates progressive taxation on profits as a means of securing an equitable distribution of benefits, but highlights that the choice of fiscal regime needs to take into consideration the administrative and auditing capacity of government entities. A tax on profits creates incentives for TNCs to overstate operating costs through transfer pricing which can be difficult for host governments to verify, especially when regulatory capabilities are limited. Transfer pricing/overstated costs often arise when reported transactions do not take place on an arm's-length basis but with related parties. Related party costs can take various forms, including exaggerated maintenance expenses, imported input costs and consultancy services. Through such activities, TNCs can potentially manipulate and declare profits in jurisdictions where overall tax liabilities are relatively low (Strange, 1996; UNCTAD, 1999). For example, in 2009 the Zambian Ministry of Finance and National Planning initiated a review of the tax regime on mining and an audit of mining firms due to a lack of reasonable income from the mines. The audit revealed high levels of tax evasion through under-invoicing and transfer pricing. All of the audited mines were found to have underpaid, and were required to pay outstanding balances to the Government (Kopulande and Mulenga, 2011). In addition, and as a result, the windfall tax was repealed and replaced by a 15 per cent variable tax on revenue (Lungu, 2009).<sup>18</sup>

In contrast to taxation on profits, a tax in proportion to the value of resource extraction – effectively a production tax – may be implemented which requires lower institutional capabilities and regulatory costs, and leaves less scope for tax evasion. Land (2009) notes that production and export taxes are *regressive* taxes. This means that the tax rate, as a percentage of total profits is relatively higher for mining companies that have higher per unit extraction costs than for more profitable companies that use superior technology and capital equipment and/or for operating mines that have higher ore grades.<sup>19</sup> Production taxes effectively provide a positive incentive for mining companies to invest in capital and improve methods of production, as any surplus profits earned (relative to other companies operating mines of similar ore grade) will be retained by the company rather than be taxed at a higher rate as with progressive taxation.

On the downside, production taxes also mean that mining companies may retain surplus profits which are not derived from capital invested or superior

technological capability, but from natural advantages arising from the relatively higher ore grade of the mine(s) which they operate. A potential policy implication is that more productive mines could be leased to companies at higher prices, or discriminately higher production taxes could be applied. A discriminatory production tax based on mine productivity effectively ensures that any differentials in the profit earned by mining companies arise purely as a result of differentials in capital investment and technological capabilities, and not as a result of the natural characteristics of the resource.

In combination with discriminatory production taxes, an export tax may also be considered, as it encourages domestic processing and manufacturing of the extracted commodity on condition that export taxes are lower or non-existent on exports of manufactures. An export tax can effectively form part of a development programme of diversification into downstream industries. Furthermore, export taxes are not prohibited by the WTO, and if applied by a large country or collectively by a number of producing countries, which together have a significant share of world production of a particular commodity, this will raise the world price of the underlying commodity and improve the country's terms of trade (Piermartini, 2004). This improvement in the terms of trade arises because the application of an export tax often renders exports from more marginal mining areas unprofitable, resulting in reduced exports and higher world prices,<sup>20</sup> thereby benefiting the major exporting countries.<sup>21</sup> The collective application of a predetermined export tax also avoids a "race to the bottom" in offering favourable tax regimes for TNCs at the expense of government revenues. Higher taxes and royalties going towards infrastructure and education, for example, not only support domestic economic development, but also improve the image of foreign investors and reduce potential political risks inherent in long-term FDI (e.g. government nationalization or confiscation), as they contribute towards win-win outcomes.

In addition, some countries have introduced a resource rent tax on supernormal profits, especially those resulting from spikes in export prices, and placed the proceeds in a special fund to finance future development measures. Such a tax has been used successfully by Botswana, for example, in relation to its diamond revenues.

### 5.3. Agriculture: securing commodity rents

In contrast to the extractive industries, the ability of developing countries to obtain rents from tropical agricultural production is decreasing. There are growing concerns about unequal exchange, as small, fragmented producers of tropical agricultural products increasingly trade within highly con-

*The choice of fiscal regime needs to take into consideration the administrative and auditing capacity of government entities.*



centrated value chains dominated by multinational buyers.<sup>22</sup> As a result, farmers' incomes are often at subsistence levels. In addition they face price volatility and an increasing complexity of public and private standards, on the one hand, and the challenge of trying to bring together the necessary technical upgrading, collective action and access to working capital for their participation in modern supply chains, on the other. In most CDDCs, small-scale agriculture, which supports the livelihoods of the majority of the rural poor, is often poorly placed to adjust to these changes. Indeed, food subsidy policies and variations in transport and storage costs and in the profit margins of food value chains are among the factors that result in an incomplete pass-through of international prices to domestic food prices (Ghosh, 2009).<sup>23</sup> Moreover, in Benin, Ethiopia, Malawi and Sierra Leone, for example, consumer subsidies were slashed at the instigation of the International Monetary Fund (IMF), causing domestic prices of food and fuel to rise further than elsewhere (Van Waeyenberge, Bargawi and McKinley, 2010).

The argument that farmers will reduce supply in response to low prices is difficult to sustain in a context where alternative employment offering a higher income is not available. Kaplinsky (200) discusses this asymmetry in market power in coffee and cocoa value chains, where producers have become increasingly fragmented following structural adjustment programmes. Farmers must now exchange with near-monopoly or oligopsonistic commodity traders, exporters and agents. One example among many, is that of Côte d'Ivoire, where Wilcox and Abbot (2004) found that cocoa exporters had gained considerable market power and obtained excessive rents from producers resulting in lower farmgate prices. UNCTAD (2008) notes that, in relative terms, farmgate shares of world cocoa prices increased in Ghana,<sup>24</sup> while they declined during the period 1985–2005 in Cameroon, Côte d'Ivoire and Nigeria. The likely cause of declining farmgate shares is reported to be the emergence of backward integration in the value chain by large transnational commodity exporters that have filled the gap previously occupied by government marketing boards. Farmers in more remote areas were found to be the most vulnerable to abuse by market (buyer) power (UNCTAD, 2008). A little-researched, yet important sign of market power (although not solely due to TNCs) is where farmgate prices are not uniform but subject to significant regional and country differences beyond what could be attributed to variations in export tax regimes.<sup>25</sup> This gives rise to the possibility of discriminatory oligopsony/monopsony positions, whereby multinational commodity buyers reap higher returns from differentials in land productivity and surplus labour by purchasing at lower farmgate prices (either directly or via intermediaries) in regions/countries where the marginal costs of production are

lower, thereby effectively capturing the differential Ricardian rents from producers.

## 6. THE COMMODITY PROBLEM: SOME PRELIMINARY VIEWS

The terms of trade of resource-rich economies increased during the period 2003–2008, but largely due to the external factor of rising commodity prices rather than domestic policies (Frankel, 2010). It is often argued that the increased openness to trade, investments and capital flows of the 2000s (compared with the 1980s and the 1990s) placed resource-rich economies in a better position than previously to capture and capitalize on the increased inflows. However, from recent experience, openness may increase the size of inflows, but not necessarily improve their utilization. Indeed, it may even have potentially adverse consequences for some CDDCs.

What determines whether countries manage to use commodity windfall incomes effectively? Currently, the most conventionally favoured response to this question looks to country-specific factors. If developing countries have “good institutions” – a catchall phrase for little corruption, accountable business governance structures, law and order, responsible macroeconomic policies, and preferably, a “democracy” – they are perceived as possessing a better investment climate, including for international inflows. For example, Obstfeld (2009) identifies prudent macroeconomic policies and stable property rights as the key conditions that enable countries to benefit from financial openness. Emerging from the conclusion of this argument is a set of policy recommendations for LDCs which remain the staple of post-Washington Consensus IMF policy packages.

A second response refers to the resource curse discussed above, and highlights the need to recognize the unintended financial repercussions of capital inflows. Even where corruption is absent, governments are democratic and business transparent, capital inflows may cause Dutch disease-related currency appreciation, push up domestic interest rates, lead to procyclical government spending, cause asset bubbles and destabilize the economy upon reversal.

The third response is to call this very desirability into question, and to ascribe the cause of inflow problems to the international financial system and to individual countries. It views rising commodity prices as one symptom of a broader trend of growth in markets for financial assets and wealth at the cost of growth in output and productivity. Rising commodity prices also tend to attract more speculative investments globally (involving futures and index funds), and more financial – rather than real-sector – investment which further increases volatility (a proposition explored in chapter 2).

*Food subsidy policies and variation in transport and storage costs and in the profit margins of food value chains are among the factors that result in an incomplete pass-through of international prices to domestic prices.*



*The international commodity trap is likely to persist in the context of finance-driven globalization, the oligopolistic power of TNCs and the growing integration of global production systems.*

It is questionable as to whether the conventional distinction between developed and developing countries, where the former import commodities and export manufactures and the latter does the inverse, is still relevant in an increasingly interdependent global economy. The international commodity trap is likely to persist in the context of finance-driven globalization, the oligopolistic power of TNCs and the growing integration of global production systems, with manufactures being generated in both the North and the South, which represent (or have created) new forms of global interdependence. A major implication of this is that CDDCs need to enhance South-South cooperation efforts in addition to capacity-building initiatives to foster their participation in international trade, such as Aid for Trade, product diversification, and higher value addition. Critically, CDDCs will need to improve the competitiveness of their traditional commodity sectors, support vertical and horizontal diversification, and mitigate the short-term impact of commodity price shocks. The United Nations can play a wider role in developing innovative thinking in this area and coordinating the work of reform of individual commodity value chains. To provide urgent relief in the event of a significant price shock, a related reform should take the form of a quick-

disbursing global countercyclical financing facility to support CDDCs, particularly LDCs.

Recent developments in the international financial architecture in a context of shrinking “policy space” for CDDCs probably render outdated the idea espoused by early development economists that commodity exports may kick-start economic diversification.<sup>26</sup> Indonesia in the 1960s and 1970s was still able to grow its rural economy and then diversify, based on profits from its crude oil industry. However, during the 2000s it was unable to benefit in a similar way from the boom in palm oil and other commodities in which it has a leading position (World Bank, 2011). The main reason for this may be the completely different international financial system that had evolved, as it discovered during the 1997-1999 Asian financial crisis (discussed further in chapter 4).

The commodity problem is even more relevant today than before, owing to the complexities associated with an increasingly globalized world, greater volatility of commodity prices, the financialization of commodity markets and the reduced scope for commodity exports to actively promote economic diversification in CDDCs.



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<b>Appendix 1.1. Commodity-dependent developing countries: Commodity exports as a percentage of merchandise exports, 2009-2010</b>			
<b>DEVELOPING ECONOMIES: AFRICA</b>			
<b>Country</b>	<b>Developing economies: East Africa</b>	<b>%</b>	
Burundi*	(071) Coffee and coffee substitutes, (074) Tea and mate, (971) Gold, non-monetary (excluding gold ores and concentrates).	91	CDDC
Comoros*	(075) Spices, (971) Gold, non-monetary (excluding gold ores and concentrates), (03) Fishery products.	29	N
Djibouti*	(022) Milk, cream and milk products (excluding butter, cheese), (001) Live animals other than animals of division 03, (971) Gold, non-monetary (excluding gold ores and concentrates).	85	CDDC
Eritrea*	(001) Live animals other than animals of division 03, (03) Fishery products, (211) Hides and skins (except fur skins), raw.	46	N
Ethiopia*	(071) Coffee and coffee substitutes, (054) Vegetables, (222) Oil seeds and oleaginous fruits (excluding flour).	90	CDDC
Kenya	(074) Tea and mate, (292) Crude vegetable materials, n.e.s., (054) Vegetables.	65	CDDC
Madagascar*	(03) Fishery products, (075) Spices, (287) Ores and concentrates of base metals, n.e.s.	50	N
Malawi*	(121) Tobacco, unmanufactured; tobacco refuse, (074) Tea and mate, (061) Sugar, molasses and honey.	90	CDDC
Mauritius	(03) Fishery products, (061) Sugar, molasses and honey, (667) Pearls, precious & semi-precious stones.	40	N
Mayotte	(03) Fishery products, (288) Non-ferrous base metal waste and scrap, n.e.s., (111) Non-alcoholic beverages, n.e.s.	17	N
Mozambique*	(684) Aluminium, (351) Electric current, (121) Tobacco, unmanufactured; tobacco refuse.	93	CDDC
Rwanda*	(074) Tea and mate, (287) Ores and concentrates of base metals, n.e.s., (071) Coffee and coffee substitutes.	88	CDDC
Seychelles	(03) Fishery products, (334) Petroleum oils or bituminous minerals > 70 % oil, (421) Fixed vegetable fats & oils, crude, refined, fractionated.	88	CDDC
Somalia*	(001) Live animals other than animals of division 03, (971) Gold, non-monetary (excluding gold ores and concentrates), (24+25) Forestry products	99	CDDC
Uganda*	(071) Coffee and coffee substitutes, (03) Fishery products, (121) Tobacco, unmanufactured; tobacco refuse	70	CDDC
United Republic of Tanzania*	(971) Gold, non-monetary (excluding gold ores and concentrates), (289) Ores & concentrates of precious metals; waste, scrap, (03) Fishery products.	83	CDDC
Zambia*	(682) Copper, (283) Copper ores and concentrates; copper mattes, cement, (287) Ores and concentrates of base metals, n.e.s.	89	CDDC
Zimbabwe	(284) Nickel ores & concentrates; nickel mattes, etc., (121) Tobacco, unmanufactured; tobacco refuse, (263) Cotton.	75	CDDC
<b>Developing economies: Central Africa</b>			
Angola*	(333) Petroleum oils, oils from bituminous materials, crude, (971) Pearls, precious & semi-precious stones, (334) Petroleum oils or bituminous minerals > 70 % oil.	100	CDDC
Cameroon	(333) Petroleum oils, oils from bituminous materials, crude, (072) Cocoa, (334) Petroleum oils or bituminous minerals > 70 % oil.	89	CDDC
Central African Republic*	(24+25) Forestry products, (971) Pearls, precious & semi-precious stones, (277) Natural abrasives, n.e.s. (incl. industrial diamonds).	90	CDDC
Chad*	(333) Petroleum oils, oils from bituminous materials, crude, (334) Petroleum oils or bituminous minerals > 70 % oil, (263) Cotton.	96	CDDC
Congo	(333) Petroleum oils, oils from bituminous materials, crude, (334) Petroleum oils or bituminous minerals > 70 % oil, (24+25) Forestry products.	99	CDDC
Democratic Republic of the Congo*	(682) Copper, (287) Ores and concentrates of base metals, n.e.s., (283) Copper ores and concentrates; copper mattes, cement.	96	CDDC
Equatorial Guinea*	(333) Petroleum oils, oils from bituminous materials, crude, (343) Natural gas, whether or not liquefied, (342) Liquefied propane and butane.	98	CDDC
Gabon	(333) Petroleum oils, oils from bituminous materials, crude, (24+25) Forestry products, (287) Ores and concentrates of base metals, n.e.s.	96	CDDC
Sao Tome and Principe*	(072) Cocoa, (334) Petroleum oils or bituminous minerals > 70 % oil, (057) Fruits and nuts (excluding oil nuts), fresh or dried.	47	N


**Appendix 1.1. Commodity-dependent developing countries: Commodity exports as a percentage of merchandise exports, 2009-2010**

<b>Developing economies: North Africa</b>			
Algeria	(333) Petroleum oils, oils from bituminous materials, crude, (343) Natural gas, whether or not liquefied, (334) Petroleum oils or bituminous minerals > 70 % oil.	99	CDDC
Egypt	(334) Petroleum oils or bituminous minerals > 70 % oil, (343) Natural gas, whether or not liquefied, (333) Petroleum oils, oils from bituminous materials, crude.	58	N
Libyan Arab Jamahiriya	(333) Petroleum oils, oils from bituminous materials, crude, (343) Natural gas, whether or not liquefied, (334) Petroleum oils or bituminous minerals > 70 % oil.	97	CDDC
Morocco	(03) Fishery products, (054) Vegetables, (272) Crude fertilizers (excluding those of division 56).	38	N
Sudan*	(333) Petroleum oils, oils from bituminous materials, crude, (334) Petroleum oils or bituminous minerals > 70 % oil, (971) Gold, non-monetary (excluding gold ores and concentrates).	99	CDDC
Tunisia	(333) Petroleum oils, oils from bituminous materials, crude, (421) Fixed vegetable fats & oils, crude, refined, fractionated, (334) Petroleum oils or bituminous minerals > 70 % oil.	26	N
<b>Developing economies: Southern Africa</b>			
Botswana	(667) Pearls, precious & semi-precious stones, (284) Nickel ores & concentrates; nickel mattes, etc., (011) Meat of bovine animals, fresh, chilled or frozen.	84	CDDC
Lesotho*	(667) Pearls, precious & semi-precious stones.	31	N
Namibia	(286) Ores and concentrates of uranium or thorium, (03) Fishery products, (667) Pearls, precious & semi-precious stones.	73	CDDC
South Africa	(681) Silver, platinum, other metals of the platinum group, (321) Coal, whether or not pulverized, not agglomerated, (281) Iron ore and concentrates.	59	N
Swaziland	(061) Sugar, molasses and honey, (098) Edible products and preparations, n.e.s., (24+25) Forestry products.	41	N
<b>Developing economies: West Africa</b>			
Benin*	(263) Cotton, (334) Petroleum oils or bituminous minerals > 70 % oil, (057) Fruits and nuts (excluding oil nuts), fresh or dried.	91	CDDC
Burkina Faso*	(263) Cotton, (971) Gold, non-monetary (excluding gold ores and concentrates), (222) Oil seeds and oleaginous fruits (excluding flour).	94	CDDC
Cape Verde**	(03) Fishery products, (112) Alcoholic beverages, (282) Ferrous waste, scrape; remelting ingots, iron, steel.	70	CDDC
Côte d'Ivoire	(072) Cocoa, (334) Petroleum oils or bituminous minerals > 70 % oil, (333) Petroleum oils, oils from bituminous materials, crude.	85	CDDC
Gambia*	(057) Fruits and nuts (excluding oil nuts), fresh or dried, (421) Fixed vegetable fats & oils, crude, refined, fractionated, (03) Fishery products.	82	CDDC
Ghana	(072) Cocoa, (971) Gold, non-monetary (excluding gold ores and concentrates), (287) Ores and concentrates of base metals, n.e.s.	90	CDDC
Guinea*	(285) Aluminium ores and concentrates (incl. alumina), (333) Petroleum oils, oils from bituminous materials, crude, (971) Gold, non-monetary (excluding gold ores and concentrates).	85	CDDC
Guinea-Bissau*	(057) Fruits and nuts (excluding oil nuts), fresh or dried, (333) Petroleum oils, oils from bituminous materials, crude, (282) Ferrous waste, scrape; remelting ingots, iron, steel.	99	CDDC
Liberia*	(231) Natural rubber & similar gums, in primary forms, (971) Gold, non-monetary (excluding gold ores and concentrates), (333) Petroleum oils, oils from bituminous materials, crude.	62	CDDC
Mali*	(971) Gold, non-monetary (excluding gold ores and concentrates), (263) Cotton, (001) Live animals other than animals of division 05.	88	CDDC
Mauritania*	(281) Iron ore and concentrates, (03) Fishery products, (333) Petroleum oils, oils from bituminous materials, crude.	100	CDDC
Niger*	(286) Ores and concentrates of uranium or thorium, (001) Live animals other than animals of division 03, (334) Petroleum oils or bituminous minerals > 70 % oil.	68	CDDC
Nigeria	(333) Petroleum oils, oils from bituminous materials, crude, (334) Petroleum oils or bituminous minerals > 70 % oil, (343) Natural gas, whether or not liquefied.	97	CDDC
Saint Helena	(03) Fishery products, (321) Coal, whether or not pulverized, not agglomerated, (073) Chocolate, food preparations with cocoa, n.e.s.	68	CDDC
Senegal*	(334) Petroleum oils or bituminous minerals > 70 % oil, (03) Fishery products, (971) Gold, non-monetary (excluding gold ores and concentrates).	66	CDDC



<b>Appendix 1.1. Commodity-dependent developing countries: Commodity exports as a percentage of merchandise exports, 2009-2010</b>			
Sierra Leone*	(971) Pearls, precious & semi-precious stones, (285) Aluminium ores and concentrates (incl. alumina), (287) Ores and concentrates of base metals, n.e.s.	69	CDDC
Togo*	(072) Cocoa, (272) Crude fertilizers (excluding those of division 56), (334) Petroleum oils or bituminous minerals > 70 % oil.	61	CDDC
<b>DEVELOPING ECONOMIES: LATIN AMERICA AND THE CARIBBEAN</b>			
<b>Developing economies: The Caribbean</b>			
Anguilla	(112) Alcoholic beverages, (059) Fruit and vegetable juices, unfermented, no spirit, [684] Aluminium.	25	N
Antigua and Barbuda	(091) Margarine and shortening, (334) Petroleum oils or bituminous minerals > 70 % oil, (03) Fishery products.	10	N
Aruba	(334) Petroleum oils or bituminous minerals > 70 % oil, (112) Alcoholic beverages, (122) Tobacco, manufactured.	95	CDDC
Bahamas	(334) Petroleum oils or bituminous minerals > 70 % oil, (112) Alcoholic beverages, (03) Fishery products.	57	N
Barbados	(333) Petroleum oils, oils from bituminous materials, crude, (112) Alcoholic beverages, (334) Petroleum oils or bituminous minerals > 70 % oil.	33	N
British Virgin Islands	not available.		
Cayman Islands	(334) Petroleum oils or bituminous minerals > 70 % oil, (667) Pearls, precious & semi-precious stones, (321) Coal, whether or not pulverized, not agglomerated.	5	N
Cuba	(284) Nickel ores & concentrates; nickel mattes, etc., (061) Sugar, molasses and honey, (122) Tobacco, manufactured.	77	CDDC
Dominica	(057) Fruits and nuts (excluding oil nuts), fresh or dried, (273) Stone, sand and gravel, (054) Vegetables.	42	N
Dominican Republic	(122) Tobacco, manufactured, (057) Fruits and nuts (excluding oil nuts), fresh or dried, (072) Cocoa.	33	N
Grenada	(046) Meal and flour of wheat and flour of meslin, (03) Fishery products, (075) Spices.	51	N
Haiti*	(071) Coffee and coffee substitutes, (057) Fruits and nuts (excluding oil nuts), fresh or dried, (072) Cocoa.	12	N
Jamaica	(285) Aluminium ores and concentrates (incl. alumina), (334) Petroleum oils or bituminous minerals > 70 % oil, (112) Alcoholic beverages.	83	CDDC
Montserrat	(273) Stone, sand and gravel, (277) Natural abrasives, n.e.s. (incl. industrial. diamonds), (112) Alcoholic beverages.	50	N
Netherlands Antilles	(334) Petroleum oils or bituminous minerals > 70 % oil, (335) Residual petroleum products, n.e.s., related materials, (971) Gold, non-monetary (excluding gold ores and concentrates).	83	CDDC
Saint Kitts and Nevis	(112) Alcoholic beverages, (111) Non-alcoholic beverages, n.e.s., (022) Milk, cream and milk products (excluding butter, cheese).	6	N
Saint Lucia	(334) Petroleum oils or bituminous minerals > 70 % oil, (057) Fruits and nuts (excluding oil nuts), fresh or dried, (112) Alcoholic beverages.	63	CDDC
Saint Vincent and the Grenadines	(046) Meal and flour of wheat and flour of meslin, (057) Fruits and nuts (excluding oil nuts), fresh or dried, (054) Vegetables.	23	N
Trinidad and Tobago	(343) Natural gas, whether or not liquefied, (334) Petroleum oils or bituminous minerals > 70 % oil, (333) Petroleum oils, oils from bituminous materials, crude.	73	CDDC
Turks and caicos Islands	(03) Fishery products, (288) Non-ferrous base metal waste and scrap, n.e.s., (048) Cereal preparations, flour of fruits or vegetables.	35	N
<b>Developing economies: Central America</b>			
Belize	(333) Petroleum oils, oils from bituminous materials, crude, (061) Sugar, molasses and honey, (059) Fruit and vegetable juices, unfermented, no spirit.	76	CDDC
Costa Rica	(057) Fruits and nuts (excluding oil nuts), fresh or dried, (071) Coffee and coffee substitutes, (098) Edible products and preparations, n.e.s.	29	N
El Salvador	(071) Coffee and coffee substitutes, (061) Sugar, molasses and honey, (048) Cereal preparations, flour of fruits or vegetables.	29	N
Guatemala	(057) Fruits and nuts (excluding oil nuts), fresh or dried, (061) Sugar, molasses and honey, (071) Coffee and coffee substitutes.	59	N



<b>Appendix 1.1. Commodity-dependent developing countries: Commodity exports as a percentage of merchandise exports, 2009-2010</b>			
Honduras	(071) Coffee and coffee substitutes, (057) Fruits and nuts (excluding oil nuts), fresh or dried, (03) Fishery products.	47	N
Mexico	(333) Petroleum oils, oils from bituminous materials, crude, (971) Gold, non-monetary (excluding gold ores and concentrates), (334) Petroleum oils or bituminous minerals > 70 % oil.	25	N
Nicaragua	(071) Coffee and coffee substitutes, (011) Meat of bovine animals, fresh, chilled or frozen, (03) Fishery products.	64	CDDC
Panama	(03) Fishery products, (112) Alcoholic beverages, (057) Fruits and nuts (excluding oil nuts), fresh or dried.	9	N
<b>Developing economies: South America</b>			
Argentina	(081) Feeding stuff for animals (no unmilled cereals), (421) Fixed vegetable fats & oils, crude, refined, fractionated, (222) Oil seeds and oleaginous fruits (excluding flour).	67	CDDC
Bolivia	(343) Natural gas, whether or not liquefied, (287) Ores and concentrates of base metals, n.e.s., (289) Ores & concentrates of precious metals; waste, scrap.	93	CDDC
Brazil	(281) Iron ore and concentrates, (333) Petroleum oils, oils from bituminous materials, crude, (222) Oil seeds and oleaginous fruits (excluding flour).	63	CDDC
Chile	(682) Copper, (283) Copper ores and concentrates; copper mattes, cement, (03) Fishery products.	89	CDDC
Colombia	(333) Petroleum oils, oils from bituminous materials, crude, (321) Coal, whether or not pulverized, not agglomerated, (334) Petroleum oils or bituminous minerals > 70 % oil.	76	CDDC
Ecuador	(333) Petroleum oils, oils from bituminous materials, crude, (057) Fruits and nuts (excluding oil nuts), fresh or dried, (03) Fishery products.	91	CDDC
Falkland Islands (Malvinas)	(03) Fishery products, (268) Wool and other animal hair (incl. wool tops), (012) Other meat and edible meat offal.	97	CDDC
Guyana	(971) Gold, non-monetary (excluding gold ores and concentrates), (042) Rice, (061) Sugar, molasses and honey.	94	CDDC
Paraguay	(222) Oil seeds and oleaginous fruits (excluding flour), (011) Meat of bovine animals, fresh, chilled or frozen, (081) Feeding stuff for animals (no unmilled cereals).	89	CDDC
Peru	(971) Gold, non-monetary (excluding gold ores and concentrates), (283) Copper ores and concentrates; copper mattes, cement, (287) Ores and concentrates of base metals, n.e.s.	89	CDDC
Suriname	(971) Gold, non-monetary (excluding gold ores and concentrates), (285) Aluminium ores and concentrates (incl. alumina), (03) Fishery products.	96	CDDC
Uruguay	(011) Meat of bovine animals, fresh, chilled or frozen, (042) Rice, (268) Wool and other animal hair (incl. wool tops).	74	CDDC
Venezuela (Bolivarian Republic of)	(333) Petroleum oils, oils from bituminous materials, crude, (334) Petroleum oils or bituminous minerals > 70 % oil, (684) Aluminium.	91	CDDC
<b>DEVELOPING ECONOMIES: ASIA</b>			
<b>Developing economies: East Asia</b>			
China (incl. Macao SAR, Hong-Kong SAR and Taiwan, Province of China)	(334) Petroleum oils or bituminous minerals > 70 % oil, (03) Fishery products, (971) Gold, non-monetary (excluding gold ores and concentrates).	8	N
Korea, Dem. People's Rep of	(321) Coal, whether or not pulverized, not agglomerated, (281) Iron ore and concentrates, (334) Petroleum oils or bituminous minerals > 70 % oil.	49	N
Korea, Republic of	(334) Petroleum oils or bituminous minerals > 70 % oil, (682) Copper, (971) Gold, non-monetary (excluding gold ores and concentrates).	12	N
Mongolia	(283) Copper ores and concentrates; copper mattes, cement, (971) Gold, non-monetary (excluding gold ores and concentrates), (287) Ores and concentrates of base metals, n.e.s.	96	CDDC
<b>Developing economies: South Asia</b>			
Afghanistan*	(057) Fruits and nuts (excluding oil nuts), fresh or dried, (292) Crude vegetable materials, n.e.s., (263) Cotton.	53	N
Bangladesh*	(03) Fishery products, (264) Jute, other textile bast fibre, n.e.s., not spun; tow, (334) Petroleum oils or bituminous minerals > 70 % oil.	8	N
Bhutan*	(351) Electric current, (075) Spices, (682) Copper.	51	N
India	(334) Petroleum oils or bituminous minerals > 70 % oil, (667) Pearls, precious & semi-precious stones, (281) Iron ore and concentrates	43	N



<b>Appendix 1.1. Commodity-dependent developing countries: Commodity exports as a percentage of merchandise exports, 2009-2010</b>			
Iran (Islamic Republic of)	(333) Petroleum oils, oils from bituminous materials, crude, (334) Petroleum oils or bituminous minerals > 70 % oil, (342) Liquefied propane and butane.	91	CDDC
Maldives**	(03) Fishery products, (282) Ferrous waste, scrape; remelting ingots, iron, steel, (288) Non-ferrous base metal waste and scrap, n.e.s.	93	CDDC
Nepal*	(054) Vegetables, (292) Crude vegetable materials, n.e.s., (075) Spices	31	N
Pakistan	(042) Rice, (334) Petroleum oils or bituminous minerals > 70 % oil, (263) Cotton	25	N
Sri Lanka	(074) Tea and mate, (667) Pearls, precious & semi-precious stones, (03) Fishery products	37	N
<b>Developing economies: South-East Asia</b>			
Brunei Darussalam	(333) Petroleum oils, oils from bituminous materials, crude, (343) Natural gas, whether or not liquefied, (334) Petroleum oils or bituminous minerals > 70 % oil	98	CDDC
Cambodia*	(231) Natural rubber & similar gums, in primary forms, (971) Gold, non-monetary (excluding gold ores and concentrates), (273) Stone, sand and gravel	10	N
Indonesia	(321) Coal, whether or not pulverized, not agglomerated, (422) Fixed vegetable fats & oils, crude, refined, fractionated, (343) Natural gas, whether or not liquefied	62	CDDC
Lao People's Democratic Republic*	(682) Copper, (283) Copper ores and concentrates; copper mattes, cement, (351) Electric current.	81	CDDC
Malaysia	(422) Fixed vegetable fats & oils, crude, refined, fractionated, (343) Natural gas, whether or not liquefied, (333) Petroleum oils, oils from bituminous materials, crude.	32	N
Myanmar*	(343) Natural gas, whether or not liquefied, (24+25) Forestry products, (054) Vegetables.	78	CDDC
Philippines	(682) Copper, (334) Petroleum oils or bituminous minerals > 70 % oil, (422) Fixed vegetable fats & oils, crude, refined, fractionated.	15	N
Singapore	(334) Petroleum oils or bituminous minerals > 70 % oil, (971) Gold, non-monetary (excluding gold ores and concentrates), (112) Alcoholic beverages.	22	N
Thailand	(334) Petroleum oils or bituminous minerals > 70 % oil, (03) Fishery products, (231) Natural rubber & similar gums, in primary forms.	29	N
Timor-Leste*	(342) Liquefied propane and butane, (333) Petroleum oils, oils from bituminous materials, crude, (071) Coffee and coffee substitutes.	91	CDDC
Viet Nam	(333) Petroleum oils, oils from bituminous materials, crude, (03) Fishery products, (042) Rice.	42	N
<b>Developing economies: West Asia</b>			
Bahrain	(334) Petroleum oils or bituminous minerals > 70 % oil, (684) Aluminium, (281) Iron ore and concentrates	74	CDDC
Iraq	(333) Petroleum oils, oils from bituminous materials, crude, (334) Petroleum oils or bituminous minerals > 70 % oil, (971) Gold, non-monetary (excluding gold ores and concentrates).	99	CDDC
Jordan	(272) Crude fertilizers (excluding those of division 56), (054) Vegetables, (971) Gold, non-monetary (excluding gold ores and concentrates).	27	N
Kuwait	(333) Petroleum oils, oils from bituminous materials, crude, (334) Petroleum oils or bituminous minerals > 70 % oil, (342) Liquefied propane and butane.	91	CDDC
Lebanon	(971) Gold, non-monetary (excluding gold ores and concentrates), (667) Pearls, precious & semi-precious stones, (282) Ferrous waste, scrape; remelting ingots, iron, steel.	39	N
Occupied Palestinian Territories	(421) Fixed vegetable fats & oils, crude, refined, fractionated, (273) Stone, sand and gravel, (122) Tobacco, manufactured.	35	N
Oman	(333) Petroleum oils, oils from bituminous materials, crude, (343) Natural gas, whether or not liquefied, (684) Aluminium.	80	CDDC
Qatar	(333) Petroleum oils, oils from bituminous materials, crude, (343) Natural gas, whether or not liquefied, (342) Liquefied propane and butane.	91	CDDC
Saudi Arabia	(333) Petroleum oils, oils from bituminous materials, crude, (334) Petroleum oils or bituminous minerals > 70 % oil, (342) Liquefied propane and butane	86	CDDC
Syrian Arab Republic	(333) Petroleum oils, oils from bituminous materials, crude, (334) Petroleum oils or bituminous minerals > 70 % oil, (111) Non-alcoholic beverages, n.e.s.	67	CDDC
Turkey	(334) Petroleum oils or bituminous minerals > 70 % oil, (971) Gold, non-monetary (excluding gold ores and concentrates), (057) Fruits and nuts (excluding oil nuts), fresh or dried.	22	N



<b>Appendix 1.1. Commodity-dependent developing countries: Commodity exports as a percentage of merchandise exports, 2009-2010</b>			
United Arab Emirates	(333) Petroleum oils, oils from bituminous materials, crude, (667) Pearls, precious & semi-precious stones, (971) Gold, non-monetary (excluding gold ores and concentrates).	75	CDDC
Yemen*	(333) Petroleum oils, oils from bituminous materials, crude, (334) Petroleum oils or bituminous minerals > 70 % oil, (03) Fishery products.	97	CDDC
<b>DEVELOPING ECONOMIES: OCEANIA</b>			
American Samoa	(081) Feeding stuff for animals (no unmilled cereals), (263) Cotton, (03) Fishery products.	47	N
Cook Islands	(667) Pearls, precious & semi-precious stones, (059) Fruit and vegetable juices, unfermented, no spirit, (03) Fishery products.	74	CDDC
Fiji	(061) Sugar, molasses and honey, (03) Fishery products, (111) Non-alcoholic beverages, n.e.s.	77	CDDC
French Polynesia	(667) Pearls, precious & semi-precious stones, (058) Fruit, preserved, and fruit preparations (no juice), (03) Fishery products.	76	CDDC
Guam	(03) Fishery products, (282) Ferrous waste, scrape; remelting ingots, iron, steel, (071) Coffee and coffee substitutes.	28	N
Kiribati*	(03) Fishery products, (422) Fixed vegetable fats & oils, crude, refined, fractionated, (289) Ores & concentrates of precious metals; waste, scrap.	85	CDDC
Marshall Islands	(03) Fishery products, (334) Petroleum oils or bituminous minerals > 70 % oil, (422) Fixed vegetable fats & oils, crude, refined, fractionated.	25	N
Micronesia (Federated States of)	(03) Fishery products.	97	CDDC
Nauru	(272) Crude fertilizers (excluding those of division 56), (335) Residual petroleum products, n.e.s., related materials, (03) Fishery products.	73	CDDC
New Caledonia	(284) Nickel ores & concentrates; nickel mattes, etc., (281) Iron ore and concentrates, (03) Fishery products.	39	N
Niue	(684) Aluminium, (334) Petroleum oils or bituminous minerals > 70 % oil, (269) Worn clothing and other worn textile articles.	2	N
Palau	(03) Fishery products, (282) Ferrous waste, scrape; remelting ingots, iron, steel, (288) Non-ferrous base metal waste and scrap, n.e.s.	97	CDDC
Papua New Guinea	(971) Gold, non-monetary (excluding gold ores and concentrates), (283) Copper ores and concentrates; copper mattes, cement, (333) Petroleum oils, oils from bituminous materials, crude.	98	CDDC
Samoa*	(03) Fishery products, (422) Fixed vegetable fats & oils, crude, refined, fractionated, (112) Alcoholic beverages.	23	N
Solomon Islands *	(24+25) Forestry products, (03) Fishery products, (422) Fixed vegetable fats & oils, crude, refined, fractionated	99	CDDC
Tokelau	(042) Rice, (059) Fruit and vegetable juices, unfermented, no spirit, (057) Fruits and nuts (excluding oil nuts), fresh or dried.	26	N
Tonga	(054) Vegetables, (292) Crude vegetable materials, n.e.s., (075) Spices.	80	CDDC
Tuvalu*	(03) Fishery products, (684) Aluminium, (292) Crude vegetable materials, n.e.s.	33	N
Vanuatu*	(03) Fishery products, (223) Oil seeds & oleaginous fruits (incl. flour, n.e.s.), (422) Fixed vegetable fats & oils, crude, refined, fractionated	85	CDDC
Wallis and Futuna Islands	(072) Cocoa, (071) Coffee and coffee substitutes, (073) Chocolate, food preparations with cocoa, n.e.s.	2	N

Source: UNCTAD, 2012b; UNCTADstat (SITC Rev 3, 1 to 3 digit codes).

\* LDCs.

\*\* Cape Verde and Maldives graduated from LDC status in 2007 and 2011 respectively.

Note: CDDCs are defined as countries where total commodity exports account for more than 60 per cent of total merchandise exports. Commodity exports for each country are reported as a percentage of total national merchandise exports in 2009-2010, the latest years for which international trade statistics are currently broadly available.

n.e.s. = not elsewhere specified; N= non-CDDC.



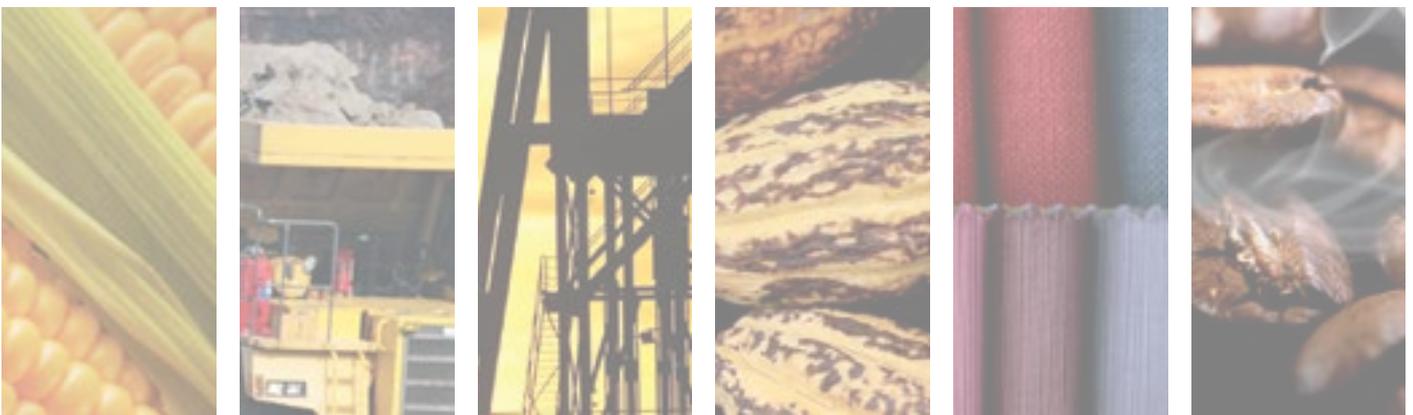
## NOTES

1. However, from the 1990s the debate on the terms of trade has increasingly revolved around the relative movement in the prices of manufactures exported by developing countries vis-à-vis those exported by developed countries (UNCTAD, 2002). Indeed, many primary-commodity-exporting developing countries, especially in Asia and Latin America, have shifted to labour-intensive manufacturing. This choice is based on the belief that manufactured exports will enable these countries to overcome the difficulties understood to arise as a result of an excessive dependence on commodity exports, and will thus allow them to achieve higher rates of economic growth and development. Nevertheless, exports of manufactures from developing countries are said to share the same characteristics as those of the primary commodity exports underlying the Prebisch-Singer hypothesis, due to the fact that the income elasticity of demand for developing countries' manufactured products is lower than that of developed countries. This issue is important, since the shift from primary to manufactured exports could fail to solve the declining terms of trade faced by developing countries.
2. Commodity-dependent developing countries (CDDCs), are defined as those developing countries and territories where total commodity exports account for more than 60 per cent of total merchandise exports.
3. Indeed, as Davis (2008:240–242) maintains, “to state that resource-rich countries are made worse off for their resources relies on comparison with the unmeasurable counterfactual. It suggests that the Congo, Angola and Nigeria would be doing just fine if natural resources were not found and extracted on their soils.”
4. See appendix 1.1 for the list of developing countries that were commodity dependent in 2009.
5. The recent commodity boom period started in 2003, punctuated by a short but marked downturn in the second half of 2008, before rallying in early 2009.
6. UNCTAD calculations based on UNCTADstat.
7. The UNCTAD concentration index, which is based on merchandise exports (excluding services), is computed using the Herfindahl-Hirschmann index (HHI). The concentration index or Hirschman (H) index is calculated using the shares of all SITC three-digit products in a country's exports. Thus:  $H_j = \text{sqrt} [\sum (x_i/X_t)^2]$ , where  $x_i$  is country  $j$ 's exports of product  $i$  (at the three-digit classification) and  $X_t$  is country  $j$ 's total exports. The index is normalized to account for the number of actual three-digit SITC product categories that could be exported. The lower the index, the less concentrated are a country's exports.
8. Primary commodities are defined as all foods (including basic foods, beverages and tobacco, agricultural products and oils); all metals and minerals (ferrous and non-ferrous metals, precious stones and pearls); and all fuel (crude petroleum, natural gas and other fuel commodities) (UNCTAD, Handbook of Statistics, 2009).
9. Measured in terms of gross national income (GNI) per capita (in PPP international dollars) during the period 2009–2010, West Asian CDDCs had the highest average per capita income among all CDDCs, at \$18,503, compared with South Asian CDDCs at \$8,133 and sub-Saharan African CDDCs at \$4,470.
10. Kaldor (1966) emphasized the importance of generating a higher agricultural surplus, which requires agricultural labour's productivity growth to exceed the growth of labour's own consumption requirements. A lack of agricultural surplus may constrain non-agricultural growth from the demand side (demand deficiency) but also from the supply side by making the system prone to food-price inflation, which: (i) erodes real wages of non-agricultural workers, reducing their consumption; (ii) erodes industrial profits and hence investment; and (iii) may lead to lower exports due to loss of cost competitiveness.
11. The double factorial terms of trade are the NBTT multiplied by the ratio of indices of labour productivity in the export sectors of the trading partners. They effectively ensure that any changes in relative prices caused by changes in labour productivity are netted out, giving a more accurate measure of gains/losses per unit of labour realized through trade.
12. Many firms use cost-plus pricing, also known as markup pricing. Typically a firm first calculates the cost of the product, then adds a proportion of it as a markup.
13. For a fuller discussion of this issue in the context of flexible versus fixed pricing from a structuralist position, see Taylor (1979). For example, an expansion of employment opportunities in CDDCs may result in an increase in demand for foodgrains. Given that the prices of foodgrains are largely demand-determined (flexible price), this can cause wage costs to rise in response to an increase in the cost of living. As the prices of most industrial goods are determined on a cost of production (fixed price) basis, an increase in the wage cost causes prices of industrial goods to increase, thus giving rise to inflationary pressure on the economy as a whole.
14. Differential rent, a term first used by Ricardo, refers to the rent arising from differences in the fertility of land. The surplus due to the difference between the marginal and intra-marginal land is the differential rent. It is accrued generally under conditions of extensive cultivation of land. As distinguished from differential rent, absolute rent does not depend on differences in fertility, in the locations of various natural resources (land or mine), or in the productivity of additional capital investments in a given



- location. Private owners who legally own the natural resource allow this to be used only in return for compensation, which they receive in the form of rent. The owner collects rent from any natural resource, even the least productive one, if a demand to utilize it arises.
15. The flying geese paradigm characterizes the international division of labour in East Asia based on dynamic comparative advantages. According to this paradigm, industrial production would continuously move from the more advanced countries to the less advanced ones. The less developed countries could be considered to be “aligned” successively behind the advanced industrial countries in the order of their different stages of growth in the pattern of flying wild geese. The lead goose in this pattern was Japan.
  16. The value chain concept may be defined as the sequence of activities needed to produce and deliver a product or service. This includes activities such as design, production, marketing, distribution and support to the final consumer. The value chain not only pays attention to the different production and transformation stages, but also to the interactions between the different actors involved in the chain. Value chain analysis considers the efficiency of the system holistically, which enables the identification of bottlenecks within the chain that reduce overall competitiveness. The “global value chain” (GVC) concept focuses on value chains that are divided among multiple firms and spread across wide geographical areas, whether regional or international, rather than a single geographical location. The process of transforming goods and services from production to final consumption involves linkages between the various sectors participating in that transformation process (UNECA, 2007).
  17. Dutch disease was first identified in the Netherlands in the late 1950s and was very apparent in the United Kingdom in the 1980s. These countries are generally viewed as stable, and their legal and financial systems and political institutions are considered strong and highly developed. Therefore the issue for these countries relates more to policy, but for CDDCs institutions also matter.
  18. UNCTAD (2009a) outlines a range of policies that governments could adopt to enhance tax revenue collection, widen the tax base and promote productive investment of commodity rents.
  19. A higher ore grade means that the metal content of the ore is higher, which reduces per unit costs of producing the metal and hence (all else being equal) yields larger profits for the mining company. Other natural sources of surplus mining profits include a high concentration of the ore near the surface and a favourable mine location. Note that natural differences in extraction costs also apply to oil and gas extraction.
  20. This policy proposal has been advocated by the WTO (2004) and the terms of trade gain is well known in trade theory. The WTO notes that “If a ‘large’ exporting country (or a group of small countries producing identical goods) levies an export tax, domestic production will fall, thus exports will decline and the world price will increase” (WTO, 2004: 4).
  21. A potential conflict between exporting countries is that mining operations in countries with relatively less productive mines will experience greatly reduced production in the long run as a result of export taxes, resulting in unequal benefits from cooperative export taxes.
  22. Nevertheless, in agricultural value chains it is easier to shift supplier than in mineral value chains; in the latter, few alternative suppliers exist, and firms must invest billions over many years to extract minerals.
  23. The asymmetric pass through of changes in world food prices to developing countries’ domestic prices may also be partly explained by competition, or a lack thereof.
  24. It is worth noting that in Ghana the government marketing board, Cocobod, continues to operate. Cocobod maintains a monopoly over cocoa bean exports and sets a floor on farmgate prices, effectively increasing farmers’ bargaining power vis-à-vis traders.
  25. For example in the case of cocoa, Abbott et al. (2005) find that, despite the fact that the export tax rate is the highest in Côte d’Ivoire, the exporter markups by TNCs operating in the country are by far the highest relative to those in other cocoa producing countries, with farmers receiving the lowest farmgate prices.
  26. See UNCTAD (2007), which discusses the concept of policy space and the challenges that this poses to development, particularly in Africa.

# COMMODITY BOOM AND BUST IN HISTORICAL PERSPECTIVE: NEW TWISTS



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## 1. COMMODITY BOOM AND BUST IN HISTORICAL PERSPECTIVE

This chapter briefly traces the evolution of commodity prices since the commodity boom of the 1960s. It then examines the similarities and differences between the recent boom of 2003–2011 and that of the 1970s with a view to identifying any parallels and lessons that could be learnt. This is followed by a discussion of the “new twists” to commodity boom-bust cycles, investigating in detail the extent of financialization of commodity markets.

An important common element to the commodity price booms in the 1970s and during the period 2003–2008 is that they coincided with periods of real depreciation of the dollar and low global interest rates. A particular feature and a “new twist” to the recent boom is the increasing presence of financial investors in commodity futures markets. During the 2000s, investment in commodity index funds has been heavily concentrated in the buy (long) side of those markets, and such a substantial influx of investment gives rise to futures price bubbles. These, in turn, affect spot prices by altering price expectations and providing incentives to hoard – a phenomenon never evident before. Furthermore, ethanol use as a proportion of world maize consumption has increased sharply since 2003–2004, which is effectively diverting food and animal feedstock to fuel production, resulting in higher maize prices. Also, despite concerns raised about the potential impact

on commodity prices as a result of strong Chinese demand for commodities, the analysis suggests that during the period 2005–2010 China’s share of world imports, although significant for several hard commodities, grew steadily, but was relatively small for most soft commodities.

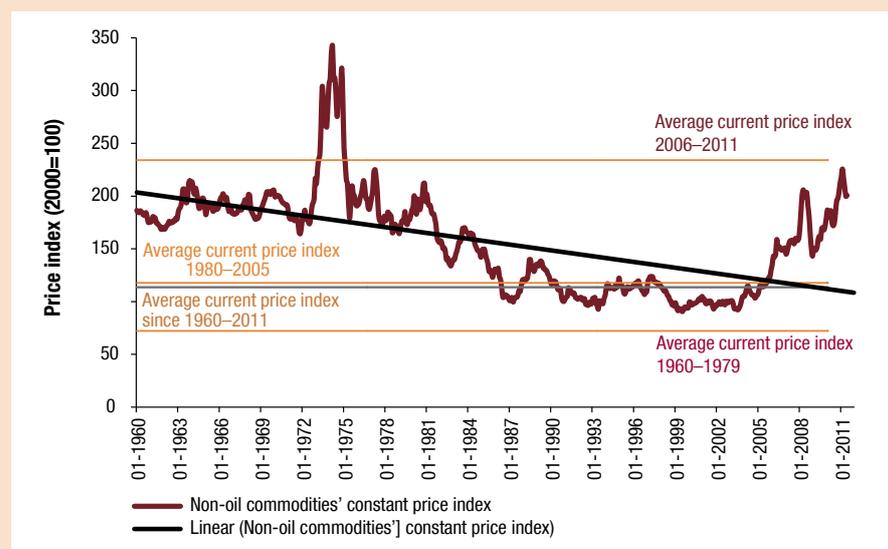
### 1.1. Overview of price trends, 1960–2011

Since 1960, the real prices of non-oil commodities had been relatively stable, but in 1974 they peaked to their highest level (Figure 2.1) in parallel with oil prices, and this was accompanied by an oil shock. During the period 1980–2000, commodity prices displayed some volatility, with temporary peaks in 1988 and 1997, but overall they declined.<sup>1</sup> However, the 1997–1999 Asian crisis contributed to a slump in dollar-denominated prices of primary commodities of 20 per cent (compared with 5 per cent for manufactures) (Page and Hewitt, 2001). By mid-2008, commodities had enjoyed a five-year price boom – the longest and broadest rally of the post-Second World War period after almost 30 years of generally low but moderately fluctuating prices for each sub-period. Moreover, once the prices had changed as a result of the two price shocks, there is a tendency for them to remain at their post shock level for the medium term. However, it has been relatively well established that there is a long-term downward trend in the relative prices of primary commodities vis-à-vis manufactures (Maizels, 1992).

*A new twist to the 2003–2011 commodity boom is the growing presence of financial investors in commodity futures markets.*

*By mid-2008, commodities had enjoyed a five year price boom – the longest since 1945.*

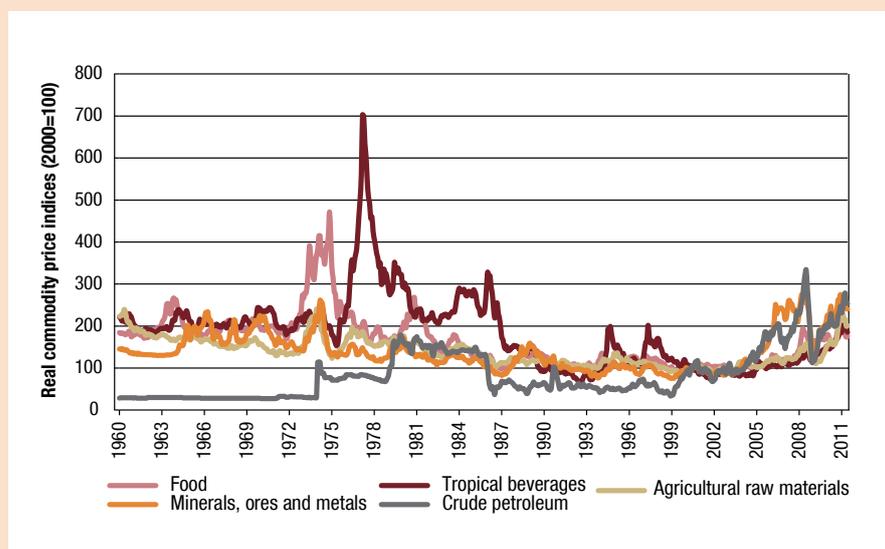
Figure 2.1. Non-oil commodity price index in constant terms, 1960–2011 (2000 = 100)



Source: UNCTAD secretariat calculations, based on UNCTADstat.



**Figure 2.2. Evolution of real price indices of commodities, 1960–2011**



Source: UNCTAD secretariat calculations based on UNCTADstat.

Note: Data for 2011 cover the period January to June.

Note: To compute prices in constant terms, the deflator used is the unit value index of manufactured goods exports by developed market-economy countries (United Nations Statistical Division).

As is widely recognized, during this period, there have been two major commodity price booms, one during the course of 1973–1980 and the second from 2003 to 2011. The recent commodity price boom is different from the previous one of the 1970s. For example, it has been argued that the 1970s commodity price spikes were short-lived (Radetzki 2006; Kaplinsky and Farooki, 2009). The historical data also show that significantly higher real prices of beverages and food commodities were recorded in the 1970s as compared with the period 2003–2011 (see Appendix 1).<sup>2</sup> However, the rise in commodity prices in the latter boom, especially from 2006 to 2008, was particularly pronounced in metals, crude oil and food (Figure 2.2).

Commodity price cycles are often asymmetric, with boom periods generally shorter than bust cycles (Page and Hewitt, 2001: 5). Moreover, Cashin, McDermott and Scott (2002) show that the magnitude of price slumps exceeds that of price rebounds during subsequent booms (see also, UNCTAD, 2003).

Most studies accept that relative commodity prices are non-stationary, with debate coalescing around the issue of whether the trend is deterministic or reflects structural breaks (Cashin, Liang and McDermott, 1999: 3). From mid-2008 to 2009, as a result of the global financial and economic crisis most commodity prices plummeted as global growth slowed down and consumer demand weakened in most major economies. However, since then all commodity subgroups have rebounded strongly: for ex-

ample, in 2011 average prices of metals, agricultural raw materials and beverages even surpassed 2008 averages (see Appendix 1).<sup>3</sup> This appears to challenge conventional arguments about the asymmetric nature of commodity price cycles, and may be reflected by the rising importance of “new twists” to the commodity problem which play a critical role in changing long-term demand patterns for commodities.

## 2. THE COMMODITY BOOMS OF THE 1970S AND 2000S COMPARED

Commodity markets are characterized by price cycles which can have grave macroeconomic consequences for CDDCs and pose major challenges for their policymakers. Such cycles usually have periods of short-lived boom followed by longer periods of bust (for a detailed account of booms and busts, see Cashin, McDermott and Scott, 2002). However, the recent boom between 2003 and 2011 somewhat reversed that trend. It was recorded as the longest in the history of commodity price movements, and the broadest, affecting almost all commodities – minerals and metals, energy and agricultural. At the beginning of the boom, world prices rose gradually, but the pace intensified between 2006 and 2007, and by mid-2008 energy prices were 320 per cent higher (in dollar terms) than in January 2003, metals and minerals were 296 per cent higher and internationally traded food prices 138 per cent higher.

*Significantly higher real prices of beverages and food commodities were recorded in the 1970s as compared to the 2000s.*

*From mid-2008 to 2009, as a result of the global financial crisis most commodity prices plummeted... However, since then all commodity subgroup prices have rebounded strongly.*



Since 2001, there has been a gradual contraction in industrial growth in the high-income OECD countries.

Prior to the 2003–2011 commodity boom, two major commodity booms had occurred since the Second World War. The first related to the Korean War in 1950, when insecurity about the supply of industrial minerals prompted a widespread build-up of strategic inventories and demand, causing prices to spike. The second was spurred by strong macroeconomic performance in 1972 and 1973 as well as two years of crop failures that led to low inventories both for food and agricultural raw materials (Radetzki, 2006).

The across-the-board increases in industrial commodity prices which preceded the increases in oil prices in the 1970s were largely due to strong industrial growth and expansionary monetary policies led by the United States beginning in 1971 which is why it was not only oil prices that increased, but also commodity prices more broadly (Barsky and Killian, 2002).<sup>4</sup> <sup>5</sup> Moreover, a common feature of the 1970s and of recent boom cycles is the rise in private capital flows to developing countries<sup>6</sup> and emerging market economies (e.g. the BRICS) which began under conditions of rapid expansion of liquidity and low interest rates in the major reserve-issuing countries, particularly the United States (Akyuz, 2011; Morgan, 2011).<sup>7</sup> The next subsection compares the following elements of the 1970s and 2000s commodity booms: world industrial production trends and United States exchange rate and monetary policies.<sup>8</sup>

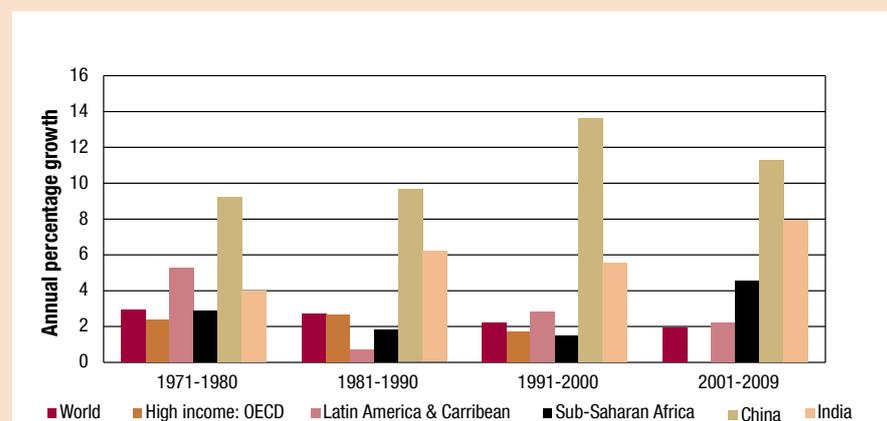
## 2.1. World industrial production

Growth in world industrial production during the 1970s compares favourably with the 2000s; on

average, world industrial growth between 1971 and 1980 was 3 per cent, while for the period 2001–2009 it averaged 1.9 per cent (Figure 2.3). Therefore, despite the increasing importance of emerging market economies, such as China and India, relative to the high-income OECD countries as drivers of world industrial growth, world industrial growth has not outperformed the 1970s. This is mainly because the rate of growth of industrial output in the OECD countries slowed significantly to near 0 per cent during the period 2001–2009. And since these countries accounted for an average of 66 per cent of global industrial value added during the period 2005–2009, the rate of industrial growth in these countries continues to have a more significant effect on world industrial growth relative to other regions/countries. Latin America and the Caribbean have also experienced a slowdown in industrial growth since the 1970s. On the other hand, sub-Saharan African countries have experienced a rebound in industrial output over the past decade after a relatively poor performance in the 1980s and 1990s. However, their share in world industrial output is currently only 1 per cent.

The declining share of manufactures in GDP in the OECD countries, from 25 per cent in 1980 to 15 per cent in 2009 (Figure 2.4), suggests, *inter alia*, a slowdown in industrial growth in these countries. This reflects a relocation of manufacturing from the developed countries to the newly industrializing economies (NIEs) of East and South-East Asia. In addition, this trend might have been influenced to some extent by recent falls in the income elasticity of demand for commodities (particularly for raw ma-

Figure 2.3. Average annual growth rate of industrial value added, 1971–1980 to 2001–2009 (per cent)



Source: UNCTAD secretariat calculations based on World Bank, World Development Indicators database (accessed: 20 June 2011; data on 2010 not available at time of writing).

Note: The World Development Indicators database does not include CDDCs as a group. Therefore, Latin America and sub-Saharan Africa serve as proxies for CDDCs, while China and India separately serve as proxies for emerging economies. Unfortunately, for the West Asia/North Africa region, since data are available only until 2007, this group is not presented separately.

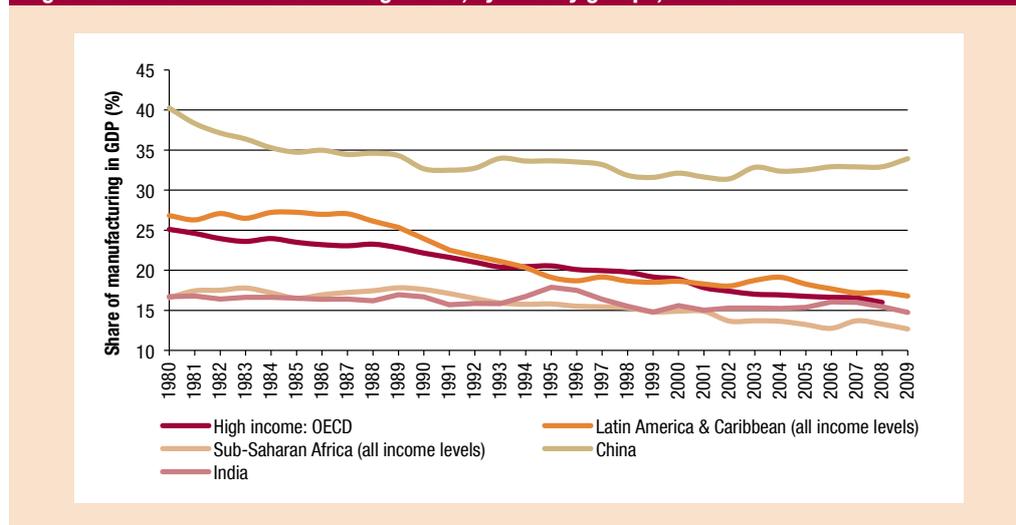


materials used in manufacturing), which has hindered growth of the commodities sector.

In other regions as well the share of manufacturing in GDP has been declining, though to varying extents, except in India where it has remained relatively constant (Figure 2.4). Thus, the structural decline of this sector's share in GDP in OECD countries is not

being offset by its increase in the rest of the world. As noted earlier, since OECD countries still account for 66 per cent of world industrial production, if they remain in stagnation, the BRICS alone clearly cannot drive up commodity prices. However, the services sector has begun to account for an increasing share of world value added, from 56 per cent of GDP in 1980 to 70 per cent by 2008.<sup>9</sup>

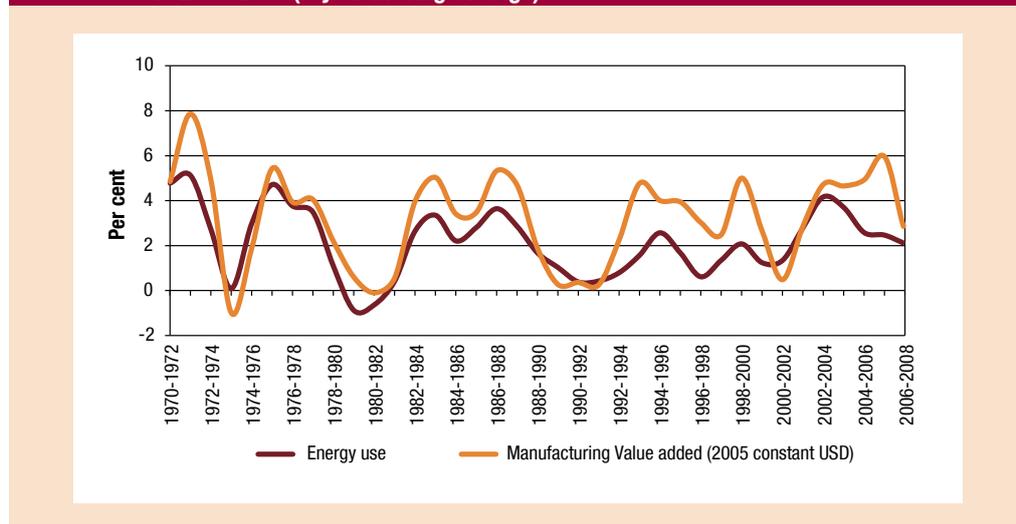
**Figure 2.4. Share of manufacturing in GDP, by country groups, 1980–2009**



*Since 1980, a structural decline in manufacturing share of GDP in OECD countries is not being offset by its increase in the rest of the world.*

Source: UNCTAD secretariat calculations based on World Bank, World Development Indicators database (accessed 30 June 2011).

**Figure 2.5. Growth rate in world manufacturing value added and energy use 1970-1972 to 2006-2008 (3-year moving average)**



Source: UNCTAD secretariat calculations, based on UNCTADstat for manufacturing value added, and on World Bank, World Development Indicators database for energy use (accessed 8 December 2011).

Notes: The time window to which the moving average refers is centred on the year reported on the X-axis (i.e. the 3-year moving average data for 1972 is the growth rate of the relevant variable over the 1971-1973 period). The estimated correlation coefficient is 0.81.

Energy use (thousand tons (kt) of oil equivalent) refers to use of primary energy before transformation to other end-use fuels, which is equal to indigenous production plus imports and stock changes, minus exports and fuels supplied to ships and aircraft engaged in international transport (World Bank, World Development Indicators database).



*It is likely that China and India will continue along a commodity-intensive growth path, as both of their per capita GDP and intensity of resource use have some way to go before reaching the levels of the US and Europe.*

Historically, in the process of industrialization, the resource intensity of growth in Europe, Japan, the Republic of Korea and the United States has been high. Therefore, it is likely that China and India will continue along a similar commodity-intensive growth path, as both their per capita GDP and intensity of resource use have some way to go before reaching the historic levels of the United States and Europe. Their demand for steel, coal, aluminium, copper and other minerals and ores is likely to rise for some decades to come (Kaplinsky and Farooki, 2010).<sup>10</sup> Moreover, there is some evidence of a strong correlation between world growth in manufacturing value added and in energy use during the period 1970 to 2011 (Figure 2.5), which can be considered a proxy for world demand for hard commodities.<sup>11</sup> In this respect, a parallel can arguably be established between the demand conditions for energy in the mid-1970s and the corresponding conditions in the mid-2000s.

## **2.2. United States exchange rates and global monetary conditions**

### **2.2.1. Parallels in United States exchange rates and monetary conditions**

The 1970s and 2000s were characterized by a real depreciation of the United States dollar and low real interest rates globally. There are a number of mechanisms through which real interest rates and exchange rates affect commodity prices, which are explained below. First, however, it is useful to describe the main parallels between global monetary conditions in the 1970s and the 2000s.

In the 1970s, the breakdown of the Bretton Woods system of gold-based fixed exchange rates permitted substantial monetary expansion in the United States, which was associated with a real depreciation of the dollar, by 50 per cent between 1971 and 1980, as well as to a lowering of global real interest rates (McKinnon, 1982; Barsky and Killian, 2002). Between 2001 and 2010, although the dollar again depreciated, by 26 per cent, the United States recorded a growing trade deficit which has been financed by sizeable capital inflows from emerging economies. These inflows have provided a source of cheap capital and have helped to maintain low interest rates that were first introduced following the 2001 economic slowdown.<sup>12</sup>

In response to the expansionary monetary policies of the United States, central banks in emerging market economies, such as Brazil, intervened in 2010 and 2011 to prevent their currencies from appreciating too much against the dollar, although with only modest success, as other factors were also playing a role. In both periods – 1970s and 2000s – the United

States effectively exported monetary expansion and inflation to other countries that attempted to prevent strong appreciation of their currency against the dollar, thereby lowering world real interest rates in the process (McKinnon, 2011).

### **2.2.2. The effects of real interest rates on commodity prices**

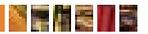
Low real interest rates can push up commodity prices by lowering borrowing costs and thereby catalyzing investment and stimulating demand.<sup>13</sup> The low real interest rates in the United States and thus its monetary policy over the last decade not only increased liquidity in the United States but also in commodity markets worldwide. As commodities are traded in dollars, this increased liquidity generated upward pressure on commodity prices.

There are three other channels through which a low real interest rate increases commodity prices: (i) it reduces the incentive for extraction today rather than tomorrow, thereby reducing supply; (ii) it lowers the cost of holding inventories, thus stimulating demand; and (iii) it shifts financial investment away from United States Treasury bills into commodity-related portfolio investments and commodity index funds, causing an overshooting of commodity prices<sup>14</sup> (discussed in section 3.5.1; see also Frankel, 2008). However, each of these three explanations has inherent caveats, which are explored below.

### **2.2.3. Interest rates and the intertemporal trade-off in commodity production**

If interest rates and commodity extraction are directly related, it is argued that, all other things being equal, as interest rates rise mine owners could discount future profits more heavily relative to current profits. The net prevailing value of current revenues will therefore increase as the interest rate rises, leading to greater extraction in the current period. This is termed the Hotelling model. Conversely, lower interest rates should lead to reduced supply in the current period. Thus the effect of lower interest rates should be an increase in prices in the current period as supplies contract.<sup>15</sup> This can only be applied to commodities which are scarce and non-renewable, such as metals, whose extraction necessarily diminishes the remaining amounts available. For agricultural commodities, no such intertemporal trade-off in production exists. However, the Hotelling model is too simplistic to be generalized, since it fails to distinguish between the economic agents involved. There are conflicting interests and motivations between the private mining companies operating the mines, the private (or State) landlords seeking to earn land rents, and government royalties (i.e. production taxes – effectively a share of profits/rents).

*The 1970s and 2000s were characterized by dollar depreciation and low real interest rates globally.*



For example, mining companies can invest their accumulated capital in the development of new mines or the acquisition of other mining companies, rather than in United States Treasury bonds to earn interest. In contrast to the Hotelling model, low real interest rates reduce the cost of borrowing capital, which is particularly important in mining development owing to its capital intensity and long gestation periods before profits can be realized. Thus, low interest rates in fact encourage increased borrowing and investment in mining development, raising overall supply in the medium term. Indeed, except for the period mid-2008 to 2009, there has been increasing investment in mine development by mining companies in recent years (PWC, 2011).

Where mining operations are State-owned, or where the State levies production taxes, there are many other factors influencing extraction levels beyond interest rate concerns. For example, in the case of national gas or oil companies, which currently control approximately 90 per cent of the world's oil reserves and 75 per cent of global production, the World Bank (2011) outlines many factors which determine extraction decisions beyond interest rate concerns. These factors include international agreements on supply (particularly OPEC quotas), public spending pressures, intergenerational concerns, suitable reinvestment opportunities, Dutch disease-related issues, short-term versus long-term price expectations, as well as extraction cost expectations. As Stiglitz (2007) explains, high current costs of extraction may provide incentives for governments to wait and extract at a later date if there is expectation of

technical progress in extraction techniques. This also applies to large private producers.

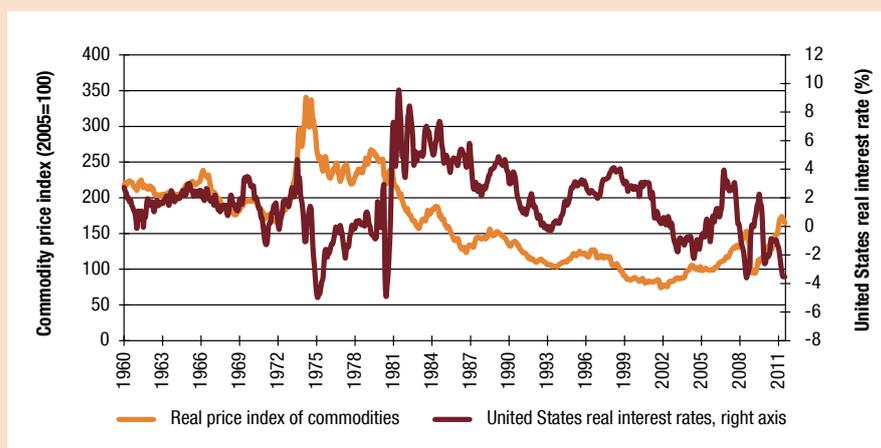
#### 2.2.4. Interest rates and commodity inventory holding

In the context of strong physical demand and rising commodity prices, low real interest rates will lower the cost of carry,<sup>16</sup> and so encourage inventory hoarding in the expectation of capital gains on inventories at a future date. However, when prices of commodities are declining, low real interest rates and the convenience yield associated with holding inventories must be weighed against possible depreciation of inventory holdings over time as commodity prices fall.

Although there appears to be a negative relationship between commodity price indices and real interest rates, the relationship is not statistically stable over time (Frankel, 2008, and figure 2.6). During the 1970s, spikes in commodity prices corresponded with periods of low real interest rates. This also occurred in mid-2008, and once again since 2009 the recovery in commodity prices has coincided with a period of low interest rates (see discussion on financialization in section 3.1.1). As a result of the lack of stability between commodity price indices and real interest rates, more recently in the context of rising commodity prices, as real interest rates fell from 2.8 per cent in July 2007 to -3 per cent by June 2008, the commodity rate of interest<sup>18</sup> fell by a greater amount for many commodities as the spike in commodity prices in mid-2008 may have provided incentives to hoard inventories (Figure 2.6).

*Low real interest rates can raise commodity prices by lowering borrowing costs and thereby catalyzing investment and stimulating demand.*

**Figure 2.6. Evolution of real interest rates in the United States and real price index of commodities, 1960–2011**



Source: Thomson Reuters, Datastream.

Note: Real interest rates are calculated as the United States' effective federal funds rate less consumer price index (CPI) inflation rate. The commodity price index is derived from the Commodity Research Bureau Commodity Index, deflated by United States core CPI.



However, there is limited evidence that any hoarding actually took place during the recent commodity boom, although in the case of extractive commodities such as crude oil, rates of extraction may have been reduced because low interest rates would yield low returns on revenues generated (Davidson, 2008; Baffes and Haniotis, 2010). Thomas, Muhleisen and Pant (2010) note that OPEC production averaged about 97 per cent of capacity between 2005 and late 2008, and OPEC only cut supplies in 2009 in response to the collapse in prices in late 2008. In the absence of physical evidence of hoarding, the conclusion is not that incentives to hoard do not exist in the context of rising commodity price expectations and low interest rates; rather, that there are incentives to hoard on both the supply and demand sides of the market on expectations of higher prices in the future. A simultaneous reduction in supply and increase in demand at any given spot price<sup>19</sup> results in spot prices rising to a new equilibrium without the requirement of any change in the quantities traded or evidence of accumulating physical inventories on either the supply or demand side of the market.<sup>20</sup>

### 2.3. Effect of changes in real exchange rates on commodity prices

The real depreciation of the dollar makes commodities (which are generally priced in dollars) cheaper to non-United States buyers, increasing their purchasing power and demand for commodities, and therefore associated with a rise in dollar-denominated prices of commodities (IMF, 2008). In the case

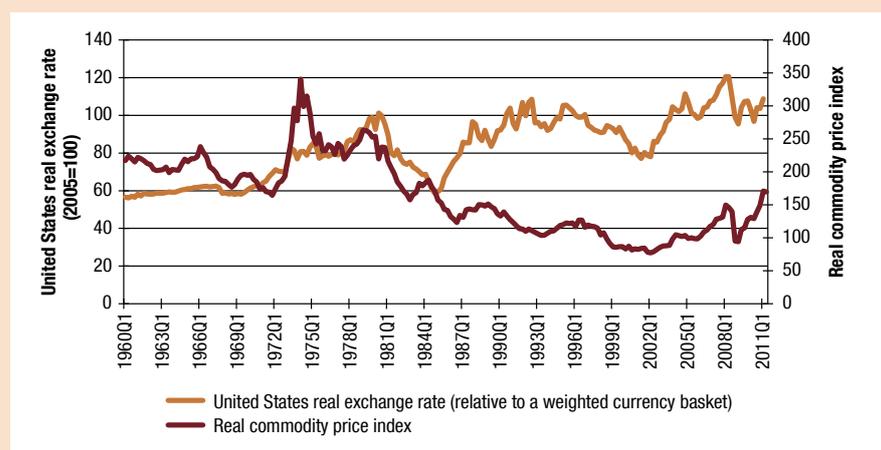
of non-United States producers, dollar depreciation effectively lowers revenues expressed in domestic currency, which places pressure on prices to rise in order to maintain margins. Abbot, Hurt and Tyler (2008) discuss the effects of dollar depreciation on the prices of agricultural commodities (such as maize, wheat and soybeans), a large proportion of which are exported by the United States. They note that its depreciation leads to a gain in United States export shares, but at the same time increases the dollar-denominated prices of those commodities as foreign demand rises and domestic supply falls.

A falling dollar also reduces the relative returns on dollar-denominated financial assets, which can make commodities a more attractive asset class for investments that are invested in futures contracts (IMF, 2008), feeding through to higher spot prices. An additional channel is where dollar depreciation leads to monetary expansion in countries whose currencies are pegged to the dollar. Without effective sterilization of foreign exchange interventions, this leads to lower real interest rates and increased liquidity, thereby stimulating demand for commodities.

The effect of dollar depreciation on commodity prices is more pronounced when commodity inventories are low. In those conditions, increased demand following dollar depreciation by non-United States buyers will only be met by close to perfectly inelastic supply, since, in contrast to manufactures, supplies of commodities cannot readily be increased in the short run in response to demand. This leads to an instant increase in dollar prices with little, if any, change in the quantity supplied. Conversely, when

*The effect of dollar depreciation on commodity prices is more pronounced when commodity inventories are low.*

**Figure 2.7. United States real exchange rate and real commodity prices, 1960–2011**



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

Note: The real dollar exchange rate is calculated relative to a basket of currencies comprising the euro, the Canadian dollar, the pound sterling and the Japanese yen with weights 2:1:1:1. Percentage changes in the deutsch mark exchange rate are used to estimate the dollar/euro exchange rate prior to 1999. To derive real exchange rates, all nominal exchange rates are multiplied by the ratio of the country's GDP deflator relative to the United States GDP deflator.



inventories are high, dollar depreciation and subsequent increases in demand from non-United States buyers can be readily met through supplies drawn from commodity inventories. It is for this reason that real exchange rate effects on prices are conditional on low inventories. Indeed, it follows that the relationship between commodity prices and the real dollar exchange rate against a basket of currencies should not be expected to be constant over time, but dependent on available supplies relative to demand. Since 1960, it is only during periods where supplies have been limited and stocks low (i.e. in the 1970s and during the past decade), that there has been a significant positive correlation between the dollar exchange rate and commodity prices (Figure 2.7).

Crude oil and petroleum are particularly important to the United States trade balance since they constitute the largest proportion of imported goods (by SITC code) into the United States (ITC, 2011). Hence, a rise in the oil price adversely affects the United States trade balance and hence the United States current account, which can then lead to a depreciation of the dollar relative to other currencies. Importantly, during the period 2001–2008, the oil price increased from an annual average of \$22 per barrel to \$90 per barrel.<sup>21</sup> As a result, oil and petroleum as a percentage of total goods imports (by value) into the United States increased from 9 per cent in 2001

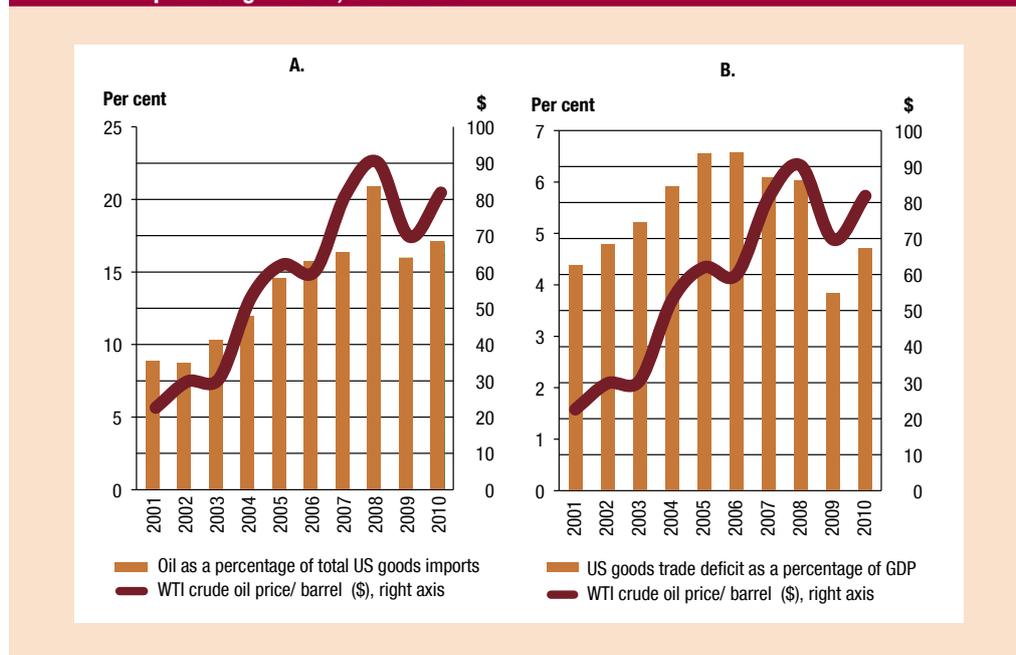
to 21 per cent in 2008 (Figure 2.8). As expected, the increase in the oil price during this period contributed to a deteriorating United States trade balance: the United States goods trade deficit increased from 4.4 per cent of GDP in 2001 to 6 per cent in 2008<sup>22</sup> (Figure 2.8).

The composition of EU imports differs from that of the United States in that crude oil and petroleum constitute a significantly smaller proportion of the area's total goods imports, at 6 per cent in 2001 and rising to 11 per cent in 2008 as oil prices increased (Figure 2.9). This is a major reason why, in contrast to the United States, the euro area's external trade deficit as a percentage of GDP has remained near zero per cent since 2001, despite increases in oil prices (Figure 2.9).<sup>23</sup> At the same time, oil-exporting countries tend to raise their oil prices (in dollars) to maintain their incomes from oil revenues against a basket of currencies (UNCTAD, 2009).

Thus, any increases in oil prices will lead to a depreciation of the dollar relative to the euro, given that the United States trade deficit grows far more significantly than that of the euro zone. Furthermore, as the dollar depreciates against the euro, the purchasing power and demand for oil (at any given dollar price) in the euro zone increases, leading to even higher dollar-denominated oil prices. A further

*During the period 2001-2008, the oil price increased from an annual average of \$24 per barrel to \$97 per barrel.*

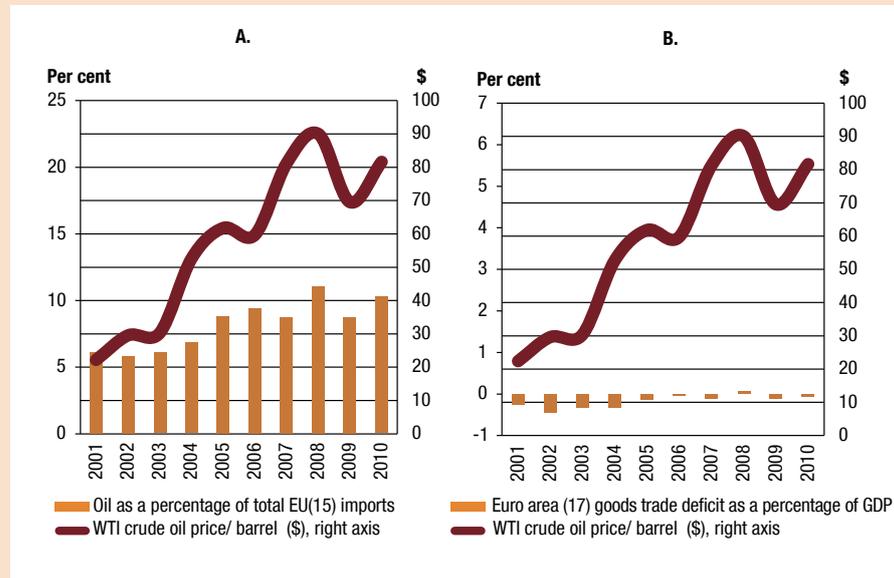
**Figure 2.8. Price of crude oil compared with (a) share of crude oil and petroleum in total goods imports of the United States, and (b) the United States trade deficit as a percentage of GDP, 2001–2010.**



Sources: ITC (2011) for data on crude oil and petroleum imports; Thomson Reuters, Datastream for data on WTI crude oil annual mean price/barrel; ITC (2011) for data on United States trade deficit; and United States Bureau of Economic Analysis (2011) for GDP in current dollars.



**Figure 2.9. (a) Share of crude oil and petroleum in EU goods imports vs. crude oil price; (b) Euro area goods trade deficit as a percentage of GDP vs. crude oil price, 2001–2010**



Sources: ITC (2012) for data on imports of crude oil and petroleum; Thomson Reuters, Datastream for data on annual mean price/barrel of WTI crude oil; European Central Bank, Eurostat (2011) for goods trade deficit as a percentage of GDP in euro area.

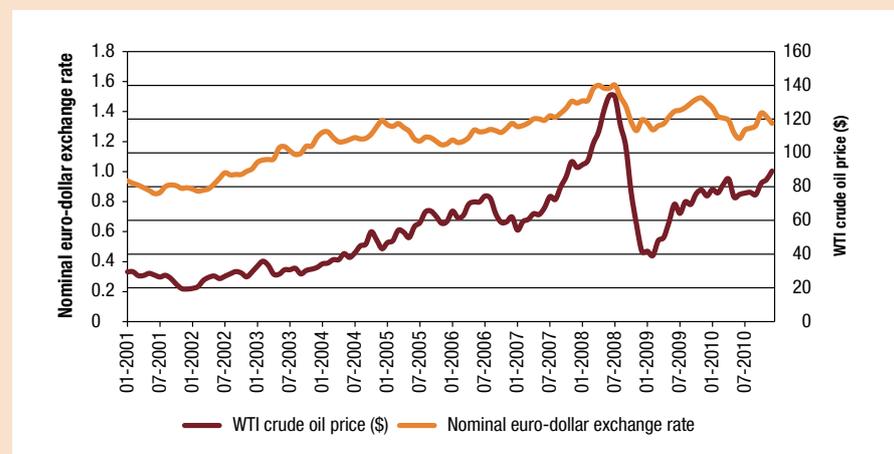
The IMF estimates that a 1 per cent real depreciation of the dollar would result in a greater than 1 per cent increase in the real prices of gold, crude oil, aluminium and copper in the long run.

increase in oil prices contributes to a further deterioration of the United States trade balance relative to that of the euro area, which is associated with a still greater depreciation of the dollar, and higher oil prices. It is this phenomenon which explains the strong correlation between nominal oil prices and the appreciation of the euro-dollar exchange rate since 2001 (Figure 2.10). Thus the persistent depreciation of the dollar relative to the euro between 2001 and 2008 created incentives for diversification of dollar

foreign exchange reserves to euros by the OPEC and other countries with persistent trade surpluses, and to their accumulation of increasingly large foreign exchange reserves.

What are the potential implications of dollar depreciation for commodities? The IMF estimates that a 1 per cent real depreciation of the dollar would result in a greater than 1 per cent increase in the real prices of gold, crude oil, aluminium and copper

**Figure 2.10. Evolution of the nominal euro-dollar exchange rate and crude oil price, 2001–2010**



Source: Thomson Reuters, Datastream.



in the long run, after controlling for world industrial production, interest rates and inventory levels.<sup>24</sup> For cereals, however, dollar depreciation does not appear to be an important determinant (IMF, 2008). This is consistent with Gilbert (2010a) who also finds no statistically significant effect of dollar depreciation on food prices.<sup>25</sup> In contrast to crude oil, the United States is a major exporter of cereals and soybeans, which in 2010 collectively accounted for 17.9 per cent of United States net exports.<sup>26</sup> Thus an increase in cereal and soybean prices improves the United States trade balance and reduces depreciation of the dollar in the medium term. This effectively counteracts any inverse relationship between dollar exchange rates and dollar-denominated cereal and soybean prices.

### 2.3.1. United States exchange rate and monetary policy: implications for commodity prices

Since 2009, the strong rebound in prices of commodities and United States equities has partly been driven by a modest economic recovery. But it has also been driven by low interest rates and quantitative easing in the United States, which has resulted in greater financial investments in equities and commodities futures by primary dealers while real capital investment has lagged behind. This has led to concerns about overshooting in equity and commodity prices beyond what would be justified by economic fundamentals (Roubini, 2009).

Since 2008 the Federal Reserve has not been expected to raise interest rates relative to other countries, and so the dollar has remained the major funding currency in carry trades.<sup>27</sup> This is because not only could investors borrow dollars at near 0 per cent nominal interest rates, but also, given the expectation that the dollar would further depreciate, the value of dollar loans would effectively decline relative to that of other currencies and world financial asset prices, yielding a negative real interest rate of 10–20 per cent (Roubini, 2009).

Moreover, the United States faces inflationary pressure due to: (i) growing speculation in commodity markets; (ii) Chinese growth until 2011; and (iii) rapid expansion of liquidity and low real interest rates. If this results in a tightening of monetary policy in the United States, the current “boom” may become a “bust” similar to that of the 1970s (Akyuz, 2011). There have been recent signs of economic slow-down in China, which, if prolonged, could substantially reduce its demand for commodities, resulting in a major downswing in commodity prices.<sup>28</sup> For those CDDCs (mainly in sub-Saharan Africa and Latin America) that have benefited the most from

rising commodity prices and the expansion of global liquidity (some of which have run up significant current-account deficits) this could have significantly deleterious impacts on growth and poverty reduction efforts. Some CDDCs have generated current-account surpluses, as rising commodity prices have generated higher export revenues. Beyond the exchange rate and the monetary policy of the United States, other factors appear to have become more important in commodity price formation in the last decade or so. Some of these factors are discussed in the next section.

## 3. NEW “TWISTS” TO THE PERENNIAL COMMODITY PROBLEM

### 3.1. Changing long-term demand patterns for commodities

There are several new elements or “twists” to the perennial commodity problem, such as:

- Growth in developing-country markets, especially in the BRICS, for minerals, metals and energy commodities;
- Growth in developing-country markets for high-value agricultural commodities through new and dynamic wholesale and retail outlets such as supermarkets. This growth is being driven mainly by urbanization and the increasing purchasing power of consumers in many developing countries, as well as changing food preferences/food consumption patterns;
- Growth of biofuels, which has increased competition for cropland resources;
- The increasing role of TNCs in international trade in commodities;
- Financialization of commodity markets;
- Sanitary and phytosanitary (SPS) standards and technical barriers to trade (TBT); and
- Climate change, environmental pressures as well as major public health challenges which may have implications for productivity (e.g. avian flu, HIV/AIDS, malaria).

Some of these global trends and new twists are discussed in chapters 3 and 4 of this report. This section discusses four major new elements or “twists” to the perennial commodity problem: financialization of commodity markets, the growing importance of biofuels, Chinese demand for commodities and the growing role of TNCs in international commodity trade. These four factors have a strong impact on long-term demand patterns for commodities. These factors are discussed below.

*There have been recent signs of economic slow down in China, which, if prolonged, could substantially reduce its demand for commodities, resulting in a major downswing in commodity prices.*



### 3.1.1. Financialization of commodity markets

The sustained but volatile increases in commodity prices since 2003 have been accompanied by a growing presence of financial investors in commodity derivative markets and by low real interest rates on United States Treasury bills. This section first examines a number of mechanisms through which United States real interest rates and exchange rates have affected commodity prices (see also section 2.3). This is followed by an assessment of the degree to which large-scale speculative activities in commodity-linked financial derivative markets have affected commodity prices.

#### A. FINANCIAL INVESTMENT IN TREASURY BILLS VERSUS COMMODITIES

Frankel's (2008) contention that low real interest rates encourage investors to reallocate funds out of Treasury bill holdings into commodity markets implicitly assumes that investors physically hoard commodities in spot markets. However, with the exception of precious metals, financial investment in commodities does not take the form of physical handling. Rather, it has taken the form of speculation on commodity price movements via commodity index funds, which are rolling commodity futures contracts traded at futures and options exchanges<sup>29</sup> (Masters and White, 2008). If done in the United States, there is not necessarily a trade-off between returns on Treasury bills and returns on commodities, as the collateral or "margin" requirements against futures positions can take the form of Treasury bills, according to regulations of the Commodity Futures Trading Commission (CFTC).<sup>30</sup> Therefore a speculator can earn interest on Treasury bills while simultaneously speculating on commodity prices.

An alternative contention about the effects of low real interest rates on commodity prices is that they create "excess liquidity", that is the excessive investment of new money into commodity index funds (Baffes and Haniotis, 2010). According to Calvo (2008), during the period 2007-2008 the excess liquidity largely arose as a result of sovereign wealth funds rebalancing their portfolios – withdrawing from low-yield United States Treasury bills and buying higher yielding equities (corporate stocks) – which had the effect of raising the yields on United States Treasury bills and the United States effective federal funds rate<sup>31</sup> in the process. Therefore, some argued that the United States Federal Reserve was forced to intervene with expansionary open market operations (i.e. buying Treasury bills and other securities with new money) in order to maintain the target interest rate. The end result was an increase in the money supply and higher commodity prices.

Notably, the Federal Reserve has continually reduced the federal funds target interest rate, from 4.75 per cent in September 2007 to 0–0.25 per cent by December 2008 – at the onset of the 2008-2009 recession. It followed this with two rounds of quantitative easing programmes (further purchases of government bonds and mortgage-backed securities with new money) totalling \$2.3 trillion between November 2008 and June 2011 (Federal Reserve, 2011). Calvo (2008) maintains that commodity speculation in futures markets is not to blame for commodity price spikes; rather, he believes it is monetary expansion, and thus excess liquidity, which inflates commodity prices. Thus commodity price increases merely precede general inflation, because commodities are characterized by flexible prices (they adjust immediately), whereas the prices and wages for manufactured goods adjust more gradually (with a time lag).<sup>32</sup>

However, before concluding that speculation in futures markets has no effect on commodity prices, it is important to analyse the agents through which expansionary open market operations by the Federal Reserve take place. This will provide a deeper understanding of the process by which expansionary monetary policies can raise commodity prices. The Federal Reserve undertakes open market operations through designated primary dealers which consist of major investment banks/broker dealers, such as Goldman Sachs, JP Morgan, Citigroup, HSBC and Barclays Capital (Federal Reserve, 2011). The new money created is transferred to primary dealers in exchange for Treasury bills and other securities, thereby reducing government bond yields and the federal funds interest rate in the process. For primary dealer investment banks, lending the newly created money to financial investors involved in equity and commodity index fund investments via margin accounts<sup>33</sup> is more secure than lending directly to non-financial firms or consumers for the purposes of purchasing physical commodities or real investments. This is because financial investors' margin accounts and associated liquid financial assets can at all times be directly monitored or managed by the primary dealer; a client's positions can be readily liquidated by the primary dealer whenever the client's funds fall below the borrowed amount, thus ensuring that the lender does not incur material loan losses. In contrast, direct lending to commercial firms for illiquid real capital investments or for purchasing physical commodities cannot be so readily liquidated and pose a risk of substantial loss to the lender. This effectively creates asymmetry in the lending risk of primary dealers, and favours lending at lower interest rates to clients investing in liquid financial assets such as equities and commodity futures contracts, as opposed to real capital investment.

*An alternative contention about the effects of low real interest rates on commodity prices is that they create "excess liquidity" – often investing new money in commodity index funds.*



Such asymmetry in lending risk is particularly important since the collapse of the real estate bubble in 2008, which skewed lending in favour of financial investors. As a result, expansionary monetary policies and financial investment which lead to a rise in equity and commodity futures prices can readily overshoot real investment in the economy.

By reducing the returns on Treasury bills, the Federal Reserve is providing incentives to financial investors to rebalance their portfolios towards potentially higher yielding assets, such as equities, commodity index funds<sup>34</sup> and commodity futures contracts with the quantitative easing, further inflating financial equity<sup>35</sup> and commodity futures prices.<sup>36</sup> It might be noted that most index funds and exchange-traded funds are in equities. But while commodity index funds are small in relation to those for equities, they are very large in relation to the size of even the oil market, let alone other commodities.

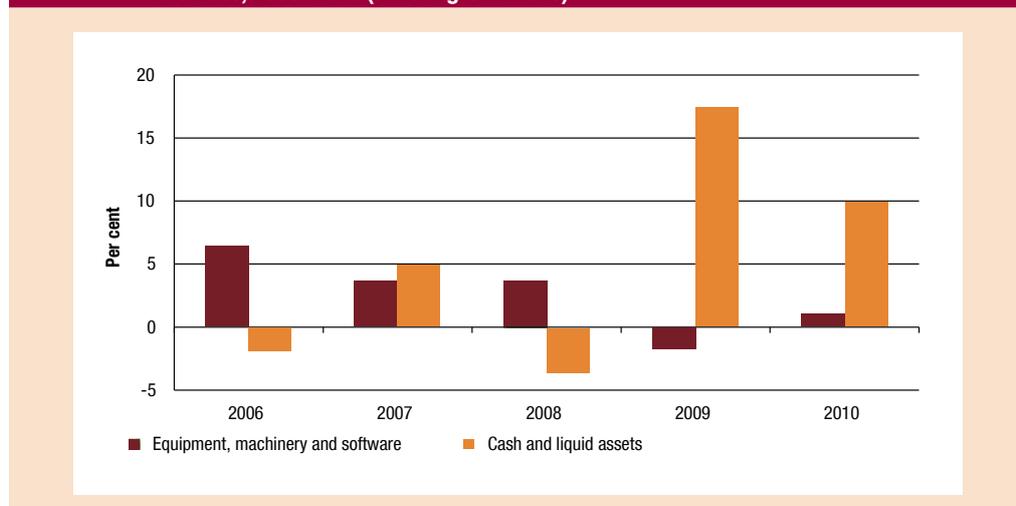
There is a major difference between equity investment and commodity index fund investment in that in contrast to buying equities, Treasury bills can be placed as collateral against commodity futures positions,<sup>37</sup> therefore returns on commodity index funds are higher than those on Treasury bills. Nevertheless, as Treasury bill returns fall as a result of expansionary monetary policies, the difference between excess returns on commodity index funds and those on Treasury bills rises, providing increased incentives to place Treasury bills as collateral (margin) against more risky, higher yielding positions in commodity futures markets. Importantly, non-commercial financial investment in commodity futures markets has been concentrated on the buy (long) side of the com-

modity futures market, with a significant proportion taking the form of passive investment in large commodity index funds such as the Dow Jones UBS and S&P Goldman Sachs Commodity Index – indexes that involve taking long positions in a range of commodities in preset weights. There was a substantial influx of long side investment in commodity futures since the start of the commodity price boom, which was exacerbated by monetary expansion. This gave rise to commodity futures price bubbles through “weight of money” effects, as increasing inflows of long (buy) positions in themselves raise commodity futures prices. This is because for each futures price there is a given supply of ask (sell) orders, which is not infinite, therefore relatively large bid (buy) orders will raise futures prices. Higher futures prices affect commodity spot markets by altering price expectations and market sentiments (Nissanke, 2012).

In January 2011, Federal Reserve Chairman, Ben Bernanke, noted that United States quantitative easing programmes had contributed to a stronger stock market since the collapse of equities in 2008–2009.<sup>38</sup> However, the monetary expansions have not led to any significant improvement in United States employment, which remained above 9 per cent for much of 2011 and declined only in January 2012 to 8.3 per cent. The underlying reason for this is that, although United States equity prices and corporate balance sheets have grown substantially following the quantitative easing programmes beginning in late 2008, capital, in aggregate, rather than being invested in expanding employment or in new machinery and equipment, has largely taken the form of corporate cash and liquid asset hoarding (see Figure 2.11).<sup>39</sup>

*While commodity index funds (CIFs) are small in relation to investments in equities, they are very large in relation to the size of the oil and other commodities markets.*

**Figure 2.11. Aggregate balance sheet of United States non-farm, non-financial corporate business, 2006–2010 (annual growth rate)**



Source: Federal Reserve (2012).

Note: Liquid assets include shares in low-risk short-term money market funds and United States Treasury securities.



Therefore, rising equity prices are not necessarily a reflection of real economic investment and growth or of real demand for commodities; rather, they may reflect a potentially unsustainable asset price bubble fuelled by monetary expansion. This analysis is consistent with UNCTAD (2011), which notes that the synchronized increases in equity and commodity prices since 2008 are not sustainable, given the low capacity utilization in processing/manufactures industries, which are the underlying sources of physical demand for commodities.

In summary, United States expansionary monetary policies appear to have fuelled asset price bubbles in both equity and commodity futures markets, as primary dealers have skewed lending towards financial asset investors as opposed to riskier real capital investment and consumption. With financial investors rebalancing portfolios away from low-yielding Treasury bills towards equities and commodity futures, this has contributed to inflating both these asset classes.

## B. COMMODITY DERIVATIVE MARKETS AND COMMODITY PRICES

The growing “financialization” of commodity markets began in response to the dramatic decline in equity prices following the bursting of the dotcom bubble in 2000. Investment in commodities as an asset class served as a means for investors to diversify their portfolios and for leverage purposes. However, this growing presence of financial investors in commodity markets has raised concerns that financial investors are creating increased volatility and price movements unrelated to fundamentals (IMF, 2008; UNCTAD, 2011). The annual number of com-

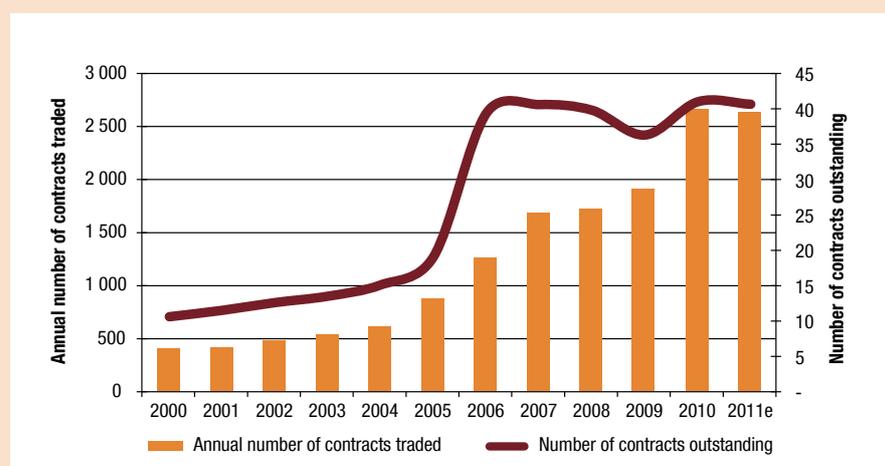
modity futures contracts traded on world exchanges has risen exponentially, from 418 million in 2001 to 2.6 billion in 2010 (Figure 2.12).

Global derivative markets are still dominated by foreign exchange derivatives trading, but the share of commodities as a proportion of the world total has increased significantly, from 3 per cent in 2003 to 9 per cent in 2010 (figure 2.22). The notional amount of over-the-counter (OTC) derivatives traded has significantly declined as a result of increased uncertainty and risk aversion with respect to counterparty risk since the collapse of Lehman Brothers in September 2008, and trading activities have gradually shifted towards futures/options exchanges (Figure 2.13).<sup>40</sup>

There are three main types of participants in commodity futures markets. First, there are commercial participants, which wish to either buy or sell the underlying physical commodities in the future, and seek to hedge the risk of future price movements by entering into a futures or an options contract.<sup>41</sup> Second, there are money managers, including hedge funds and commodity trading pools, which seek short- to medium-term gains through leveraged positions. Some of them trade on the basis of short-term price trends, while others trade according to underlying market fundamentals. These may be described as noise traders. Third are index traders, which take passive, almost entirely long positions in commodity futures markets, and account for about 40 per cent of all long open interest trades<sup>42</sup> (Masters and White, 2008). Index traders, like noise traders, may change their positions in commodities according to wealth effects<sup>43</sup> from others assets, such as equities and bonds within their portfolios. An estimated 95 per cent of commodity index traders ordinarily follow the Standard & Poor’s Goldman Sachs

*The growing presence of financial investors in commodities has raised concerns that financial investors are creating increased price volatility unrelated to market fundamentals.*

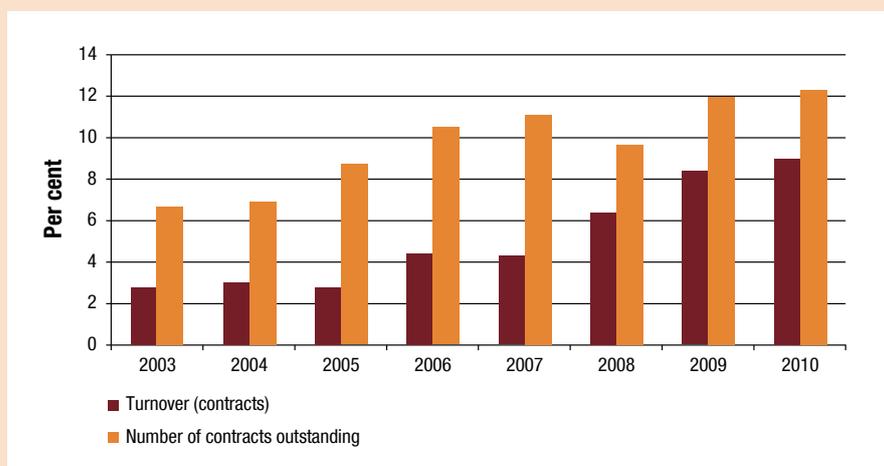
Figure 2.12. Evolution of commodity trading contracts on world exchanges, 2000–2011 (millions)



Source: Bank for International Settlements, <http://www.bis.org/statistics/extderiv.htm>



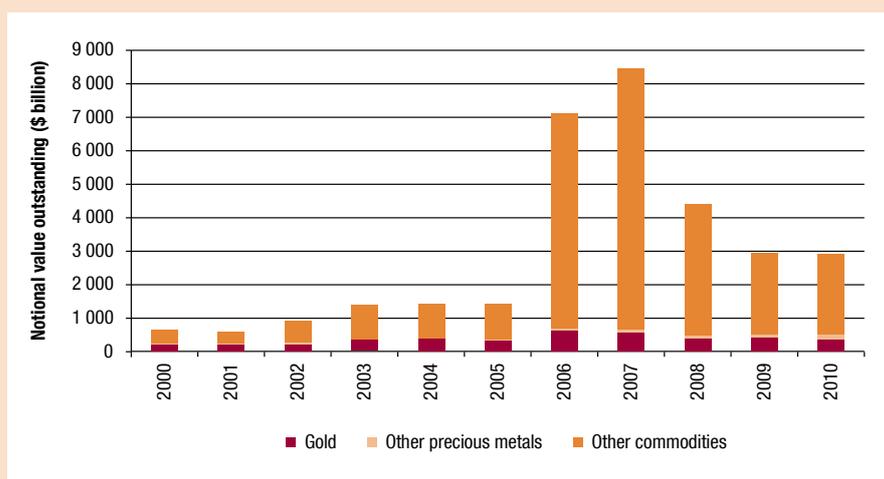
**Figure 2.13. Commodity trading as a share of global derivatives trading, 2003–2010 (Per cent)**



*The share of commodities as a proportion of the global derivatives market has increased from 3 per cent in 2003 to 9 per cent in 2010.*

Source: Bank for International Settlements, at: <http://www.bis.org/statistics/extderiv.htm>.

**Figure 2.14. OTC derivatives trading of commodities, 2000–2010 (\$ billion)**



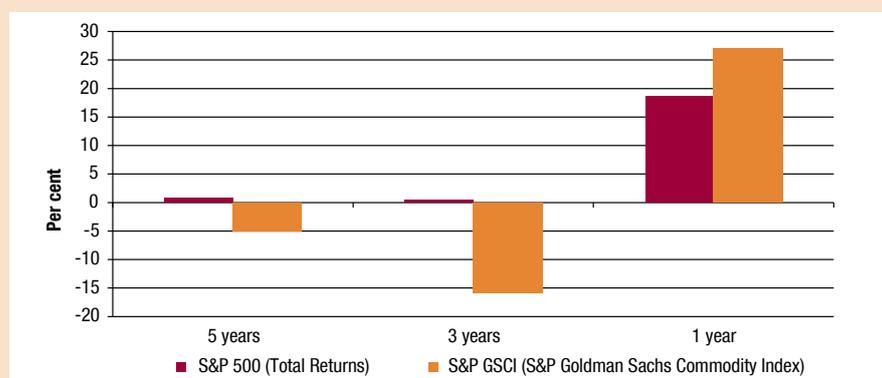
Source: Bank for International Settlements, <http://www.bis.org/statistics/extderiv.htm>.

Commodities Index (more heavily weighted towards energy commodities) or the Dow Jones UBS Commodity Index (weighted more towards agricultural commodities) (Baffes and Haniotis, 2010).<sup>44</sup>

Investments in these indexes involves taking long positions on the nearby futures contracts, selling (shorting) those contracts before they reach maturity, then entering new long positions on the next nearby futures contracts (called “rolling”). For index traders, the returns on investment in each period depend on three factors. First, whether the futures price increases since the time of purchase (yielding positive “spot” returns) or decreases (yielding negative “spot” returns). Second, is whether the futures market is in contango or backwardation.<sup>45</sup> Third is the United States Treasury bill (T-bill) interest rate.

In contrast to the 1980s and 1990s, recent years have been characterized by “contango” commodity futures markets (UNCTAD, 2009), giving negative roll returns and T-bill interest rates have also been relatively low. These two factors combined have substantially offset spot returns associated with positive changes in commodity futures prices. Moreover, given the dramatic fall in commodity prices in mid-2008 to 2009, over a five-year period, annualized returns on commodity indices have actually been negative and have underperformed the S&P 500 Total Returns Index (figure 2.24). These developments suggest, contrary to popular belief, that investment in commodity indices can yield returns which are below market returns, despite the commodity price boom.<sup>46</sup>

*Around 95 per cent of commodity index traders follow the S & P Goldman Sachs Commodity Index or the Dow Jones UBS Commodity Index.*

**Figure 2.15. Relative performance of commodities as an asset class (no. of years to 31 August 2011)**


Source: Standard & Poor's Indices Performance Reports (2011).

Note: The figures show annualized percentage changes in returns. Thus, for the three years leading up to 31 August 2011, the GSCI annualized return was -15.9 per cent, which means there was an annual decline of 15.9 per cent in the total returns since March 2008. The S&P 500 Total Returns Index is a free-floating capitalization-weighted index of share prices and dividends of the top 500 large-cap stocks actively traded in the United States.

Indexed commodity funds were sold to investors and pension funds as a means of diversifying their portfolios. Since the 1970s, returns on commodity indices have been negatively correlated with equity returns; as returns on commodity indices rise, those on equities fall (Greer, 2000; Masters and White, 2008). However, on analysis of the S&P 500 Total Returns Index and the Goldman Sachs Commodity Total Returns Index, it is clear that the indices are not negatively correlated over all periods (Table 2.1).

In particular, between 1971 and 1980, a period of boom in commodities, the S&P 500 Total Returns Index and the Goldman Sachs Commodity Total Returns Index had a negative correlation coefficient of -58.4 per cent. By contrast, in the more recent commodity price boom (2003–2011) the correlation coefficient was significantly positive at +67.1 per

cent (see also Figure 2.16). To analyse the relationship between commodity prices and equity returns, the GSCI Commodity Spot Price Index and CRB commodity Spot Price Index relative to S&P 500 total returns is used. Table 2.1 shows that the correlation coefficient between commodity total returns and equity total returns was also positive in the 1980s and 1990s, at +72.5 per cent and 5.9 per cent respectively. However, in the 1980s and 1990s, the correlation between the S&P 500 Total Returns Index and the Goldman Sachs Commodity Spot Price Index<sup>47</sup> was strongly negative (Table 2.1). Total returns were positively correlated to S&P 500 total returns in the 1980s and 1990s due to backwardation in commodity futures prices (yielding positive roll returns) as well as relatively higher interest rates on T-bills. These offset the negative commodity spot returns, as prices of commodities largely declined during this period.

**Table 2.1. Correlation between log S&P 500 Real Total Returns Index and log Goldman Sachs Commodity Real Total Returns Index and Real Spot Price Index**

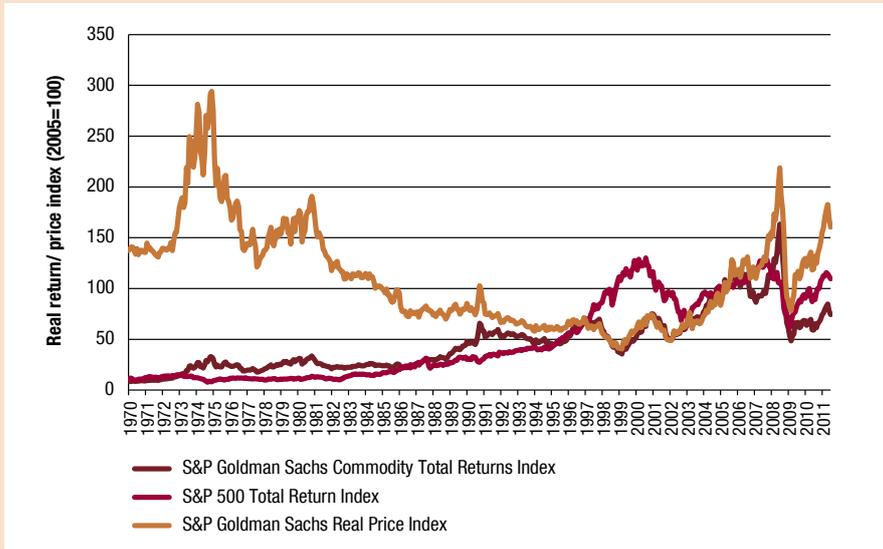
	Correlation between log of S&P 500 Real Total Returns Index and log of Goldman Sachs Commodity Real Total Returns Index (per cent)	Correlation between log of S&P 500 Real Total Returns Index and log of Goldman Sachs Commodity Real Spot Price Index (per cent)
1971–1980	-58.4	-30.8
1981–1990	+72.5	-86.9
1991–2000	+5.9	-53.3
2001–2010	+62.2	+48.9
2003–2010	+67.1	+56.6

Source: UNCTAD secretariat calculations, based on data shown in Figure 2.16.

Note: The table comprises the following data: the S&P 500 total returns (change in equity prices + dividends) and Goldman Sachs Commodity Index (GSCI) total returns as in figure 2.26.



**Figure 2.16. Evolution of Goldman Sachs commodity indexes compared with S&P 500 Total Returns Index, 1970–2010**



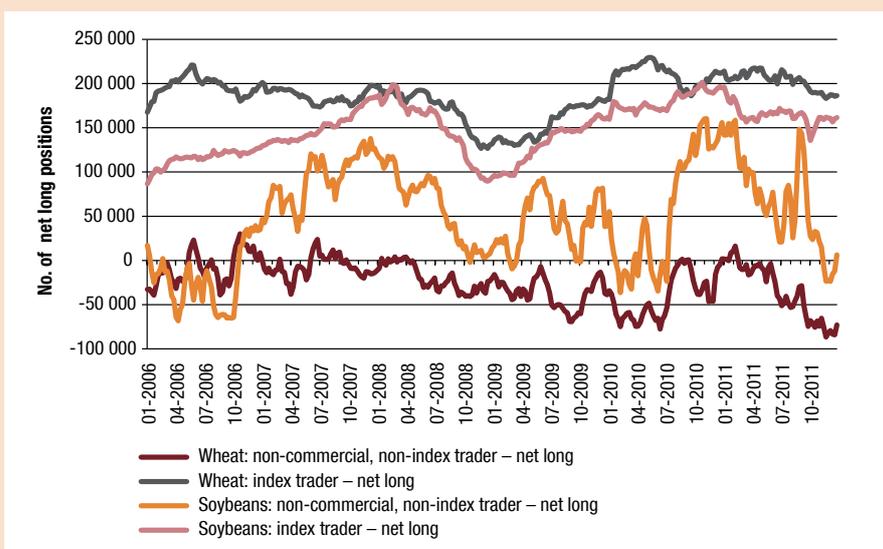
*During the 2003–2011 commodity price boom, the GSCS price index and the S & P 500 total return index have been positively correlated for the first time.*

Source: Thomson Reuters, Datastream (July, 2011): Goldman Sachs Commodity Total Returns Index, Goldman Sachs Commodity Spot Price index, S&P 500 Total Returns Index, all deflated by United States core CPI to derive real returns/prices; monthly data series.

The recent commodity price boom (2003–2011) represents the first time that the Goldman Sachs Commodity Spot Price Index has been positively correlated with the S&P 500 Total Return Index – a correlation of +56.6 per cent. This positive correlation can be explained, in part, by the growing presence of long-only commodity index in-

vestment<sup>48</sup> within investor portfolios and pension funds since the collapse of the dotcom bubble. However, it should also be noted that net index trader positions were significantly larger than net non-commercial, non-index trader (managed funds)<sup>49</sup> positions throughout the period 2006–2011 (Figure 2.17).

**Figure 2.17. Chicago Board of Trade wheat and soybeans: non-commercial, non-index trader net long positions compared with index trader net long positions, 2006–2011**



Source: Thomson Reuters, Datastream (March, 2012)  
Note: Based on weekly data.



*60 per cent of all positions attributed to index speculators were controlled by four Wall Street swap dealer banks, giving them significant market power in commodity derivatives markets.*

The expansion or contraction of investments in commodity indices mainly results from fluctuations in income from investments in other asset classes, especially with respect to returns from the largest asset class, namely equities.<sup>50</sup> Thus, when total returns on a major equity index such as the S&P 500 Total Return Index rises, this creates positive wealth effects, and prompts portfolio investors and pension funds to invest more in commodity index funds.

Growing investments in commodity index funds in turn create spot returns as commodity futures prices rise through the increasing purchase of commodity futures contracts by commodity index investors. Conversely, where investors' total returns from equities decline, a negative wealth effect takes place, resulting in a fall in commodity index fund investments and thus in commodity futures prices. This source of correlation in the spot prices of commodities and equity returns is detached from the underlying fundamentals of commodity markets, resulting in distorted prices and increased volatility (Tang and Xiong, 2010; Nissanke, 2010). An increased correlation between equity returns and commodity price indices may also be explained by greater labour market flexibility in developed countries since the 1970s, which decouples wages from rising commodity prices (Blanchard and Riggi, 2009).

Since the 2009 recession, low interest rates and quantitative easing programmes in the United States have been another underlying source of correlation between commodity prices and equity returns. The primary dealers have been using the newly created money extended to them to invest in equities and commodity futures, while investment in labour and capital has been relatively stagnant.<sup>51</sup> This has led to concerns about excess liquidity and overshooting in equities and commodity prices beyond what might occur in response to economic fundamentals (see section 2.2.2).

The majority of index investors are institutional, such as pension funds, which tend to keep a relatively fixed proportion of commodity investments in their portfolios. In the period 2003 to 2008 approximately 85 per cent of index speculators traded through swap deals with investment banks (Masters and White, 2008). In particular, 60 per cent of all positions attributed to index speculators were controlled by four Wall Street swap dealer banks, namely Goldman Sachs, Morgan Stanley, JP Morgan and Barclays Bank, giving them significant market power in commodity derivatives markets (Masters and White, 2008). Index speculators average about 40 per cent of total long open interest, therefore these four Wall Street swaps dealers control almost a quarter of total long open interest in commodity futures indices, excluding trading on their own account.

The large size of net long index funds, combined with positions of swap dealers trading on their own account, can effectively inflate commodity futures prices and create bubbles through "weight of money" effects (UNCTAD, 2009). In the case of indexed commodity funds, this effect is particularly relevant, because the commodity indices pool large amounts of capital together which trade almost entirely on the buy side of the market.

The United States CFTC requires swap dealers to declare index trader positions hedged on exchanges only every Tuesday, and only for agricultural commodities. These data are not published until the following Friday (CME, 2011); therefore swap dealing investment banks possess private information on the inflow of large commodity index investment unknown to other traders.<sup>52</sup> More significantly, commodity index investments may be hedged by swap dealers against commercial/speculative counterparties on OTC market. These do not need to be declared to the CFTC. Thus, even once data is published by the CFTC regarding on-exchange index trader/swap dealer positions, there is no public information on OTC activity and hence no information on aggregate index trader/swap dealer positions. This means the effect of index trader investment/swap dealer positions on commodity futures prices is impossible to quantitatively estimate accurately. This information asymmetry gives swap dealers a competitive advantage when trading on their own account. Effectively, without public information on OTC activity, and thus no information on the exact size and timing of changes in index trader/swap dealer positions, other traders (both physical commercial hedgers and speculative futures traders) cannot judge whether changes in the exchange futures price reflect new fundamental information in the spot market or the speculative weight of money effects.<sup>53</sup>

### **3.1.2. Biofuels and demand for commodities**

In recent years, several short-term and structural factors have had an impact on cereal prices. At the same time, there has also been a strong correlation between crude oil prices and the prices of wheat, maize and soybeans. This correlation may be explained by the growing use of maize and (to a lesser extent) soybeans in the production of biofuels that are used as substitutes for petroleum, diesel and gasoline products. Estimates by the Food and Agriculture Organization of the United Nations (FAO), for example, suggest that increased biofuel production contributed to a roughly 97 per cent increase in the price of vegetable oils in the first three months of 2008 compared with the same period in 2007 (FAO, 2008).<sup>54</sup> It imposes a disproportionate cost on low-income households in developing countries, which succumb to greater



poverty and food insecurity owing to the high prices of food. Biofuel production also has an impact even on products that do not constitute feedstock, such as wheat, because of the close relationship between crops on both the demand side (because of substitutability in consumption) and the supply side (due to competition for land and other inputs).

Meanwhile, an increase in crude oil prices raises the costs of fertilizers, chemicals and the transportation of agricultural produce (USDA, 2009). Mitchell (2008) estimates that higher fuel<sup>55</sup> costs raise the export prices of cereals by 15–20 per cent.

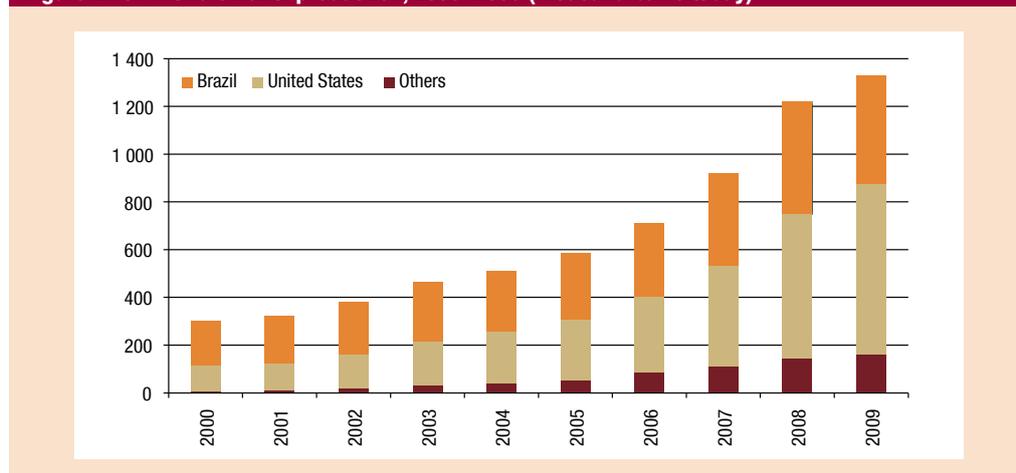
Since 2001, ethanol production has been growing rapidly, from an average of 314,000 barrels/day in 2001 to 1,327,000 barrels/day in 2009 (Figure 2.18). Brazil and the United States dominate, together accounting for 88 per cent of world ethanol production in 2009. In the United States, the main feedstock for ethanol production is maize, whereas in Brazil it is

sugar cane. Some experts argue that ethanol from sugar cane is probably the only environmentally sustainable biofuel capable of being successfully developed in Brazil.<sup>56</sup> Second-generation biofuels, such as those derived from jatropha, which uses less water and can be grown on marginal land with a minimal impact on food security, could also be promoted.

Ethanol use as a proportion of world maize consumption increased from 5 per cent in the 2003/04 crop year to an estimated 15 per cent in 2010/11 (Figure 2.19). This is effectively diverting food and animal feedstock towards fuel production, with the effect of raising food prices. The United States Government's Renewable Fuel Standard (RFS) mandated steady, annual increases in ethanol use through subsidy programmes, which are to be met regardless of market prices of oil, ethanol or maize, making demand for maize less price-sensitive (Collins, 2008). According to Collins, without government intervention some ethanol plants would be unprofitable and

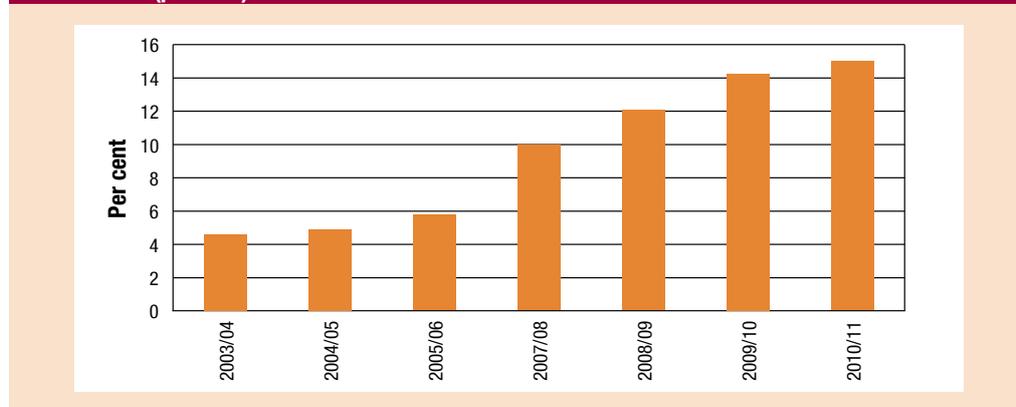
*Since 2001, ethanol production rose rapidly, the major producers being Brazil and the US.*

**Figure 2.18. World ethanol production, 2000–2009 (thousand barrels/day)**



Source: Energy Information Agency (2011).

**Figure 2.19. Share of ethanol from maize in total world maize consumption, 2003/04–2010/11 (per cent)**



Source: USDA (2011), World Agricultural Supply Demand Estimates (WASDE); available at: <http://www.usda.gov/oce/commodity/wasde/>.

*Ethanol use as a proportion of world maize consumption increased significantly effectively diverting food and animal feedstock towards fuel production, with the effect of raising maize prices.*

*In general, speculative influences may have more effect in a context of low inventories and inelastic demand.*

*The EU produces 60 per cent of the world's biodiesel, using rapeseed as the main feedstock.*

would cease to operate, causing maize prices to decline. Moreover, Wise (2012) shows that the United States ethanol policies have increased the food bills of poor food-importing countries by \$9.3 billion since 2006. The steady increase in biofuel demand supported by government subsidies means that the volatility of maize prices cannot be solely explained by fluctuations in basic demand.

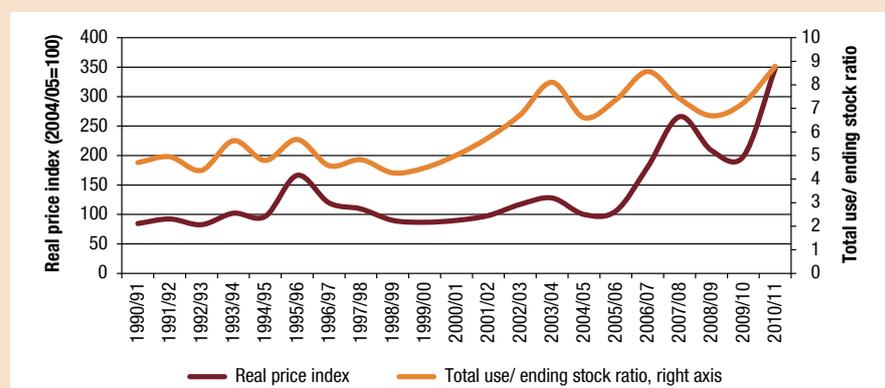
Although ethanol production constitutes a new source of demand for maize, it should be analysed as part of annual total maize use in year-end inventory ratios. Typically, the greater the total use of maize relative to available inventories, the higher will be the expected price. There has been a significant upward shift in real prices of maize in 2007/08, which is not reflected in changes in the ratio of total use to ending stock (Figure 2.20). This suggests that the large price spikes during this period cannot be explained solely by fundamental changes in physical demand/supply conditions. Moreover, growth in biofuel demand was anticipated and therefore would not have contributed to the spike in prices due to asymmetric information (Wright, 2009). The International Food Policy Research Institute (IFPRI, 2009) finds that index traders<sup>57</sup> had a statistically significant causal effect on maize futures prices during the period January 2006 to May 2008, which may explain the upward shift in real spot prices. Thus it appears that speculative influences have more effect in a context of low inventories and inelastic demand.

Despite concerns about soybeans being used as feedstock in biodiesel, its production is relatively marginal compared with ethanol production (Figure 2.21). The European Union (EU) produces approximately 60 per cent of the world's biodiesel, using rapeseed as the main feedstock rather than soybeans (CRS, 2006). The main driver of soybean demand appears to be China, but its demand is mostly

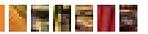
for animal feed and not for biofuels. Chinese imports of soybeans as a share of world consumption rose from 11.2 per cent in 2002/03 to 22.3 per cent in 2010/11 (Figure 2.22). This is in contrast to wheat and maize, for which Chinese imports since 2002/03 have been near 0 per cent of world consumption,<sup>58</sup> given that China is largely self-sufficient in these cereals (USDA, 2011). The total use-to-inventory<sup>59</sup> levels for soybeans are close to their long-term average (Figure 2.23), implying that the traditional market supply-demand forces do not explain the doubling of prices since 2006/07. Mayer (2009) and Gilbert (2010) both find statistical evidence that index traders inflated soybean futures prices during the period 2006–2009. Given low interest rates, this could have fed through to hoarding in the spot market in anticipation of higher prices, thus contracting supply and increasing demand simultaneously. This may explain why, although there appears to be no change in the use-to-inventory ratio, real prices increased dramatically from 2006 to 2008. As prices have remained higher than pre-2006 levels for a sustained period, this suggests that demand may have become more inelastic to price changes.<sup>60</sup>

Wheat is not used as feedstock to produce biofuels; the effect of biofuels on wheat production is therefore indirect, in that there is greater competition for land-use for wheat production versus crops for biofuel production, making supply more inelastic with respect to price. In 2007/08, wheat stocks declined to their lowest levels since 1990 (Figure 2.24). As with soybeans and maize, the doubling of real prices for wheat in 2007/08 seems excessive. However, Mayer (2009) and Gilbert (2010a) find no empirical evidence to suggest that index traders or other non-commercial traders caused higher futures prices of wheat. A plausible explanation for the higher prices could be the huge fall in production due to the drought in Australia, a large producer.

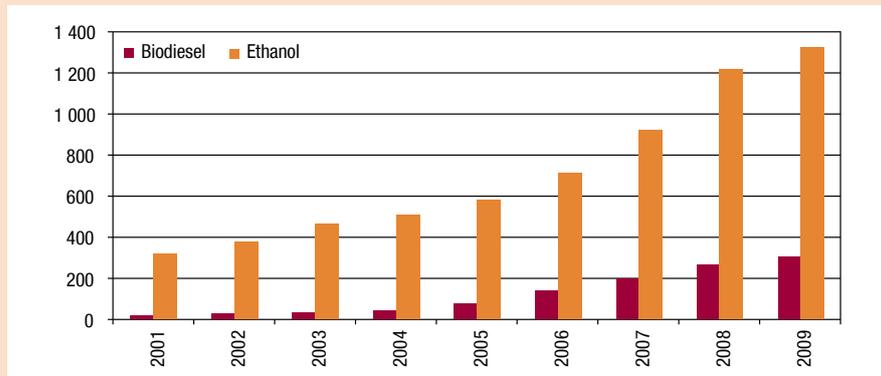
**Figure 2.20. Maize: real price index and total use/ending stock ratio, 1990/91–2010/11**



Sources: USDA, Foreign Agricultural Service, Production, Supply and Distribution (PSD) online database, for use/ending stocks; USDA Economic Research Service, for real dollar prices  
Note: Nominal prices are adjusted by the United States Core CPI Index.



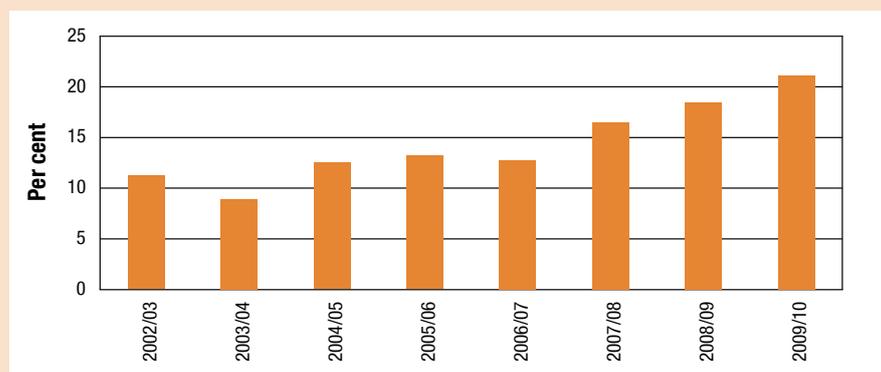
**Figure 2.21. Biofuel production, 2001–2009 (thousand barrels/day)**



Source: Energy Information Agency (2011).

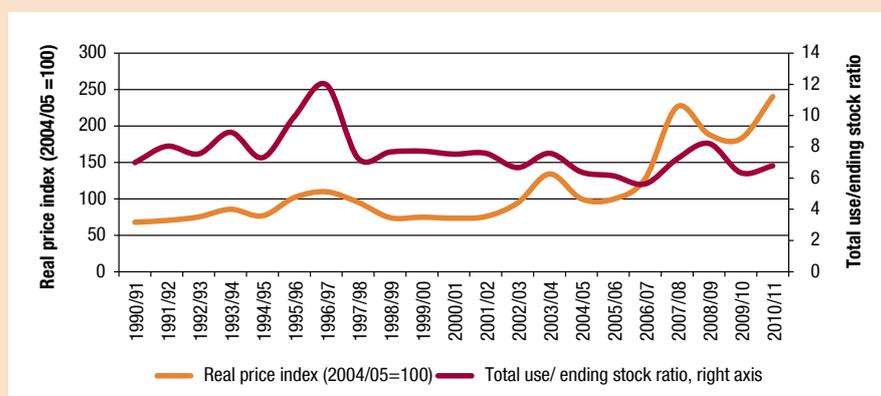
*The effect of biofuels on wheat production is indirect, in that there is greater competition for land-use for wheat production versus crop for biofuel production, making supply more inelastic with respect to price.*

**Figure 2.22. Chinese imports as a share of total soybean use, 2002/03–2009/10 (Per cent)**



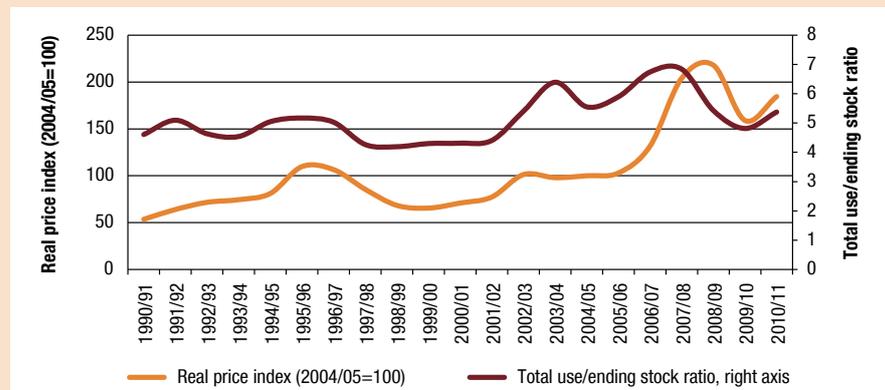
Source: USDA (2011), World Agricultural Supply Demand Estimates (WASDE); available at: <http://www.usda.gov/oce/commodity/wasde/>.

**Figure 2.23. Soybeans: Ratio of total use/ending stocks and real price index, 1990/91–2010/11**



Sources: USDA, Foreign Agricultural Service, Production, Supply and Distribution (PSD) online database, for use/ending stocks; USDA, Economic Research Service, for real price index  
 Note: Nominal prices are adjusted by United States Core CPI Index.

*The soybean use-to-stock ratio is close to its long-term average, implying that traditional markets supply-demand forces do not explain the doubling of prices since 2006/07.*

**Figure 2.24. Wheat: real price index and use/ending stock ratio, 1990/91–2010/11**

Sources: USDA Foreign Agricultural Service Production, Supply and Distribution (PSD) online database, for Use/ending stocks (official USDA estimates); USDA, Economic Research Service, for real dollar prices  
 Note: Nominal prices are adjusted by United States Core CPI Index.

*Addressing the potentially negative impact of biofuels on land use and food security requires the development of biofuel production systems which enhance smallholder farm production and food systems.*

The continuing debate about the impact of biofuel production on food prices notwithstanding, major economies have acknowledged the potential threat and have taken steps in recent months to offset this. In October 2012, the European commission (EC) proposed to limit the use of crop-based biofuels to meet the EU's 10 per cent target for renewable transport energy by 2020. The new policy proposed that only 50 per cent of that target be met with biofuels from food crops. Moreover, the EC will take into account the extra carbon emitted when farmers switch from growing crops for food to growing crops for fuel. The European commission's new proposal also aims to promote investment in second-generation biofuels: such as those produced from waste, algae or residue from other processes. This is a welcome departure from the previous mandate focussed on greater biofuel production (irrespective of feedstocks), in favour of a policy framework which at least recognises the potential impacts of biofuel demand on food security.

In November 2012, the US Environmental Protection Agency (EPA) rejected a request from the governors of eight US states to waive requirements for blending maize-based ethanol into gasoline; a Renewable Fuels Standard (RFS) mandate which contributed to rising food costs during the worst drought in the US for 50 years. Critics of the RFS argue that the EPA's decisions are often politically motivated, and that the waiver process is insufficiently flexible to respond to a crisis. A potential solution to these problems is outlined in the US Renewable Fuel Flexibility Act which proposes that an automatic waiver of the RFS should be triggered when stocks-to-use ratios are low, thus making it more responsive to world supply and less open to political influence (FAO et al., 2011; Wise, 2012).

*CDDCs might also support smallholders in moving up the value chain into both refining and selling the biofuel feedstock.*

Addressing the potentially negative impact of biofuels on land use (with growing competition from industrial and urban uses) and food security (especially in net-food importing developing countries) would need to go beyond such biofuel mandate changes. It requires the development of biofuel production systems which enhance smallholder farm production and food systems. For example, some CDDCs could consider promoting smallholder producer groups and/or co-operatives (improving economies of scale and risk sharing) to intercrop biofuel feedstocks with staple crops for regional food markets. Moreover, CDDCs might also support smallholders in moving up the value chain into both refining and selling the biofuel feedstock. This would reflect a potential win-win situation for CDDC smallholders, in terms of both local energy uses and deterring an externally driven reconfiguration of their agricultural markets, structures and institutions. This may require a robust case-by-case impact assessment that is sensitive to food security. Many CDDCs irrespective of changes in existing biofuel mandates, will remain net-food importers, therefore, domestic food security considerations should remain paramount in their allocation of resources to biofuel production. An increase in publicly funded research and subsidies into alternative sources of energy (e.g. wind and solar power) is in the long-run probably the most viable means of addressing this problem.

### 3.1.3. The China factor

#### A. CHINESE DEMAND FOR COMMODITIES

The commodity price boom of the past decade has increasingly focused attention on the role China played in this boom.<sup>61</sup> This is because, as dis-



cussed earlier, the rise in commodity prices experienced since 2003 is very different from the ones observed in the 1950s and 1970s. The latter were driven by a combination of disruptions in supply and expectations of demand growth; and whereas the former was rapidly overcome, the latter remained only expectations. As a result, the price rises were short-lived. However, the current commodity price boom has lasted for quite a while, which suggests that the supply constraints are still prevalent, and that the demand for commodities is actually growing and may continue to do so in the foreseeable future. However, there are at

least two schools of thought on the role of China in this boom (Box: 2.1).

These two views notwithstanding, China's share of iron ore imports (used in the production of steel) is especially significant, at 63 per cent in 2010 (Figure 2.25). However, its import shares of most other commodities, although significant, have been relatively small. For example, in 2010, China's import share of crude and petroleum oil was just 7 per cent, and that of cereals such as wheat and maize was also very small due to its self-sufficiency in these commodities.

### Box 2.1. The role of China in the boom in global commodity markets: Two schools of thought

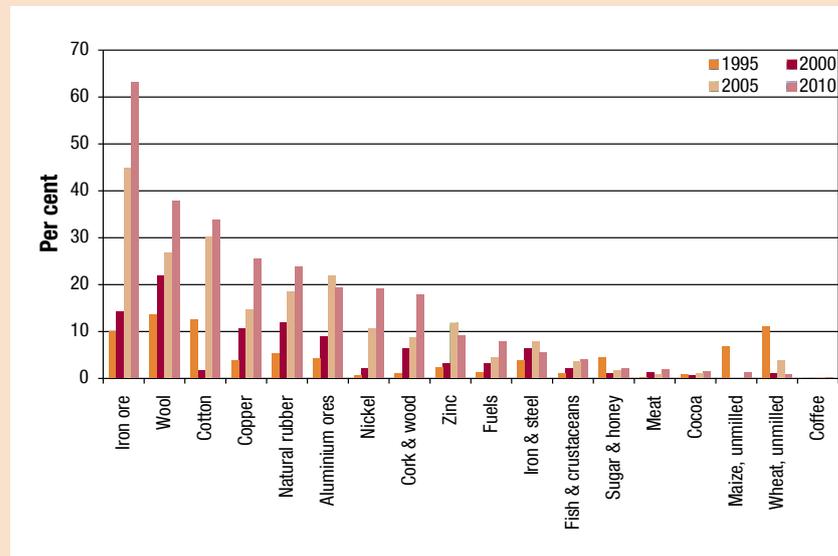
Farooki and Kaplinsky (2011) argue that a large part of the increase in the demand for commodities is being driven by the growth of the Chinese economy. In their opinion, China is influencing commodity markets because it needs natural resources as drivers of growth – a mechanism they refer to as a combination of “growth” and “consumption” effects. Specifically, they contend that China is pursuing a resource-intensive growth path that is impacting on the soft, hard and energy commodity markets. China's demand for commodities has been driven by various factors since 2000. First, growing urbanization and infrastructure development have driven demand for industrial metals (Kaplinski and Farooki, 2010). Second, China's urban dietary habits are changing rapidly, with a greater proportion of household income being spent on meat and fish products (Liu et al., 2009), which in turn has stimulated import demand for soybeans as animal feedstock. Third, China's main exports have been electronics, metal-intensive consumer goods and textile products (ITC, 2011), which have stimulated import demand for industrial metals, cotton and wool. Farooki and Kaplinsky conclude that China's demand for commodities has therefore played a major role in the recent commodity price booms.

A second school of thought represented by Roache (2012) takes a more cautious view concerning the impact of China on commodity markets. He analyses its role in influencing the prices of oil and of some base metals (i.e. aluminium, copper, lead, nickel, tin and zinc), and compares it with that of the United States. Specifically, Roache focuses on two types of demand shocks that affect commodity prices. One is related to aggregate economic activity – as activity increases, the demand for commodities as an input should also rise. The second relates to commodity-specific demand shocks that are unrelated to aggregate activity, such as changes in the desired stock-holding of the State agencies that manage China's inventories, or temporary demand substitution. In the econometric specification, the first shock is measured by industrial production, while the second is measured by apparent consumption.<sup>a</sup>

With regard to the first transmission channel, while China's increase in industrial production has a large and significant impact on oil and copper prices, the impact of the United States is greater and for all commodities. This could be explained in two ways. First, China's activity growth rate shock is weak and not as persistent as that of the United States; and second, United States industrial growth has stronger spillover effects on the rest of the world's economic activity, and is important both for world commodity demand and consumption. On the other hand, commodity-specific demand shocks of China and the United States do not have major effects on commodity prices. This is because these shocks could be perceived as temporary and are accommodated by changes in inventories elsewhere, and thus the effect on prices is dampened. Roache contends that, while China's impact on commodity prices is rising, this impact remains smaller than that of the United States. In conclusion, he urges more caution when seeking to explain the causes of recent developments in commodity market: while China's impact might well increase depending on its future economic growth, the question remains as to how big its effect will be on commodity prices.

<sup>a</sup> Apparent consumption is measured by the sum of commodity production and imports minus exports.

Figure 2.25. China's share in world imports of selected commodities (per cent)



Source: UNCTAD secretariat calculations based on UNCTADstat (accessed 6 December 2011).

*China's growing demand during the period 1995–2010 accounted for an increasing share of global demand for a number of commodities.*

Therefore, even with significant growth in Chinese demand for commodities, given its relatively small share of total imports of many commodities, shrinking demand from the rest of the world can lead to dramatic falls in commodity prices as occurred in 2008–2009. Nonetheless, as commodity market expectations underlying price formation and dynamics is always forward looking (not solely based on a static share of demand) focusing on China's rising share in the growth of global demand may be a better reflection of its potential impact on price dynamics. Indeed, Figure 2.25 shows that China's growing demand (albeit from a relatively low base) during the period 1995–2010 accounted for an increasing share of global demand for a number of commodities. However, given that Chinese boom-bust demand cycles for many other commodities (e.g. wheat and maize) were countercyclical to those of the United States, it is unlikely that China contributed significantly to the price boom of all commodities (Tang and Xiong, 2010).

In the long run, concerns about supply-side commodity shortages with respect to demand from emerging markets must be placed in a historical perspective. During the commodity price boom of the 1970s, world economic growth was predicted to become inevitably constrained by a shortage of resource availability and by what is now called peak oil (Meadows et al., 1972). Although the prices of oil and other commodities increased substantially in the early 1970s, this was followed by a significant slowdown in world manufacturing production and by two decades of excess supply and depressed com-

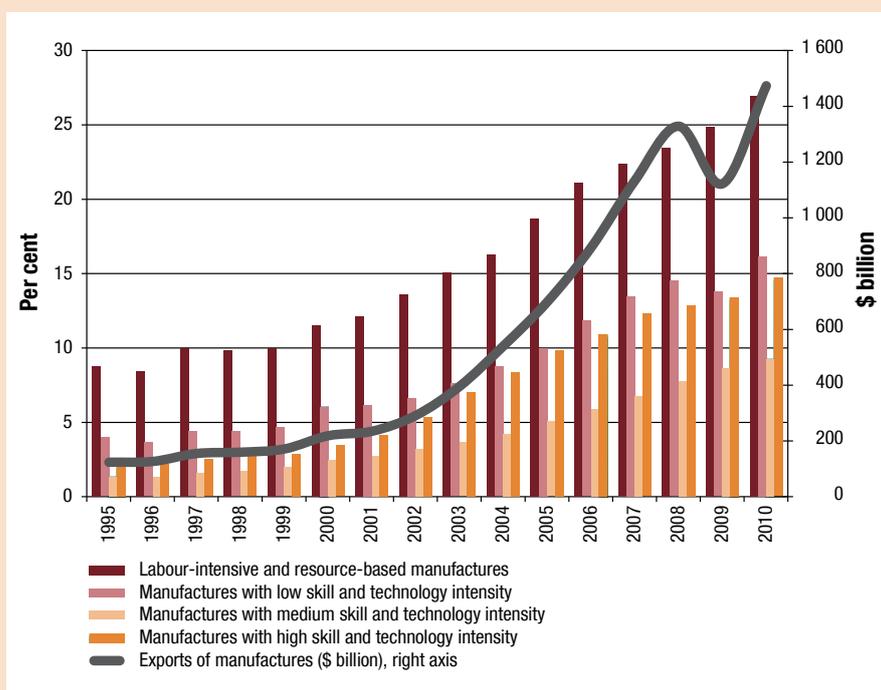
modity prices. This highlights the fact that periods of imbalance between growth in manufactures and commodity production do occur, which can be favourable in the short term, but can also have adverse impacts on commodity prices in the medium term.<sup>62</sup>

## B. CHINA'S IMPACT ON THE PRICES OF MANUFACTURES

A contemporary factor that boosts the relative prices of commodities is the extraordinarily limited increase in the prices of manufactures in recent years relative to rising commodity prices, in contrast to the commodity boom of the 1970s. Krichene (2008) notes that between 1973 and 1980, as oil prices increased at an annual average rate of 46.5 per cent, worldwide consumer prices rose annually by 14 per cent. In comparison, between 2003 and 2007, oil prices rose at an annual average rate of 30.3 per cent and other commodities, on average, by 23 per cent, but with only an annual 3.3 per cent rise in consumer prices worldwide. This could result from productivity gains in manufacturing and processing which act as a countervailing force against rising prices of manufactures, despite growing raw material costs. Or it could result from low labour costs due to labour surplus in Asian exporters of manufactures, which may keep prices of manufactures down as productivity growth exceeds income growth. Kaplinsky (2006) estimates that 29.7 per cent of sectors in China<sup>63</sup> experienced declining price trends in nominal terms during the period 1988/89–2001 due to large labour reserves placing downward pressure on wages.<sup>64</sup>



Figure 2.26. China's share of world exports of manufactures, 1995–2010 (\$ billion)



Chinese manufactures have achieved high growth exports, from \$235 billion in 2001 to \$1.47 trillion in 2010.

In 2010, state-owned National Oil Companies accounted for 55 per cent of world oil production and controlled 85 per cent of proven oil reserves.

Sources: ITC (2011), Trade Statistics database, for total value of exports; and World Bank, World Development Indicators database 2011, for share of exports attributed to manufactures.

Disinflation effects of low labour costs in China on manufactures globally can operate directly – by lowering costs of manufactured consumer goods and inputs – and indirectly by exerting pressure on domestic producers in import-competing industries to lower prices in response to competition from China, or otherwise lose market shares (Pain, Koske and Sollie, 2006).<sup>65</sup> Many manufacturing sectors located in developed countries such as the United States are struggling to compete and are losing their market share to lower cost China-based producers (Engardio, Roberts and Bremner, 2004). This is perhaps reflected in the explosive growth in exports of Chinese manufactures in recent years, from \$235 billion in 2001 to \$1.47 trillion in 2010 (figure 2.19). Moreover, given import penetration from China, such competition may act as a barrier to entry for regions not yet engaged in production of manufactures in the short term.

### 3.1.4. The growing role of TNCs in international commodity trade

State participation in minerals and metals exploitation has featured prominently in the development of the mining and minerals sector internationally over the past 50 years. With the post 2003 surge in commodity prices, there has been renewed enthusiasm,

particularly in developing countries for increased state participation in these sectors. Nonetheless, the nature of state participation varies considerably by country and mineral (McPherson, 2010). The minerals sector is often considered by governments to be of strategic economic importance, requiring a high degree of state control (as a critical feedstock into the domestic economy, e.g. iron and steel) or minerals which dominate the national economy (e.g. diamonds in Botswana, copper in Chile and Zambia). In 2010, fully or majority state-owned National Oil Companies (NOC) accounted for 55 per cent of world oil production and controlled 85 per cent of proven oil reserves (Energy Information Administration, 2012). The importance of NOCs relative to international oil companies such as Royal Dutch Shell, Exxon Mobil etc., has grown due to their ownership of proven reserves. Furthermore, some NOCs are assuming certain characteristics of TNCs by expanding their operations into third countries.

In order to quickly acquire the requisite capital and skills, many CDDCs have opted to realise their natural resource endowments through attracting foreign TNCs, rather than mainly relying on domestic capital (Box: 2.2). One evolving trend in commodity markets in recent decades concerns the fast-growing role of TNCs, including large commodity trading companies and financial institutions (e.g. bank and hedge



*There is a rising concentration of trade and vertical integration of large firms (e.g. TNCs) in global value chains.*

*Three TNCs control 60 per cent of global banana production. Three TNCs control 85 per cent of the world's tea market. Four TNCs control around 60 per cent of the global coffee market.*

funds), in global trade in commodities. Moreover, there is a rising concentration of trade and vertical integration of large firms (e.g. TNCs and supermarket chains) in global value chains (GVCs). Mergers and acquisitions have led to a dramatic reduction in the number of firms that have significant market shares of commodities such as cocoa, vegetable oils, grains, fruit and bauxite. For example, the global trade in bananas is dominated by three United States TNCs which control 60 per cent of global production: Chiquita (formerly United Fruit), which is the biggest producer, followed by Dole Food, the world's largest producer and distributor of fresh fruit and vegetables and Del Monte Fresh Produce. The first two firms, together, effectively act as price-setters as they own large banana plantations in Central America. These are all vertically integrated firms, as they own (or contract) plantations and sea transport facilities as well as distribution networks in consuming countries. Since the 1990s, these companies have expanded their banana plantations in South America, and have purchased land in Asia and Africa to further enhance output. Similarly, four TNCs control over 60 per cent of the global coffee market, while three control 85 per cent of the world's tea market (Action-Aid and South Centre, 2008).

Growing TNC mergers and acquisitions (M&A) activity is also leading to greater concentration in the minerals and metals sectors. Figure 2.27 shows that both the volume and value of deals has grown steadily since 2001. Although during the period 2010-2011 the growth in volume of M&A deals declined 10 per cent, the value of M&A deals rose 43 per cent due to the completion of 28 megadeals which accounted

for two-thirds of deal value. Recent examples of this TNC trend include Rio Tinto's acquisition of Riversdale Mining for \$3.9 billion and China Niobium Investment's \$2.0 billion acquisition of Companhia Brasileira de Metalurgia e Mineração (CBMM) in 2011. There has also been substantial M&A activity in the gold mining sector with 385 deals completed during 2011, driving consolidation between mid-tier mining companies and junior explorers to boost investment and production. Similarly, at the time of writing, the commodities trading company Glencore is in the process of completing a \$70 billion merger with the Swiss mining firm Xstrata<sup>66</sup> (The Financial Times, 2012). Glencore is the world's largest commodities trading company, with a 2010 global market share of 60 per cent in the internationally tradable zinc market, 50 per cent in the copper market, 9 per cent in the grain market and 3 per cent in the oil market (The Telegraph newspaper, 2011).

TNCs operating within commodity chains are increasingly associated with growing oligopolistic market powers and market concentration, which may create price distortions in several commodity markets (Hoekman and Martin, 2012). This has not been without costs to most developing countries' commodity producers or companies, as they lack the necessary financial muscle and expertise to compete with those TNCs on an equal footing, as shown in the example of TNCs in the cocoa-chocolate value chain (Box: 2.3). There are two factors that can potentially explain the increase in concentration and integration of the cocoa export trade in West Africa. First, local exporters have limited access to finance compared with foreign companies. With the liberali-

#### **Box 2.2. Foreign TNCs and CDDC natural resource development challenges**

Many developing countries have opted to realise their natural resource endowments through attracting foreign natural resource-seeking TNCs. However, this has come with some potential challenges:

- TNCs generally have global purchasing departments which are less likely to develop local suppliers (linkages), than would probably be the case with domestic resource companies;
- TNCs tend to optimise their global processing (beneficiation) facilities which often denies the host country their downstream opportunities;
- TNCs generally locate the technological innovation systems, research and development (R&D) in OECD countries, with the requisite skills and incentives, thus potentially reducing CDDCs domestic capacity development opportunities;
- TNCs also tend to locate their high level human resource development in OECD countries (often linked to their R&D university partners), again reducing CDDCs potential domestic capacity development opportunities; and
- There is also a TNC "core competence" conundrum, where the increasing international tendency of resource-seeking TNCs to concentrate exclusively on resource extraction could possibly reduce CDDCs development opportunities of growing indigenous diversified conglomerates.

Source: Sigam and Garcia (2012); Jourdan, (2008).

**Box 2.3. Vertical integration and horizontal concentration within the cocoa-chocolate global value chain**

Examining the evolution of the structural configuration of the cocoa-chocolate supply chain is important for understanding the changes in the bargaining power of the stakeholders along that chain. Furthermore, it provides insights into the assessment of how these structural innovations could have affected cocoa producers in the region.

The domestic cocoa market structure in Cameroon, for example, is divided into production and commercialization segments. The main activities of the farmers, who are the main producers, include maintenance of the farm, harvesting, fermentation, drying, bagging, and in some cases transport of the cocoa beans to upcountry delivery points. The largest cost components are related to labour and material inputs. Commercialization involves the distribution of the cocoa from the farmers to international purchasers via two intermediary stages: so-called “internal marketing”, which refers to local collection at farm gate to delivery to the port of export; and “external marketing”, which consists of shipment for export.

Over the past decade, the chain has undergone significant changes, especially in terms of customers on the export market. While in the past, importers were the first to purchase cocoa that would then be sold to cocoa processors and manufactures, now, it is difficult to separate merchants from industrial users. Indeed, at present, the largest processors and manufactures are the leading international purchasers of cocoa in export markets. Moreover, these foreign trading and processing companies in Cameroon are closely associated with, and sometimes even subsidiaries of, TNCs (e.g. Société Industrielle Camerounaise des Cacaos, the country's most notable processor owned by Swiss-based Barry Callebaut, a major chocolate processor and manufacture). In addition, horizontal concentration has taken place in external marketing, where a small number of big private exporters have come to dominate the export market. In Cameroon, more than 60 per cent of exports declared in 2006-2007 were handled by the four largest exporters.

At the international level, the chocolate manufacturing sector and the consumer market for chocolate have also undergone considerable changes, most importantly in the areas of cocoa trading, processing and the market for industrial chocolate.

There are two main developments with regards to cocoa trading: (i) the main trading companies have taken over cocoa exporting operations within producing countries, their reach sometimes extending all the way to the farm level, either directly or through agency relationships; and (ii) large trading companies are also engaged in processing. Indeed, there are very few international firms that concentrate just on trading operations in the cocoa sector. Hence, cocoa traders are more vertically integrated, both upstream to the farmer level and downstream in processing.

In cocoa processing, changes have occurred mainly in the grinding segment. Traditionally, this was controlled by manufacturers, but as these rapidly retreated because of falling profits, trading companies took over these operations. This has resulted in a new pattern of vertical integration. The grinding segment is also highly concentrated in order to obtain both economies of scale and scope. Currently, two thirds of all grinding is done by the top 10 firms, with the four largest cocoa processing companies (Archer-Daniels-Midland Company (ADM), Cargill, Bloomer and Barry Callebaut) dominating the market.

The evolution of the market for industrial chocolate perhaps best reflects the changes undergone by the cocoa trading and processing segments. Producers of industrial chocolate fall into two categories: (i) vertically integrated groups which produce their industrial chocolate and mainly use it in-house to make consumer products; and (ii) industrial processors that supply most of their industrial chocolate to market suppliers.

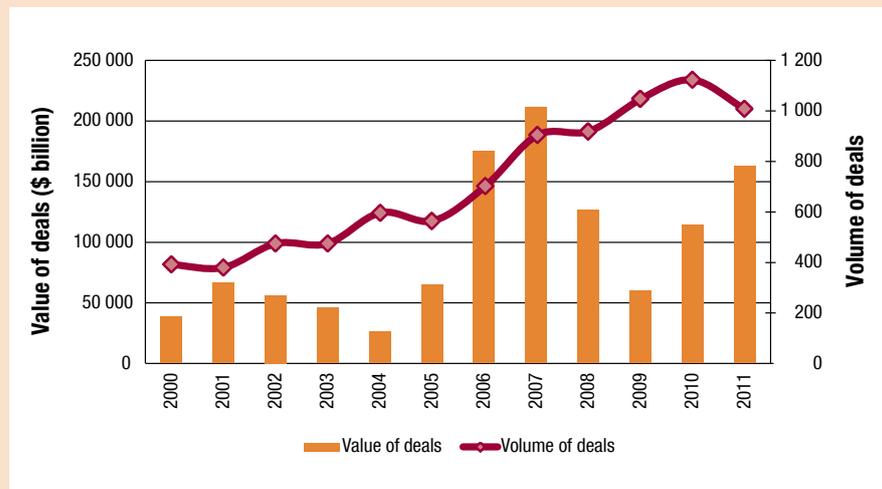
The market for the production of industrial chocolate is highly concentrated: about three-quarters of couverture (a very high quality chocolate containing extra cocoa butter) is supplied by just four companies: Barry Callebaut, Cargill, Bloomer and ADM, with Barry Callebaut alone claiming a market share of roughly 40 per cent. These four top ranking companies were also found to account for almost half of cocoa grinding in the world.

This new structural configuration has resulted in some imbalances in bargaining power between actors at various stages along the cocoa value chain. Specifically, small producers in developing producing countries have been negatively affected because the market power of the large TNCs has limited both their reach to the global market and the benefits accruing from international trade.

*Source: UNCTAD (2008).*

*Simply linking producers to global value chains dominated by TNCs is unlikely to bring about the diversification and structural transformation CDDCs seek.*

**Figure 2.27. Value and volume of deals in the global mining and metals sector, 2000-2011 (\$ billion)**



Source: Ernst and Young (2012).

*Most CDDCs producers or companies lack the financial muscle and expertise to compete with TNCs on an equal footing.*

*In the future, CDDCs will need to create linkages with TNCs that incorporate greater technology and knowledge transfer as well as value retention for their producers.*

zation of the sector, private commercial banks in the producing country became reluctant to finance local operators and set more demanding credit conditions. As a result, local exporters sought affiliation with foreign trading and processing companies from which they could receive financing at lower interest rates. Second, the economies of scale in transportation through bulk shipments resulted in major cost savings. At the same time, bulk trade reinforced the competitive position of the large TNCs (see Box: 2.3).

Clearly CDDCs need to escape the poverty trap stemming from an excessive dependence on commodities. However, simply linking producers to GVCs<sup>67</sup> dominated by TNCs is unlikely to bring about the diversification and structural transformation they seek. It serves merely to further entrench the burgeoning bargaining power of the TNCs at the expense of often diverse and fragmented commodity producers. To avoid being trapped on a low-growth, commodity-dependent path, where the maintenance of future competitiveness is based on a race to the bottom,<sup>68</sup> these countries will need to adopt new technologies and skill-intensive processes to assist diversification into manufacturing. As most GVCs are increasingly TNC- and buyer-driven (particularly in agricultural products but also in the extractive sector), resulting in the latter capturing most of the value added and controlling technology in the processing, distribution and marketing elements of the chain, CDDCs will need to create linkages with these entities that incorporate greater technology and knowledge transfer as well as value retention for their producers (Sigam and Garcia, 2012). If the CDDCs are to gain a greater share of the value generated from their commodities, avoid commodity dependence and upgrade into higher value added products, they

will need to harness their potential for economic and industrial upgrading through effective public-private partnerships and an industrial policy flexible enough to respond to a rapidly changing global economy.

### 3.2. Some policy responses

In the United States, the Dodd-Frank Wall Street Reform and the Consumer Protection Act in 2010 have mandated greater financial market regulation, which includes improving transparency in the OTC derivatives markets. However, changes in reporting regulations remain to be implemented. In the EU also, the European Commission has made a proposal for increased regulation of OTC derivatives trading. However, as European commodity futures exchanges are relatively less regulated than in the United States, they remain unpredictable for commercial hedgers and non-swap dealer speculators, which limits the scope for research and regulation.

Episodes of extreme volatility in commodity markets and unexpected price swings had prompted collaborative global action in search of solutions. Agriculture ministers from the Group of Twenty (G20) leading economies, under the presidency of France, met in Paris on 22-23 June 2011 and released a Ministerial Declaration, aptly entitled the Action Plan on Food Price Volatility and Agriculture, which was presented to G20 leaders at their summit in November 2011. The centrepiece of the eight-point Action Plan is the proposed Agricultural Market Information System (AMIS).<sup>69</sup> The Action Plan seeks, primarily, to address high and volatile food prices through tougher regulation of speculative investments in commodity markets, government mandates on biofuels and other pressing food security issues.



One of the recommendations made by FAO et al. (2011) relates to improving spot market transparency in food markets under the AMIS through international cooperation in providing timely and accurate data on food production, consumption and stock levels. Such information would enable the creation of a global early warning system and help prevent future food crises. This proposal has been welcomed by G20 leaders. This scheme is particularly important for anchoring spot market price expectations, and could prevent speculative price bubbles driven by futures markets by reducing fundamental market uncertainty. This is because, once AMIS is in operation, if futures prices rise excessively, beyond what is justified by publicly announced current production, use and stock levels, commercial wholesalers and food processors will be less inclined to hoard in response to spikes in futures prices, unless they are justified by the published market fundamentals. In this case, any bubble in futures prices will not be followed by higher spot prices, providing potential arbitrage opportunities which would bring down futures prices in convergence with spot prices. This convergence should theoretically take place, since, if the futures price is higher than the spot price towards expiry of the futures contract, an arbitrager could buy the underlying commodity in the spot market and deliver the physical commodity (through a short position) in the futures market at the higher futures price, thereby yielding risk-free profit. In practice however, in the United States there has been consistent non-convergence between futures prices and spot prices in wheat, maize and soybean markets in recent years (USDA, 2009). This issue remains unresolved and requires further research.

A further recommendation seeks to ensure greater transparency in commodity futures and OTC markets and implement appropriate regulations aimed at improving their functioning and ensuring harmonization across exchanges in order to avoid regulatory arbitrage. This would be not only with respect to agricultural commodities but to commodities in general. G20 agricultural ministers did not address this issue directly, but rather passed on the recommendation for review by finance ministers. This recommendation is of particular importance if the issue of financialization is to be tackled, as futures prices continue to have material effects on spot market expectations in the formation of commodity price bubbles.

With regard to biofuels, the G20 draft recommendation was that they should “remove provisions of current national policies that subsidize (or mandate) biofuels production or consumption”. However, this recommendation met with strong resistance from the largest producers of biofuels. G20 leaders ultimately agreed only on the need for further research on the relationship between biofuels and food avail-

ability. This was a rather disappointing result, given that 15 per cent of the world’s maize is already used as feedstock for biofuels, up from less than 5 per cent in 2003/04 (Figure 2.20).

Notwithstanding the fact that speculators have provided market liquidity which has increasingly driven commodity prices in the last decade or so (see chapter 3, section 1.3), the role of the fundamentals of supply and demand cannot be completely discounted in commodity price formation. In this regard, improved market transparency regarding the levels of supply and demand as well as stock levels will almost certainly help commodity markets to clear at more realistic price levels.

However, it is also important to ensure sufficient levels of supply to match anticipated demand by increasing the levels of investment in and efficiency of commodity production. Indeed, sustained levels of investment in commodity production will help to reduce the vulnerability of commodity markets to the impact of huge financial flows and associated market liquidity (and other shocks) that could exacerbate spikes in prices, as in recent years. This is particularly important considering that some of the imbalance in supply and demand for commodities during the current boom could be traced to supply shortfalls, which was partly due to insufficient investment in the commodities sector over the past quarter of a century due to generally low prices. Considering that the stock levels of almost all commodities are at historic lows, a strong and sustained growth of supply would also help replenish stocks, thus removing one of the potential sources of stress on commodity prices.

One major characteristic of commodity markets in recent years has been the fast growing role of TNCs, including huge commodity trading companies and financial institutions, and the associated increase in oligopolistic power and market concentration, which may create price distortions (see, for example, Hoekman and Martin, 2012). This has been to the detriment of most developing countries’ companies which lack the necessary financial muscle and expertise to compete on an equal footing. Reducing this sort of imperfect competition and associated price distortions might entail the application of anti-competitive or anti-trust legislation, possibly within the framework of the WTO. Specifically, in the case of agricultural commodities, much tighter discipline in the use of policies that distort global agricultural commodity markets is necessary. However, it remains to be seen if this could be achieved through full liberalization of global trade in agriculture in the context of the Doha Round.

The excessive volatility of commodity prices gives rise to considerable uncertainty in the short and medium term, leading to higher insurance costs

*Notwithstanding the fact that speculators have provided market liquidity which has increasingly driven commodity prices in the last decade, the role of market fundamentals cannot be completely discounted in commodity price formation.*

*Improved market transparency regarding the levels of supply and demand as well as stock levels would certainly help commodity markets to clear at more realistic price levels.*



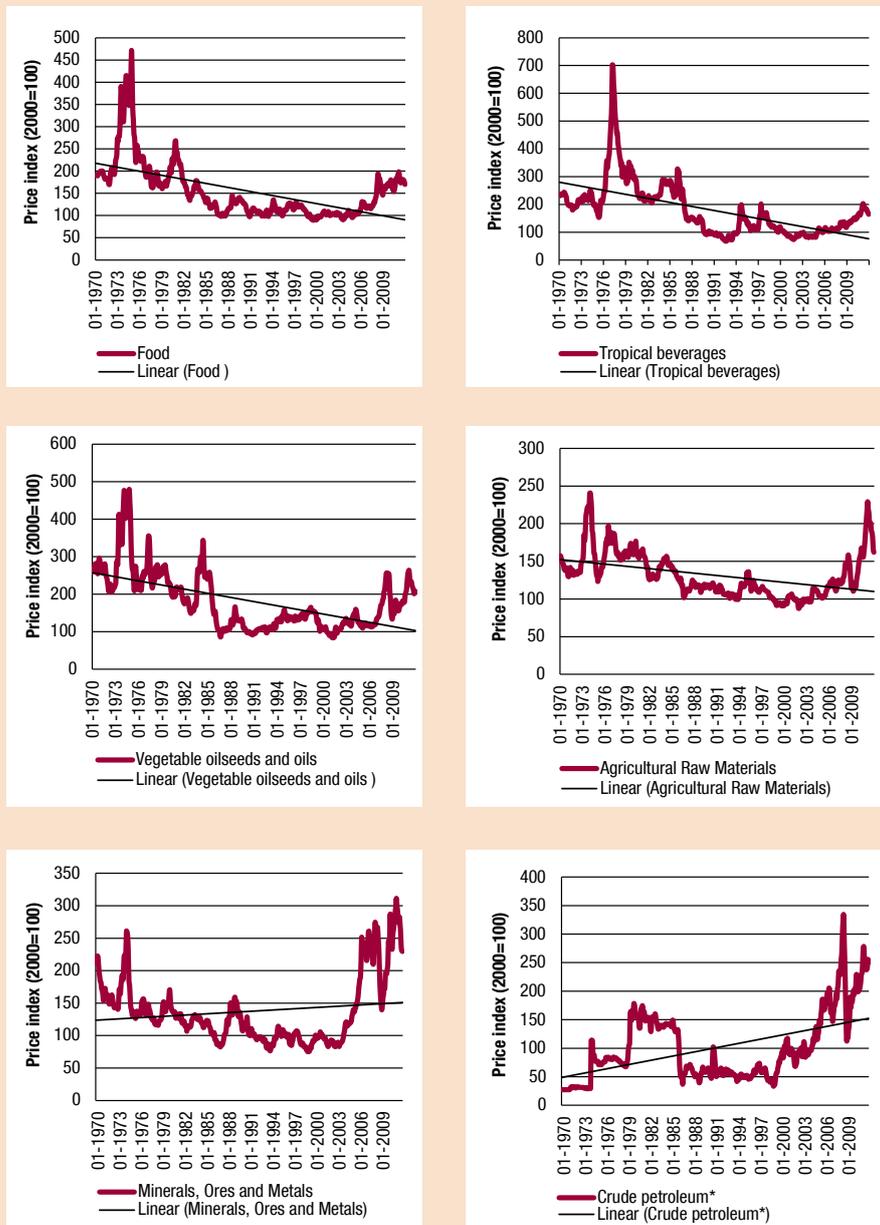
*Increasingly, government revenues from commodity production in CDDCs have not been used to fund investment in economic diversification.*

and increased risks associated with investment in natural resource sectors. Moreover, volatility creates uncertainty, which limits access to capital for investing in the expansion of commodity production, especially when agents are not in a position to collateralize their loans. This also means that, increasingly, government revenues generated from commodity production in developing countries have been set aside as insurance against volatile

prices, as opposed to providing a steady stream of income to fund investment in economic diversification. Furthermore, volatility in food prices is especially harmful to food security and to social and political stability in developing countries, where food accounts for a larger share of consumer spending than in industrialized economies. Some of these issues are addressed in the next chapter of this report.



Appendix 1. Evolution of real price indices of commodities, 1970–2011 (2000=100)



Source: UNCTAD secretariat calculations based on UNCTADstat.

Note: Data for 2011 cover the period January to June.

Note: Crude petroleum, average of UK Brent (light), Dubai (medium) and Texas (heavy), equally weighted (\$/barrel)

Note: To compute prices in constant terms, the deflator used is the unit value index of manufactured goods exports by developed market-economy countries (United Nations Statistical Division).

Note: The UNCTAD secretariat also applied the Hodrick-Prescott filter to the above commodity sub-categories which smoothed long term trend lines by filtering short-term fluctuations, which confirmed the above trends (see Hodrick R and Prescott E (1997). Postwar U.S. Business Cycles: An Empirical Investigation. *Journal of Money, Credit, and Banking*, 29 (1), 1–16.).



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## NOTES

1. The UNCTAD secretariat analysed commodity subcategories separately and controlling for short-term fluctuations using the Hodrick-Prescott Filter, observed prolonged and significantly higher real prices for agricultural raw materials, beverages and food commodities in the 1970s.
2. There is evidence of adverse weather and supply shocks for certain food commodities in the 1973/74 crop year (FAO, 2008) and for coffee and cocoa in 1977/78 (ICCO, 2010; Maurice and Davis, 2011).
3. In fact, the price hikes of the recent boom have brought real prices back to the levels they were during most of the 1960s.
4. Barsky and Kilian (2002) maintain that the 1970s boom was not solely due to crop failures and supply shocks by the members of the Organization of the Petroleum Exporting Countries (OPEC), but rather to a market correction: an increase in prices following a growth in industrial demand and expansionary monetary policies led by the United States. This is why it was not only oil prices that increased, but also commodity prices more broadly.
5. Even in the short term, due to the short-run inelasticity of supply of commodities, as opposed to manufactured goods, monetary easing can have a particularly strong effect on commodity prices.
6. Morgan (2011) estimates that “about 40 per cent of the increase in the monetary base in the (US) Quantitative Easing 1 period [from about November 2008 to November 2010] leaked out in the form of increased gross private capital outflows (about \$32 billion per quarter) and about one-third (about \$74 billion) leaked out during the first two quarters of the Quantitative Easing 2 period [starting in November 2010].”
7. However, busts followed each boom. The first in the early 1980s was due to a tightening of monetary policy in the United States and resulted in a debt crisis in Latin America. The second in 2009 was a result of a subprime credit and asset bubble crisis, the collapse of the Lehman Brothers bank and a flight to safety in commodities (especially metals).
8. A discussion of private capital flows is included in chapter 4.
9. World Bank, *World Development Indicators* database (accessed 30 June 2011).
10. This in turn may have implications for future patterns of South-South commodity trade, as China and India become major sources of demand for food, mineral and metals with different, perhaps less demanding, standards than those of the OECD countries.
11. Historically economic growth has been very energy-intensive with the industrial sector being one of the principal users of energy. However, energy intensity has been declining over time due to technological progress (Farooki and Kaplinsky, 2011).
12. It could be argued that this capital inflow did not lead to an appreciation of the dollar, at least to some extent because of the Triffin dilemma, according to which, when a national currency is used as the international reserve, reserve accumulation by other economies will lead the country in question to run a structural current-account deficit. The country printing the reserve currency enjoys cheap access to funds due to its status, but the structural deficit will simultaneously lead to a weakening of the currency. In addition, United States monetary policy was quite expansionary during this period (broad money grew at an average of 6.6 per cent per annum during the period 2000–2009, compared with 4.7 per cent during the period 1990–1999), thereby reducing some of the pressure on the exchange rate.
13. Although the focus here is on low real interest rates causing a rise in commodity prices, in principle this could also encourage more supply and lower prices, but with a lag considering the gestation period of projects.
14. Low real interest rates may also lead to an increase in investments and raise aggregate demand, thereby leading to higher demand for commodities.
15. Frankel (2008) notes that higher interest rates provide an incentive to extract at a faster rate to earn interest from current revenues.
16. The cost of carry model summarizes the link between the spot price and the (theoretical) futures price for a commodity. UNCTAD (2011: 3) notes that market participants who need a certain commodity at a future time, can either buy it in the spot market today and store it, or buy (i.e. take a long position in) a futures contract and take delivery when the contract expires. In the former case, the participants will incur storage costs and opportunity costs because they might alternatively have invested the funds used to buy the commodity at the prevailing interest rate. The futures price should thus be equal to the spot price plus interest and storage cost – the so-called cost of carry.
17. See Kaldor (1939) for a discussion of the convenience yield of holding commodity inventories.
18. Keynes (1936) was aware of this asymmetry, noting that the real effective interest rate faced by buyers and sellers in the commodity market was determined by the nominal rate less the expected rise in commodity prices, in other words, the



real *commodity rate of interest*, and not by real interest rates as determined by overall inflation expectations. Note that the commodity rate of interest is given by  $r = I - \pi_e$ , where  $\pi_e$  is the expected percentage increase in the price of that particular commodity ; thus for each commodity there exists a separate real rate of interest for traders of that commodity.

19. A spot price is the price that is quoted to buy a commodity today. Similarly, a spot commodity is a commodity traded on the spot market with the expectation of actual delivery, as opposed to a commodity future that is usually not delivered.
20. Again, such spot price dynamics can occur without the requirement of any change in quantities traded or in accumulated inventories. Low interest rates are important in that they reduce the cost of holding inventories, amplifying the shifts in both the commodity supply and demand curves and further inflating spot prices.
21. This refers to WTI crude oil annual mean price/barrel.
22. Increasing net capital inflows and net imports to the United States from China also played an important role in the deteriorating United States' trade balance (Morrison, 2011).
23. The euro area also has also maintained slightly more balanced trade with China compared with the United States.
24. Although the dollar depreciation partly explains the gradual increase in oil and other commodity prices since 2003, it does not explain the sudden increase and collapse of commodity prices in 2008-2009.
25. Using a structural vector autoregressive (VAR) model, Akram (2008) estimates that a change in the real exchange rate accounts for 50 per cent of the fluctuations in cereal prices, although, unlike the IMF (2008), inventory levels are not considered in the estimation, which subjects the model to possible bias.
26. This figure is calculated as the net exports of maize, wheat and soybeans as a proportion of all products (by SITC code) for which the United States has a net positive trade balance.
27. "Currency carry trade" is a class of financial operations that involves borrowing and selling in a low-yielding currency in order to buy and lend in a high-yielding currency (UNCTAD, 2007).
28. *Bloomberg Business Week*, 9 December 2011, at: <http://www.businessweek.com/news/2011-12-01/china-s-reserve-ratio-cut-may-signal-economic-slowdown-deepening.html>.
29. These commodity index funds take passive long futures positions in a broad set of commodities within a specified commodity index.
30. Available at: [www.cftc.gov](http://www.cftc.gov), Regulation 1.25, published at US Printing Office, Title 17 Commodity and Securities Chapter 2, Securities and exchange commission, Part 240, General Rules and Regulations.
31. The effective federal funds rate is the effective interest rate on overnight loans between banks, used in order to meet the reserve requirements of the Federal Reserve – the United States central bank.
32. For a fuller discussion of this issue in the context of flexible versus fixed pricing from a structuralist position, see Taylor (1979) and chapter 1, section 2 of this report.
33. A margin account is a brokerage account in which the broker lends the client cash to purchase financial securities and instruments.
34. However, investments in commodity index funds stagnated in 2011, and it remains to be seen whether this will be a sustained trend.
35. Equity (stocks) is one of the principal asset classes in investment strategies. The others are fixed-income (bonds) and cash/cash-equivalents, which are used in asset allocation planning to structure a desired risk and return profile for an investor's portfolio.
36. In the case of the United Kingdom's Quantitative Easing Programme, Joyce, Tong and Woods (2011). maintain that portfolio rebalancing effects, involving disinvestment from low-yield governments bonds and investment in equities, are potentially large.
37. Longer term government bonds can also be placed as collateral (margin) against futures positions in the United States, although CFTC regulations require the margin requirement to be greater than for short-term Treasury bills.
38. Bernanke made the remark at a forum sponsored by the Federal Deposit Insurance Corporation (Isidore, 2011). See the testimony by Bernanke on the Economic Outlook and Monetary and Fiscal Policy before the United States House of Representatives Committee on the Budget at: <http://www.federalreserve.gov/>, 7 January 2011.
39. The total amount of money and liquid asset hoarding in United States non-financial corporations reached a staggering \$1.7 trillion at the end of 2010 (Federal Reserve, 2012).



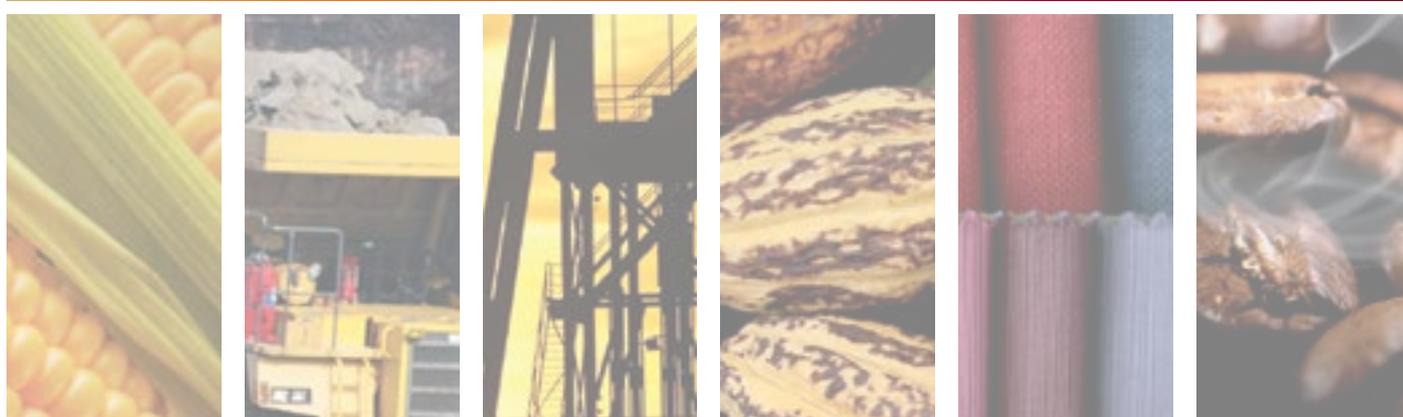
40. The OTC market involves trading of derivatives directly between two parties. There is always at least a minimal risk that one of the parties will default (as happened in the case of Lehman Brothers). In exchange trading, all parties must place collateral against their positions, which is held at the exchange. Margins (i.e. capital which must be held at the exchange as collateral) continually change in accordance with the state of the market. Positions are immediately liquidated if the margin call is not met. This reduces the risk of default (CME, 2011).
41. For further information on definitions, please see the glossary of terms.
42. Open interest is the total number of outstanding futures contracts long or short, held by market participants at the end of each day. It measures the flow of money into the futures market. For each seller of a futures contract there must be a buyer of that contract. To determine the total open interest for any given market requires totals from buyers or sellers – not the sum of both .
43. The term wealth effects refers to an increase in spending that accompanies an increase in perceived wealth.
44. For more details, see Standard & Poor's GSCI at: <http://www.standardandpoors.com/indices/sp-gsci/en/us/?indexId=spgscirg-usd----sp----->.
45. If the market is in backwardation, it means that the futures price of contracts with later maturity dates is lower than the price of futures in the nearby maturities. In this case, positive yields are earned in the roll period, as the price of the current futures contract (which is sold) will be higher than the next futures contract (which is then bought). Conversely, in a contango market, negative yields are earned in the roll period.
46. This could, however, be explained by the rollover of losses in a contango market, or simply because the five-year period is too short to provide robust/reliable evidence of returns on commodity indices.
47. The Goldman Sachs Commodity “spot price” index is actually nearby futures prices. As nearby futures prices or “spot” prices rise, this yields positive “spot returns” for index investors.
48. For further information on definitions, please see the glossary of terms. A long position is a market position that obligates the holder to take delivery (i.e., to buy a commodity). This contrasts with a short position, which obligates the holder to make delivery (i.e., to sell a commodity). The aggregate of all long open positions is equal to the aggregate of all short open positions. For individual traders, net long positions are total long positions minus total short positions (Mayer, 2009; Irwin and Sanders, 2010).
49. For further information on definitions, please see the glossary of terms.
50. However, this is changing, given that in 2011 there was widespread disinvestment from index funds and a growing interest in more actively managed funds.
51. Morgan (2011) shows that there were significant gross private capital outflows to some Asian emerging economies.
52. The CFTC does not gather or release data on index trader positions in non-agricultural markets, which limits transparency and hinders research.
53. For further information, see UNCTAD (2011).
54. For further discussions on the impact of biofuels on food prices, see Flammioni (2008).
55. Here fuels include lubricants and electricity.
56. Statement by Clem Boonekamp at the UNCTAD Global Commodities Forum, 23 January 2012, available at: <http://www.unctad.info/en/Global-Commodities-Forum-2012/Presentations/>.
57. Commodity index traders are institutional investors engaged in commodities futures trading strategies that seek to replicate one of the major commodities indices by following that index's methodology (see the glossary of terms).
58. For a comparison with Chinese import demand for other commodities, see section 3.1.3.
59. The stocks-to-use ratio reflects the excess of supply against demand. It is calculated by dividing the ending stocks of a commodity by the total demand of that commodity and is used for measuring supply and demand of food commodities. Historically, in the United States, soybeans have risen in price when the stocks-to-use ratio falls below 10 per cent, for wheat below 20 per cent and for maize below 12 per cent.
60. This may also be due to land of lower quality being used for growing crops, which raises the costs of production and world prices. However, in the absence of land productivity statistics, this cannot be empirically confirmed.
61. Explanations for the recent price commodity booms cannot be limited to an analysis of fundamentals (demand and supply) alone, nor indeed to the role of China; there is also an increasing body of literature linking commodity prices to the recent phenomenon of “financialization” of commodity markets (see section 3.1.1).



62. This imbalance arises because of short-run inelasticity of supply of commodities. Excess demand for commodities following periods of robust growth in manufactures pushes up commodity prices and encourages investment in commodities. However, for many commodities, such as metals, fuels and tree crops, new investments generate yields after a long gestation period (sometimes several years), by which time manufacturing growth may have slowed (as it did in the 1980s), resulting in a subsequent slump in commodity prices.
63. This percentage of sectors is calculated according to the Harmonized System of Trade classification introduced by the World Customs Organization, which provides a high degree of disaggregation and a detailed analysis of product prices in different sectors.
64. This is in line with Lewis (1954) who argued that surplus labour results in wages being held down causing export prices to fall as productivity grows. In China, this effect is particularly magnified, given the robust productivity growth in manufactures, combined with a large endowment of labour.
65. It should be noted that Chinese labour costs have been steadily rising and many Chinese firms are currently relocating to other cheaper Asian manufacturing zones.
66. Xstrata is a major producer of coal (especially thermal coal), copper, nickel, primary vanadium, zinc and ferrochrome.
67. According to the GVC concept, value chains are divided among multiple firms and spread across wide geographic areas, whether regional or international, rather than a single geographic location. The process of transforming goods and services from production to final consumption involves linkages between the various sectors involved in that transformation process.
68. A race to the bottom is a situation where companies and countries try to compete with each other by cutting wages and living standards for workers, and move the production of goods to places where the wages and employment rights' are lowest.
69. AMIS aims to provide accurate, timely, reliable and comparable data on agricultural markets (i.e. with regard to production, consumption and stocks). Thus, it would be similar to the Joint Oil Data Initiative (JODI) launched in 2002 by the G20 to curb volatility in oil markets.



# THE DIRECT EFFECTS OF THE 2003-2011 COMMODITY BOOM: POVERTY AND FOOD INSECURITY



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*Although the commodity price boom was associated with high levels of GDP growth, the fuel and food price hikes may have undermined efforts to reduce poverty rates and food insecurity.*

*The sharp rise in food prices during the period 2006–2008, combined with increased freight rates, caused expenditures on food imports in LIFDCs to surpass one trillion dollars in 2008.*

## 1. THE DIRECT EFFECTS OF THE 2003–2011 COMMODITY BOOM ON CDDCS

### 1.1. Introduction

This chapter discusses two major direct effects of the 2003–2011 commodity boom, drawing on recent research. The first is the effect of soaring food prices on food security<sup>1</sup> and trade balances, which was found to vary depending on the composition of imports and exports. For many CDDCs which are net food importers, rising prices inflated their food import bills, increased domestic food prices and levels of poverty, and in some instances fuelled social unrest and riots (all negative direct effects). The second direct effect, resulting from this, was on incomes and poverty rates.<sup>2</sup> Although the commodity price boom was associated with high levels of GDP growth, the fuel and food price hikes may have undermined efforts to reduce poverty rates and food insecurity. The chapter concludes with a review of a series of proposals for international and regional cooperation and policy actions to address food insecurity.

### 1.2. Rising food prices and food insecurity

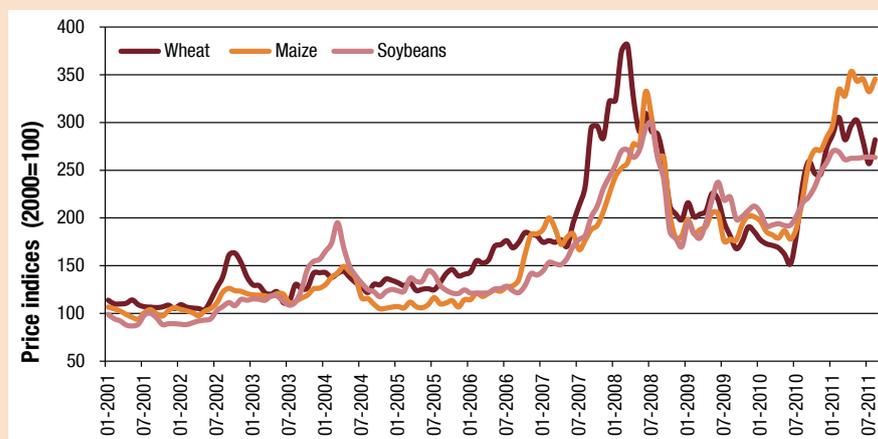
Since 2006, food prices have risen by about 70 per cent and have become increasingly volatile (UNCTAD, 2012). This has caused considerable damage to the health and social well-being of people on low incomes. During the 2007–2008 food price hikes, Bangladesh, Côte d'Ivoire, Egypt, Haiti and Uzbekistan were among 33 developing countries that experienced violent food riots, demonstrations

or social unrest as a result of rising food prices (Torero, 2011). Particularly vulnerable were pregnant women, infants and children, with reports of rising malnutrition, especially among the poorest households (Lin, 2008). Prices of food, especially cereals, again surged during 2010, which contributed to considerable distress and civil unrest in cereal-importing developing countries, especially in West Asia and North Africa, where bread is a key staple (ITC, 2011).<sup>3</sup> Although the civil unrest in Tunisia and Egypt was mainly prompted by high unemployment, corruption, authoritarian governments, and poor living conditions, high food prices was an important catalyst in the uprisings (Zurayk, 2011).

By the first quarter of 2011, wheat, maize and soybean prices had approached the highs of 2008 (Figure 3.1). According to the World Bank (2011), an additional 44 million people fell below the \$1.25 poverty line as a result of higher food prices from June 2010 to February 2011. With more and more people affected by hunger and poverty, attainment of the Millennium Development Goals (MDGs) by 2015 is becoming increasingly unlikely.

The sharp rise in food prices during the period 2006–2008, combined with dramatic increases in freight costs, caused expenditures on food imports by low-income food-deficit countries (LIFDCs) to surpass one trillion dollars in 2008, which was 26 per cent higher than the peak reached in 2007 (see for example, Figure 3.6).<sup>4</sup> At the height of the food crisis in 2008, stable or stronger currencies against the dollar had attenuated the effect of food and fuel price increases for some developing countries, but for others, currency depreciation against the dollar added to their import bills (Conceição and Mendoza, 2009). The increases in the import bill were not necessarily linked to importing more food; indeed,

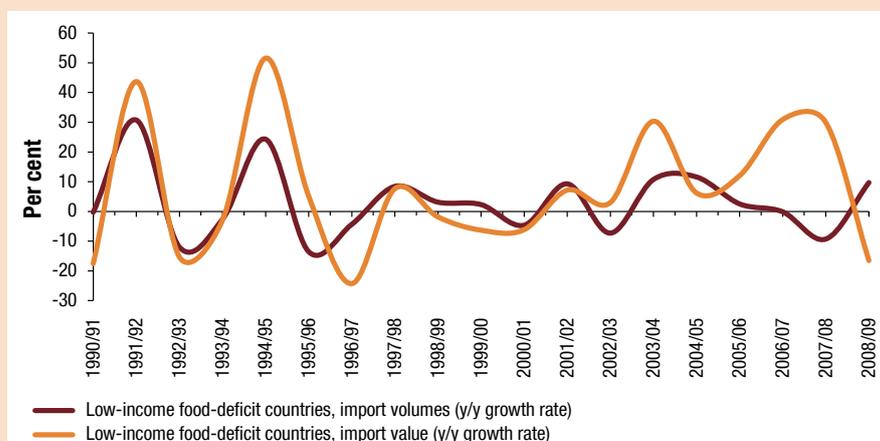
Figure 3.1. Food price spikes, 2001–2011 (2000=100)



Source: UNCTAD secretariat calculations, based on UNCTADstat.



**Figure 3.2. Evolution of cereal imports by low-income food-deficit countries, by value and volume, 1990/91–2008/09 (year-on-year percentage change)**



Source: UNCTAD secretariat calculations based on FAOstat.

Note: The data on volumes is in tons. The cereals category comprises: wheat, maize, rice, sorghum, barley, oats, rye and millet. The LIFDCs cover 78 developing countries, including 46 LDCs.

many CDDCs and LIFDCs curtailed their imports of foodstuffs due to higher food prices (Figure 3.2). They were more in line with the longer term response to food price movements.

Most CDDCs adopted a wide range of food management and regulation policies to try to mitigate the direct impact of the food crisis on their food security (Table 3.1). For example, recent cases include trade embargoes, such as the ban on wheat

exports by a number of countries, particularly CDDCs in 2010, and rice exports by India and Viet Nam in 2007-2008, which affected importing countries. In some cases such bans can lead to food emergencies in other countries (Box 3.1), depending on whether any shortfall in imports can be replenished from domestic production or stocks or by importing from elsewhere on affordable terms.

*Most CDDCs adopted a range of food management and regulation policies to try to mitigate the direct impact of the food crisis on food security.*

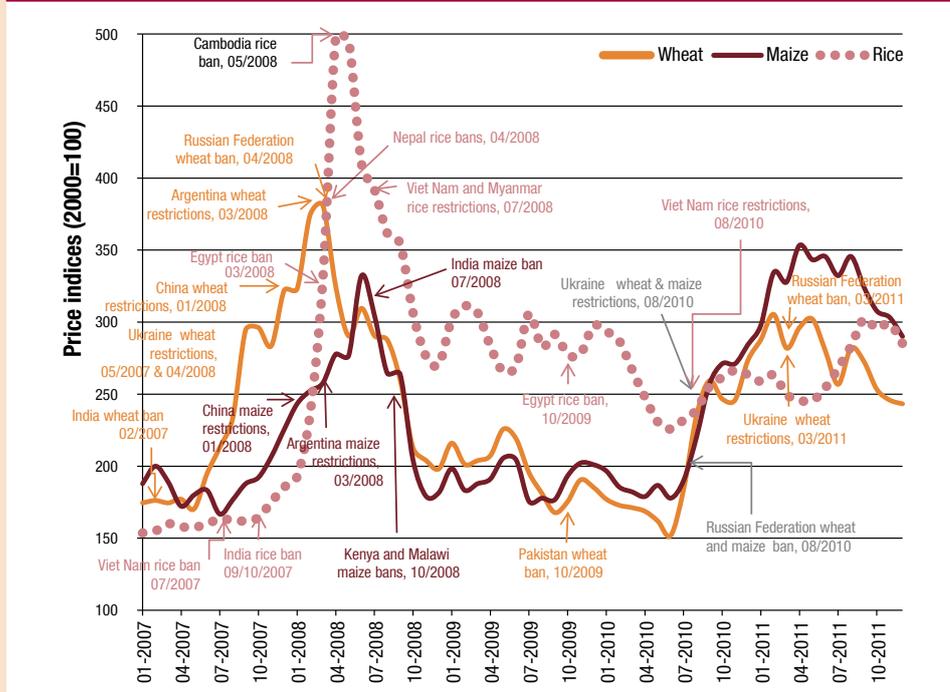
**Table 3.1. Policy responses to rising food prices in CDDCs, 2008–2010**

Consumption	Production	Management and regulation of food markets
Food assistance	Producer input subsidies	Lower import tariffs
Cash transfers	Lower taxes	Export bans/tariffs
Food for work programmes	Other support	Build-up of food reserves
Price subsidies		Price support
Price controls		Import bans or raising of tariffs
Lower taxes		

Source: UNCTAD.

**Box 3.1. Exploring the impact of trade and export restrictions on food prices**

Export restrictions can take various forms: variable, differential and specific (ad valorem) export taxes, minimum export prices (MEPs), quotas, government-to-government sales and export bans. These restrictive measures fall within the purview of GATT Article XI on prohibition and restriction of exports. Although WTO rules do not prohibit the application of export restrictions if “temporarily applied to prevent or relieve critical shortages of foodstuffs or other products essential to the exporting contracting party,”<sup>6</sup> as commodity prices for food continuously rise, a number of major cereal-exporting countries have repeatedly imposed export restrictions and bans which may have exacerbated already high prices (Box chart 1).

**Box 3.1. Exploring the impact of trade and export restrictions on food prices (continued)**
**Box chart 1. Major food export restrictions imposed during 2007-2011**


Source: UNCTAD secretariat, based on Headey (2011a) and Sharma (2011).

During the period 2007–2010 there were at least 36 export bans, 6 ad valorem taxes, 6 quotas and 4 MEPS imposed, some of which were introduced concurrently and others sequentially (Sharma, 2011). Rising food prices can negatively affect poverty and food security, particularly in LDCs and net food-importing developing countries (NFIDCs). Several studies on the food crises have noted that while export bans on their own did not initiate the food crisis (which were often due to exogenous shocks such as droughts or poor harvests), they often amplified the price rises, turning them into spikes (Sharma, 2011; Headey, 2011a).

In addition to contributing to global instability in food markets, export restrictions lead to trade policy responses from both exporters and importers, which, when considered collectively, have been shown to render national government interventions ineffective in stabilizing domestic prices (Martin and Anderson, 2010). Export restrictions add to the cost of exogenous supply or demand shocks to food purchasers worldwide. Moreover, when several major food-exporting countries adopt export restrictions, they further depress the terms-of-trade for food-importing countries, especially LDCs and NFIDCs. Martin and Anderson (2012) use a global market equilibrium model to show that changes in trade policies (particularly export restrictions and import tariff cuts) contributed significantly to price rises in world wheat and rice of 30 per cent and 45 per cent, respectively, during the period 2006–2008.

Also, Headey (2011a), in comparing trade volumes for rice, wheat and maize against all major trade policy developments of both importers and exporters during the 2008 food crisis, finds that short-run trade shocks provide the most compelling explanation for the overshooting of prices of all three commodities. Moreover, assuming inelastic demand and supply values for rice, Headey estimates that export bans by four countries (China, Egypt, India and Viet Nam) contributed to a 61 per cent increase in the world price of rice between 2007/08 - 2009/10. The relatively small volumes of traded rice may be one of the reasons for the observed price fluctuations (Headey, 2011a). These results are broadly consistent with those observed in a study by Mitra and Josling (2009) of the impact of the Indian rice export ban. While it would appear that export restrictions did not significantly contribute to the thinness of agricultural markets, nor did they trigger the food crisis, they probably played a role in undermining confidence in the global trading system. Developing countries (particularly the most food insecure ones) will need to retain some policy flexibility as such restrictions may be politically necessary in response to public protests over high food prices.



Rising food prices have inevitably become a challenge for food security, especially in poor countries. Estimates of the number of additional people pushed into hunger as a result of the 2008 food crisis range between 119 and 180 million (World Bank, 2010; FAO, 2010).<sup>5</sup> More recently, in 2011, the Horn of Africa suffered one of the worst famine and food security crises observed since the 1980s, largely due to a devastating drought which decimated local food production.

Food emergencies tend to arise from three types of events: (i) natural disasters, such as droughts, floods and earthquakes; (ii) the loss of normal supplies for economic, political or military reasons (e.g. food export bans discussed in Box 3.1); and (iii) an increase in the prices of imported foods to a level that causes countries to reduce their food imports. These events have stemmed from the following three underlying factors:

- Climate change has increased the incidence of natural catastrophes, such as floods in Pakistan in 2010 and erratic rainfall in much of East Africa, often leading to national food emergencies. Another example of a climate-related impact, which caused a global price shock, was the severe drought of 2007 in Australia. This resulted in a major reduction of world wheat exports, leading to a spike in wheat prices in 2007-2008 (Box 3.2).
- Price shocks on world markets, which were transmitted through the trading system to virtu-

ally every country in the world. This applied most of all to wheat, rice and maize – the world's most important staple foods.

- A sharp change in the long-term ratios between the prices of cereals, agricultural inputs and export crops (with biofuels and land grabs also playing a role). Over the past 30 years, the prices of cereals have increased more slowly, overall, than those of oil and mineral fertilizers, but faster than those of poor countries' main export crops. This makes input-dependent forms of agriculture less profitable.

The Updated Comprehensive Framework for Action (UCFA) of the United Nations High-level Task Force on the Global Food Security Crisis (UN HLTf) has advocated a twin-track<sup>7</sup> approach to enhance food and nutrition security and resilience to shocks, while responding effectively to humanitarian emergencies at the national level. It requires implementing simultaneous short- and long-term interventions.<sup>8</sup> The UCFA contains detailed treatment of all aspects of food (and nutrition) security, and gives particular priority to sustainable agriculture, better ecosystem management and gender equity. It also mentions improved nutrition and the human rights of those least able to enjoy their right to food as prerequisites. Moreover, the UCFA acknowledges the primary role of the State in tackling food insecurity, in partnership with other stakeholders, through a wide range of sectoral policies and activities that need to be addressed both comprehensively and coherently.

*The Updated Comprehensive Framework for Action of the UN HLTf has advocated a twin-track approach to enhance food and nutrition security: (i) meeting the immediate food and nutrition needs of those at risk; and (ii) building longer term resilience by eliminating the root causes of hunger and poverty.*

### Box 3.2. Climate change and food insecurity

Many developing countries are already off-track in meeting MDG 1,<sup>a</sup> and the potentially adverse effects of climate change may mean that most, if not all, these countries will be unable to meet that MDG in the foreseeable future. Current estimates suggest that global food and fuel shortages, which are expected to accompany climate change, may have a disproportionate impact on CDDCs, particularly the oil-importing ones. Since CDDCs rely on agriculture as a source of household income, and on the production and export of primary products as a source of national income, increased climate variability and its effects will have a significant socio-economic impact on their capacity to maintain current levels of food security. For example, in sub-Saharan Africa, where over 60 per cent of households rely on agriculture for their livelihoods, heat-related plant stress is expected to contribute to reduced yields in major crops by as much as 50 per cent in some areas (UNCTAD, 2009). In sub-Saharan Africa, 200 million people (or a quarter of the population) are already facing water stress, and this is likely to exacerbate existing health and sanitation problems, straining already precarious health services in many areas (UN-DESA, 2009: xiii).

The agricultural sector (crops and livestock) accounts for 13.5 per cent of global greenhouse gas (GHG) emissions, mostly methane and nitrous oxide (Kasterine and Vanzetti, 2010). In LDCs, agricultural GHG emissions account for 28 per cent of emissions (UNCTAD, 2010), and about 43 per cent of their GHG emissions emanate from land-use change and forestry. With growing demand for meat and dairy products in developing countries, it is likely that GHG emissions from agriculture will increase (Kasterine and Vanzetti, 2010). Moreover,

**Box 3.2. Climate change and food insecurity (continued)**

the decline in the FAO agricultural input index (which reflects the ratio between food prices and input prices) during the period 2004-2008 suggests that farmers did not benefit from the commodity price boom. Sub-Saharan Africa contributes the least in terms of GHG emissions, and yet it is among the most vulnerable regions to the impacts of climate change due to multiple stresses, including a heavy reliance on rainfed agriculture, poverty, weak institutional structures and low adaptive capacity (Couharde, Davis and Generoso, 2011).

Agricultural practices do not necessarily have to be disastrous for the environment, as potential risks can be turned into opportunities for harnessing growth and agricultural development. The agricultural sector has the potential to mitigate climate change mainly by increasing the carbon sequestration rate (i.e. the rate at which carbon is stored in the soil), and, to a lesser degree, through the reduction of some GHG emissions— principally nitrous oxide and methane (Smith et al., 2007). Across the rest of the agri-food supply chain, mitigation can be achieved through carbon emission reductions. Some estimates suggest that around 89 per cent of potential GHG mitigation from the agricultural sector is achievable through carbon sequestration (Barker et al., 2007). However, this depends to a large extent (an estimated 70 per cent) on improved grazing, cropland management and agro-forestry in developing countries, the level of the carbon price and effective policy instruments (UNFCCC, 2008; FAO, 2007). Potential additional benefits of carbon sequestration include the conservation of agricultural biodiversity and reduced environmental degradation. Niggli et al. (2008 and 2009) see strong potential for climate change mitigation from organic agriculture, for instance, and highlight its added benefits such as conserving agricultural biodiversity, reducing environmental degradation and integrating farmers into high-value food chains. An UNCTAD-UNEP study (2008) of 114 projects in Africa shows that a shift towards organic agricultural production increased yields by 116 per cent. Similarly, the UN Special Rapporteur on the Right to Food reports that small-scale farmers could double food production within 10 years in critical regions by using ecological methods, and calls for a fundamental shift towards agro-ecological methods to boost food production and improve the situation of the poorest (de Schutter, 2010).

However, reversing the potentially damaging impact of agriculture on the climate would require concerted actions and commitments from all stakeholders, along with the necessary financing to implement climate adaptation and mitigation programmes. The additional investment and financial flows needed for climate adaptation in developing countries is estimated at between \$28 and \$67 billion annually, with a further \$52–\$62 billion for agriculture, water, health, ecosystem and coastal-zone protection (UNFCCC, 2007 and 2009). These figures are likely to be much higher if mitigation actions are not taken to prevent further global warming.

Two recent initiatives arising out of the 17th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in Durban, South Africa, in 2011 aimed at helping to bridge the financing gap and smooth the transition towards sustainable agriculture in developing countries. The first initiative concerns a Green Climate Fund, which by 2020 should provide \$100 billion annually for mitigation and adaptation in developing countries. The second initiative aims to promote environmentally sound technology transfer between developed and developing countries through the creation of a Climate Technology Centre and Network (Cancun Accord, 2011).

There is need for a renewed political commitment to sustainable agricultural development in order to overcome new and emerging challenges. In the context of food security and sustainable agricultural development, such a commitment should reaffirm the “right to food” and give greater priority to sustainable intensification of food production through increased investment in local food production, support to farmers’ organizations for developing and sharing knowledge on ecological innovations, as well as improving access to local and global agri-food markets and reducing waste throughout the supply chain. This will require a more transparent and open trading system, and, where appropriate, policies that contribute to the stability of food prices and domestic markets. In addition measures are needed to ensure access to land, water and other resources, and support for social protection programmes (UN High-Level Task Force, 2010).

<sup>a</sup> MDG 1 aims to eradicate extreme poverty and hunger. The targets underpinning the goal seek to halve, between 1990 and 2015, the proportion of people living on less than \$1 a day, and to halve the proportion of people who suffer from hunger.



### 1.3. Food price volatility

In broad terms, volatility of food prices can be bad for both surplus and deficit countries for three main reasons (Panitchpakdi, 2010). First, fluctuating revenues distort governments' financial planning and make it hard to allocate foreign exchange resources efficiently. Second, farmers are unable to make optimal production decisions. Third, volatility exacerbates risk, and therefore deters investment as well as the adoption of new technologies by farmers in low-income countries, who cannot afford to take risks.

These factors, which change the fundamentals of supply and demand, are of particular importance to CDDCs, but they do not necessarily all contribute to food price volatility. An inter-agency report acknowledges that "in the long term there is little or no evidence that volatility in agricultural commodity prices as measured using standard statistical measures is increasing" (FAO et al., 2011: 6). However, it points out that volatility has been higher in the 2000s than during the previous two decades. Indeed, it states that since 1990, "the implied volatility for major crops has increased significantly... [and] the period since 2006 has been one of extraordinary volatility" (FAO et al., 2011: 7). This is the focus of the discussion about food price volatility and food security which follows.

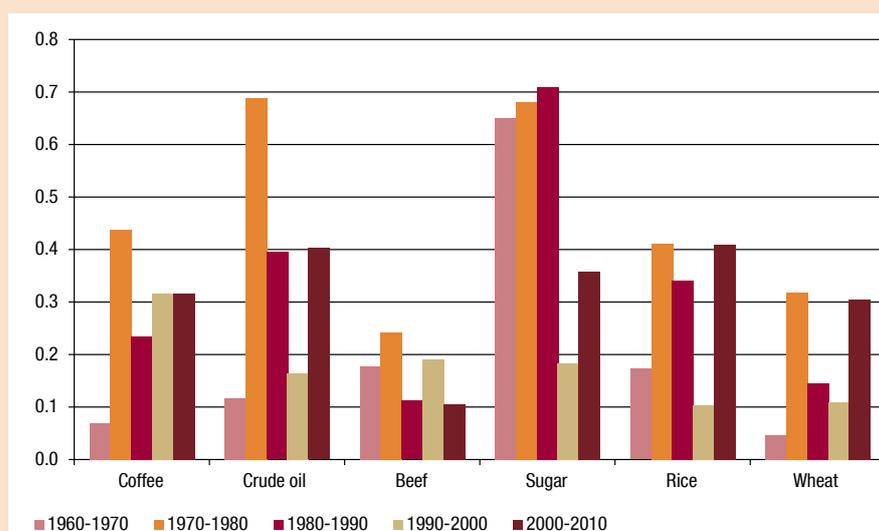
Long-term comparisons show that recent price volatility is not unprecedented for individual commodities (Jacks, Rourke and Williamson, 2011; Maurice

and Davis, 2011). Figure 3.3 below presents the coefficients of variation for various food commodities and oil (for comparison purposes).<sup>9</sup> It shows the long-term volatility of commodities prices using annual constant prices for six commodities over the period 1960–2010, and indicates that the more recent price fluctuations during the period 1990–2010 are unexceptional for some commodities (Calvo-Gonzales, Shankar and Trezzi, 2010). For instance, the volatility of coffee prices has been similar to that of most agricultural products over the past 50 years, whereas petroleum and sugar prices have been the most volatile (Maurice and Davis, 2011). However, it should be noted that the volatility estimates below do not take into account trends which could be important in the context of a commodity super-cycle, as in the case of real prices of metals, for example (Cuddington and Jerrett, 2008). More specifically, the magnitude of the most recent upswing of food and metal prices was above the historical average, while the magnitude of the price rebound for oil was similar to the historical average, but occurred more rapidly (Baffes and Haniotis, 2010).

As discussed in chapter 2 of this report, there is some evidence that trade in commodity-related financial assets and instruments (such as index funds and futures) was one of the reasons for the commodity price boom (Andreosso-O'Callaghan and Zolin, 2010), and that the boom attracted non-commercial traders. Their trade may have contributed to price volatility, as their motive was not related to market fundamentals of supply and demand but to

*The magnitude of the most recent upswing of food and metal prices was above the historical average, while the magnitude of the price rebound for oil was similar to the historical average, but occurred more rapidly.*

**Figure 3.3. Coefficients of variation for selected commodities in the short and long run, 1960-1970 to 2000-2010**



Source: Maurice and Davis (2011).

Note: The coefficient of variation (ratio) is based on annual constant dollar values (2000=100).

*Causation remains an area of dispute, but there is agreement that there exists a correlation between the recent commodity price volatility and the financialization of commodity markets.*

*Increased volatility of commodity prices through financialization may have hindered effective investment and planning for agricultural production.*

realizing gains from price changes in commodity futures. Indeed, when participation of non-commercial traders increases on both sides of the market (producers and industrial food processors), this has the potential to become an independent force affecting prices. For instance, as speculators take long positions, betting on higher future spot prices, futures prices are driven upwards and signals of higher prices may be transmitted to the spot market in such a way that initial expectations are confirmed and provide feedback on further expectations (Cooke and Robles, 2009).

While such speculation has a role to play in the functioning of the market, with rising prices requiring increasing liquidity, the proportion of speculators relative to commercial traders increases, so that prices become driven increasingly by the market liquidity that speculators provide rather than by underlying fundamentals of supply and demand. Since change in liquidity can be sudden and large, this tends to increase price volatility.

Between 2002 and 2008, the number of financial contracts for derivatives in commodities tripled (Figure 3.4). As Michel Barnier, Commissioner in charge of EU financial reform, noted, "We are no longer talking about foodstuffs. Agricultural products are turning into financial assets."<sup>10</sup>

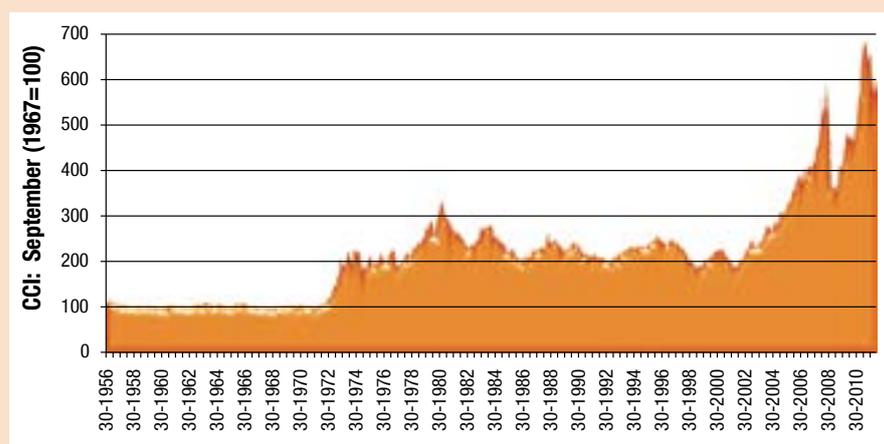
Causation remains an area of dispute, but there is agreement that there exists a correlation between the recent increases in commodity price volatility and the financialization of commodity markets. A recent inter-agency report prepared for the G20

states: "Whilst analysts argue about whether financial speculation has been a major factor, most agree that increased participation by non-commercial actors... acted to amplify short term price swings and could have contributed to the formation of price bubbles" (FAO, et al., 2011: 12).

Figure 3.5 shows how an increase in non-commercial traders' positions in commodity futures markets may have contributed to price volatility in three major food commodities – wheat, maize and soybean. The importance of speculation is measured by the percentage share of non-commercial traders' net positions in those markets. An entry above the zero line indicates that traders had net short positions. The correlation between price volatility and speculation is evident, as rising price volatility tends to be preceded by an increase in net short positions. The mechanism is that increased "shorting" of a future is one measure of market anxiety about the return on the investment. Given the linkages between futures and prices of the underlying commodity, this translates into greater variation in cereal prices.

Ghosh (2010) asserts that the increased volatility of commodity prices through financialization hindered effective investment and planning for agricultural production. Many producers initiated investments in, for example over-sowing and other forms of production, while others opted out of cultivation due to irregular price signals resulting from information asymmetries. These asymmetries were driven by financial market behaviour which exacerbated volatility in agricultural commodity markets (UNCTAD, 2009).

**Figure 3.4. Monthly value of the continuous commodity index, 1956–2012**

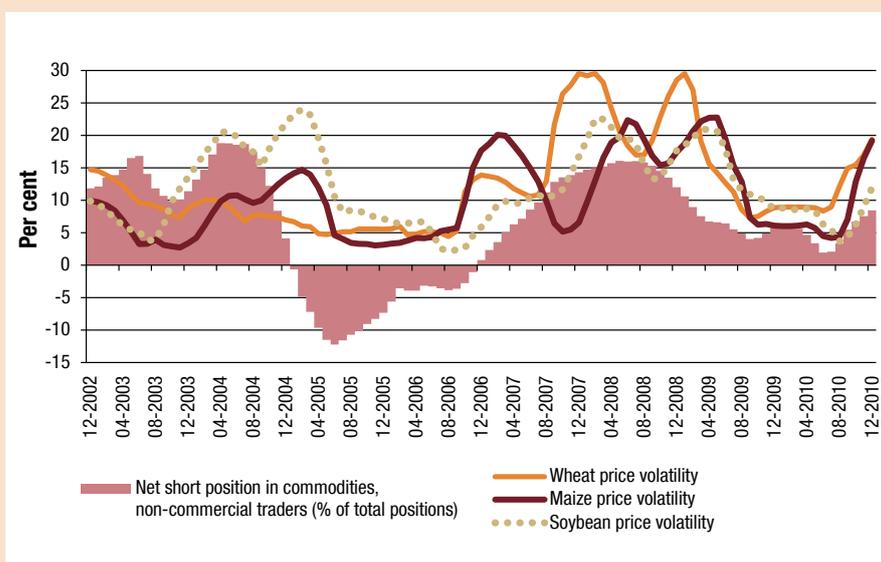


Source: Commodity Research Bureau, at [wikiposit.org](http://wikiposit.org) (<http://wikiposit.org/uid?CRB.CCI>).

Note: The continuous commodity index (CCI) comprises 17 commodity futures aggregated into four commodity subgroups, which are continuously rebalanced. Its components are equally weighted, and are distributed evenly across the major sectors: energy 17.6 per cent, metals 23.5 per cent, soft commodities 29.4 per cent and agriculture 29.4 per cent. The CCI indicates exposure to all four commodity subgroups and trades on the ICE Futures Exchange.



Figure 3.5. Non-commercial futures trading, 2002–2010: a cause of cereal price volatility?



Source: Bezemer and Szökol (2011).

Producers and consumers have a common interest in determining and addressing the causes of any increased price volatility. However, there have been disagreements over the permanence of any increased volatility and the relative importance of the causes of the recent price hikes. The picture is clouded further since these are not the only changes that have been taking place in global commodity markets. For example, there has been a substantial transformation of the membership and governance of global value chains (GVCs). Citing a group of influential GVC studies, Nissanke (2010) notes that “the governance structures of primary commodity value chains have become increasingly buyer-driven with a shift in the distribution of value skewed in favour of consuming countries” (Nissanke, 2010: 8).<sup>11</sup>

There have been a wide range of proposals on how to deal with price rises and volatility. The inter-agency report, for example, calls for new market-based mechanisms to protect producers against price volatility and other risks, and to stabilize food import bills. It identifies a gap between normal and catastrophic risks “that can be handled through market tools, such as insurance and futures markets or through cooperative/mutual arrangements among farmers themselves” (FAO et al., 2011: 33). Conflicts and increasing weather-related catastrophes often exacerbate the challenges associated with high and volatile prices, including an escalating need for food imports, which in turn threaten national and regional stability and undermine confidence in market-mediated food security.

#### 1.4 Various aspects of food security

As discussed in the previous subsection, price fluctuations are inherent in agricultural markets – partly due to supply-demand dynamics and the unpredictability of weather patterns and harvest yields. The extent to which activity in futures trades, including in OTC markets for agricultural commodities, contributes to this volatility is currently hotly debated. However, there is some agreement that it may have amplified the price spikes and volatility experienced in commodity markets during the most recent boom. Whatever the cause, extreme volatility in food prices deters producers from making the necessary investments for increasing productivity – one of the underlying reasons for continued worldwide food insecurity.

By definition, food security requires continuous availability and universal access to food in adequate quantity and quality for a healthy and productive life. In the present context of economic openness and globalization, food can be acquired by many means, including domestic production, trade and other types of transfers such as food aid. It is argued that sustainable food security must be based on: (i) extending the analytical and programmatic perspective beyond the narrow confines of farming to encompass a macroeconomic perspective; and (ii) agricultural and rural transformation (including the provision of decent employment opportunities that generate sustainable incomes for the rural population) (Davis, 2004).

*The governance structures of primary commodity value chains have become increasingly buyer-driven with a shift in the distribution of value skewed in favour of consuming countries.*

*Conflicts and increasing weather-related catastrophes often exacerbate the challenges associated with high and volatile prices.*

This subsection describes various food acquisition channels, followed by an analysis of the evolution of agricultural productivity in CDDCs and how it has affected food security. This is illustrated with particular reference to LDCs, which are the most at risk of food insecurity.

#### 1.4.1. Food acquisition channels

For most countries, domestic food production is the principal means of ensuring food security. An indication of the importance of domestic food production is the agricultural production instability index, which is a measure that estimates annual fluctuations of agricultural output in relation to its trend value in a given country. During the period 1996–2001, the estimated instability index for LDCs was high, at 11.7 (UNCTAD, 2009), compared with the period 2006–2008, when it was down to 7.6. By comparison, the index for developing countries for the period 2006–2009 was much lower at 6.4. Thus, LDCs' domestic food production has been, on average, less variable since 1996–2001, but on average more variable than that of other developing countries.

Given that markets are increasingly integrated, most countries acquire some food through international trade. The food import bill of developing countries (including LIFDCs) in 2008 was \$356 billion, 25 per cent higher than in 2007 (Figure 3.6) and about equal to the total net official development assistance (ODA) receipts of developing countries in 2007 (FAO, 2008a). Even though this is a nominal increase and developing countries as a whole grew rapidly in 2007, their rate of economic growth (about 8 per cent in 2007 in real terms in purchasing power parity) was far lower than the increase in their food bill. For LDCs as a whole, their food import bill rose from \$7 billion in 1995 to \$29 billion in 2010, and

as a share of GDP it peaked at 5.8 per cent in 2008 (FAO, 2011a).

Throughout the 1970s to the early 2000s there have regularly been major food import surges to LDCs (UNCTAD, 2006). And these have been increasing over time, largely owing to the inability of domestic producers (especially in African LDCs) to compete with cheaper imported food (UNCTAD, 2006).<sup>12</sup> Since 2003, LDCs' food trade balance has steadily declined because of soaring food prices (figure 3.7), resulting in growing trade deficits. As illustrated in box 3.3 (section 1.5 below), net food and fuel importers, on average, witnessed a deterioration in their terms of trade during the period 2002–2008.

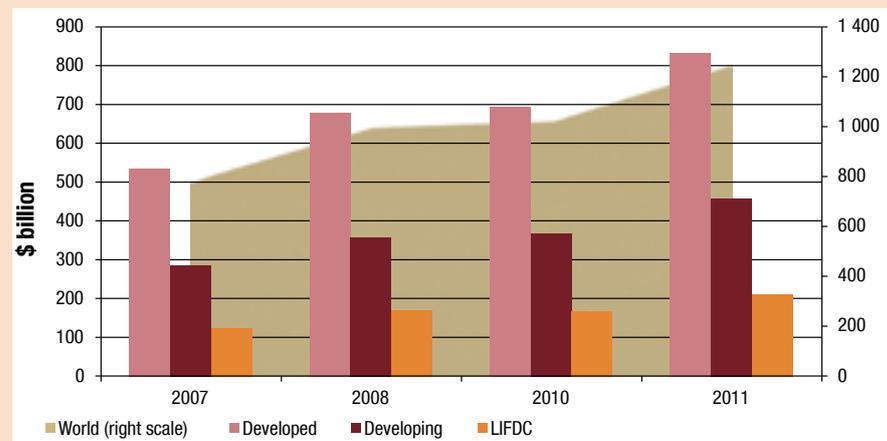
For a set of 33 net food-importing countries (which are eligible for IMF funding through the Poverty Reduction and Growth Facility and for which data are available) the adverse balance-of-payments impact of the increase in food prices during January 2007 until April 2008 was estimated at \$2.3 billion, an average of 0.5 per cent of the average annual GDP for 2007.

During the period 2005–2007, 35 LDCs were net food importers and 15 of them can be considered net food exporters. Major food-importing LDCs typically include oil-producing countries and those where conflict has hindered domestic production of food and made them more vulnerable to higher food prices. Similarly, small island developing States (such as Cape Verde and Maldives) tend to be major food importers, as their economies rely mainly on their services sector (e.g. tourism), rather than on food production. Food aid accounted for an increasing share of total food imports in LDCs, rising from 6 per cent in 2006–2008 to 8 per cent in 2009 (figure 3.8). In 2008, food imports accounted for 12 per cent of food consumption in African LDCs, 7 per cent in Asian LDCs and 20 per cent in island LDCs.

*LDCs' food import bill rose from \$7 billion in 1995 to \$29 billion in 2010, peaking at 5.8 per cent of their GDP in 2008.*

*The food import bill of developing countries in 2008 was \$356 billion, 25 per cent higher than in 2007 and about equal to the total net ODA receipts.*

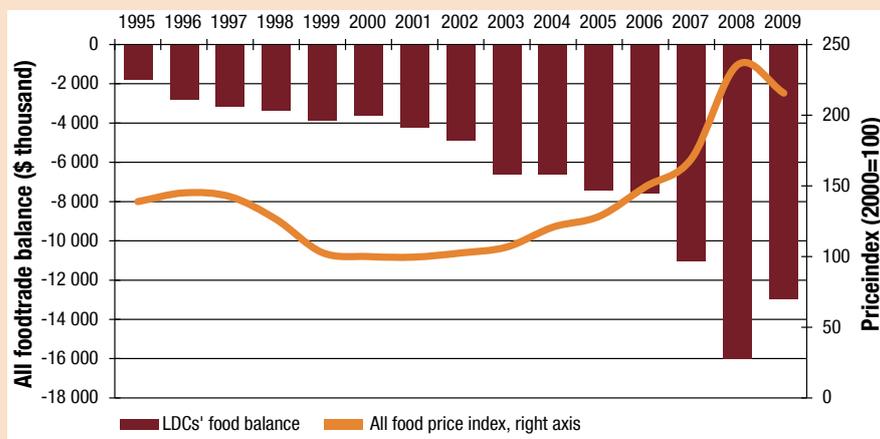
**Figure 3.6. Food import bills of developed and developing countries and LIFDCs, 2007–2011 (\$ billion)**



Source: FAO (2008b and 2011a).

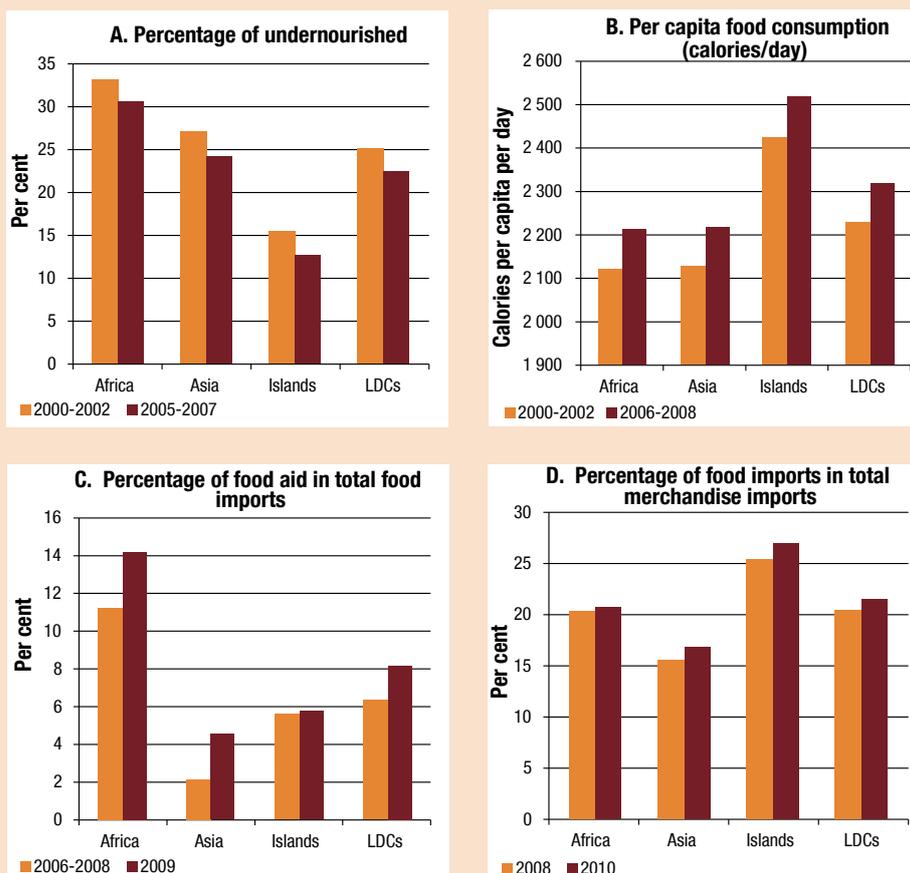


Figure 3.7. LDCs' food trade balance, 1995–2009



Source: UNCTAD secretariat calculations, based on UNCTADstat (accessed November 2011).

Figure 3.8. Indicators of food security in LDCs, selected years<sup>a</sup>



Food aid as a share of total food imports in LDCs, rose from 6 per cent in 2006–2008 to 8 per cent in 2009.

Source: UNCTAD secretariat calculations, based on data from FAO: <http://www.fao.org/economic/ess/ess-fs/fs-data/ess-fadata/en/> (Dietary Energy, Protein and Fat); FAO: [http://www.fao.org/fileadmin/templates/ess/documents/food\\_security\\_statistics/Food\\_Consumption\\_Population\\_Growth\\_en.xls](http://www.fao.org/fileadmin/templates/ess/documents/food_security_statistics/Food_Consumption_Population_Growth_en.xls); OECD, Creditor Reporting System database: [http://stats.oecd.org/Index.aspx?DataSetCode=ODA\\_SECTOR](http://stats.oecd.org/Index.aspx?DataSetCode=ODA_SECTOR); and UNCTADstat.

<sup>a</sup> Depending on availability of data for each year.

*The average share of the undernourished in the total LDC population, although declining since 1990, is still high at 23 per cent.*

*The share of ODA for agriculture in developing countries has been falling, from 13 per cent in 1983 to 3 per cent in 2006.*

For the 35 food-importing LDCs, rising food prices increase import bills, which negatively affect their trade and current accounts. For the 15 food-exporting LDCs, there have been limited benefits from higher prices due to inadequate access to land, weak productive capacities and higher production costs linked to higher oil prices. For LDCs as a whole, commercial food imports as a share of total merchandise imports rose by 2 percentage points between 2008 and 2010. LDC food consumption measured as calories per capita/day, increased on average by 4 per cent between 2000–2002 and 2006–2008 (Figure 3.8). The average share of the undernourished in the total LDC population, although declining since 1990, is still high at 23 per cent.

During the period 2005–2007, undernourishment declined in LDCs (Figure 3.8A), and per capita food consumption increased (Figure 3.8B), despite higher food prices. This may be due to substitution effects of expenditure on household food instead of non-food, as well as rising food aid and imports (Figure 3.8 C and D), possibly with higher nutrient content.<sup>13</sup> Even in a context of rapid GDP growth, maintaining food consumption levels in LDCs was achieved but with rising food import bills (UNCTAD, 2011a).

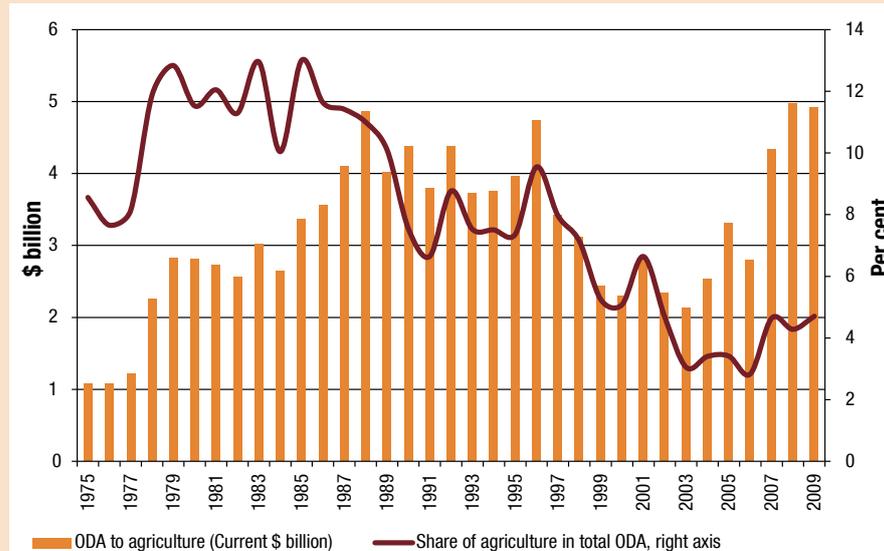
Food is also acquired through other types of transfers, such as food aid, and more generally, by food production, for which ODA has been critical. However, the share of ODA for agriculture in developing countries has been falling, from 13 per cent in 1983 to 3 per cent in 2006 (Figure 3.9). Since then, international efforts (e.g. the G8 L'Aquila commitments) have been made to increase the level of investment

in agriculture in developing countries as a result of increasing price volatility and the food crisis of 2008. Unfortunately, however, according to the Deauville Accountability Report<sup>14</sup> only 22 per cent of the \$20 billion pledged at L'Aquila for a three-year period had actually been spent more than half-way through that period. Although the share of total ODA to agriculture had risen from 3 per cent in 2006 to 5 per cent by 2009, it is still insufficient; there needs to be a concerted effort by the international community to increase aid to CDDC agriculture and thus support developing-country efforts to enhance their food security.

#### 1.4.2. Agricultural productivity and food security

In recent decades the contribution of agriculture to global growth has been falling. Despite the importance of agriculture for employment in the CDDCs, growth of labour productivity is low compared with that in manufactures and services, contributing only very little to real GDP growth. LDCs, in particular, have lagged behind, their agricultural labour productivity being just 46 per cent of that of other developing countries and below 1 per cent of that of developed countries (UNCTAD, 2010). Moreover, the agricultural productivity gap between most CDDCs, especially in Africa, and the world average has been increasing since 1961 (figure 3.10). Agricultural productivity and its potential vary considerably among CDDCs – the result of a combination of natural and locational factors that determine crop suitability and accessibility of markets. However, climate change

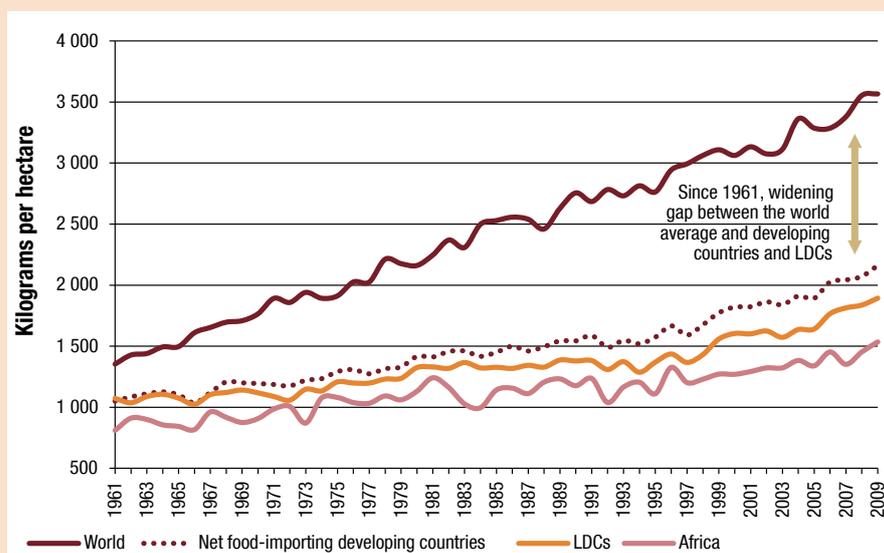
**Figure 3.9. Share and level of official development assistance to developing countries, 1975–2009**



Source: OECD.Stat, DAC database (accessed on 21 June 2011).



**Figure 3.10. Cereal yields: developing countries versus world average, 1961–2009 (Kilograms/hectare)**



Source: UNCTAD secretariat calculations, based on FAOstat (accessed 21 June 2011).

also has potentially significant impacts on CDDC agriculture and food security (Box 3.2). The adverse effects of global warming on agricultural production and consequently on food supplies, result in higher food prices for consumers. On the supply side, the effects on producers vary according to farm size, location and agro-ecology, as well as through opportunities in the burgeoning bio-energy markets. With the agricultural frontier expanding only marginally (mostly in sub-Saharan Africa), the availability of arable land per person may continue to decline. Additionally, shrinking farm sizes pose problems of poverty and threaten food security – not to mention distributional issues – which are likely to be aggravated by the potentially disruptive effects of climate change on land productivity, especially in marginal areas (Valensisi and Davis, 2011). However, these effects could be averted if there is the political will to implement climate mitigation and adaptation measures (Box 3.2).

The adoption of advanced technologies, accompanied by increased productivity in different parts of the world, may explain in large part the regional differences in growth and poverty reduction in recent decades. Agricultural performance in Asia between 1961 and 2001 was positive, with cereal production outstripping population growth, and it was achieved with a modest expansion of cultivated land from 1 billion ha to 1.4 billion ha. This suggests that the increase in productivity in that region has largely been due to the application of technological innovations (e.g. the Green Revolution). During the same period, the production of cereals in sub-Saharan Africa did not keep pace with population growth.

Between 1961 and 2001 increases in cereal productivity in that region have been small, rising from 0.8 to 1.2 tonnes per ha, mainly due to the deployment of more labour and the expansion of cultivated land rather than to technological innovations (UNCTAD, 2009).

Policymakers in CDDCs are therefore confronted with a need to increase agricultural productivity on the one hand, but also to foster the creation of greater income opportunities through higher value-added agriculture and non-farming rural activities. The development of agriculture for enhancing food security and reducing poverty requires extending the analytical and programmatic perspective beyond the narrow confines of farming; it needs to encompass a macroeconomic perspective that emphasizes the importance of generating a larger agricultural surplus. This requires a growth in agricultural labour productivity that exceeds the growth of labour's own consumption requirements by an increasingly larger margin. As the World Bank (2008a: 35) notes, "In countries, or regions within countries, with poor agroecological conditions, agriculture's contributions to growth will be limited. Even so, agriculture is still likely to play an important complementary role in reducing poverty and improving food security."

The lack of agricultural surplus in many CDDCs may constrain non-agricultural growth from the demand side (demand deficiency), but also from the supply side. On the supply side, it has the potential to make the system prone to food-price inflation, which would: (a) erode the real wages of non-agricultural workers and of farmers, since the most of them are

*Sustainable food security requires an analytical and programmatic perspective beyond farming to encompass a macroeconomic perspective and agricultural and rural transformation, including productivity improvements.*

*The agricultural sector needs structural transformation in order to ensure long-term food security. Public investments have a crucial role to play in this process.*

*Since 1987, the LDC agricultural trade balance has steadily worsened, as they have become net importers of agricultural products.*

net food purchasers, and consequently reduce their consumption; (b) erode industrial profits, and hence investment; and (c) possibly lead to a decline of exports, due to loss of cost competitiveness.

Another hindrance to agricultural development since the 1980s is that there has been reduced domestic government support for agriculture in most LDCs, largely as a result of structural adjustment programmes (SAPs) initiated at that time. Agricultural marketing systems in most African developing countries prior to the 1980s were characterized by pervasive government interventions which were intended to minimize the risk of famine and food shortages as well as to assure foreign exchange earnings and tax revenues from strategic agricultural export commodities (Akiyama et al., 2001). In the mid-1980s, when LDCs faced severe fiscal crises, donors sought to improve efficiency of resource allocation by promoting privatization, liberalization and agricultural marketing reforms as part of SAPs.<sup>15</sup> As a result, the involvement of the State in input and output marketing, as well as in setting domestic producer prices for various commodities, was either abolished or scaled back substantially. There is little historical evidence of sustained agricultural productivity growth occurring in countries without a reasonable level of effective government intervention in agricultural markets, such as through price stabilization, establishing rural banks or marketing boards (Bezemer and Headey, 2008). The Asian growth experience during the 1970s to 1980s highlights the potentially positive role developmental states can play in promoting successful agricultural development through the provision of public goods and market coordination processes (see chapter 1; Stiglitz, 1997; UNCTAD, 2009).<sup>16</sup> However, much of this was effectively outlawed under the SAPs of the 1980s and subsequent

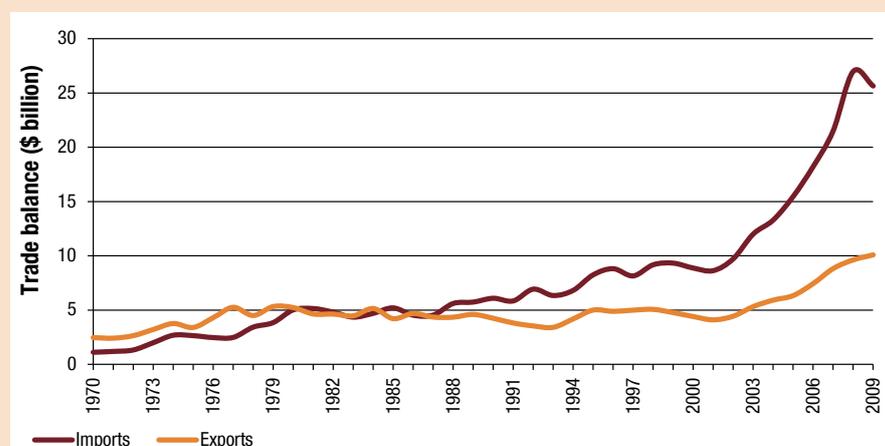
WTO rules<sup>17</sup> in the 1990s (Bezemer and Headey, 2008; DiCaprio and Gallagher, 2006).

However, it should also be noted that many sub-Saharan African policymakers neglected the agriculture sector in terms of investing in research and development (R&D), and through the introduction of high taxation policies targeting the sector. The importance of government investment in agriculture has been recognized by the African Union (AU) and the New Partnership for Africa's Development (NEPAD). For example, under the AU Maputo commitment, governments of sub-Saharan African countries have promised to channel, on average, 10 per cent of public spending to agriculture and rural development. However, the figure is currently less than half that amount, and the sector is still taxed at relatively high levels.

The LDCs that were encouraged to liberalize trade too quickly have struggled, many of them under the pressure of low-priced, subsidized food exports from developed countries. Agricultural subsidies in developed countries may have influenced the rise in LDC food imports since the 1980s and undermined LDCs' food production for both export and the domestic markets. As a result, this may also have reduced farmers' abilities to generate the supplies needed in response to the food crises. Since 1987, the agricultural trade balance in LDCs has steadily worsened as they have become major net importers of agricultural products (figure 3.11). Their gross imports of agricultural products rose by 96 per cent during the period 1987–2009.

Many CDDC farmers face a “double disconnect” – from input and product markets and from fragmented regional markets. In order to overcome this problem, it will be necessary to develop strategic

**Figure 3.11. Agricultural trade balance of LDCs, 1970–2009 (\$ billion)**



Source: UNCTAD secretariat calculations, based on FAOstat (accessed January 2012).



agricultural commodity value chains that have the potential for making a positive impact on food security (e.g. in Africa this might include, maize, rice and sorghum). This will require maximizing intraregional complementarities and trade potential in the following ways:

- Development of a common agricultural market in various regional groupings, such as the Economic Community of West African States (ECOWAS), the Southern African Development Community (SADC), the Association of Southeast Asian Nations (ASEAN) and the Central American Common Market (CACM);
- Encouraging the private sector to participate in agricultural markets through the development of agri-processing and agribusiness in order to create greater value-added activities in agriculture, especially in Africa.
- For purposes of R&D, regional centres of excellence to enhance potential economies of scale need to be established.

Some of these issues are addressed in more detail later in this chapter.

### 1.5. Potential poverty impacts of rising and volatile food prices

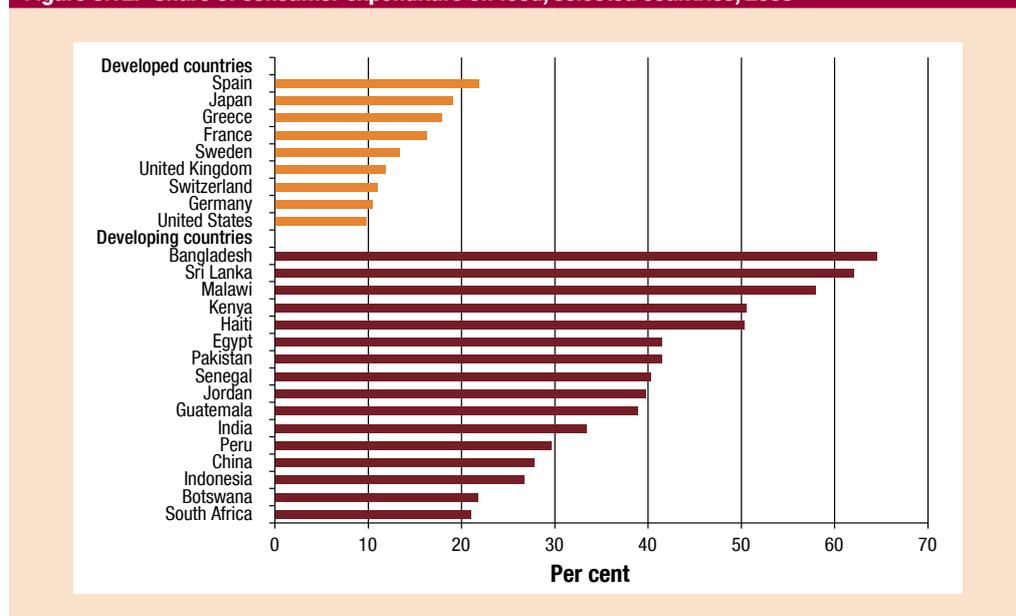
The risk of rising food prices leading to an increase in poverty is particularly high in developing countries, because the share of consumer spending on food in these countries is, on average, much larger

than in developed countries (Figure 3.12). For example, the average share of consumer income spent on food is 9.8 per cent in the United States compared with 65.5 per cent in Bangladesh. LDC households, where food accounts for 40–80 per cent of consumer spending, have probably suffered the most from domestic food price inflation. Rising food prices therefore have a disproportionately adverse impact on lower income countries (OECD-FAO, 2008). Whereas people in developed countries can easily afford to spend more on food, as it constitutes a relatively small share of their monthly expenditure, poorer CDDC populations are routinely vulnerable to food insecurity and other shocks.

Beyond the immediate humanitarian dimensions, high food prices are detrimental to development: they contribute to macroeconomic instability in developing and emerging economies, creating inflationary pressures as real incomes are eroded (UNCTAD, 2008). In particular, developing countries where food constitutes a large share of imports may be subject to adverse terms-of-trade shocks and high current-account deficits (Lin, 2008). This can trigger a balance-of-payments crisis and depreciation of the domestic currency which further aggravates inflationary pressures and food shortages.

Determining the impact of recent food price volatility on food security and poverty indicators in the CD-DCs is problematic because of the varied conditions in the different countries. Net food exporters benefited from improved terms of trade, although some of them missed out on this opportunity by banning exports to protect consumers. Net food importers,

Figure 3.12. Share of consumer expenditure on food, selected countries, 2008



Source: OECD-FAO (2008), at: <http://www.fao.org/es/esc/common/ecg/550/en/AgOut2017E.pdf>.

*As most LDCs are net importers of cereals, during the boom they were hit hard by rising prices, as were the majority of LDC households, where food accounts for 40-80 per cent of consumer spending.*



however, struggled to meet domestic demand. Given that many CDDCs are net importers of cereals, they were hit hard by rising prices, as were the majority of CDDC households which are net food purchasers.

Both governments and donors are concerned about how best to address the recent high food prices that are threatening to undermine some of the gains that CDDCs have made in terms of lowering their levels of poverty and malnutrition in recent years (UN High-Level Task Force, 2010). Poverty is both quantifiable and highly correlated with hunger and malnourishment (von Braun, 2008). The spike in food prices between 2005 and the first half of 2008 had both immediate (first-order) and indirect (second-order) impacts on incomes and poverty. The immediate negative impacts were that households were obliged to spend a larger proportion of their budgets on food, which decreases real incomes. On the other hand, it had a positive first-order effect on farmers, who received higher prices for their output. But since farmers are also consumers, and since many of them are poor and spent a large proportion of their household income on food, much of these gains were undermined by the negative consumption effect. A second-order effect may operate when higher food prices trigger a supply response, shifting production factors and leading to an increase in wages and employment, as well as income growth, in the food and agricultural sectors (Balcombe et al., 2005).

It is important to use domestic prices in any assessment of the impact on incomes and poverty. Since 2003, some CDDC governments have introduced food subsidy policies, which dampen the effect of price fluctuations in international markets. Other causes of incomplete pass-through of international prices to domestic markets include variations in the degree of food processing, size/volume of non-traded food items in domestic consumption baskets, variations in transport and storage costs as well as variations in food value chain profit margins (Ghosh, 2010). De Hoyos and Medvedev (2011) provide the most complete assessment of the incomplete pass-through of international prices to domestic markets to date. Using domestic food consumer price index (CPI) data of the ILO, they compare these to changes in a manufacturing unit value index for a sample ranging from 63–93 per cent of the population of the developing world. They find that relative to the latter index, the domestic food CPI in a sample of 58 developing countries increased by 5.6 per cent, on average, over the period January 2005–December 2007. The extent of incomplete pass-through is clear in comparison with the international food CPI relative to the manufacturing unit value index, which rose by 31 per cent (the change in the international food CPI itself was 74 per cent).

Urban dwellers are mainly net food purchasers, and are therefore fully exposed to the immediate negative consumption effect of rising food prices. Based on a sample covering 63 per cent of the developing-country population (but excluding China), De Hoyos and Medvedev (2011) estimated that on average the urban poor spent 59 per cent of their budget on food.

There are large regional variations in the effects of the changes in relative food prices on poverty (table 3.2). Between 2005 and 2007, the weighted average increase in the relative food CPI for urban areas in developing countries was 4.1 per cent, with food prices increasing at slower rates in Latin America and the Caribbean as well as in Eastern Europe and Central Asia, whereas in East Asia and the Pacific and in West Asia and North Africa they increased more rapidly (de Hoyos and Medvedev, 2011). East Asia experienced the greatest increase in poverty (measured by a poverty line of \$1.25 per day in 2005 constant PPP-corrected dollars) owing to the large share of food items in poor urban households' budgets and soaring food prices. The countries of West Asia and North Africa also witnessed a relatively large increase in urban poverty caused by a sharp rise of 12.5 per cent in the relative prices of food in these subregions. The estimated average cumulative shock to urban dwellers' domestic food prices of 4.1 per cent over the period January 2005–December 2007 resulted in a 2.9 per cent increase in the urban poverty headcount ratio (rising from 15.2 to 18.1 per cent). This is an increase of 68.8 million people, and most of them (51.1 million) were in East Asia and the Pacific. The severity of poverty, measured by the headcount ratio, also increased the most in East Asia and the Pacific, from 13.3 per cent to 19.6 per cent, compared with the developing-country average rise of 2.9 per cent to 18.0 per cent. In areas where poverty has already been quite high – such as South Asia and sub-Saharan Africa, with poverty gaps of 8.1 per cent and 13 per cent respectively – the urban food price impact has been relatively small, with the poverty gap increasing by only 0.7 and 0.8 per cent respectively in the two regions.

An evaluation of the poverty effect on rural populations requires the use of imputed agricultural self-employed shares, which are hard to measure accurately. Rural populations are both more numerous in developing countries and more likely to be poor (Table 3.2). For the whole sample, covering both urban and rural households, the 2005–2007 price shock added 2.4 per cent to the poverty headcount ratio in the total sample (from 29 per cent to 31.4 per cent). The poverty gap increased from 8.2 per cent to 9 per cent, compared with a change of 4.3 per cent to 5.2 per cent in urban areas. Altogether, the food price shock increased the number of people in poverty by 155.6 million (De Hoyos and Medvedev,



Table 3.2. Effects on poverty of the changes in relative food prices, Jan. 2005 – Dec. 2007.

Region	Shock to food prices (%)	Food share among the poor (% of total income)	Initial (circa 2005)		Change		
			Poverty headcount ratio	Poverty gap	Poverty headcount ratio (percentage points)	Poverty gap (percentage points)	Number of poor (million)
<b>Urban households only</b>							
East Asia and the Pacific	13.81	67.46	13.28	2.69	6.34	1.86	51.1
Eastern Europe and Central Asia	-0.49	56.87	1.31	0.22	0.04	0.01	0.1
Latin America and the Caribbean	1.64	40.36	3.73	1.39	0.12	0.02	0.5
West Asia and North Africa	12.54	57.03	2.71	0.48	2.49	0.72	4.4
South Asia	4.84	61.86	32.27	8.07	1.89	0.66	8.2
Sub-Saharan Africa	4.91	52.75	34.09	12.97	1.65	0.75	4.6
Developing world	4.1	58.76	15.17	4.29	2.86	0.89	68.8
<b>Urban and rural households</b>							
East Asia and the Pacific	12.98	70.65	24.77	5.59	5.98	1.97	113.5
Eastern Europe and Central Asia	-0.39	60.42	1.94	0.34	0.04	0.01	0.2
Latin America and the Caribbean	3.09	44.1	7.97	3.23	0.19	0.07	1.1
West Asia and North Africa	19.79	61.7	9.61	2.14	2.41	0.8	7.4
South Asia	4.96	64.9	40.6	9.81	1.84	0.65	27.7
Sub-Saharan Africa	8.14	64.35	48.32	19.69	0.74	0.36	5.8
Developing world	5.6	64.51	28.72	8.18	2.38	0.75	155.6

Source: de Hoyos and Medvedev, 2011, and de Hoyos and Lessem, 2008.

Notes: (i) The regional changes in food prices are weighted averages of the cumulative increase in domestic food CPIs relative to non-food CPI, observed between January 2005 and December 2007; (ii) the poverty line is set at US\$1.25 (2005, PPP) per day; (iii) to compute the increase in the number of poor, the regional change in headcount was applied to all countries in the region; (iv) de Hoyos and Medvedev define East Asia as Jordan, Morocco and Yemen and excludes China and the Middle East includes only Jordan, Morocco and Yemen.

2011). In sum, the negative first-order consumption effects clearly outweigh any positive income effects.

In order to examine the second-order effects, namely whether higher food prices triggered a supply response, thereby shifting production factors which resulted in increased wages and employment, de Hoyos and Medvedev (2011) simulate a computable general equilibrium model. The total effect is moderated when taking into account the supply response, with poverty rising by only 32 million people compared with a baseline scenario, which increases the poverty headcount ratio from 15.8 per cent to 16.4 per cent. Most of this is due to an increase in urban poverty; poverty among farmers remains virtually unchanged due to offsetting income and consumption effects. It should be noted that the computable general equilibrium simulation relies on many assumptions, including imputed agricultural self-employment and rural income shares. In any case, the main conclusion from this exercise is that the ability of developing countries to respond to increased food prices by

expanding production has been insufficient to offset the negative price effects. This is because the potential benefits of higher prices did not accrue to producers in many CDDCs due to higher prices of major agricultural inputs such as fertilizers, seeds and energy (UNCTAD, 2008). Furthermore, export taxes and other restrictions limited the transmission of international prices to domestic markets, which burdened producers with higher costs and stagnant output prices. In addition, producer proximity to markets (often constrained by poor infrastructure) and the structure of the market (i.e. the role of traders and processors who may have captured the bulk of price gains) may have contributed to the reduced supply response from CDDC producers.

Risk analyses conducted by the World Food Programme (WFP) in a number of countries during the period 2007–2008 show that the impact of food price hikes on household food security and poverty was significant (Dawe, 2008). The World Bank (2008b) estimates that wheat prices in Yemen doubled during 2007–2008 reversing all gains in poverty

*The potential benefits of the increased food prices have not accrued to producers in many CDDCs, due to higher prices of major agricultural inputs.*



reduction achieved between 1998 and 2005. Similarly, Ivanic and Martin (2008) analysed the impact of higher prices of key staple foods on poverty in nine low-income countries,<sup>19</sup> and found that in six of the countries the increase in food prices between 2005 and 2007 increased poverty by 3 percentage points.

FAO (2008d) simulations using household data from Malawi show that a 10 per cent increase in food prices resulted in a 1.2 per cent income loss for the poorest quintile in rural areas and a 2.6 per cent income loss for the poorest quintile in urban areas. According to this analysis, only the richest rural quintile gained from an increase in food prices. The Asian Development Bank (2008) found that for every 10 per cent increase in food prices, about 2.3 million Filipinos fell into poverty. In addition, estimates of the total effect of changes in price on poverty (the price elasticity of poverty)<sup>20</sup> by commodity in the

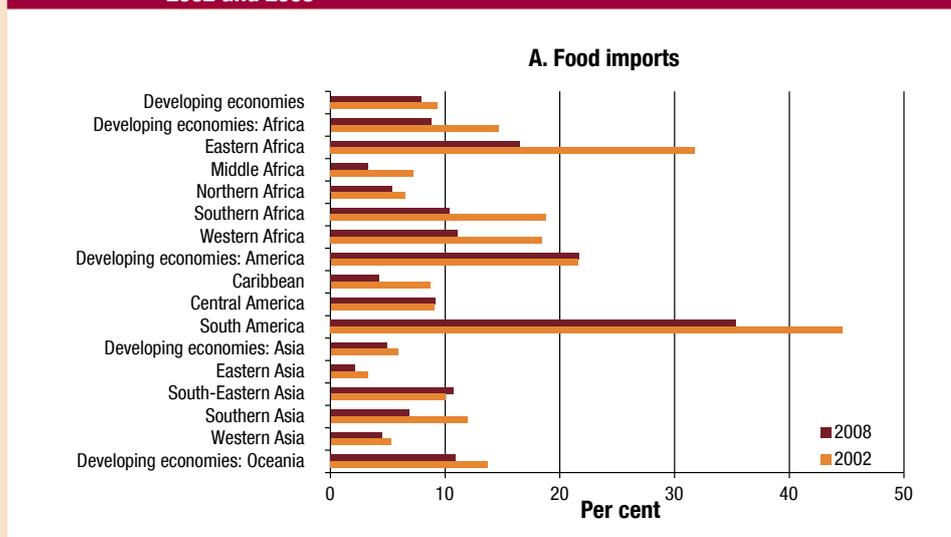
Philippines suggested that a 10 per cent increase in non-food prices (e.g. fuel and utility bills) would drive an additional 1.7 million people into poverty (ADB, 2008). The study also suggested that the decline in the standard of living due to food price increases was greatest for the poorest communities.

The impact of rising food prices on poor net food-importing countries is a particular concern. A study of the 2007-2008 price spikes by Clay, Keats and Lanser (2011), which includes case studies of rice in Bangladesh, maize in Malawi and cereals in the Sahel, finds some observable domestic market sensitivity to global price volatility in all these countries. This had particular implications in terms of market instability. The price rises also intensified food insecurity amongst poor urban and rural consumers and farming households that were only partially meeting their own staple food requirements and were seasonally in deficit.

### Box 3.3. How vulnerable to price spikes are developing countries that are highly dependent on food and fuel imports?

As noted in chapter 2, while it is clear that most fuel and food exporting CDDCs benefited from the growing demand for primary exports and rising prices during the period 2001–2008, the soaring prices of food, and particularly energy, have tended to moderate the potential positive impact of the boom in terms of raising living standards and alleviating poverty. During the mid-2008–2009 economic downturn, the fall in food and fuel prices helped to attenuate the impact of the financial crisis on net food- and fuel-importing developing countries. Developing countries' combined food and oil import bills as a percentage of merchandise exports, increased on average by 7 percentage points during the period 2002–2008. If food and fuel are considered independently of each other as a share in merchandise exports, it is clear that higher fuel prices have had the greatest inflationary impact, and this has grown since 2002 (Box chart 2). This suggests that higher prices of fuel imports may also have had a greater impact on the incidence of poverty in low- to middle-income developing countries, as the share of food imports in merchandise exports fell in most of these countries.

Box chart 2. Regional food and fuel imports as a percentage of total merchandise exports, 2002 and 2008

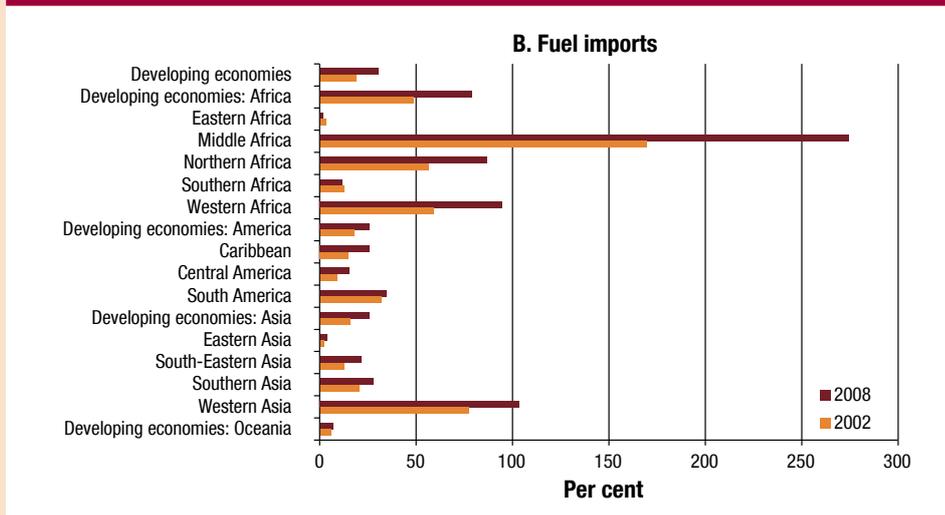


Source: UNCTAD secretariat calculations, based on UNCTADstat.



**Box 3.3. How vulnerable to price spikes are developing countries that are highly dependent on food and fuel imports? (continued)**

**Box chart 2. Regional food and fuel imports as a percentage of total merchandise exports, 2002 and 2008**

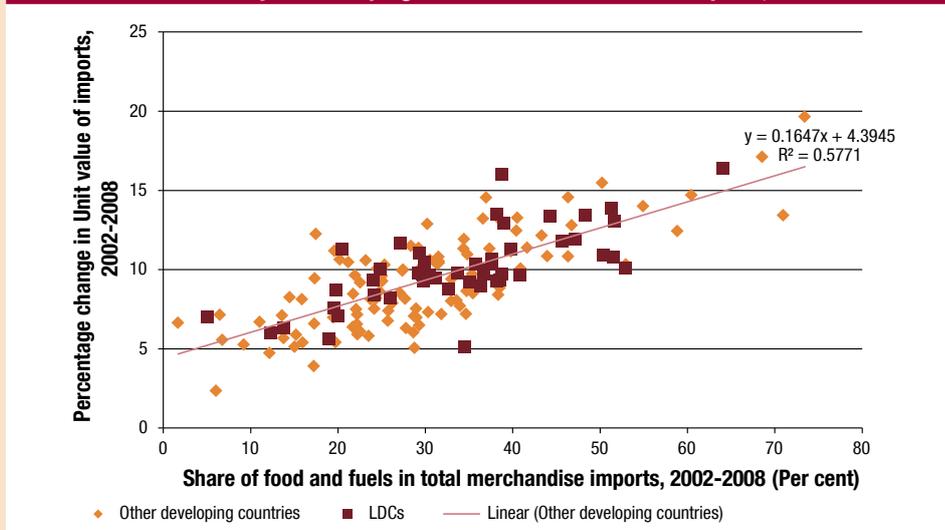


Source: UNCTAD secretariat calculations, based on UNCTADstat.

For 70 per cent of the LDCs, the share of food and fuel imports as a percentage of merchandise exports was over 50 per cent in 2008. Moreover in 20 LDCs, the combined share of food and fuel imports as a percentage of merchandise exports exceeds 100 per cent. It should also be noted, that the fuel import costs do not fully reflect the cost of fuels in services imports (such as international transport by air or sea). Therefore, with the exception of the major oil exporters, it is clear that the boom in key commodity prices has placed tremendous pressure on most LDC economies.

Box chart 3 confirms this observation: it shows that countries with higher shares of food and fuel in total merchandise imports witnessed, on average, a sharper deterioration in their terms of trade during the period 2002–2008. Due to the fast rising food and fuel import prices relative to other commodity prices, net importers of these commodities faced higher import bills and a terms-of-trade shock. Net oil exporters benefited greatly from strongly rising oil prices during the commodity boom period of 2002–2008.

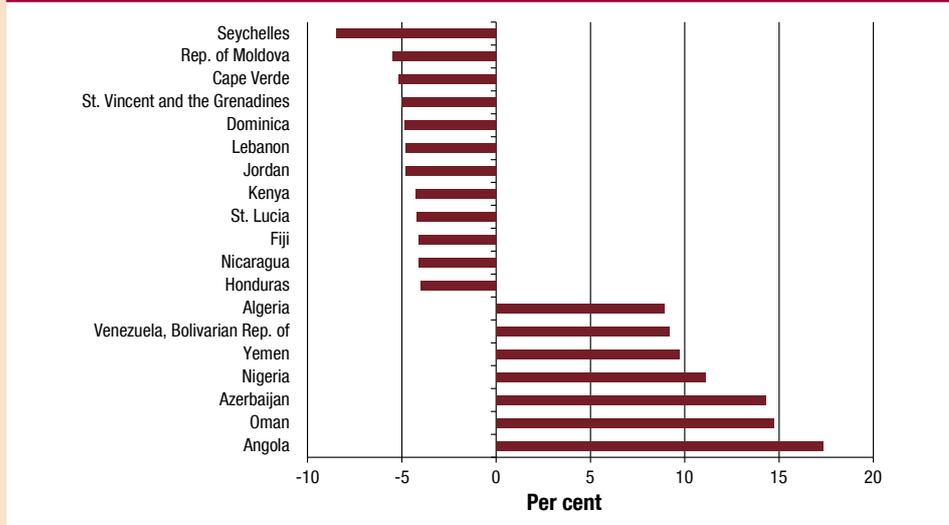
**Box chart 3. Sensitivity of developing countries to food and fuel imports, 2002–2008**



Source: UNCTAD secretariat calculations, based on UNCTADstat.

**Box 3.3. How vulnerable to price spikes are developing countries that are highly dependent on food and fuel imports? (continued)**

As Box chart 4 further illustrates, for 19 developing countries, the main gains from the recent commodity boom have been concentrated among oil exporters, while resource- and food-poor oil-importing countries have experienced losses. It shows that 7 countries experienced positive terms-of-trade effects and recorded gains in excess of 8 per cent of GDP. The largest negative effects were smaller in scale, generally less than 6 per cent of GDP, and particularly impacted the small island States.

**Box chart 4. Changes in terms of trade as a percentage of GDP for selected developing countries, 2010**

Source: World Bank (2012), *Global Commodity Markets*, at: <http://go.worldbank.org/0BOJW9B700>.

In the long term, the impact of the higher food prices on poverty partly depends on how overall growth in CDDCs responds to increased wealth accumulation and investment by net food-selling rural households. The impact of price volatility on poverty and food insecurity, especially for net food-importing developing countries could be quite negative. The higher food prices associated with the recent food crisis have not only caused a setback for poverty reduction, but also, the associated income losses may have resulted in greater undernourishment, thereby further reducing the likelihood of meeting other MDGs.

The issues of protecting vulnerable groups from food insecurity and the role of governments have come to the fore in recent years because of: (i) the widespread incidence of poverty and high vulnerability of large sections of the populations of CDDCs to food price shocks, and (ii) social unrest (and political instability) including food riots in recent years. The provision of social safety nets for the long-term food insecure is not contested, but there is little agreement on how to protect vulnerable groups from transitional food insecurity. In the context of high food prices in recent years, one policy option that is receiving renewed attention is to create emergency food reserves (discussed in the next chapter).

## 2. POLICY RESPONSE: EMPLOYING EMERGENCY FOOD RESERVES TO OVERCOME FOOD INSECURITY

### 2.1. Emergency food reserve systems

The 2008 food crisis exposed weaknesses in the international food system that disproportionately threatens the world's poor and malnourished populations. Arguably, a further factor that exacerbated that crisis was the short-term supply shocks that resulted from restrictions imposed on food exports by individual national governments (Conceição and Mendoza, 2009; Headey, 2011a; Timmer, 2010; von Braun, 2008). This response was widespread: governments in Asia, Africa and Latin America imposed a variety of non-market measures to ensure supplies of their staple foods and shield their consumers from the worst of the price spikes. Common to all these cases was not only the widespread use of non-market measures, but also their lack of coordination. An extreme case concerns the world rice market which evaporated when the governments



of three of the world's main rice-producing nations imposed export restrictions on rice between November 2007 and March 2008 (Box 3.1). Prices more than doubled by May 2008, and the withdrawal from trade by the producing nations effectively suspended the international rice market, rendering ineffective any foreign exchange reserves that net rice-importing nations had earmarked for emergency rice purchases.

However, the aggregate effect of the unilateral withdrawals from the international market by individual countries ensured that the protection they achieved for their domestic market was short-lived and that the medium- and long-term threats of the crisis worsened. This applied to both net exporters and importers of traded food commodities.

For food-exporting countries, protectionist measures delayed the transmission to domestic consumers of the price inflation on the international market. But the resulting supply shock accelerated this inflation, such that when domestic stocks were exhausted and price controls ceased, resuming imports during the boom was much more expensive. In the meantime, the net rice-exporting countries had damaged their relations with their import-dependent trading partners. In addition, domestic producers suffered income losses from price controls employed domestically and from the loss of their export markets.

Countries relying on imports for their food security predictably suffered the most. Along with the effects of any price or trade controls they imposed, the rapid inflation of international prices meant most countries faced a fiscal quandary: whether to use their foreign exchange reserves to purchase food on the international market, or to continue to fund basic public services. For many of the poorest governments, high prices and tight international supplies meant that importing food was beyond their reach, whatever their priorities.

As policymakers review the changes to the international food system that would be necessary to prevent and/or better cope with future crises, the experience from the 2008 food crisis points to the need for supranational grain reserves of some kind. The following are some general arguments concerning such a reserve:

- Food security strategies based on spot transactions on the market instead of physical reserves may have been cheaper and more flexible to operate during good times, but they proved unsustainable for governments with limited resources when the crisis peaked in early 2008. For those poorer countries, access to some external physical reserves is probably necessary (Timmer, 2010).

- Since it is impossible to guarantee that major food-exporting countries will continue exporting during future crises, any multilateral physical grain stocks must include ownership and location provisions that guarantee access to import-dependent countries.
- Regional specificities and logistical constraints imply that some form of regional body will provide the most cost-effective, responsive management of these multilateral grain reserves.

Initiatives are well under way to establish regional grain reserves among countries with food insecure populations. The primary example is the ASEAN Emergency Rice Reserve (AERR), maintained since 1979. In October 2011, following a five-year pilot project that spanned the 2008 food crisis, ASEAN agreed on a new, strengthened version of the reserve, called the ASEAN Plus Three Emergency Rice Reserve (APTERR).<sup>21</sup> The size, funding and coverage of the reserve were significantly expanded by the addition to the agreement of the "Plus Three" nations: China, Japan and the Republic of Korea.<sup>22</sup>

Another established example is the Latin America and Caribbean Emergency Response Network (LACERN). But LACERN's mandate is narrower than that of a regional grain reserve operated by the governments of member States. It is devoted mainly to servicing emergency response efforts in the region by the WFP and its partners, and it stocks ready-to-eat biscuits rather than commodity grains (Balletto and Wertheimer, 2010; SWAC, 2010).

In addition to these examples, regional grain reserves are at varying stages of negotiation in Africa and South Asia. The following section examines the major issues facing these initiatives, and their potential to improve food security.

### 2.1.1. Overview of current food reserve initiatives

The South Asian Association for Regional Cooperation (SAARC) began discussing a regional grain reserve as early as 1988, and in 2007 the group signed an agreement to create the regional SAARC Food Bank. The agreement committed the eight SAARC member States<sup>23</sup> to earmark a regional reserve of approximately 242,000 tons of grain from their national stocks, with India providing 150,000 tons of the total. The size of the planned reserve was later increased to nearly 500,000 tons. The reserve is limited to responding to a food emergency following a request from one member State to the others.<sup>24</sup> Despite being signed into force, the creation of the SAARC Food Bank has stalled<sup>25</sup> due to hesitations among member States in implementing

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contributions, and reservations about its triggers and its maintenance (Rahman, 2011; Robinson, 2011).

The SAARC Food Bank's organization and proposed trigger arrangements resemble those of the AERR. In general, the AERR agreement deferred to the sovereignty of member States. The physical composition of its stock was earmarked from national stocks and its trigger mechanism depended on rigid bilateral requests and agreements. Thus, when its member States encountered an emergency, they preferred to turn to international organizations for assistance instead of requesting aid from their neighbours through the AERR, especially as the AERR's rice had to be provided on what amounted to commercial terms (Daño and Peria, 2006).

The recent APTERR agreement expands on the AERR in several respects. The size of the reserve has been increased tenfold, to 787,000 tons, comprising the existing 87,000 tons contributed by ASEAN member States to the AERR, plus 300,000 tons from China, 250,000 tons from Japan and 150,000 tons from the Republic of Korea. APTERR will be managed and owned regionally instead of by member States, and will be stored in China, Japan, the Republic of Korea and the ASEAN countries that are dependent on food imports (SWAC, 2010). APTERR's objectives are also more ambitious than those of its predecessor: as well as being an emergency reserve, it aims to stabilize rice prices in the region.

*In Africa, at least three regional food reserve initiatives are under consideration.*

*Food storage aims to smooth food consumption over time, balancing periods of production surplus with ones of deficit, including emergency shortages.*

In Africa, the governments of the member States of the Southern African Development Community (SADC) have discussed a regional food reserve since the 1980s. In 2000-2001, they drafted the initial plan for the Regional Food Reserve Facility (RFRF), which has an ambitious set of objectives, including price stabilization and emergency response. The reserve would include 500,000 tons of food, comprising four kinds of cereals and livestock and representing approximately three months of average consumption. Net exporters will store the stock, but it will be managed by the regional body (Zunckel, 2010). SADC has completed the initial exploratory phases of the RFRF, but it has stalled prior to the implementation stage due to disagreements among member States about the reserve's cost and the breadth of its mandate (Rwelamira, 2009).

The most recent regional reserve initiative involves the Economic Community of West African States (ECOWAS). The grouping is currently evaluating different options for a potential reserve. To date, the main proposed plans are (ECOWAS 2011; SWAC, 2010):

- RESOGEST: In 2007, the member States of the Permanent Inter-State Committee for Drought Control in the Sahel (CILSS) initiated negotiations over what is now proposed as RESOGEST, a network enabling coordination among food

stock boards in the Sahel and West Africa, and providing for a regional reserve comprising 5 per cent earmarked from each member State's national stock. Once fully implemented, RESOGEST would act as an emergency reserve and will neither replace nor duplicate the work of national boards. Its use would therefore depend on requests and agreements between the governments of the member States.

- PREPARE: In 2009, the International Food Policy Research Institute (IFPRI) and the World Bank proposed that ECOWAS implement a two-layered emergency reserve system called Pre-Positioning for Predictable Access and Resilience (PREPARE), initially as a five-year pilot project aimed at benefiting 11<sup>29</sup> of the 15 ECOWAS member States (IFPRI, 2009). PREPARE would have a small physical stock of 67,000 tons of food that would cover an initial 30 days of food needs in the event of an emergency. The second "virtual reserve" layer, amounting to a fund from contributions by member States and managed by a technical commission, would trade on the futures market, as needed, to effect price adjustments and/or procure an additional 60 days of food needs.<sup>30</sup> The PREPARE system would be triggered by volatility on the international commodity markets, and not by a government request or by a natural disaster.
- Local grain banks: Non-governmental organizations (NGOs) have highlighted the value of village grain banks in countries such as Burkina Faso, Mali and Niger. They offer the benefit of an immediate response in the event of a food shortage, as well as localizing any economic benefits that flow from the operation of the grain bank.

Experiences and negotiations concerning these three regional initiatives reveal some major issues that would need to be resolved. Four of these are discussed in the following subsections, namely:

- A. Setting achievable objectives
- B. The scale and components of a reserve system
- C. The mix of commodities to stockpile
- D. Aligning the interests of exporters, importers, rich and poor neighbours

## **A. SELECTING ACHIEVABLE OBJECTIVES**

Food storage aims to smooth food consumption over time, balancing periods of surplus and deficit food production, including emergency shortages. Over time, the scale of food reserves employed by populations has spanned a wide range, from individual households to the informal world grain reserves held



in the United States and Canada after the Second World War (Puchala and Hopkins, 1982).

As the scale of food reserves has grown, as the economies around them have become more complex, and as storage and transportation technologies have advanced, the number and ambition of the objectives in maintaining such reserves has grown as well. From insurance against emergencies and consumption smoothing, reserves are increasingly being utilized as instruments for more elaborate interventions in food markets. The following are some of the general reasons why communities have used food reserves (Murphy, 2009):

- As insurance against food emergencies: Whatever their causes, food emergencies are often sudden and unforeseen, and stored food can provide a ready, accessible food supply that can feed the affected population in these extraordinary situations. Although such a supply is available for only a limited period, it can sustain at-risk populations until the situation improves or until more durable programmes reach them.
- To smooth consumption over time: The seasonality of agriculture and fisheries requires that excess food production during brief harvesting seasons be stored for distribution over the remainder of the year, when consumption exceeds production.
- To address missing markets: Because food is an essential good, communities cannot endure the gaps or failures in food markets when the private sector undersupplies less profitable regions or populations. A food reserve can help fill these gaps in the private sector's market coverage. Viewed otherwise, a reserve can smooth the gaps in the market's geographic or social distribution of food.
- To stabilize prices: During periods of low prices, food producers are motivated to cut production or change activities altogether. Conversely, high prices strain consumers' budgets. Since food is essential for life, both of these price extremes are harmful. Moreover, although a well-functioning market will correct itself from such extremes, the lead time required for this to happen can be long, with potentially harmful effects for food insecure or at-risk groups. A community can use its food reserve to avoid these price extremes and correction lead times by selling to undercut high prices and buying to boost low ones. Thus, price stabilization often involves protecting the band between a floor and a ceiling price. In addition to shielding the community from price extremes, maintaining a price band reduces harmful volatility in food markets.

As a community adopts more ambitious market intervention objectives for its food reserve, the costs to operate the reserve increase. For example, during non-emergency periods, an emergency reserve need only purchase new grain to avoid spoilage. By contrast, during the same period, a reserve with a price stabilization mandate may be required to purchase volumes of grain well in excess of its needs, at a loss, in order to prevent domestic prices falling below their mandated floor levels.

In practice, the use of grain reserves as a price stabilization mechanism has yielded mixed results. Whether or not a reserve manages to stabilize prices, it inevitably consumes significant public resources in doing so which could otherwise have been deployed in other important areas, such as investing in agricultural productivity or funding a social safety net (Timmer, 2010). Moreover, executing a price stabilization mandate becomes more difficult and expensive over time. However accurately the reserve's initial price band or floor price matches the market, even the most skilled reserve managers will be unable to fully predict future market conditions in order to adjust the reserve's parameters accordingly. This is because the reserve is inevitably a small player relative to the market as a whole, which also means that its intervention attempts at either end of its price band risk draining its budget without having the desired effect on prices (Wright, 2009).

Indeed, most reserves created after the Second World War with price stabilization objectives have failed within a decade or two of their creation (Wright, 2009). In a recent example, Malawi created its National Food Reserve Agency (NFRA) in 1999 with a mandate of stabilizing domestic maize prices (IMF, 2002). By 2001, the NFRA's responses to challenging market conditions had left it heavily indebted and depleted of reserves, forcing the Government of Malawi to bail it out at a heavy cost to the public budget, equivalent to approximately 1.5 per cent of the country's GDP (Zunckel, 2010). No sooner was Malawi forced to dismantle its NFRA because of this huge cost, than it was hit by three severe droughts that affected nearly 8.5 million people between 2005 and 2007. This paradox underscores the difficult policy choices that governments face in their efforts to guarantee food security to their populations in emergency situations.

By contrast, reserve programmes designed as emergency stocks (i.e. with no price stabilization objectives) have a higher survival rate in the modern era. For example, the AERR, although it was never used by its member countries, had an emergency-only mandate and operated for 32 years. For an example of an emergency reserve that was more active than the AERR, Ethiopia's Emergency Food Security Re-

*Most food reserves created after 1945 with price stabilization objectives have failed within a decade or two of their creation. By contrast, reserve programmes designed as emergency tools have a higher survival rate in the modern era.*



serve Administration (EFSRA) is often studied in the current debates about regional grain reserves. Ethiopia created the EFSRA in 1980, following the severe droughts and famines the country experienced in the 1970s. This reserve has proved vital in reacting to subsequent droughts and famines and remains active and relevant today. Its success is largely due to its clear, emergency-only mandate. It also holds relatively small stocks, which minimizes its effect on market prices and its burden on government budgets (Rachid and Lemma, 2011).

Therefore, for current discussions about regional grain reserves, theoretical and practical arguments suggest that emergency response is a more feasible mandate than price stabilization. Furthermore, in the absence of a market intervention or price stabilization mandate, the Ethiopian example suggests that an emergency reserve should be only as large as is needed to respond to an emergency, which limits its size and distortive effects on markets and public budgets.

Should a reserve initiative contemplate a price stabilization mandate, its regular operating budget should be explicitly underwritten by emergency funding facilities of the size and responsiveness that it will need when it inevitably has to protect its price band.

## **B. SCALE AND COMPONENTS OF A RESERVE SYSTEM**

Grain reserves are on the post-2008 food and fuel crisis agenda of international organizations such as the, IFPRI, WFP and the World Bank. The work of these institutions in this area has been prominent, including, most recently, support to the ongoing ECOWAS deliberations regarding a West African grain reserve.<sup>31</sup>

The IFPRI's proposed framework for the grain reserve comprises the following three components, each operating at a different scale (von Braun, Lin and Torero, 2009):

- *An independent emergency physical reserve.* This would be equivalent to approximately 5 per cent of food aid flows and stocked by the main grain-producing countries. It would be funded by a "club" of participating countries, operated by the WFP, and located at strategic points near or in food insecure populations using existing national storage infrastructure. This reserve would be used solely for emergency response purposes.
- *A coordinated international price stabilization reserve.* This would comprise a small percentage of each member State's domestic reserves, and would be overseen by the United Nations or another international body. It would be managed

by a technical commission that would use the reserve, as needed, to effect price adjustments on the market. The international reserve would be used to stabilize commodity food prices on the spot market.

- *A "virtual reserve"* The fund would normally consist not of actual budget expenditures, but of promissory, or virtual, financing by a group of States (e.g. the G20). The fund, which would be drawn upon by the high-level technical commission only when needed for intervention in the futures market is a notional commitment to stabilize prices which has the effect of limiting price volatility on those markets. It has the advantage of incurring much lower costs than any intervention through physical buffer stock management.

With government budgets throughout the world strained by the ongoing global economic and financial crisis, the second element – an expensive global price stabilization reserve – is off the table for the foreseeable future. The G20 reportedly rejected the idea of a global reserve proposed by the Government of Ukraine<sup>32</sup> on the grounds that it would cost too much to operate.<sup>33</sup>

The World Bank and IFPRI have proposed to ECOWAS that it construct a reserve system based on the remaining two elements: a small physical reserve of 67,000 tonnes of grain, representing 30 days of food consumption, complemented by a virtual reserve system designed to procure an additional 60 days of food requirements. One of the advantages of this proposal is the inclusion of a village-level system of silos. Especially for the emergency stock goal of this programme, the village silos would provide the most immediate response – the "first aid" in the event of a shortage. The scale of the project is daunting: engaging thousands of local villages in the design and implementation of a coordinated system, refurbishing old granaries and building new ones, and training all of the local managers. Its operation will also be complex, particularly in designing an effective central stock monitoring system that does not undermine the advantages of local ownership and control.

If ECOWAS were to pursue a network of village-level grain reserves, it could build on the existing, albeit patchwork, infrastructure of granaries and grain reserves in its member countries. For example, since 1972 the National Federation of Naam Associations (FNGN)<sup>34</sup> – a federation of peasant associations in Burkina Faso – has overseen the construction of a network of approximately 368 greniers de sécurité alimentaire (food security granaries) in the country. Since 2002, the network has benefited from a credit facility funded by SOS Faim, a Belgian NGO which loans operating funds to the community granary com-

*Grain reserves are on the post-2008 food and fuel crisis agenda of international organizations.*



mittees.<sup>35</sup> Including the FNGN granaries, Oxfam estimates that by 2002 Burkina Faso had approximately 2,000 granaries that could be employed as local food reserves, although a majority of these were unused.<sup>36</sup>

Similarly, in Niger, the Federation of Peasant Associations of Niger (FUGPN-MOORIBEN) operates a network of 213 local grain reserves as part of a system of integrated services that it offers to its member associations. The MOORIBEN granaries are part of the 4,647 grain banks recorded by the Niger Government in a 2008 census. In Mali, the Government built 759 granaries in 2005-2006, although the programme has suffered from irregularities in the management of some of its grain banks.<sup>40</sup> The programmes in these examples are disparate and a large proportion of the existing granaries are likely either unused or in disrepair. Nonetheless, they represent a foundation of infrastructure and experience on which ECOWAS could build a successful village-level grain reserve system.

### C. THE COMMODITY MIX TO BE STOCKPILED

APTERR is unique among the regional reserve initiatives discussed here in that it stocks only one kind of grain: rice. This reflects the predominance of rice in the diets, cultures and even politics of East and South-East Asian peoples. A single-commodity stockpile provides the benefit of reduced complexity, as APTERR only has to interact with one commodity value chain and market. But this makes it very exposed to volatility and supply shortages in the rice market.

The proposed SAARC Food Bank is intended to stock both wheat and rice. Since the contents of the reserve are earmarked from the national stocks of each member State, the level of stocks of the two grains is left for each country to determine.<sup>41</sup>

Both the SADC Regional Food Reserve Facility and the two regional-level proposals being considered by ECOWAS would stock four kinds of grains – maize, millet, sorghum and rice – reflecting the general diversity of dietary preferences in sub-Saharan Africa. In addition to providing the above grains for food, the SADC reserve would include feed grains to sustain the important livestock herds in Southern African countries (Zunckel, 2010; ECOWAS, 2011). These two African initiatives, which would stock multiple commodities, present new challenges and opportunities. If either of these reserves were implemented, they would have to contend with the complexities of interacting with four different value chains and markets. The reserves' economies of scale would be reduced as they would be splitting their buying power among four products as well as any marginal infrastructure investments they would require to transport or store any of the grains separately. They

would also face the challenge of not having an existing model of a multi-commodity regional reserve from which to draw lessons.

On the other hand, the use of multiple commodities also presents some trading advantages. Provided the proposed SADC and ECOWAS reserves allow a variable weighting of each grain within the total reserve, managers could stock their reserves with the lowest priced grains at a given time. This kind of internal arbitrage is not possible for single-grain reserves, such as APTERR, and can minimize a reserve's exposure to the highest priced grains. Perhaps the most appealing aspect of a multi-grain reserve is that it can potentially delay the self-reinforcing paradox that threatens any grain reserve with a price stabilization mandate, namely: for price-taking import-dependent countries, high prices often coincide with scarce supplies, meaning that the reserve sells the stock it built during periods of low prices only to risk replenishing it at much higher prices, which itself contributes to further inflation. Provided gaps persist between the prices of its composite grains, a multi-grain reserve can delay this trap at the top of the price band.

Similarly, the grain mix of the two African reserves contains two grains traded on international commodity markets – rice and maize – and two traded on domestic and regional markets – sorghum and millet. Although a generalized food crisis would push up prices of all grains in a given African country, the gap between the reserve's commodity and non-commodity grains may provide further opportunities to economize and extend the relief the reserve can provide in periods of high prices.

### D. ALIGNING THE INTERESTS OF EXPORTERS AND IMPORTERS, AND RICH AND POOR NEIGHBOURS

One of APTERR's great strengths is its success in appealing to the varied interests of its diverse members: from the smaller ASEAN economies dependent on rice imports, to rice exporters Thailand and Viet Nam, and to the large, economically more diversified markets of China, Japan and the Republic of Korea. This presents its own challenges related to the various members' influence in the reserve agreement and its constituent national markets (Daño and Peria, 2006). But this seems an acceptable compromise in return for achieving a regional arrangement that has sufficient physical and financial reserves, as well as productive capacity, among all its members to be self-sufficient in rice in the event of another food crisis.

The proposed SAARC Food Bank would involve the participation of India, the region's largest economy and a major food producer, and Pakistan, its primary rice exporter.

*Existing granaries represent a foundation of infrastructure and experience on which ECOWAS could build a successful village-level grain reserve system.*

*Grain reserves stocking multiple commodities present both new challenges and opportunities.*



In ECOWAS, two of its largest members, Ghana and Nigeria, have not participated in deliberations on a food reserve so far. Although there are no major food-exporting countries in Middle and West Africa, the economies and government budgets of Ghana and Nigeria benefit from lucrative petroleum sectors. For developing countries dependent on oil and food imports, the 2008 crisis posed the double threat of high prices for both core commodities. Thus the inclusion of these two countries in a regional reserve system, even if it would not materially improve the region's food balance, would reduce the impact of future concurrent oil and food crises owing to the financial resources these two larger economies could contribute. Without the participation of the major economies in the region, an ECOWAS regional reserve system would require significant funding from international donors, which might be feasible but would remove an element of control and flexibility from the management body.

*Any future initiatives on regional grain reserves would need to negotiate compromises aligning the interests of all stakeholders in the region.*

The SADC Regional Food Reserve Facility initiative has stalled, in part due to a misalignment of expectations among its 15 member States. The most food insecure member States are also its poorest, meaning that they have the most to gain from an ambitious emergency grain reserve, but they do not have the financial resources to fund it. They would necessarily require funding from South Africa, the largest and wealthiest economy among them. However, although South Africa is a net food importer, it shows little interest in the initiative. Since it has not known any serious food shortages since 1994, it considers funding the reserve a major expense, given its minimal emergency food needs. Instead of an emergency contingency, South Africa's food security priority is price stabilization, an objective it feels it can best achieve through market-based activities.

From the experience of the four current initiatives, any future initiatives on regional grain reserves would need to negotiate compromises that align the interests of price-taking, import-dependent States with the respective regions' largest economies and primary food-producing States.

## **2.2. Key considerations for addressing food insecurity through emergency food reserves**

The sharp differences noted in the South-East Asian and African situations indicate how a regional reserve has to respond to the particular needs of the region concerned. A one-size-fits-all model will not work. ECOWAS, for example, has opted for prolonged regional consultations for its proposed system rather than having it designed and determined by governments, the ECOWAS Secretariat or international donors alone. This might take longer, but if the consul-

tations are properly conducted and respected by all parties, the design is more likely to be successful in the long run. For these reasons, no blueprint for a food reserve is proposed in this report. However, some further considerations are offered in this section. There can be either a "bottom-up" or a "top-down" approach to creating food reserves. Most of the cases, so far, have adopted top-down approaches, designed and controlled by national governments. However, that is not the only feasible method. Ousseini Salifou, the ECOWAS Commissioner for Agriculture, the Environment and Water Resources, described the interlocking needs of humanitarian relief and capacity-building to prevent emergencies as follows

*No regional reserve affordable to our economies could respond on its own to a substantial food crisis, like those provoked by major climatic shocks or big increases in price. The first line of defence lies in nearby stocks for communities to mobilise. The second line of defence is national stocks, which national arrangements can make use of. The third line of defence is the regional reserve and mechanisms of solidarity, as between countries and at the international level. None of these three levels must be neglected if we want to pursue these twin goals: respond usefully to the needs of people affected by hunger, while sustainably strengthening their capacity to withstand such shocks... No country can accept the need to rely permanently on international aid in order to guarantee its citizens' right to food. (cited in Lines, 2011: 21)*

This indicates a combined approach, using top-down methods as a way of supporting the strengthening of food security from below. The important questions are where stocks should be located and at which level they should be controlled. This can be anywhere from a village grain bank to a global virtual reserve (as in the IFPRI proposal); or it can be at several different levels simultaneously. Any decision on this will depend on the scope, scale and nature of particular hunger and food shortages. There are three broad views:

- Food security has three dimensions: (i) availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports; (ii) access by households and individuals to adequate resources to acquire appropriate foods for a nutritious diet; and (iii) utilization of food through adequate diet, water, sanitation and health care (FAO, 2003).
- Hunger can be seen as an essentially personal, household or local problem: each hungry person faces hunger in their own place and because of their own predicament. Resolving this requires an assurance everywhere of local access to food, thereby fulfilling each citizen's right to

*"No country can accept the need to rely permanently on international aid in order to guarantee its citizens' right to food."*



food. This implies a bottom-up system, based on local provision, in the first instance, and then national provision.

- However, a more common interpretation internationally is that hunger is caused by the inadequacy of supplies on organized markets, and especially *global* markets, in food products. This leads to an emphasis on the volumes of global supply and proposals for global or perhaps regional stocks.

Deciding on too high a level for food reserves (and ambitious food policies generally), and concentrating on aggregate production and availability only, can lead to neglect of the vital question of access to food and other local questions such as post-harvest losses. High-level measures can also take a long time to achieve. In 1975, the United Nations General Assembly formally established a 500,000-ton International Emergency Food Reserve, to be placed at the WFP's disposal, but it has never worked as intended. On the other hand, in many places a household or village grain store can be built in a day and costs very little. In any case, village or household stores would need to be improved or supplied, regardless of global decisions. They do not require global decisions but household, local or, at the most, national decisions, which can be much more easily achieved. Village grain reserves may help to reduce post-harvest losses and contribute to enhancing food security, particularly in isolated cases of food crises. They may, however, need to be complemented by other policies at the national level if they are to be effective in cases of large-scale and widespread food shortages.

It could be argued that the crisis in recent years has been mainly one of industrialized, high-input agriculture, not of food production in general: the relative price changes reflect “peak oil” and even “peak fertilizer” situations, but not necessarily “peak food” as has been widely suggested. This calls into question the continued reliance on fossil fuels and mineral fertilizers as well as imports of cereals for achieving food security while at the same time assuring adequate incomes for farmers. It can also be seen that the export orientation approach, which dominated development strategy in the 1980s, failed to meet countries' foreign exchange requirements – earnings from many traditional export crops (such as coffee and cotton) failed to fill their foreign-exchange gaps. Even if they did, the temporary collapse of food markets (through export bans and restrictions) in response to the recent crisis meant that NFIDCs could not meet their food requirements through imports or via markets when they needed these the most.

External agencies seeking to support regional food reserves need to take a mobilizing and developmental approach, not a controlling one. They need to have good knowledge of the agricultural and commercial situation

of any region or country where they operate. Particular restraint is called for from any agency or NGO whose experience lies in supplying food in an emergency zone from outside the region concerned or as part of large, all-encompassing programmes which over a long period have underplayed the importance of agriculture and domestic generation of food security.

It is important to tie in closely with early warning and monitoring systems such as the United States-funded Famine Early Warning Systems Network (FEWS NET) and the United Nations' Food Security and Nutrition Analysis Unit for Somalia. Collaboration is also desirable with agencies such as the International Institute of Tropical Agriculture (IITA) for the development and use of non-traded crops/staples, and the World Agroforestry Centre and others for the development of agroecological methods.

Any developing country programme, especially in Africa, should aim to rely as much as possible on smallholders' surpluses for supplies for positive developmental effects. It should use regional supplies, and aim to achieve a balance between regional surpluses and deficits. These may be topped up from external sources, where necessary, but still giving preference to sourcing from developing countries, if possible in the same continent. The decentralized approach suggested here should greatly help to develop the private agro-food sector in African countries (understood to include smallholder farming and informal food trading), as well as domestic and regional trade in agricultural and food products.

The bottom-up approach implies that food stocks and storage are primarily a matter for national policy, with regional reserves important as a backstop. Policies that successfully coordinate food surplus areas and deficit areas should be able to avoid the need to deploy reserves. The management structure needs to be controlled by the regional authority, but at this level more coordination will be required in African regions than for APTERR because of the greater number of crops involved and the greater complexity of the relationship between surplus and deficit countries in this region. Therefore its administration is likely to be more expensive than that of APTERR. It is also more likely to succeed if it meets the standards of consultation and transparency which seem to have been achieved at the ECOWAS Dakar conference in October 2011.

The next chapter of this report seeks to empirically evaluate the indirect effects of the commodity boom through an analysis of the following issues: attracting of investments (e.g. the much-discussed FDI boom in Africa), government use of increased commodity revenues, diversification and the role of precautionary strategic investment (including the so-called “land grabs” and purchasing of mineral resource rights).

*Village grain reserves may help to reduce post-harvest losses and contribute to enhanced food security.*

*Any developing country programme, should aim to rely as much as possible on smallholders' surpluses for supplies for positive developmental effects.*



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## NOTES

1. “Food security” refers to a situation where all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2003).
2. For example, in sub-Saharan Africa, nearly two thirds of the total population and about 70 per cent of the poor live in rural areas. For these poor people and for the bulk of the rural population, income and livelihoods depend primarily on agriculture, which employs 90 per cent of the rural labour force. (World Bank, 2008a).
3. High prices of cereals caused disproportionate humanitarian hardship in the West Asia and North Africa, where 17 per cent of the population lives on less than \$2 a day (World Bank, 2010).
4. The SITC “all food items category” is used throughout this chapter (SITC 0+1+22+4).
5. The FAO (2010) estimates that the number of undernourished people in the world had risen from 850 million during the period 2005–2007 and to 910 million in 2008, and peaked at 1.03 billion people in 2009. By 2010, the number of undernourished people worldwide had fallen to 925 million, but was still above the pre-food and fuel crisis levels of 2008. The decline in undernourishment rates was largely due to a reduction in food and fuel prices after mid-2008 (FAO, 2010). It should also be noted that since this report was drafted, a debate has ensued about the reliability of the assessment of the impact of the food price spikes. Recent research by the International Food Policy Research Institute (IFPRI) has called into question the World Bank and FAO estimated impacts on hunger and poverty. Headey (2011b) at IFPRI maintains that self-reported malnutrition data show no negative impact at all. He concludes that economic growth more-than-compensated for any adverse effects of higher food prices. At this point, it is not possible to establish the validity of the IFPRI findings vis-à-vis the simulation estimates presented by the World Bank and FAO, as they are currently (at the time of writing) reviewing both their methodologies, models and the estimates presented for 2009 and 2010.
6. See General Agreement on Tariffs and Trade 1994 Article XI: General Elimination of Quantitative Restrictions. Available at: [http://www.wto.org/english/res\\_e/booksp\\_e/analytic\\_index\\_e/gatt1994\\_05\\_e.htm](http://www.wto.org/english/res_e/booksp_e/analytic_index_e/gatt1994_05_e.htm)
7. The two parallel tracks are: (i) meeting the immediate food and nutritional needs of those at risk; and (ii) building longer term resilience by eliminating the root causes of hunger and poverty.
8. For guidance on building resilience to food security at the national level, see the Updated Comprehensive Framework for Action at: [http://un-foodsecurity.org/sites/default/files/UCFA\\_English.pdf](http://un-foodsecurity.org/sites/default/files/UCFA_English.pdf).
9. The coefficient of variation is a basic measure of price dispersion, which serves to compare the degree of variability from one data series to another.
10. See: Reuters, ‘EU executive pledges curbs on commodity speculators’, 3 February 2011, at : <http://www.reuters.com/article/2011/02/02/eu-commodities-idUSLDE7110Q420110202>
11. The reasons for this vary among different developing countries, for example a lack of institutions, weak infrastructure and the difficulty of complying with increasingly stringent sanitary and phytosanitary (SPS) standards and technical barriers to trade (TBT). UNCTAD, through its sustainability claims portal, has sought to improve farmer participation in high-value agricultural commodity chains.
12. According to the World Bank (2008b), the demand for food imports in sub-Saharan Africa is expected to reach \$100 billion by 2015 – twice the level of 2000.
13. According to food balance-sheet data (item code 2905) from FAOstat (accessed March 2012), LDC cereal production (excluding beer) rose 36 per cent during the period 2000 to 2007. The estimated LDC cereal import dependency ratio remained unchanged over the period, at 14 per cent.
14. Deauville Accountability Report (2011), available at: [http://www.g20-g8.com/g8-g20/root/bank\\_objects/Rapport\\_G8\\_GB.pdf](http://www.g20-g8.com/g8-g20/root/bank_objects/Rapport_G8_GB.pdf).
15. The SAPs of the IMF and World Bank list a number of budgetary and policy changes required in order for a developing country to qualify for a loan. This conditionality typically includes reducing barriers to trade and capital flows, tax increases and cuts in government spending.
16. However, agricultural growth associated with the Green Revolution in Asia since the 1970s has generally depended on the availability of a properly managed water supply system, mostly irrigation. Thus, new agricultural technologies will be ineffective without appropriate irrigation, and these facilities are very often: (a) provided by the State; (b) dependent on electricity, which requires public investment; and (c) dependent on credit, which again may be available only as priority (State-mandated) credit. Therefore, while it is useful to invest in R&D, for example to develop new plant varieties, a major constraint on agricultural productive capacity may be the lack of irrigation, which requires additional public investments and interventions. In Asia, the macroeconomic benefits from public investment in expanding irrigation and electricity are often far greater than the benefits from public spending on fertilizer use or price support.



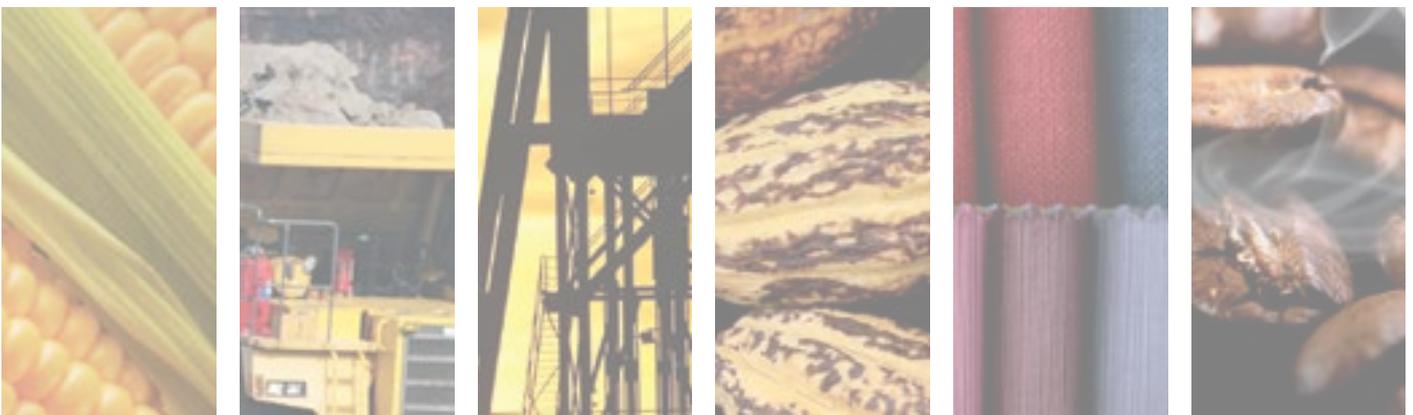
17. It should be noted that for some developing countries, notably LDCs and poorer countries, particular considerations and derogations have been offered in their accession to the WTO, including special and differential treatment (SDT) in WTO agreements on goods and services, and preferential market access. However, UNCTAD (2010) shows that special considerations have had a limited development impact on these countries, as they have not taken advantage of these flexibilities for a variety of reasons.
18. During the period 2000–2004 taxes on agriculture in Africa (nominal rate of assistance) averaged \$6 billion per annum, which was significantly higher than public investment or foreign aid to the sector (Anderson and Masters, 2009).
19. The nine low-income countries studied were: Bolivia, Cambodia, Madagascar, Malawi, Nicaragua, Pakistan, Peru, Viet Nam, and Zambia (Ivanic and Martin, 2008).
20. The price elasticity of poverty measures the total effect of changes in price on poverty in terms of two components: (i) is the income effect of the change in price; and (ii) is the distribution effect captured by the price changes. It is the distribution effect which determines whether the price changes benefit the poor proportionally more (or less) than the non-poor (Asian Development Bank, 2008).
21. See: ASEAN (2011), 11th AMAF Plus Three Countries Conclude Agreement on Rice, at: <http://www.aseansec.org/26651.htm> (accessed 21 December 2011).
22. APTERR member States are: Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam (i.e. all the ASEAN members), plus China, Japan and the Republic of Korea.
23. Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka
24. SAARC (2007), Agreement on establishing the SAARC Food Bank; available, at: [www.saarc-sec.org/userfiles/FoodBank.doc](http://www.saarc-sec.org/userfiles/FoodBank.doc).
25. See: Associated Press of Pakistan (15 December, 2011), SAARC ministerial moot for increasing trade links in region; available at: [http://app.com.pk/en/\\_index.php?option=com\\_content&task=view&id=170413&Itemid=2](http://app.com.pk/en/_index.php?option=com_content&task=view&id=170413&Itemid=2).
26. See: APTERR (2010), How APTERR Works? Available at: <http://www.apterr.org/index.php/how-apterr-works>.
27. Angola, Botswana, Democratic Republic of the Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, the United Republic of Tanzania, Zambia and Zimbabwe.
28. ECOWAS is a regional group of 15 West African countries: Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, the Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo.
29. Benin, Burkina Faso, the Gambia, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Senegal, Sierra Leone and Togo.
30. This is a variant of the "virtual reserve" proposed by IFPRI.
31. It should also be noted that in February 2012, the West African Economic and Monetary Union (WAEMU) Council of Ministers adopted a recommendation for the implementation of a regional food reserve in its economic area. The three regional institutions (ECOWAS, WAEMU, CILSS) agreed to unify their approaches into a single regional strategy. Moreover, a high-level meeting on food and nutrition crisis between the Member States of ECOWAS, WAEMU and CILSS held on June 4, 2012 in Lomé determined the establishment of the regional food reserve as a priority for the end of 2012 (ECOWAS, WAEMU, CILSS, RESOGEST, 2012).
32. PR Newswire (4 August, 2011), Ukraine offers United Nations to create world grain reserve; available at: <http://www.prnewswire.com/news-releases/ukraine-offers-united-nations-to-create-world-grain-reserve-126763063.html>.
33. Bloomberg (4 August, 2011). Ukraine offers to set up, manage world grain reserves for UN; available at: <http://www.bloomberg.com/news/2011-08-04/ukraine-offers-to-set-up-manage-world-grain-reserves-for-un-1-.html>.
34. FNGN, La cellule grenier de sécurité alimentaire; available at: <http://naam.free.fr/ALLEGE/GRENIER.htm>.
35. SOS Faim (2011), Des banques de cereals aux greniers de sécurité alimentaire; available at: [http://www.sosfaim.be/pdf/publications/defis\\_sud/100/burkina\\_cereales\\_greniers\\_securite\\_alimentaire\\_defis\\_sud.pdf](http://www.sosfaim.be/pdf/publications/defis_sud/100/burkina_cereales_greniers_securite_alimentaire_defis_sud.pdf).
36. Oxfam (2011), L'utilité des Banques Céréalières au Sahel; available at: [http://www.inter-reseaux.org/IMG/pdf/Presentation\\_OXFAM\\_utilite\\_des\\_banques\\_cerealieres.pdf](http://www.inter-reseaux.org/IMG/pdf/Presentation_OXFAM_utilite_des_banques_cerealieres.pdf).
37. SOS Faim (2010), MOORIBEN: l'expérience d'un système de services intégrés au bénéfice des paysans nigériens; available at: [http://www.sosfaim.be/pdf/publications/dynamiques\\_paysannes/mooriben-au-benefice-des-paysans-nigeriens-dynamiques-paysannes23.pdf](http://www.sosfaim.be/pdf/publications/dynamiques_paysannes/mooriben-au-benefice-des-paysans-nigeriens-dynamiques-paysannes23.pdf).
38. Republic of Niger (2009), État des lieux des banques céréalières; available at: [http://www.reca-niger.org/IMG/pdf/Etat\\_des\\_lieux\\_des\\_banques\\_cerealieres\\_juin2009.pdf](http://www.reca-niger.org/IMG/pdf/Etat_des_lieux_des_banques_cerealieres_juin2009.pdf).
39. Republic of Mali (2006). Situation des banques de céréales; available at: [http://www.csa-mali.org/docs/Situatbanquecereales\\_06.pdf](http://www.csa-mali.org/docs/Situatbanquecereales_06.pdf).



40. Kassoum Thera (2011), *Le commissaire à la sécurité alimentaire: Il faut sanctionner les mauvais gestionnaires des banques de céréales*; available at: <http://www.malikounda.com/Economie/le-commissaire-a-la-securite-alimentaire-qil-faut-sanctionner-les-mauvais-gestionnaires-des-banques-de-cerealesq.html>.
41. SAARC (2007), *Agreement on establishing the SAARC Food Bank*; available at: [www.saarc-sec.org/userfiles/FoodBank.doc](http://www.saarc-sec.org/userfiles/FoodBank.doc) (see also Robinson, 2011).
42. Since many CDDCs' national budgets for R&D in agriculture are small, the establishment and/or strengthening of regional centres of excellence for agricultural research would help build critical research and financial resources to achieve economies of scale. These could be created along the lines of agro-ecological zones or of strategic food commodities. Such centres would need to give special attention not only to farm-level technologies, but also to post-harvest (storage, processing, and transport) technologies and appropriate biotechnologies for food and cash crops.



# INDIRECT EFFECTS OF THE RECENT COMMODITY BOOM: STRUCTURAL AND FINANCIAL IMPACTS



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## 1. INTRODUCTION

The recent commodity boom had both positive and negative indirect effects on commodity-dependent developing countries. On the positive side, it could be argued that the boom attracted FDI and other capital inflows, which spilled over into economic diversification and domestic financial development. On the negative side, the rising food and fuel prices may have inhibited diversification. The boom may also have increased the volatility of commodity prices by attracting speculative investment. This chapter shows that the imperative to “build financial capital” identified by Kregel (2004) – i.e. to safeguard stability in international financial relations – meant that revenues from commodity exports (along with other inflows) were mainly used by countries to strengthen their international financial positions through the accumulation of stocks of foreign assets and a reduction of their foreign liabilities, notably debt.

While recognizing that it takes time for sectoral booms to translate into broader growth, and that rising inequality is often a by-product of growth, the above contrasting effects illustrate some of the issues that have surfaced as a result of the recent commodity price boom. This chapter offers an evidence-based assessment of these issues by tracing the indirect effects of the commodity price boom through a review of the empirical literature and by analysing a data set specifically constructed for this purpose.

This chapter is structured as follows. In Section 2, the diversification and development effects of the recent commodity boom, are considered using variables for the real sectors (e.g. the respective shares of manufacturing and services in GDP and in gross capital formation<sup>1</sup>) and key social indicators (e.g. health and education). Section 3 seeks to analyse the impacts of the commodity price boom on developing countries empirically, using data for 142 developing countries (both commodity-dependent and others) over the period 1995–2009. This is followed by an estimation of the impacts of the price boom based on an econometric model using a specially constructed data set. The model does not disaggregate the data or introduce dummy variables according to type of economy (e.g. small island State, landlocked country, least developed country) or export specialization (mineral, metal, oil or non-oil exporter), as this was beyond the scope of this report.<sup>2</sup> The estimated weighted least squares model reflects grouped data with known group sizes and heteroskedasticity<sup>3</sup> to obtain unbiased estimates. Section 4 discusses commodity dependence in the context of finance-driven globalization, and analyses FDI and strategic investment in natural resources. The high prices of natural resources may have stimulated FDI, especially in resource-rich economies,

and particularly in land acquisitions. Section 5 reviews specific research about the contentious and topical issue concerning the acquisition of land as a category of FDI, also known as “land grabs”. Finally, section 6 presents some policy implications.

## 2. STRUCTURAL AND FINANCIAL EFFECTS OF THE COMMODITY BOOM

In this section, a data set containing variables that capture the three perspectives outlined in chapter 2 is utilized. The diversification and development effects are derived from real-sector variables, including the shares of the manufacturing and services sectors in GDP and gross capital formation; development effects are observable in social indicators, both input measures (e.g. health expenditures) and outcomes (infant mortality and life expectancy). Resource curse effects are reflected in interest and exchange rates, the increased share of commodities in exports, increased commodity dependence and possible crowding out of manufacturing and services development (“de-diversification”/ increased concentration of exports). Financial sector effects of foreign currency inflows can be seen from increases in CDDCs’ growing international financial investments (a rise in foreign assets and a fall in liabilities – especially a decline in debt – and rising capital inflows, typically in the form of FDI), often at the cost of domestic financial development (evident in declining credit-to-GDP ratios) and financial deepening. Section 3 presents a more rigorous exploration of the three perspectives using a full panel data set for panel data regression analyses.

The data from the *World Bank’s World Development Indicators* (WDI)<sup>4</sup> database are combined with indicators of commodity earnings taken from the UNCTADstat database. The sample of 142 low- and middle-income countries and the time frame/period of 1995 to 2009 have been selected on the basis of data availability and relevance to the resource boom.<sup>5</sup>

In this section, these data are analysed in two ways: (i) trends over time and across various levels of development; and (ii) trends across categories of countries defined by their growth in commodity exports and degree of commodity dependence.

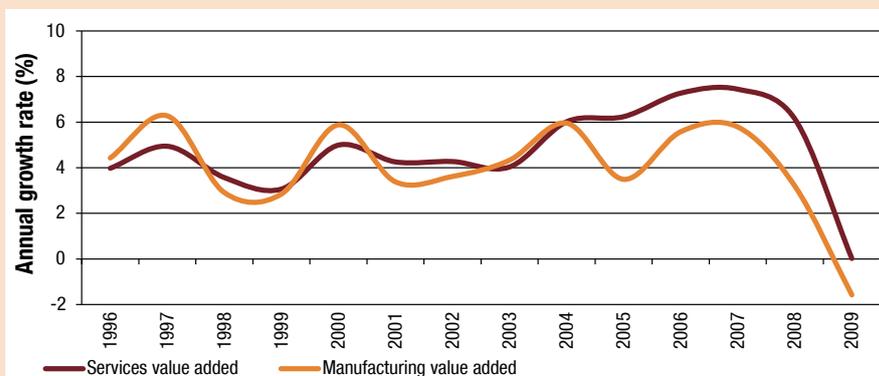
### 2.1. Trends over time and by country income groups

To set the scene, the four figures below show developments of the real and financial sectors in the sample of 142 low- and middle-income countries over the period 1995–2009 based on key variables using unweighted sample averages.<sup>6</sup>

*The recent commodity boom had both positive and negative indirect effects on CDDCs. On the positive side, the boom attracted FDI and other capital inflows. On the negative side, the rising food and fuel prices may have inhibited diversification.*



**Figure 4.1. Structural transformation: rates of growth of value added in manufacturing and services, 1996–2009 (per cent)**



*Between 2004 and 2009 manufacturing growth decoupled from services growth, which was growing at more than one percentage point higher.*

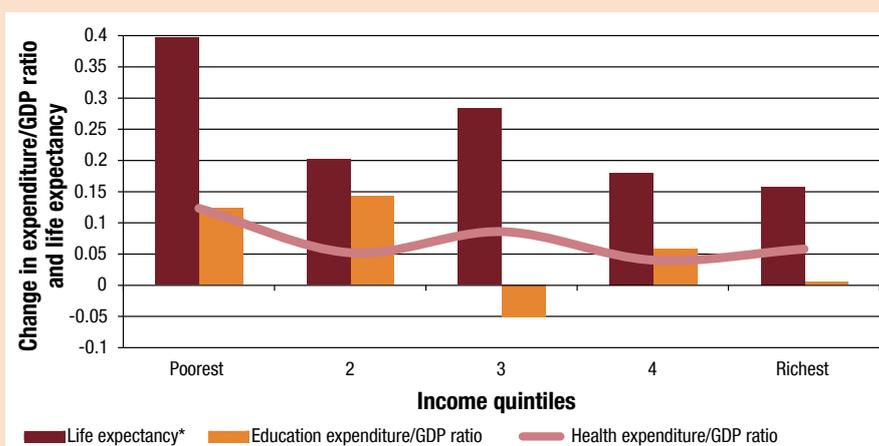
Source: UNCTAD secretariat calculations, based on World Bank, World Development Indicators database.  
 Note: The data show year-on-year growth rates, with calculations based on value added data in current dollars.

Figure 4.1 shows growth rates of value added in manufacturing and services from 1995–1996 to 2009. After 2004, manufacturing growth decoupled from services growth, which was growing at more than one percentage point higher during the period. This is compatible with the commodity boom, which stimulates services (non-tradables) more than manufacturing activity. For this sample period, what resembles a structural break<sup>8</sup> is observed after 2002–2003. This observation is explored further in the analysis below.

Figure 4.1 appear to persist across income levels. Comparing these variables for the richest quintile in the sample with the poorest quintile, the observed differences are negligible. Social indicators were also observed to be trending upwards during this time period. Countries in the sample increased their share of total expenditure on health and education, with noticeable gains in health and longevity: life expectancy rose from 62 to 65 years, on average. This was largely driven by reductions in mortality rates of infants and children under 5 years old (not shown). Figure 4.2 shows that increased longevity and high levels of expenditure on education occurred mainly in the poorest countries, and generally there were large differences in social expenditure patterns across income quintiles.

For each of the years 1995–2009, each country in the sample is classified into one of five quintiles according to GDP per capita levels.<sup>9</sup> The observations on trends in structural transformation presented in

**Figure 4.2. Changes in life expectancy and spending on health and education, by income quintiles, 1995–2009 average**



*The poorest countries in the sample increased their share of total expenditure on health and education.*

Source: UNCTAD secretariat calculations, based on World Bank, World Development Indicators database.  
 Note: Regarding life expectancy, the change is not in per cent, but in years. Thus, people in the countries in the sample gained, on average, about a quarter of a year for each year during the period 1995–2009 (this means they gained on average  $0.25 \times 14 = 3.7$  years over 1995–2009). It denotes the percentage change in life expectancy, which is measured in years.



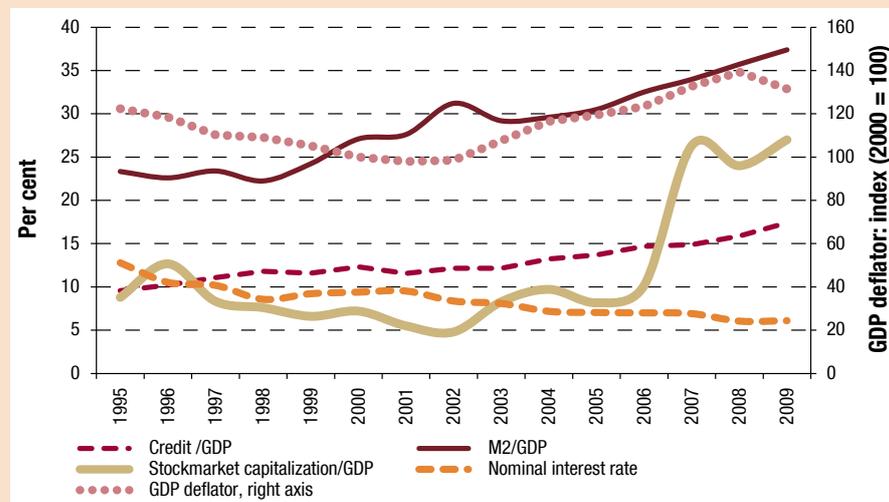
*Domestic financial development was characterized by growth of both money and credit aggregates relative to GDP after 2003, and by a stock market boom from 2002.*

Domestic financial development was characterized by growth of both money and credit aggregates relative to GDP, especially after 2003, and by a stock market boom (in the 70 countries in the sample that have an active stock exchange) from 2002 (Figure 4.3). This was coupled with a reversal and then a rise in the GDP deflator (one measure of inflation)<sup>10</sup> after 2002, and an ongoing decline in nominal interest rates, from 18 per cent to 6 per cent, on average. Overall, the commodity boom period of 2003–2009 also saw monetary expansion, financial deepening and rising inflationary pressures. These general

trends may be observed across all countries in the different income quintiles, but at very different levels. For example, there was only 25 per cent stock market capitalization in 2009 in the poorest quintile of the economies in the sample.

Regarding trends in CDDCs' foreign financial positions (Figure 4.4), there were large debt reductions after 2002, but mainly in the poorer countries, possibly as part of conditionalities of the Heavily Indebted Poor Countries (HIPC) Debt Relief initiative of the IMF and World Bank and the Multilateral Debt Relief Initiative (MDRI).<sup>11</sup> The debt levels of the richest

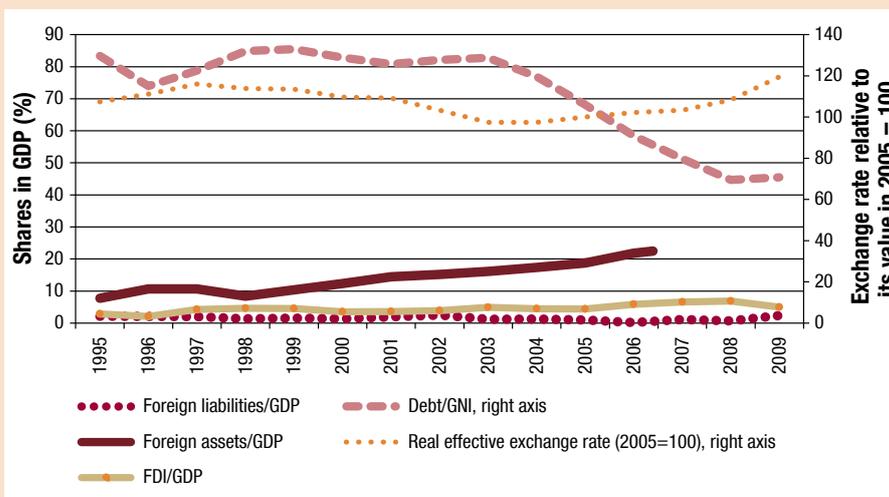
**Figure 4.3. Trends in indicators of domestic financial development, 1995–2009**



Source: UNCTAD secretariat calculations, based on World Bank, World Development Indicators database.  
 Note: The figure comprises the 70 countries in the sample that have a stock exchange. M2 is a measure of the quantity of money in circulation (including cash and currency, savings deposits and non-money market funds). Credit refers to bank credit to the private sector.

*Regarding trends in CDDCs' foreign financial positions there were large debt reductions after 2002, but mainly in the poorest countries.*

**Figure 4.4. Trends in foreign financial positions and exchange rates, 1995–2009**



Source: UNCTAD secretariat calculations, based on World Bank, World Development Indicators database.



quintile of countries rose until 2002, and, stabilized until 2009.<sup>12</sup> Debt service flows, and the consequent demand for dollars also appear to have governed movements in poor countries' real effective exchange rates (REERs),<sup>13</sup> the estimated correlation being 32 per cent in the lowest quintile but an insignificant -6 per cent in the richest quintile. This also appears to be the case for foreign liabilities more generally. Foreign asset accumulation for the sample followed the same upward trend, rising from 7.7 per cent in 1995 to 24 per cent of GDP in 2009.<sup>14</sup> REERs rose between 1995 to 1997 and then declined until 2007, rising moderately thereafter. FDI as a share of GDP rose from a sample average of 2.8 per cent in 1995 to 5.1 per cent in 2009.<sup>15</sup>

### 3. COMMODITY GROWTH EXPOSURE AND ITS CONSEQUENCES

#### 3.1. Measuring commodity growth exposure

In order to establish to what extent the above variables and other observable trends in CDDCs could be ascribed to the effects of the commodity price boom, the Report creates a measure of countries' exposure to growth in commodity revenues based on the level of their commodity dependence and the extent of their growth in commodity revenues. This variable is termed "commodity growth exposure". This section aims to capture both dimensions of commodity growth exposure:

- (i) The extent to which a country is experiencing growth in its commodity revenues (measured by annual percentage change); and
- (ii) The extent of a country's dependence on commodities (measured by the share of commodity revenues in total export earnings).

Both are important, and excluding either dimension would paint a misleading picture of the level of exposure to growth in commodity revenues. For instance, in the sample, countries such as Nigeria are observed to have a high but fairly stable (or even declining) level of commodity dependence. Using only the (low) growth in commodity revenues to measure its exposure to the commodity boom would erroneously classify Nigeria as not having been affected by that boom. On the other hand, countries such as China experienced very rapid year-on-year growth rates in commodity earnings, but displayed very low levels of commodity dependence. Therefore, using growth in commodity revenues to measure its exposure to the commodity boom would erroneously classify China as a major beneficiary of that boom. Similarly, using only commodity dependence as a measure would

ignore price dynamics. In view of these considerations, a measure of a country's exposure to the commodity boom that captures both *commodity dependence* and *growth in commodity revenues* was constructed in three steps:

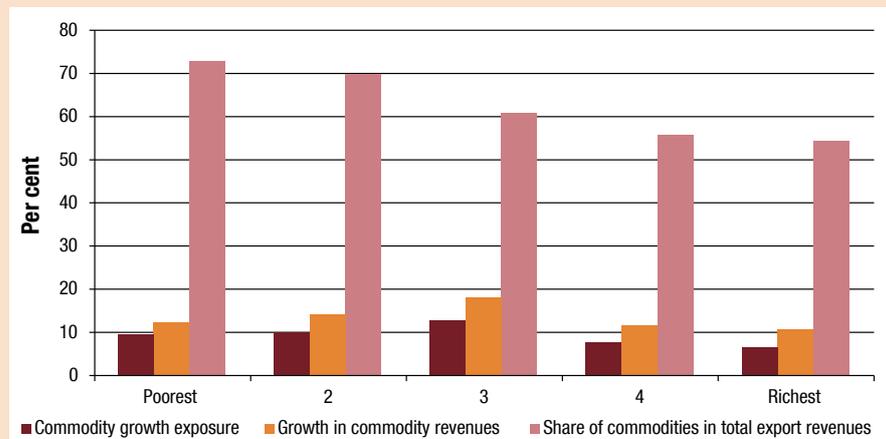
1. First, for each of the 142 countries and for each year of the 1995–2009 period, the year-on-year growth rates in commodity revenues as well as the share of the increase in commodity revenues of the previous year were calculated. There were 1,404 observations. As expected, because of low base year values these year-on-year growth rates vary greatly, between -821 per cent and +193 per cent.
2. Secondly, this percentage growth was multiplied by the country's commodity dependence (defined as commodity revenues as a percentage of total exports in that year). In this sample, commodity dependence varies between 2.5 per cent and 100 per cent.
3. The product obtained in step 2 is a variable that is specific to each country and each year (but with a few gaps in the time series),<sup>16</sup> and it reflects both commodity dependence and growth in commodity revenues.

There were 1,932 observations, which varied between -60 and +626, with 694 negative values. It is clear from the bivariate correlation coefficient of 1.7 per cent that the new variable effectively captures two very different dimensions: commodity dependence and growth in commodity revenues. This new variable is termed "commodity growth exposure,"<sup>17</sup> which is very closely linked to growth in commodity revenues, their correlation coefficient being 84 per cent. Importantly, it should be noted that this measure is designed to study the structural and financial effects, but not the demand-side effects, on food prices and poverty, which were discussed in chapter 3.

Appendix 1 presents the new variables of "commodity growth exposure" and its components, namely commodity dependence and growth in commodity revenues, for all the countries in the sample, with totals averaged over time.<sup>18</sup> For instance, countries with very high commodity growth exposure, on average, include Azerbaijan, Chad, Iraq and Sudan; countries with very low commodity growth exposure include Bangladesh, Cambodia, China and the Philippines. Even within this sample of low- and middle-income countries, the price boom was more important for the poorer countries, as they show higher scores on the commodity growth exposure index (Figure 4.5). This is understandable, as their economies tend to be less diversified, and their share of commodities in total exports tends to be comparatively larger.

*Foreign asset accumulation for the sample rose from 7.7 per cent in 1995 to 24 per cent of GDP in 2009.*

*The "commodity growth exposure" of a specific country captures both its commodity dependence and the growth in its commodity revenues.*

**Figure 4.5. Commodity growth exposure by income quintiles, 1995–2009 average**


Source: UNCTAD secretariat calculations, based on World Bank, World Development Indicators database.  
 Note: Income quintiles are annually defined on the basis of GDP per capita in PPP-corrected constant dollars.

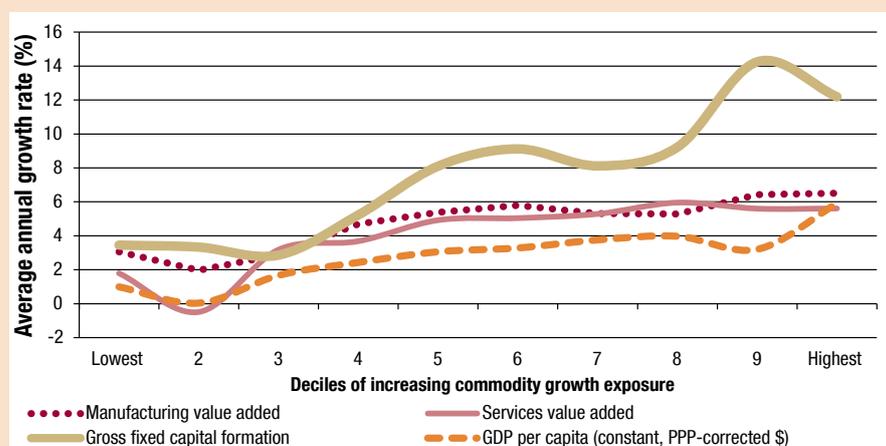
### 3.2. Exploring the consequences of commodity growth exposure

*With the exception of the lowest decile in the sample, greater commodity inflows were positive for per capita income growth.*

The effects of larger commodity growth exposure in the sense defined above are explored in this section through a series of graphs. This is based on unweighted averages of the sample of 142 low- and middle-income countries over the period 1995–2009. Also shown are how trends have differed across income groups, categorized into five quintiles based on per capita GDP levels. Focusing on the average for the 1995–2009 period means that the analysis does not initially consider two sub-periods (1995–2002 and 2003–2009) that suggest a structural break around

2002 in several of the trends presented above. In order to avoid a profusion of graphs, the analysis by sub-periods is included, instead, in the econometric analysis below (see section 3.3).

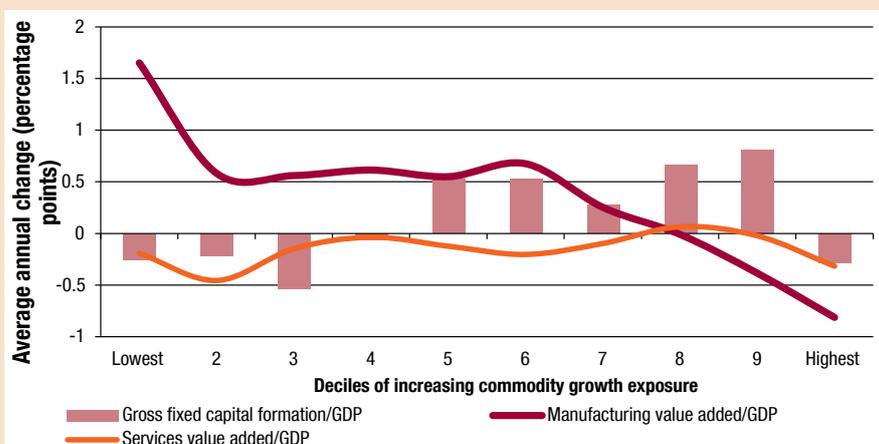
In Figure 4.6, countries are grouped into deciles based on increasing values of the commodity growth exposure variable. It shows that, with the exception of the lowest decile, greater commodity inflows were positive for per capita income growth in constant, PPP-corrected dollars. This is not solely due to rising prices in the primary sector, which by definition will increase GDP growth. It is also due to the fact that commodity growth exposure correlates positively with annual growth rates of value added (in current terms) in the non-primary sectors, as well as to growth of inward investment.

**Figure 4.6. Commodity growth exposure and growth of non-primary sectors and investment, by decile, 1995–2009 (Average annual percentage growth rate)**


Source: UNCTAD secretariat calculations, based on World Bank, World Development Indicators database.



**Figure 4.7. Average annual commodity growth exposure and structural transformation, by decile, 1995–2009 average**



Source: UNCTAD secretariat calculations, based on World Bank, World Development Indicators database.

Note: The figure shows the average change in the GDP shares of services, manufacturing and gross capital formation in percentage points. Thus, if the services/GDP ratio moved from 0.23 to 0.37 over the period 1995–2009 (14 annual change observations), the average annual change in the GDP shares of services is 1 (that is,  $37-23/14$ ).

During this period, as the commodity sector grew faster than the secondary and tertiary sectors, the shares of services and (especially) manufacturing in total GDP tended to decline with greater commodity growth exposure (Figure 4.7). This is to be expected, as structural transformation is a slower process than price increases. Therefore changes in sectoral shares are unlikely to keep up with high value-added growth in the commodity sector due to booming prices. Figure 4.7 shows that the share of services in GDP did not decline with increasing commodity growth exposure, whereas that of manufacturing did. Again, this is understandable: an increase in commodity revenues fuels domestic demand for services (which are not tradable) more strongly than for domestic manufactures.

These falling shares of the non-primary sectors do not necessarily suggest a process of deindustrialization. Figure 4.7 shows that greater commodity growth exposure does not correlate negatively with an increase in investment shares (the share of GDP devoted to gross capital formation), which drive structural transformation in the long run. However, the relationship is rather ambiguous, as further exploration (not shown here) suggests that the correlation between commodity growth exposure and the share of GDP devoted to gross capital formation is clearest in the more developed economies, but is entirely absent in the poorer economies in the sample. This is further developed through a more rigorous analysis below.

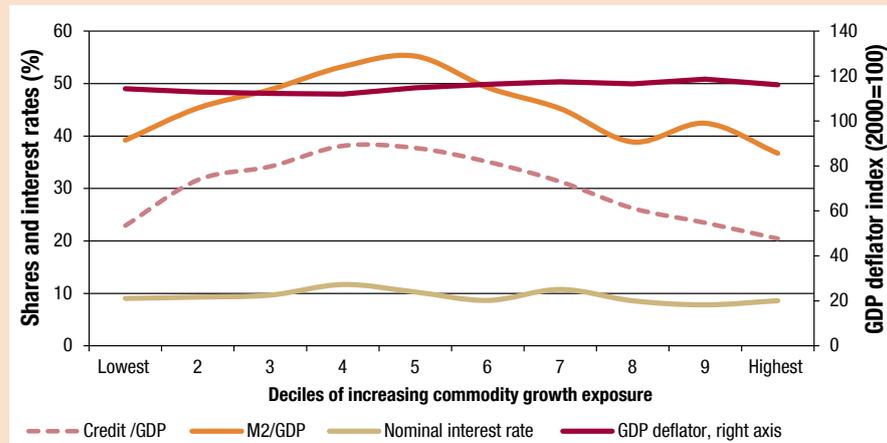
A preliminary conclusion from this exploration is that beyond a low threshold of commodity growth exposure (after the third decile), higher revenues from commodity exports may be positive for growth (Figure 4.6) and investment, but not for diversification in the short run. As diversification tends to be a long-term process, the question of whether revenues from commodity exports are a source of support or a barrier to structural transformation cannot be conclusively established from available data and the time frame used here. However, the tendency for those revenues to boost investment shares is a positive indicator.

Figure 4.8 suggests that commodity growth exposure did not stimulate domestic financial deepening. Both money and credit, as a percentage of GDP, fell with increasing deciles of commodity growth exposure. This is also true for stock market capitalization (though this is only of relevance for 70 of the sampled countries that have stock markets). The growth rate of the share of credit in GDP (not shown here) has varied in relation to commodity growth exposure, but without a clear trend. Although interest rates were stagnant, greater commodity growth exposure appears to have slightly increased inflationary pressure, with rising GDP deflators. Countries with greater commodity growth exposure were also, possibly, larger importers. Each of these trends was observable both in the lower and the higher income deciles in the sample.

Despite rising GDP deflators, there appears to be little evidence of exchange rate pressures related to

*During 1995–2009, the shares of services and manufacturing in total GDP tended to decline with greater commodity growth exposure. However, the falling shares of non-primary sectors do not necessarily suggest a process of deindustrialization.*

*Commodity growth exposure did not stimulate domestic financial deepening. Both money and credit, as a percentage of GDP, fell with increasing deciles of commodity growth exposure.*

**Figure 4.8. Commodity growth exposure and domestic financial development, 1995–2009 average**

Source: UNCTAD secretariat calculations, based on World Bank, World Development Indicators database.

*Despite rising GDP deflators, there appears to be little evidence of exchange rate pressures related to the Dutch disease phenomenon.*

*There appears to have been no negative effect of greater commodity growth exposure on life expectancy, or on infant mortality rates. This could partly be explained by the focus on the MDGs which promoted investment in social sectors.*

the Dutch disease phenomenon. REERs were flat over increasing deciles of the commodity growth exposure index. Also, the annual percentage change in nominal exchange rates appears to have been low and stable in countries with high commodity growth exposure, and higher in countries with lower commodity growth exposure (Figure 4.9). This suggests that countries with less commodity growth exposure are more vulnerable to Dutch disease effects.

This is particularly interesting in view of the many discussions of the Dutch disease effects of revenues from commodity exports, and is possibly associated with the build-up of foreign assets and the decline of liabilities. Both foreign assets and debt liability trends are quite volatile, but the trends suggest that they tend to be larger in countries with greater commodity growth exposure. Revenues from commodity exports appear to have been increasingly channelled to international financial markets, which may have prevented them from increasing domestic inflationary and exchange rate pressures.

To further elaborate, in Table 4.1, economies in the top two income quintiles are presented separately for the periods 1995–2002 and 2003–2009. This is motivated by the suggested structural break in the time series observed above, and by background knowledge of changes in international financial markets and of the growth of sovereign wealth funds (SWFs) after the early 2000s (Devlin and Brummitt, 2007). After 2002, higher commodity growth exposure appears to have been linked to a greater accumulation of foreign assets and to smaller real (and no nominal) appreciations (Figure 4.10). This finding again suggests that in the more developed commodity-dependent economies, foreign asset accumulation

prevented currency appreciations associated with Dutch disease after 2003. In the poorer economies, this association was not observed.

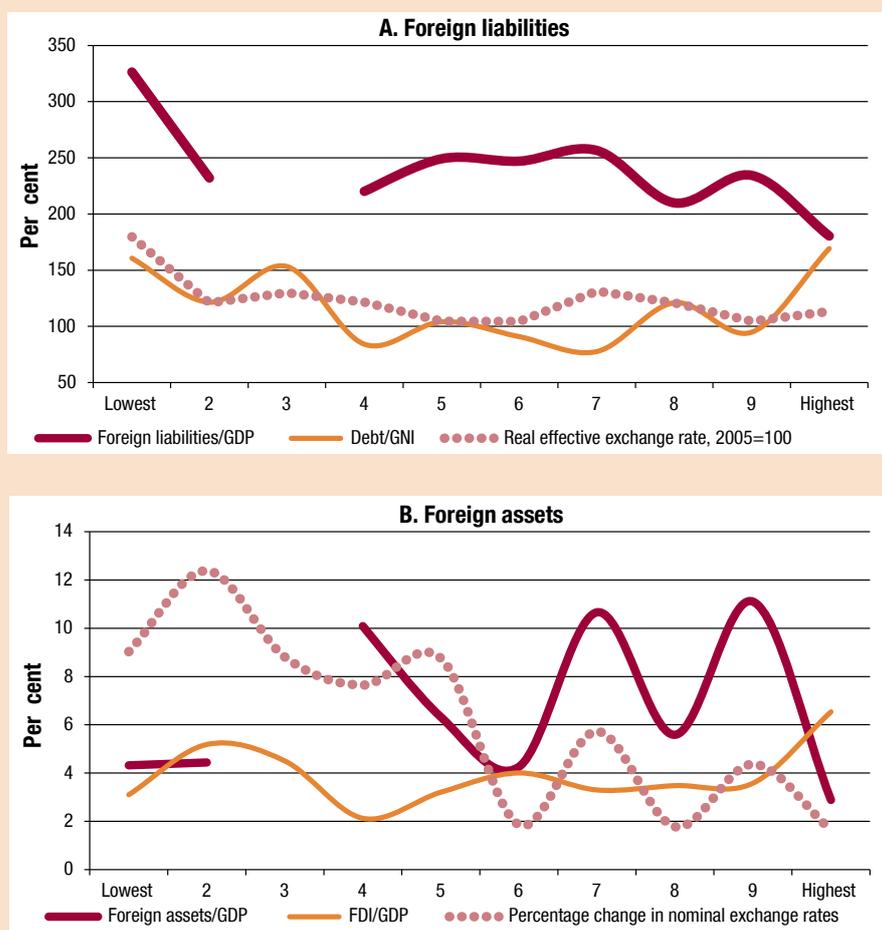
Finally, the effects of commodity growth exposure on social indicators were explored. Countries with high exposure tended to spend less on health and education as a share of their GDP (Figure 4.11).<sup>19</sup> These trends may be interpreted as a sign of the natural resource curse, as Frankel (2010) and Gylfason (2001) suggest. However, these are input measures, not health outcomes. There appears to have been no negative effect of commodity growth exposure on life expectancy, the leading health outcome measure, or on infant mortality rates, its principal driver.

This could partly be explained by the prevailing development paradigm of the 1990s and 2000s, which focused on the MDGs and thus promoted investment in the social sectors, especially health and education, with little emphasis on investment in the productive sectors (i.e. agriculture and industry) particularly for the low-income CDDCs. Commodity-dependent countries' patterns of expenditure and sectoral growth tended not to follow the conditionalities attached, for example, to structural adjustment programmes, or the HIPC initiative, such as the poverty reduction strategy papers (PRSPs) of developed-country donors and international financial institutions (IFIs), perhaps because most of them (excluding the HIPCs) enjoyed greater fiscal autonomy. However, their health outcomes were improved as they added more years to the life expectancy of their populations than did countries which did not benefit greatly from the commodity boom.

In summary, a "commodity growth exposure" variable was constructed which reflects both commod-



Figure 4.9. Commodity revenues and foreign financial positions, by decile, 1995–2009 average



Sources: UNCTAD secretariat calculations, based on UNCTADstat and World Bank, World Development Indicators database.

Notes: The numbers on the axes are all ratios expressed in per cent; thus, in chart A, debt is between 1 and 1.5 times the gross national income (GNI), which means that the value for the debt/GDP ratio in percentage terms is between (roughly) 100 and 150 per cent. The REER is also a ratio: a value relative to its value in 2005 times 100. The break in the series for foreign liabilities/GDP and foreign assets/GDP is due to a lack of data for countries in the third decile.

ity dependence and growth in commodity revenues (with a 0.84 correlation to the latter). Across increasing deciles of commodity growth exposure, indicators for income growth, structural transformation, domestic financial development, foreign financial positions and exchange rates, and social indicators have been discussed. The findings from the above analysis may be summarized as follows:

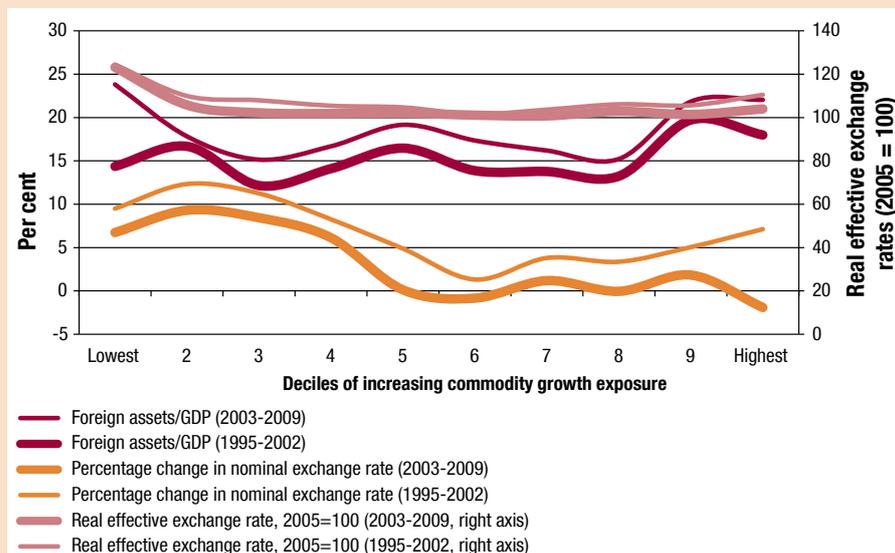
First, greater commodity growth exposure appears to have been positive for per capita income growth (in constant, PPP-corrected dollar terms) and for value-added growth in the non-primary sectors (Figure 4.6). However, it does not appear to have been clearly related to growth in investment and in investment shares, as a growth-and-investment premium from commodity growth exposure was not observed for the poorer economies.

Second, regarding the shares of money, credit and stock market capitalization in GDP, which are indicators of domestic financial deepening the analysis suggests that these shares were lower with greater commodity growth exposure. However, there was a slight increase in inflationary pressure, as reflected in rising GDP deflators.

Third, REERs were stagnant, with changes in nominal exchange rates falling over increasing deciles of the commodity growth exposure index. This suggests that there is little evidence of Dutch disease-induced exchange rate pressures due to the commodity boom, particularly in countries with high commodity growth exposure. This could be connected to larger build-ups of foreign assets and larger declines in liabilities, especially in the higher income quintiles in the sample. This trend was especially pronounced in the 2000s.

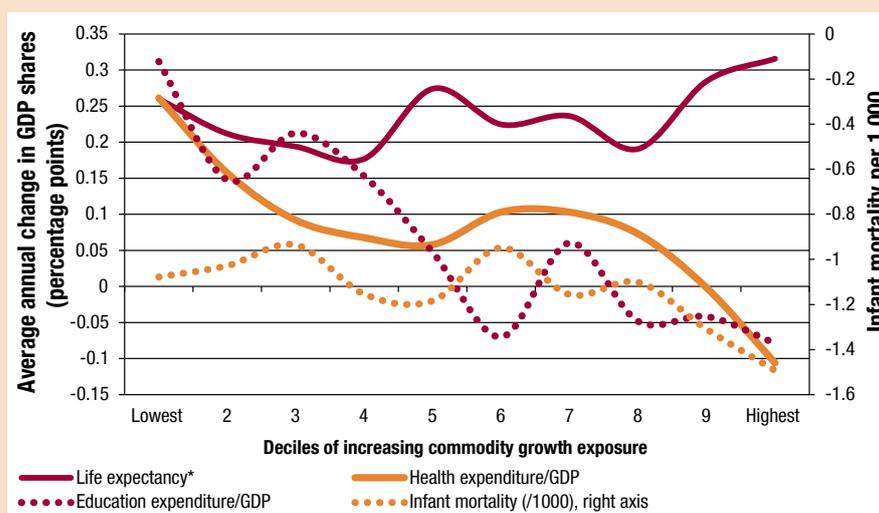


**Figure 4.10. Asset accumulation and appreciation of the top two income quintiles before and after 2002**



Source: UNCTAD secretariat calculations, based on World Bank, World Development Indicators database.

**Figure 4.11. Commodity revenues and social indicators, all deciles, 1995–2009 average**



Source: UNCTAD secretariat calculations, based on World Bank, World Development Indicators database.  
 Note: Changes in life expectancy are expressed in years, not in per cent. Thus, people in the countries in the sample gained, on average, about a quarter of a year in each year during the period 1995–2009 (meaning they gained, on average,  $0.25 \times 14 = 3.7$  years over that period). Thus it denotes the percentage change in life expectancy, which is measured in years. Infant mortality per 1,000 refers to the change in the infant and under-5 mortality rate.

Countries with greater commodity growth exposure tended to spend less on health and education as a share of their GDP.

Finally, the analysis shows that countries with greater commodity growth exposure tended to spend less on health and education as a share of their GDP. However, there appears to be no negative correlation between commodity growth exposure and life expectancy, the leading health outcome measure, or on infant mortality rates, its principal short-term driver.

### 3.3. Econometric analysis

The above observations and findings guide the panel data regression analyses below, where the dependent variable of interest is regressed against a country's commodity growth exposure and other control variables. The control variables were estimated each



time with another dependent variable of interest in order to study the effect of commodity growth exposure on income growth, investment, diversification, domestic financial development, foreign financial positions and social indicators. All estimations assumed country-specific heteroskedasticity of the error terms.

The effect of commodity growth exposure is moderated by a large number of other variables, many of which are included as control variables (Table 4.1). The control variables included reflect the following:

- Development level and growth, captured by the level and growth of GDP per capita, in constant PPP-corrected dollar terms.
- Human capital, captured by life expectancy, health and education expenditure.<sup>20</sup>
- Economic structure, captured by the value-added shares of the non-primary sectors in GDP and investment shares in GDP.
- Monetary policy, captured by the interest rate, credit and money stocks, and foreign debt as a share of GNI.
- International trade and investment conditions, captured by exchange rates and net FDI as a share of GDP.
- The value of net food imports (or exports) as a share of GDP.

To demonstrate how control variables matter, appendix 2 shows the regression of economic growth (measured as the percentage increase in GDP per capita) on commodity growth exposure with and without a varying set of control variables. Perhaps unsurprisingly, the positive effect of commodity growth exposure on the percentage increase in GDP per capita is robust for all these variables. The size of the coefficient increases with more control variables added, which is better for approximating its real value. The evidence, then, is that commodity growth exposure has a stimulating effect on growth in GDP per capita.

There appear to be a number of interconnected changes concerning the effects of commodity growth exposure emerging from this analysis (Table 4.1). These are related to changes in international financial governance since the 2000s, which had a differential impact on the CDDCs, depending upon whether they were low- or middle-income countries. As Nissanke (2010) notes, in order to avoid a repetition of the transmission effects of the 2009 financial crisis spilling over into world trade and real economic activities, it is necessary to reform international financial governance structures that oversee the globalization process as well as international regimes affecting world commodity markets and trade. This suggests that the mandates, policies and gover-

nance of IFIs, including the IMF, beyond the system of financial regulation and supervision, require urgent reform.<sup>21</sup>

Over the past decade, financial globalization has accelerated. The view that international financial flows and investments are beneficial has been gaining increasing support (e.g. Das, 2006), and developing countries have been encouraged by IFIs to devote more of their resources to strengthening their international financial positions. For instance, SWFs<sup>22</sup> (or non-renewable resource funds) began expanding to unprecedented levels. For CDDCs, the growth of SWFs may reflect a general policy stance that gives importance to the accumulation of reserves and investments in international financial markets (UN-DESA 2010; Kregel, 2004).

Comparing the periods 1995–2002 and 2003–2009 – the latter constituting a period of finance-driven globalization – revenues from commodity exports may have supported foreign financial investments after 2002, and were less correlated with domestic economic growth, diversification and domestic financial development. This is the case mainly for poorer developing countries, which traditionally adhere closely to the policy prescriptions of IFIs (e.g. IMF and World Bank), and their creditors and investors have displayed a preference for greater foreign financial investments. Thus, the impact of commodity exposure appears to have changed around the early 2000s, primarily in the poorer countries. These trends are not observable in the higher quintile (mainly middle-income) developing countries in the sample, which in general tend to exercise greater autonomy in policy-making (Wade, 2009). Clearly, the reason for this collective change in the poorer countries is not only related to country specifics (captured in the control variables); it may also be due to this group of countries encountering a significantly changed international financial environment. This finance-driven globalization perspective is explored in greater depth in the next section.

There are considerable differences in the effects over time and over income levels. The main results of the econometric analysis presented in Table 4.1 are summarized below.

1. Change in foreign financial assets as a share of GDP

For the 40 per cent of poorer countries in the sample, greater commodity growth exposure was not associated with greater foreign financial investments in 1995–2002. However, during the subsequent period, 2003–2009, revenues from commodity exports appear to have been used to support investments in the international financial markets. In the 60 per cent of richer countries in the sample, although this positive link between

*During the boom, revenues from commodity exports appear to have been used to support investments in the international financial markets.*


**Table 4.1. Effects of greater commodity growth exposure over time, by income group, 1995–2002 and 2003–2009**

Period	1995–2002		2003–2009	
	Bottom 40 per cent	Top 60 per cent	Bottom 40 per cent	Top 60 per cent
<b>Country groups (by income group)</b>	<b>(coefficients)<sup>a</sup></b>			
<b>The effect of higher commodity growth exposure on:</b>				
1. Foreign financial assets/GDP ratio (change)	-0.043 0.033	0.042*** 0.013	0.093*** 0.026	-0.007 0.008
2. Foreign debt/GDP ratio	0.244 0.161	-0.071 0.076	-0.169 0.151	0.195*** 0.038
2. Natural logarithm (ln) of debt service/GDP ratio	-0.004 0.004	0 0.001	0.007* 0.004	-0.001 0.001
3. Growth rate of GDP per capita (%)	0.982** 0.426	1.076 0.704	0.084 0.191	4.282*** 0.756
4. Domestic credit/GDP ratio <sup>b</sup>	-0.007 0.009	-0.043 0.082	-0.01 0.016	0.164** 0.067
4. M2 <sup>c</sup> /GDP ratio	-0.011 0.03	-0.01 0.045	-0.01 0.021	0.131* 0.072
5. Growth in health expenditure (%) <sup>d</sup>	0.184** 0.091	0.008 0.053	0.174** 0.079	0.067** 0.026
5. Growth in educational expenditure (%) <sup>d</sup>	-0.428*** 0.069	-0.303*** 0.068	-0.942*** 0.212	-0.06 0.037
6. Value-added growth of manufacturing and services/GDP ratio (%) <sup>d</sup>	-0.018*** 0.007	-0.052*** 0.008	-0.004 0.016	-0.023*** 0.006
7. ln <sup>e</sup> of gross capital formation/GDP	0 0.002	0 0.001	0.003*** 0.001	0 0
8. REER	0.085 0.134	-0.146*** 0.049	0.021 0.054	0.003 0.021
8. REER (year-on-year change)	0.092 0.068	-0.057** 0.024	0.157*** 0.053	0.002 0.009
9. FDI/GDP ratio (year-on-year change)	-0.023** 0.009	-0.031*** 0.007	0.008 0.014	-0.011 0.007

Sources: UNCTAD secretariat calculations, based on UNCTADstat and World Bank WDI database.

Notes: It should be noted that the set of control variables is similar, but not identical, over models – e.g. FDI is a control variable in all the models except where it is the dependent variable, and M2 is not included in the set of control variables for domestic credit due to multicollinearity. By allowing, for example, the FDI/GDP ratio to be both the dependent variable in one equation and a control variable in other regressions, it is acknowledged that the set of variables studied here are both influencing and influenced by each other.

<sup>a</sup> One, two and three asterisks indicate a coefficient's statistical significance for  $p=0.1$ ,  $p=0.05$  and  $p=0.01$ , respectively. All models are estimated assuming panel-specific heteroskedasticity. Standard errors are in italics.

<sup>b</sup> Domestic credit is the stock of loans by domestic deposit-taking institutions to the domestic non-financial sector.

<sup>c</sup> 'M2' is a measure for the money stock, including currency in circulation, deposits (overnight, time-related time-related deposits and savings), and non-institutional money market funds.

<sup>d</sup> Growth rates in spending on health and education are in current dollars. Growth rates of the manufacturing and services sectors refer to value-added growth in current dollars.

<sup>e</sup> 'ln' Indicates the natural logarithm.



commodity export revenues and foreign assets was present in 1995–2002, it was not evident during the period 2003–2009 (see appendix 2, table1 for full model specifications).

2. Foreign debt and debt service as a share of GDP

For the 40 per cent of poorer countries the results are statistically inconclusive, although these countries may have used their commodity revenues to strengthen their foreign financial positions and prevent their foreign debt levels (as a share of GDP) from rising in 2003–2009. This had not been the case during the earlier period, 1995–2002. The richer countries, on the other hand, increased their debt levels with greater commodity growth exposure in 2003–2009 – not just nominally but also as a share of GDP, despite often high GDP growth rates.

3. Growth rate of GDP per capita

As a result of their greater use of commodity revenues for debt reductions and foreign investments, for the 40 per cent of poorer countries commodity growth exposure in 2003–2009 was not correlated with income growth. This was in contrast to the 1995–2002 period and in contrast with the richer countries' experience in 2003–2009. The income growth effect of commodity growth exposure quadrupled in the richer countries between the two periods but was not evident (in terms of statistical significance) in the poorest 40 per cent.

4. Domestic credit as a share of GDP and M2 as a share of GDP

Equally, the richer countries (but not the 40 per cent of poorer countries) experienced an increase in domestic financial development (measured by their credit/GDP and M2/GDP ratios) with greater commodity growth exposure during the 2003–2009 boom period.

5. Expenditures on health and education

The poorer countries with greater commodity growth exposure spent more on health than on education in 1995–2002. These correlations persisted throughout the period 2003–2009. It is possible that they were spending more on foreign financial investment at the cost of domestic social spending, in particular education. In middle-income countries the correlations were much smaller and that greater commodity growth exposure did not lead to increased expenditure on education.

6. Shares of manufacturing and services in GDP

There were also some positive aspects to the greater use of the revenues from commodities

for foreign financial investments – principally, averting Dutch disease effects due to higher revenues from commodity exports. Whereas during the period 1995–2002, more commodity growth exposure tended to decrease the share of the non-primary (manufacturing and services) sectors in GDP in all countries, in the subsequent period this effect had disappeared in the 40 per cent of poorer countries. However, it persisted, albeit to a smaller extent, in the 60 per cent of richer countries.

7. Gross capital formation as a share of GDP

For the poorer countries, there appears to be some (though minor) positive correlation between the boom and greater gross capital formation (but not in richer countries), which had not been the case during the previous period, 1995–2002. However, this may well refer to gross capital formation in the primary sector only (e.g. investment in mineral extraction), and therefore may not necessarily indicate structural transformation and development.

8. Real effective exchange rate (REER) and change in the REER

Another Dutch disease effect, namely appreciation of the REER, was one effect of greater commodity growth exposure in the richer countries during 1995–2002, but it was avoided during 2003–2009. In the poorer countries, the appreciation effect was always statistically insignificant.<sup>23</sup> Also, the effect of the change (rather than the level) of REERs went from being insignificant to positive in the low-income countries and from negative to insignificant in the middle-income countries.

9. Change in FDI as a share of GDP

The negative effect of greater commodity growth exposure on the FDI/GDP ratio that was pervasive in 1995–2002 disappeared in 2003–2009. This may well be linked to larger resource-seeking FDI inflows after 2002, an aspect discussed further in section 4.2 of this chapter.

It should be noted that these findings from the econometric analysis are more robust and broadly in line with the outcomes of the explorations in section 3.2. The results of the analysis presented here suggest that revenues from commodity exports stimulated the build-up of financial assets, while simultaneously the link between those export revenues, diversification and the development of productive capacities was weak in the poorer economies. It is argued that this was part of observed changes in international financial policies, which is the subject of the next section.

*Whilst the poorest CDDCs appear to have used commodity revenues for debt reductions .... The richer countries experienced an increase in domestic financial development, with greater commodity exposure during the boom period.*

*Revenues from commodity exports stimulated the build-up of financial assets, while simultaneously the link between those export revenues, diversification and the development of productive capacities was weak in the poorest economies.*

*A striking feature of the commodity boom years was the strong growth in developing countries. However, the boom also exacerbated global imbalances while increasing reserve accumulation.*

*The commodity boom improved the capital account of a few major exporting CDDCs. However, most developing countries were unable to achieve a current account surplus.*

#### 4. COMMODITY DEPENDENCE IN THE CONTEXT OF FINANCE-DRIVEN GLOBALIZATION

##### 4.1. Commodity dependence, international finance and growth: lessons learned

A striking feature of the commodity boom years was the strong growth in developing countries. However, the boom also exacerbated global imbalances while increasing reserve accumulation and the number and volumes of SWFs. In emerging market economies such as Brazil, China and the Russian Federation, and in West Asia, the surge in revenues from commodity (and merchandise) exports led to the accumulation of foreign assets held both by private citizens and their governments (as foreign reserves). On the other hand, the low-income developing countries continued to run current account deficits throughout the 2000s, but, perhaps surprisingly, also increased their reserves very substantially. This was arguably initiated on the advice of international donors and the IMF, and in response to greatly increased global financial volatility.

There exists a strong self-propelling mechanism: the growing tendency to employ export revenues and capital inflows for investment in capital markets abroad has increased the liquidity of those markets, further pushing up commodity prices, export revenues and current account surpluses (including in China, the Russian Federation and West Asia) (Table 4.2, row 1), and necessitating a further build-up of reserves as buffers against volatility.

Table 4.2 reflects the overarching accounting identity: over any period net external financial inflows plus the current account balance must be equal to the change in official reserves plus the change in private claims on foreigner investors. For instance, in all developing countries during the period 2003–2008, annual financial inflows on current account

(\$461 billion) plus net external financing inflows (\$838 billion) equalled the increase in official reserves (\$689 billion) and the increase in claims on foreigner investors held by the private sector in developing countries (\$610 billion) (Obstfeld, 2009, note 5). Thus the commodity boom improved the capital account of a few major exporting CDDCs.

Table 4.2 suggests that even in the boom years, most developing countries and emerging countries were unable to achieve a current account surplus (see row 4 which excludes China, the Russian Federation and West Asia). A continuing current account drain might reflect the building up of real capital, as resources would be spent on imports in support of fixed capital formation and upgrading for greater productivity. However, the analysis presented above (section 3.3) and Table 4.2 show that what accumulated in these years was not real capital but financial capital in both public and private sector accounts. Net external financing comprises FDI, portfolio investments and loans. The large increase in these capital inflows into developing countries reflects the financial globalization of the past few decades, but reserves increased vastly and more rapidly – ten-fold in nominal terms – between the mid-1990s and the mid-2000s (row 3, Table 4.2).

Table 4.2 also shows that even excluding the accumulation of dollar reserves by China and petro and gas dollars by West Asia and the Russian Federation, the other developing countries increased their reserves more than fivefold. Since inflows must equal outflows in any balance sheet, the above balance sheet identity (that inflows equal the change in official and private reserves) indicates that the change in official and private reserves represents an *outflow of liquidity from the domestic economy* (i.e. they are resources spent outside that economy). Reserves as well as private claims are investments in the bond, stock and derivative markets of other countries. This may be viewed as a prudent and responsible policy

**Table 4.2. Trade earnings, capital inflows and reserves of all developing and emerging countries in the sample, 1990s and 2000s**

	1992–1997 Average (\$ bn)	2003–2008 Average (\$ bn)
1. Current account balance	-86.5	460.7
2. Net external financing	289.5	837.9
3. Increase in reserves	64.3	689.4
4. Current account balance (excl. China, Russian Federation and West Asia)	-96.7	-38.9
5. Net external financing (excl. China, Russian Federation and West Asia)	225.6	470.0
6. Increase in reserves (excl. China, Russian Federation and West Asia)	39.7	218.6

Source: Obstfeld (2009: 69), based on IMF data.



aimed at building up buffers in a volatile world. On the other hand, there are opportunity costs to building such reserves, as these are resources that could have been used to develop a domestic economy's productivity or employment (see, for example, Spiegel, 2008; UN-DESA, 2010). Although the accumulation of reserves from commodity revenues may help to smooth economic growth, they do not build capacity unless the resources are repatriated at a level that does not exceed domestic absorptive capacity. The strategy of reserve accumulation adopted by developing countries has two potential implications:

- (i) It has encouraged net positive lending (capital transfers) from themselves to developed countries, and may also have contributed to rising levels of domestic public debt in some developing countries because of monetary sterilization<sup>24</sup>
- (ii) There are potentially high social costs of reserve accumulation. Rodrik (2006) notes that for developing countries these costs (the difference between short-term borrowing abroad and the yield on international reserves) account for around 1 per cent of GDP per annum. Similarly, Akyüz (2008) has estimated an annual cost of reserve accumulation to developing countries of \$100 billion.

A third inference from Table 4.2 is that commodity revenues, which, like all export proceeds, appear in the current account, were dwarfed by net external financing inflows. The availability of finance for investment and for maintaining financial stability in many countries is increasingly dependent on the ability to attract sufficient capital flows, including, but also exceeding, export revenues, and to retain these.

The imperative to build up reserves has been so strong that it has not only absorbed a large proportion of commodity gains, it has also driven countries to seek capital inflows (including portfolio investments) to feed it (Table 4.2). However, these inflows carry future liabilities in the form of interest and loan repayments, or foregone profit and policy space. For developing countries, the main implication of the fickleness and growing volatility of international capital inflows is that these recipient countries face greater exposure to shocks and crises which can be large, as in 2009, and more frequent (Ocampo and Vos, 2008). The extent to which these phenomena affect developing countries depends on their level of economic development, the depth of their financial markets and the quality of their institutions.

This is entirely in line with the shift in focus that Kregel (2004) noted, from real-sector investment

for growth to financial stability as a prerequisite for growth. Thus, commodity earnings and the capital flows they have attracted have been used more for financial purposes than for real-sector development. Whatever form the financial acquisitions take (such as purchasing foreign government bonds or corporate bonds and stocks), their deployment for financial purposes prevents them from being used for other development and social purposes, such as building up the stock of capital equipment (e.g. plants and machinery), or investing in education, health and infrastructure, which are critical to the structural transformation of economies. This explains much of the simultaneous financial asset growth and the decoupling of commodity export revenues from growth in the poorer economies in the sample.

That this also occurred in many other developing economies during the same period is not coincidental. Since the 1997-1998 Asian financial crises, developing countries have recognized – or have been persuaded by investors and the IFIs – that there is a need for more buffers against growing global financial instability (Spiegel, 2008; UN-DESA, 2010).

Sovereign wealth funds have been the single most prominent vehicle to separate financial inflows – including commodity gains – from the domestic real economy. As noted, SWFs mushroomed during the commodity boom years, and have served to direct less developed economies' windfall gains into international bond and stock markets rather than into fixed capital formation, productivity and employment in developing countries. Of an estimated \$4.7 trillion held in SWFs by end 2011, \$3.9 trillion (82 per cent) was owned by developing and emerging countries. Commodity-derived SWF assets owned by these countries accounted for an estimated \$2 trillion (Table 4.3).

Fiscal stabilization funds have also been used by a number of commodity-exporting countries for some time, and have been the subject of interest for many other developing countries as well in this era of high commodity prices, increased price volatility and uncertainty in revenues (see Box 4.1). Developing countries' experiences with stabilization funds have shown that a strong institutional framework, transparency and accountability are essential for making them work effectively. An inclusive multi-stakeholder approach, such as the Extractive Industries Transparency Initiative,<sup>26</sup> involving the private sector and civil society organizations has helped promote transparency, accountability and governance in the use of these funds in some countries (UNCTAD, 2009a). Such initiatives have also served to uncover financial irregularities which can contribute to the demise of these funds.

*The availability of finance for investment and for maintaining financial stability in many countries is increasingly dependent on the ability to attract sufficient capital flows, including, but also exceeding, export revenues, and to retain these.*

*Of an estimated \$4.7 trillion held in SWFs by end 2011, (82 per cent) was owned by developing and emerging countries. Commodity-derived SWF assets owned by these countries accounted for an estimated \$2 trillion.*


**Table 4.3. Developing and emerging countries' SWF assets, as on Dec. 2011**

Country	Fund Name	Assets (\$ billion)	Inception	Origin
Oman	State General Reserve Fund	8.2	1980	Oil and gas
Timor-Leste	Timor-Leste Petroleum Fund	6.3	2005	Oil and gas
Mauritania	National Fund for Hydrocarbon Reserves	0.3	2006	Oil and gas
United Arab Emirates – Abu Dhabi	Abu Dhabi Investment Authority	627	1976	Oil
Saudi Arabia	SAMA Foreign Holdings	472.5	n/a	Oil
Kuwait	Kuwait Investment Authority	296	1953	Oil
Russian Federation	National Welfare Fund	113.9	2008	Oil
Qatar	Qatar Investment Authority	85	2005	Oil
United Arab Emirates –Dubai	Investment Corporation of Dubai	70	2006	Oil
Libyan Arab Jamahiriya	Libyan Investment Authority	65	2006	Oil
United Arab Emirates – Abu Dhabi	International Petroleum Investment Company	58	1984	Oil
Algeria	Revenue Regulation Fund	56.7	2000	Oil
Kazakhstan	Kazakhstan National Fund	38.6	2000	Oil
Azerbaijan	State Oil Fund	30.2	1999	Oil
Brunei Darussalam	Brunei Investment Agency	30	1983	Oil
United Arab Emirates – Abu Dhabi	Mubadala Development Company	27.1	2002	Oil
Iran, Islamic Rep. of	Oil Stabilization Fund	23	1999	Oil
Mexico	Oil Revenues Stabilisation Fund of Mexico	6	2000	Oil
Saudi Arabia	Public Investment Fund	5.3	2008	Oil
Trinidad and Tobago	Heritage and Stabilisation Fund	2.9	2000	Oil
United Arab Emirates– Ras Al Khaimah	RAK Investment Authority	1.2	2005	Oil
Nigeria	Nigerian Sovereign Investment Authority	1	2011	Oil
Venezuela, Bolivarian Rep. of	FEM	0.8	1998	Oil
Gabon	Gabon Sovereign Wealth Fund	0.4	1998	Oil
Equatorial Guinea	Fund for Future Generations	0.08	2002	Oil
United Arab Emirates – (Federal)	Emirates Investment Authority	n/a	2007	Oil
Oman	Oman Investment Fund	n/a	2006	Oil
United Arab Emirates – Abu Dhabi	Abu Dhabi Investment Council	n/a	2007	Oil
Papua New Guinea	Papua New Guinea Sovereign Wealth Fund	n/a	2011	Gas

**Table 4.3. Developing and emerging countries' SWF assets, as on Dec. 2011**

China	SAFE Investment Company	567.9	1997	Non-commodity
China	China Investment Corporation	409.6	2007	Non-commodity
China – Hong Kong	Hong Kong Monetary Authority Investment Portfolio	293.3	1993	Non-commodity
Singapore	Government of Singapore Investment Corporation	247.5	1981	Non-commodity
Singapore	Temasek Holdings	157.2	1974	Non-commodity
China	National Social Security Fund	134.5	2000	Non-commodity
Malaysia	Khazanah Nasional	36.8	1993	Non-commodity
Brazil	Sovereign Fund of Brazil	11.3	2008	Non-commodity
Bahrain	Mumtalakat Holding Company	9.1	2006	Non-commodity
China	China-Africa Development Fund	5	2007	Non-commodity
Viet Nam	State Capital Investment Corporation	0.5	2006	Non-commodity
Indonesia	Government Investment Unit	0.3	2006	Non-commodity
Mongolia	Fiscal Stability Fund	n/a	2011	Mining
Botswana	Pula Fund	6.9	1994	Diamonds and minerals
Chile	Social and Economic Stabilization Fund	21.8	1985	Copper
Kiribati	Revenue Equalization Reserve Fund	0.4	1956	Phosphates
Developing and emerging country total		3 927.6		
World total		4 777.9		

Source: Sovereign Wealth Fund Institute, at: <http://www.swfinstitute.org/fund-rankings/>

#### **Box 4.1. Chile's structural fiscal balance policy**

Chile, like many other developing countries, is dependent on commodity exports, which makes its economy sensitive to commodity price volatility. This, coupled with the public ownership of its main commodity export, copper, exposes Chile to the natural resource curse syndrome. However, the introduction of a structural fiscal balance policy in 2001 helped the country to successfully avoid the Dutch disease. The aim of this measure was to develop a cyclically neutral fiscal policy where current expenditure is linked to the structural level of fiscal income (Ffrench-Davis, 2010). This structural level is estimated by the Chilean Ministry of Finance based on the output gap between trend GDP and actual GDP, and on the medium-term forecast for copper prices. The expenditure is then calculated with respect to this structural budget so as to allow an annual surplus of 1 per cent (UNCTAD, 2010b).

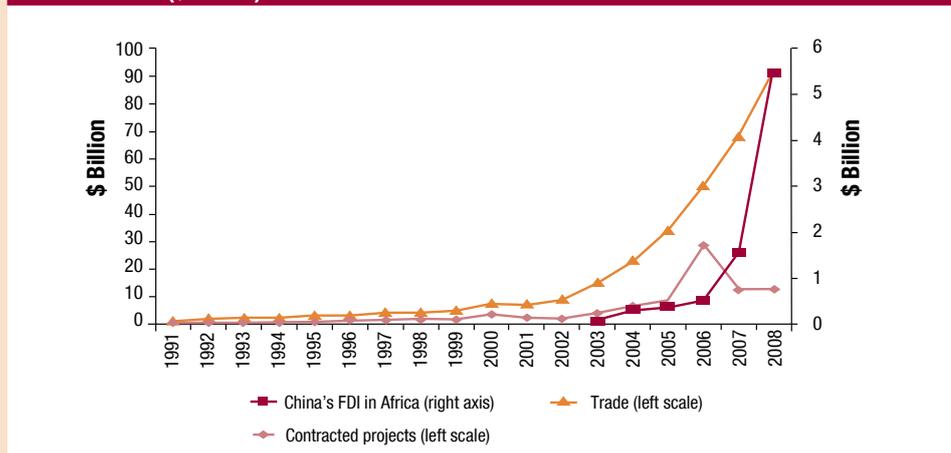
In other words, during a period of economic boom the Government collects larger than “normal” tax revenues but there is no corresponding increase in expenditure, thus accumulating savings. During bust periods, the Government can use those savings to cover falling tax revenues associated with a slowdown in activity, thereby maintaining the level of expenditure. This balancing methodology isolates the impact of the business cycle on public finances by adopting a long-term perspective of the fiscal situation in terms of both income and spending. Moreover, this kind of policy not only stabilizes revenue over the commodity price cycle; it also reduces the pressure on the exchange rate to appreciate during the boom period. To date, the Chilean rule has worked well: since 2001 the country has accumulated large surpluses which have been channelled into a sovereign fund offshore.

**Box 4.2. Chinese FDI in Africa's commodity sector: some preliminary observations**

China has had a long relationship with Africa, but the phenomenal increase in its investment in this continent coincided with the commodities boom. It began with its “Going Global” strategy, announced in 1999, to promote its overseas investment activity. Between 2003 and 2009, China’s outward FDI rose almost sevenfold, from \$33 billion to \$230 billion.<sup>a</sup> While China’s outward FDI was still only 1.2 per cent of the world’s total FDI in 2009, its share of FDI to developing countries has increased steadily since the 1990s, to 9 per cent in 2003 and 17 per cent in 2009 (Cheung et al., 2011). In an UNCTAD survey in 2010, China ranked as the second most promising global investor (UNCTAD, 2010a).

The evidence to date on the limited effects of FDI in poor developing countries, cited above, cannot simply be based on China’s investment in African resource-rich economies. Cheung et al. (2011) show that Chinese investment until 2005 mostly took the form of contracted projects rather than conventional FDI, which is the (part-) transfer of firm ownership. Indeed, China’s trade and investment in Africa have increased since the late 1990s (Box chart 1; see also UNCTAD, 2011, chapter 2). Contracted projects involve a barter deal where infrastructure is built in return for (access to) natural resources (Foster et al., 2008).

**Box chart 1. China’s trade, FDI and contracted projects in Africa, 1991–2008 (\$ billion)**



Source: Cheung et al. (2011); IMF Direction of Trade (DOT); Ministry of Commerce, China, 2009 Commerce Yearbook of China.

Whether China’s sharply rising investments in Africa were guided by a strategic resource-seeking motive or not, it is well documented that its contracted projects and FDI have been directed mostly to Africa’s resource-rich countries (Brautigam, 2008). One reason for this may be that in those countries, where infrastructure is typically poor, the returns on investment in infrastructure development are relatively large. In this sense, Chinese FDI may have symbiotic effects. Another reason may be that investment in infrastructure facilitates increased access to resources and to Africa’s expanding consumer goods markets (Corkin, Burke and Davies, 2008).

The study by Cheung et al. (2011) of Chinese FDI covering the period 1991–2005 identifies a number of possible determinants of investments, including market size, income levels, growth rates, trade intensity and contracted projects (which are formally not part of FDI). To this it adds energy and mining output (as shares of GDP) to capture the resource-seeking motive. It also identifies various risk factors, such as corruption, conflict, and law and order. The findings are interesting: before the Going Global programme was announced in 1999, an economy’s energy and mining output were not significant factors attracting Chinese FDI, but they were after 2002. This is in line with the view that the Going Global initiative was designed to support China’s domestic industry.<sup>b</sup> Further, using a second data set for the years 2003–2007,<sup>c</sup> consistent with the IMF/OECD format for FDI data, Cheung et al. find that energy and mineral output (as shares of GDP) have clearly been significant determinants of China’s investment activities. Their analysis does not specify whether this has been due to



#### Box 4.2. Chinese FDI in Africa's commodity sector: some preliminary observations (continued)

China's Going Global policy or to the exceptionally high prices of oil and other energy output during these years. But they are not, after all, mutually exclusive motivations.

In summary, China's outward FDI in support of its own industrial growth may have a potentially symbiotic relationship with the host countries. However, the effect may not be entirely benign, as the arrangements governing this at present may undermine the debt servicing capacity of the host countries. Moreover, concerns about the impact of this investment in other areas (e.g. environment and political reforms) may warrant further study.

<sup>a</sup> According to the Chinese Ministry of Commerce, non-financial outward FDI from China rose 1.8 per cent year-on-year to \$60.07 billion in 2011, taking the country's total non-financial outward FDI to \$322 billion by the end of 2011. China made investments in 132 countries in 2011, with its outward FDI in Europe and Africa up 57.3 per cent and 58.9 per cent, respectively, to \$4.61 billion and \$1.7 billion respectively. Investment through mergers and acquisitions, mainly in the mining, manufacturing, electricity, communications and retail sectors, reached \$22.2 billion in 2011, accounting for 37 per cent of its total outward FDI (see <http://english.mofcom.gov.cn/aarticle/newsrelease/counselorsoffice/westernasiaandaficareport/201201/20120107945037.html>). Xinhua News article posted January 31, 2012.

<sup>b</sup> Shankleman (2009) notes that the Chinese Government's 2006 Outward Investment Sector Direction Policy has supported the acquisition of resources or raw materials that are lacking domestically and which are urgently required for the development of the economy. The policy achieves this through the removal or relaxation of restrictions on capital outflows and the provision of incentives for outward investment. In the last decade, China proposed a new form of overseas investment – finance for assured supply – which provides long-term loans to overseas oil and gas firms to develop new capacity in return for a long-term supply (guaranteed volume) contract with a Chinese State oil company at prevailing market prices.

<sup>c</sup> The 2008 and 2009 data could not be included in the series due to a change in definition.

## 4.2. Foreign direct investment by firms and States

Rising commodity prices attracted increasing investment in commodity-rich economies. While FDI can benefit host economies through employment, capital and technology spillovers, these effects are known to depend on a well-researched set of conditioning factors. Among these are the motive for investment (resource-seeking versus market-seeking), the host country's level of development and linkages with the rest of the economy. FDI typically competes with resource use for domestic purposes that have larger first- and second-round growth effects, as when land used for domestic staple food production is allocated for the production of palm oil or soybean for export.

Resource-seeking investments tend to have fewer development benefits as they typically do not seek to introduce or develop new technologies unlike investments in manufacturing. Technological spillovers in resources are rare, given the limited scope for productivity improvement of labour-intensive products or, more typically, a wide technological gap with the host economy and large investment barriers in capital-intensive resource exploitation, as in mining and oil drilling. In any case, resource-seeking investments lack an "appropriate" level of technology for spillovers to occur (Los and Timmer, 2005). In addition, the number of high-quality jobs created through this type of investment remains quite limited (Adisu, Sharkey and Okoroafo, 2010; Trofimov, 2007).

Even where opportunities for spillovers exist, often these are not fully taken up by the host country due to weaknesses in infrastructure, the education system, research and development support, extension systems, and more generally, in the legal and regula-

tory framework. Clearly, these are major bottlenecks, especially for LDCs. In Africa's natural resource sector, both factors – few spillover opportunities and limited absorptive capabilities due to low levels of economic development – have combined to render FDI of limited use to host countries' development. Herzer, Klasen and Nowak-Lehmann (2008) and Görg and Greenaway (2004) document how low-income developing countries typically are unable to benefit from FDI due to their limited absorptive capacities (see also UNCTAD, 2005). Herzer, Klasen and Nowak-Lehmann (2008) tested the FDI-growth hypothesis for 28 of the poorest developing countries using cointegration techniques on a country-by-country basis. They found that in the vast majority of countries FDI has had no statistically significant long-term impact on growth, and in some cases it has even had short-term negative growth impacts (see also Görg and Greenaway, 2004).

In light of the above, it is not surprising that even in those countries where the commodity price boom attracted large FDI inflows, this had little impact on non-resource sector growth, the wider economy and employment. This may have been due to the lack of greenfield investments, as FDI in these countries often takes the form of a transfer of ownership claims (e.g. bonds, stock shares etc) to the income streams associated with already existing physical assets. Also, a host country's share of revenues from resource exploitation is often meagre, as contracts generally favour investors (UNCTAD, 2005). The other perspective, developed in the previous sections, is that countries have often used the foreign exchange from FDI for building their reserves and for financial investments rather than for investing domestically. This policy choice may have been imposed by the international financial environment, and logically

*Even in those countries where the commodity price boom attracted large FDI inflows, this has had little impact on non-resource sector growth, the wider economy and employment.*

*Since 2001 foreign land acquisitions in developing countries cover an area of the size of Western Europe.*

resulted in disappointing growth and productivity effects of FDI from resource exploitation.

Beyond the profit-seeking motives attributed to firms investing in resource-rich economies, there may have been a strategic motive on the part of countries that were seeking to safeguard their future access to food, fuel, minerals and metals. Amongst the most widely publicized and researched cases is that of China's investments and contracted projects in African economies (box 4.2; see also Brautigam, 2009; Cheung et al., 2011).

## 5. LAND ACQUISITION AS A CATEGORY OF FDI IN THE COMMODITIES SECTOR

The acquisition of land as a category of FDI merits separate attention for several reasons. Despite the scarcity of robust data on trends in this recent type of investment, it is generally agreed that it has rapidly assumed large proportions. Zagema (2011) estimates that foreign land acquisitions (or "land grabs") in developing countries cover an area amounting to 227 million hectares, an area the size of Western Europe. Similarly, Cuffaro and Hallam (2011) note that between 1990 and 2008 the inward stock of FDI in developing economies grew by a factor of 3.3 in agriculture, forestry and fishing, and by a factor of 5.6 in food, beverages and tobacco. While this may be an indication of their growing importance, land acquisitions are often forms of FDI that are not undertaken by transnational corporations (TNCs). Instead, they may be undertaken by private equity or State-owned funds, sometimes specially established for this purpose (Cuffaro and Hallam, 2011). Also, since FDI deals only appear in the official statistics once fully paid, this implies a potentially long time lag between the activity and collated data on land transactions.<sup>27</sup>

Therefore, it is mainly media reports that have drawn attention to the phenomenon of land acquisitions by foreign investors, which has prompted further analysis through case studies. Nonetheless, it is clear that the scale of these transactions is often vast, with many involving more than 10,000 hectares and some even more, as in the 100,000 ha agreement between Mali and the Libyan Arab Jamahiriya in 2008 (GTZ, 2009) or the (eventually aborted) deal covering 1.3 million ha between Daewoo Logistics of the Republic of Korea and the Government of Madagascar (Financial Times, 2009).

As Cuffaro and Hallam (2011) report, this form of FDI is mainly directed at acquisition of agricultural land, mostly through long-term leasing of up to 99 years, and it is often linked to infrastructure development. Major current investors are the Gulf States, but also China and the Republic of Korea. The main targets of this type of investment are countries in Africa, but also

those in South-East Asia and South America (UNCTAD, 2009b). The Gulf countries have favoured investments in Sudan and other, mainly African member States of the Organization of the Islamic Conference (OIC), for example, while, outside Asia, China has favoured Zambia, Angola and Mozambique.

Since domestic agricultural development is a *sine qua non* for broader development in poor countries (World Bank, 2008; Bezemer and Headey, 2008), access to land by domestic producers is an issue of strategic importance. Rural development strategies centred on sustained government support for improving the productivity of small farmers, have been at the heart of the Green Revolution growth miracles of the 1960s and 1970s. More recently, such strategies have focused on agricultural growth and economic diversification, as in China since the 1980s and in Cambodia and Viet Nam since the 1990s. But governments cannot plan, implement and direct these processes if agricultural land is owned or leased on a long-term basis by foreign companies that develop plantations and/or export-oriented agriculture and often exclude domestic smallholders. In this sense, foreign land acquisitions reduce the "policy space" for poor countries.

Moreover, access to land is typically the basis for poor people's livelihoods, so that foreign land acquisitions can have detrimental impacts on local poverty and social conditions, even if there are positive macroeconomic impacts. This adds a developmental and distributional aspect to the evaluation of foreign land acquisitions.

In Mali and Ghana, for example, the fact that statutory law considers all land to be State-owned, which the government can dispose of irrespective of unwritten customary rights, makes land acquisition through FDI a major concern for their populations (GTZ, 2009; FAO, 2009). Much of the case study literature on recent large land acquisitions shows that, typically, existing land uses and claims go unrecognized in a context of complex and insecure land rights (FAO et al., 2010).

In a study on large land acquisitions focusing on sub-Saharan Africa, Cuffaro and Hallam (2011:7), quoting Cotula et al. (2009), observe that:

Most if not all productive land targeted for potential investment was likely to be already claimed by farmers, herders, hunters or foragers. Land is most commonly owned or otherwise held by the state, local people may enjoy use rights over state land, land titles are extremely rare - the World Bank estimates that, across Africa, only between 2 and 10 per cent of the land, mainly urban, is held under formal land tenure - and the extent to which national

*China's outward FDI in support of its own industrial growth may have a potentially symbiotic relationship with the host countries.*

*Since domestic agricultural development is a sine qua non for broader development in poor countries, access to land by domestic producers is an issue of strategic importance.*



legal frameworks protect local land claims is variable but often limited. The World Bank's recent report on land investments<sup>29</sup> concludes that countries with poorer records of formally recognized rural land tenure have attracted greater interest, whilst, in contrast to standard results on general foreign direct investment, rule of law and a favourable investment climate had a weak effect on planned and none on implemented investment. Hence the current wave of FDI flows and land acquisitions is taking place in contexts where many people have only insecure land rights – which makes them vulnerable to dispossession. .

These broader considerations give ample reason to be concerned about the developmental impacts of land acquisitions. In view of the above findings, there is also little basis to argue that these drawbacks will be offset by the benefits of capital inflows in return for land acquisition. With this form of transaction, developing countries are giving up long-term control over a major productive resource in return for finance which they tend to use not for economic development and diversification but for financial investment. Another drawback to land acquisition is that often it favours foreign investors, and is unlikely to yield positive outcomes for the host country in the long term. On the positive side, if foreign investors acquire land not against payment, but for the development of infrastructure, as China often does, there is an argument that this helps overcome a bottleneck in development – perhaps more effectively than decades of development assistance have done (Brutigam, 2008).

Given the paucity of reliable data and of solid research on the extent, conditions and impact of foreign land acquisitions, the “land grab” debate is dominated by narratives that may require qualification. Franco and Carranza (2011) consider the narrative about the existence of available marginal lands – defined as thinly inhabited, unproductive, underproductive, underutilized, idle lands that can be transformed into zones of production for food and biofuels to solve the world's food and energy problems without undermining local food needs – as being fundamentally flawed. But equally, they argue that the counter-narrative, claiming that acquiring these lands in the context of recent land investments and global land grabbing will result in the displacement and dispossession of poor people, is only partly correct.

Chapter 3 of this report discussed the relatively poor growth of agricultural productivity in developing countries, especially in Africa. With the agricultural frontier expanding only marginally (mostly in sub-Saharan Africa), the availability of arable land per person may continue to decline. However, if “land grabs” result in major new production, even though they might entail a loss of national control, there could be some benefits. But this assumes that: (a) the land is not being

used; and (b) even if that is the case, it can be made productive without diverting scarce resources (e.g. water) from existing production. If neither of these assumptions hold, then the net increase in output (putting aside issues of distribution and control) will be less than the output from the new land – and could even be very small or negative.

Franco and Carranza's (2011) study was part of a 2011 conference on “global land grabbing” which studied these local impacts and the associated political economy effects. This research makes clear that foreign land acquisitions as well as land purchases and governments are not just a China-Africa phenomenon, as some examples suggest; there have been expropriations by domestic companies as well. Marin, Lovett and Clancy (2011) report that, in Colombia, agrarian political struggles are often a response to the increasing appropriation of land by local and national elites and corporations for the production of biofuels and feedstock for the national market and for export. Ginting and Pye (2011) studied the Merauke Integrated Food and Energy Estate in West Papua, Indonesia, and the emerging local resistance to it. Hall (2011) analyses the shifting role of South African farmers, agribusiness and capital elsewhere in the Southern African region. She finds that it frequently takes the form of large concessions for newly formed consortia and agribusinesses, and that there is an increasing reliance on external financing through transnational partnerships. For instance, she reports that, as of early 2010, the South African commercial farmers' association, Agri South Africa, was engaged in negotiations for land acquisitions with the governments of 22 African countries.

Shete (2011) has described how the Ethiopian Government is leasing out large tracts of arable lands both to domestic and foreign investors in different parts of the country where land is relatively abundant. Based on interviews with 150 farm households in two districts of the Benshanguel Gumuz region, Shete found that land sales there were characterized by poor coordination, monitoring and support of investment activities by federal, regional and district level authorities, weak capacity of domestic investors, accelerated degradation of forest resources, and threats to community members' security of livelihoods. In contrast to these bleak findings, Woodhouse and Ganho (2011) argue that to the extent that foreign “land grab” deals result in the expansion of irrigation in sub-Saharan Africa, this may accelerate the development of water infrastructure and reduce the uncertainty and risk inherent in much of African agriculture. But they also present evidence that foreign investment may compete with existing water use, as land deals have, in some instances, included provisions for priority access to water in case of scarcity.

*Much of the literature on recent large land acquisitions shows that, typically, existing land uses and claims go unrecognized in a context of complex and insecure land rights.*

*CDDCs governments should aim to shift the balance of power in favour of local right-holders and communities.*



There is need for greater clarity and transparency in such transactions through legal and regulatory reforms. In an attempt to constructively address this issue, an FAO/IFAD/UNCTAD/World Bank (2010) report outlines the following seven principles of responsible land acquisition:

- (i) Existing rights to land and associated natural resources should be recognized and respected.
- (ii) Investments should not jeopardize food security, but rather strengthen it.
- (iii) Processes for accessing land and other resources and then making associated investments should be transparent and monitored, with accountability by all stakeholders ensured through a proper business, legal and regulatory environment.
- (iv) All those materially affected should be consulted, and agreements from consultations recorded and enforced.
- (v) Investors should ensure that projects respect the rule of law, reflect industry best practices, are viable economically and result in durable shared value.
- (vi) Investments should generate desirable social and distributional impacts and should not increase vulnerability.
- (vii) Environmental impacts of a project need to be quantified and measures taken to encourage sustainable resource use, while minimizing the risk/magnitude of negative impacts and mitigating them.

In summary, foreign investment in land is often large-scale, is growing rapidly, occurs typically in ambiguous legal contexts and is still insufficiently researched. While “land grabs” attract large, one-off financial inflows, the economic impact of these inflows is unclear, while their developmental impact (especially on local communities) is a growing source of concern.

## 6. POLICY IMPLICATIONS

This chapter has analysed the indirect impacts of the commodity boom, and has discussed recent empirical research on those impacts. It has provided original empirical work on the boom’s indirect impacts using data for 142 countries (both commodity-dependent and others) during the period 1990–2009. It has paid particular attention to the imperative for CDDCs to build financial capital, as identified by Kregel (2004). In order to safeguard stability in international financial relations, revenues from commodity exports (along with other inflows) have been used mainly to strengthen international financial positions by accumulating stocks of foreign assets and decreasing foreign liabilities, notably debt.

Structural transformation, as measured by an increase in the shares of non-primary sectors in GDP, generally occurred until 2003: growth rates of manufacturing and services were higher than total value-added growth rates. After 2002, total value-added growth exceeded non-primary sector growth, apparently due to strong growth in primary sector value added as a consequence of the commodity price boom. From 2004, manufacturing growth decoupled from services growth, which was growing at more than one percentage point higher during the period 2005–2009. Therefore, in this report’s sample, something resembling a structural break is observed at around 2002–2003.

The analyses show that there was also a structural break with regard to the use of resource revenues in the middle of the research time series – around 2002. Prior to that, the poorest countries’ greater commodity growth exposure was associated with less foreign financial investment. However, in the second half of the time series (2002–2009) that relationship was reversed: commodity export revenues were used to support those countries’ investments in international financial markets. In the top income quintiles of the sample of developing countries, this positive link between commodity export revenues and foreign assets, which was present but weak during the period 1995–2002, disappeared in 2003–2009. The lower income countries also used their commodity revenues to strengthen their foreign financial positions during the period 2003–2009 by increasing their foreign debt service and by preventing their foreign debt levels (as a share of GDP) from rising. This also had not been the case previously in 1995–2002. In contrast, during the period 2003–2009, the richer countries increased their debt levels with more commodity growth exposure – not just nominally but even as a share of GDP, despite often high GDP growth rates.

Thus, financially-driven globalization had varying impacts on different countries over time, according to their development and income levels. Regarding the bottom 40 per cent of countries in the sample, as a result of their employing commodity revenues increasingly for debt reduction and foreign investments, commodity growth exposure in the period 2003–2009 was not correlated with GDP per capita growth. This finding is in direct contrast to the 1995–2002 period, and in contrast to the richer countries’ experience during the 2003–2009 period. The richer countries experienced greater domestic financial development with more commodity growth exposure during the 2003–2009 boom years.

The potentially beneficial effects of commodity export revenues on social expenditure grew weaker or were even negative in some cases for middle-income countries during the period 2003–2009. In

*While “land grabs” attract large, one-off financial inflows, the economic impact of these inflows is unclear, their developmental impact (especially on local communities) is a growing source of concern.*



the poorer countries, greater commodity growth exposure during the period 1995–2002 led them to spend more on health but less on education. These correlations persisted in 2003–2009, during which the negative effect on educational spending even doubled. It is possible that their increase in foreign financial investments was crowding out domestic social spending.

Nevertheless, there were also positive aspects of the greater use of commodity export revenues for building up reserves and investing abroad, a major one being that it averted any potential Dutch disease effect of increased commodity export revenues. During the period 1995–2002, greater commodity growth exposure tended to decrease the share of the non-primary (manufacturing and services) sectors in GDP in all the sample countries. In the period 2003–2009, this effect had disappeared in the poorer countries, although it was still present but weaker in the richer countries. Another positive impact was that the (boom) period 2003–2009 correlated with more gross capital formation in the poorer countries (but not in the richer countries), which had not been the case during the period 1995–2002. However, it needs to be borne in mind that this may well be gross capital formation in the primary sector only (e.g. investment in mineral extraction), and may not necessarily indicate transformation. Another Dutch disease effect that was avoided in the period 2003–2009 but not in the earlier period was an appreciation of the real effective exchange rate.

While it could be argued that the absence of the Dutch disease may be explained in part by the accumulation of reserves, it would be erroneous to suggest that the appropriate response to the threat of Dutch disease is simply to accumulate more reserves. The most critical issue is how commodity-exporting countries should deal with windfall revenues without compromising their broader development objectives. As argued by Ocampo (2005) with regard to increased aid flows (which could also potentially trigger Dutch disease), it is partly a matter of ensuring that governments have a much broader view of macroeconomic stability along with sufficient policy space to manage external flows of all kinds. In any case, a more developmental approach would be to ensure that windfall incomes are used to help alleviate domestic supply constraints in order to ensure that any associated increase in demand does not trigger strong inflationary pressures. Essentially, this entails using this revenue not only to finance “productivity-increasing investments” (IMF, 2003), but also to create opportunities for additional foreign exchange earnings. This will necessitate, *inter alia*, increasing expenditure on economic infrastructure which, in an appropriate macroeconomic policy framework, should promote structural transformation and economic diversification, and in turn

unleash the foreign exchange earning potential of the CDDC economies.<sup>30</sup>

Finally, the negative effect of greater commodity growth exposure on the FDI/GDP ratio that was common during the period 1995–2002 had disappeared by 2003–2009. This may well be linked to larger resource-seeking FDI inflows after 2002. High resource prices may have stimulated FDI, especially to resource-rich economies and in specific resources (such as the extractive sector). In assessing the importance of commodities in attracting investment, based on recent econometric research of the much-debated case of China’s investments in Africa, it was found that their role was indeed significant. A review of research specifically about the contentious and topical issue of the acquisition of land as a category of FDI, also known as “land grabs”, leads to the conclusion that foreign investment in land is often large-scale, is growing rapidly, occurs typically in ambiguous legal contexts and is still under-researched.

This chapter suggests that as financial globalization accelerated after the bursting of the dotcom bubble and the 9/11 terrorist attacks in the United States, and with the unprecedented monetary easing that followed these events, the environment in which developing countries could use their commodity revenues was transformed. Some of the consequences, including avoiding the long-standing and much-discussed pitfalls of increased commodity export revenues, such as Dutch disease, were positive. However, other effects of the increased emphasis on financial management rather than real-sector development and the strengthening of productive capabilities were more mixed. By separately studying the poorer countries in the developing-country sample – a group that largely coincides with the United Nations classification of LDCs – the presence of financially-driven globalization effects was evident. These countries tended to use the larger inflows resulting from the commodity boom to increase servicing of their debt and for greater foreign financial investments, but at the expense of domestic financial development, spending on education and income growth.

These findings suggest the need for a holistic view of the consequences of commodity-related (and other) international financial flows. Developing countries’ may have limited choices on how to invest their revenues given the current international financial architecture, the monetary policies of the developed countries and the views of the IFIs and donors. These countries may need to formulate and implement appropriate national policies; but equally important, the international financial system needs to be reformed and better regulated so as to create the optimum development context for developing economies to trade their way out of underdevelopment and poverty.

*The most critical issue is how commodity-exporting countries should deal with windfall revenues without compromising their broader development objectives. It is partly a matter of ensuring that governments have a much broader view of macroeconomic stability along with sufficient policy space to manage external flows of all kinds.*

*As financial globalization accelerated at the beginning of the 2000s, the environment in which developing countries could use their commodity revenues was transformed.*



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## APPENDIX 1: CDDC DATA COVERAGE

Table A.1.1 below, presents the value for commodity growth exposure as the average of all values computed for each year. This is the same for growth in commodity revenues, and for the share of commodities in total merchandise exports (expressed as a ratio). That is why in table A.1.1, the average commodity growth exposure is not equal to the average growth in commodity revenues multiplied by the average share of commodities in total merchandise exports. Each of these averages is computed with a different number of observations. However, for a sin-

gle year, the commodity growth exposure is equal to the growth in commodity revenues multiplied by the share of commodities in total merchandise exports - if data was available to compute these three values.

It should also be noted that for five CDDCs in the sample, we report a negative commodity growth exposure. Thus a negative growth (i.e. decline) in commodity revenues times a positive share of commodities in total merchandise exports results in a negative value for commodity growth exposure. It appears that these five countries did not benefit from the boom in terms of increased commodity revenues.

**Table A.1.1. Commodity growth exposure, commodity dependence and growth in commodity revenues, average, 1996–2009**

	Commodity growth exposure	Growth in commodity revenues (per cent)	Share of commodities in total export revenues (ratio)
Iraq	73.1	73.8	1.0
Marshall Islands	39.3	75.6	0.4
Sierra Leone	38.0	55.6	0.7
Chad	36.3	38.3	0.9
Azerbaijan	35.2	38.8	0.9
Cape Verde	35.2	67.6	0.4
Tuvalu	34.0	181.5	0.1
Micronesia, Federated States of,	33.0	40.0	0.8
Belize	25.8	24.5	0.8
Sudan	25.0	25.8	1.0
Angola	24.3	24.4	1.0
Timor-Leste	24.1	27.5	0.8
Mozambique	22.5	23.0	0.9
Kazakhstan	19.0	22.7	0.8
Sao Tome and Principe	18.0	19.3	0.7
Kiribati	17.8	19.8	0.8
American Samoa	17.7	20.7	0.6
Bhutan	17.5	31.5	0.5
Djibouti	17.5	26.4	0.6
Eritrea	17.3	21.1	0.6
Guinea-Bissau	17.2	17.7	1.0
Turkmenistan	16.5	18.1	0.9
Algeria	15.9	16.3	1.0
Congo	15.8	16.0	1.0
Nigeria	15.7	15.9	1.0
Libyan Arab Jamahiriya	15.6	16.2	0.9
Seychelles	14.6	18.2	0.9
Iran, Islamic Rep. of	13.6	14.9	0.9
Bolivia	13.2	14.8	0.8
Rwanda	12.7	13.5	0.9
Myanmar	12.7	18.2	0.7
Mongolia	12.3	15.0	0.8
Zambia	12.0	13.7	0.9
Bosnia and Herzegovina	11.9	26.9	0.4
Peru	11.7	13.7	0.8
Venezuela, Bol. Rep. of	11.6	13.0	0.9
Lao People's Dem. Rep.	11.5	16.3	0.5
Paraguay	11.5	13.2	0.9
Vanuatu	11.4	11.2	0.7

**Table A.1.1. Commodity growth exposure, commodity dependence and growth in commodity revenues, average, 1996–2009**

	Commodity growth exposure	Growth in commodity revenues (per cent)	Share of commodities in total export revenues (ratio)
Niger	11.4	15.4	0.6
Egypt	11.4	17.5	0.6
Burkina Faso	11.3	12.2	0.9
Ethiopia	11.2	12.0	0.9
Mauritania	11.0	11.3	1.0
Georgia	10.5	16.3	0.6
Samoa	10.5	32.5	0.2
Russian Federation	10.4	15.0	0.7
Tanzania, United Rep. of	9.9	11.2	0.9
Benin	9.7	10.6	0.9
Mali	9.6	10.7	0.9
Maldives	9.6	13.4	0.7
Yemen	9.4	9.6	1.0
Botswana	9.3	9.8	0.8
Ecuador	9.2	10.0	0.9
Chile	9.2	10.9	0.8
Indonesia	9.2	16.7	0.6
Armenia	8.8	11.9	0.6
Viet Nam	8.7	17.3	0.5
Uganda	8.6	10.8	0.9
Belarus	8.5	24.9	0.3
Malawi	8.4	9.6	0.9
Afghanistan	8.0	8.1	0.7
Comoros	7.7	7.6	0.6
Gabon	7.7	8.1	1.0
Somalia	7.7	8.3	0.9
Nepal	7.5	30.1	0.2
Lithuania	7.4	17.6	0.4
Suriname	7.2	8.9	0.9
Uruguay	7.1	10.0	0.7
Kyrgyzstan	7.1	10.5	0.7
Syrian Arab Republic	6.9	7.9	0.8
Lebanon	6.7	17.0	0.4
Palau	6.7	6.7	0.7
Congo, Dem. Rep. of	6.7	7.0	1.0
Colombia	6.7	10.0	0.7
Ghana	6.7	7.7	0.9
Côte d'Ivoire	6.6	8.3	0.8
Korea, Dem. People's Rep. of	6.5	14.6	0.3
Mayotte	6.2	34.4	0.2
Namibia	6.0	7.4	0.8
Lesotho	6.0	34.6	0.2
Guatemala	5.9	11.1	0.5
Liberia	5.7	4.6	0.4
Cameroon	5.7	6.3	0.9
India	5.6	13.9	0.4
Brazil	5.6	11.8	0.5
Argentina	5.5	8.0	0.7
Antigua and Barbuda	5.3	14.2	0.2
Latvia	5.2	13.1	0.4
Burundi	5.0	4.3	0.9
Bulgaria	5.0	12.8	0.4
Guyana	4.9	5.2	0.9



**Table A.1.1. Commodity growth exposure, commodity dependence and growth in commodity revenues, average, 1996–2009**

	Commodity growth exposure	Growth in commodity revenues (per cent)	Share of commodities in total export revenues (ratio)
Papua New Guinea	4.9	5.1	1.0
Uzbekistan	4.9	8.0	0.7
South Africa	4.8	8.5	0.5
Nicaragua	4.7	7.5	0.6
Kenya	4.6	6.6	0.7
Guinea	4.6	4.6	0.9
Senegal	3.9	5.6	0.7
Tonga	3.8	2.6	0.7
Cuba	3.7	5.3	0.8
Gambia	3.6	4.1	0.8
Tajikistan	3.4	3.8	0.9
Albania	3.4	13.4	0.3
Solomon Islands	3.3	3.2	1.0
Ukraine	3.2	11.0	0.3
Honduras	3.2	7.2	0.4
Saint Vincent and the Grenadines	3.1	-0.9	0.4
Saint Lucia	2.9	4.8	0.7
Togo	2.8	4.3	0.7
Romania	2.7	13.4	0.2
Zimbabwe	2.7	3.7	0.7
Tunisia	2.7	10.6	0.2
Swaziland	2.6	6.4	0.4
Jamaica	2.5	2.1	0.8
Fiji	2.4	3.2	0.6
Jordan	2.3	8.0	0.3
Malaysia	2.3	8.9	0.2
Morocco	2.2	6.0	0.4
Mexico	2.1	10.3	0.2
Thailand	2.1	8.5	0.3
Sri Lanka	2.1	6.6	0.3
Turkey	2.1	12.1	0.2
Pakistan	2.0	10.0	0.2
Madagascar	1.8	3.9	0.5
Dominican Republic	1.7	8.4	0.2
Saint Kitts and Nevis	1.6	-2.0	0.2
Haiti	1.3	9.7	0.1
Moldova, Rep. of	1.3	3.1	0.5
El Salvador	1.3	3.8	0.3
Panama	1.2	0.1	0.4
Mauritius	1.2	3.4	0.3
China	0.9	9.7	0.1
The former Yugoslav Rep. of Macedonia	0.9	3.2	0.3
Bangladesh	0.9	9.5	0.1
Grenada	0.7	-0.1	0.6
Philippines	0.6	4.8	0.1
Dominica	-0.7	-2.2	0.5
Central African Rep.	-1.2	-1.4	0.9
Cambodia	-1.7	2.7	0.2
Serbia	-4.4	-12.2	0.3
Montenegro	-22.4	-33.0	0.7



## APPENDIX 2: MODEL

Model selection:<sup>31</sup> clearly, the effect of commodity growth exposure on, for example, economic growth is moderated by a large number of other variables, many of which are included as control variables. The control variables used are intended to reflect:

- *Development level and growth*, which is captured by the level and growth of GDP per capita, in PPP-corrected constant dollars.
- *Human capital*, which is captured by life expectancy, and expenditure on health and education.<sup>32</sup>
- *Economic structure*, which is captured by the value-added shares of the non-primary sectors in GDP and investment shares in GDP.
- *Monetary policy* which is captured by the interest rate, credit and money stocks, and foreign debt as a share of GNI.
- *International trade and investment conditions*, which are captured by exchange rates and net FDI as a share of GDP.
- *Dependence on, and nature of, commodity exports*, which are captured by the share of commodity exports in total exports, and by the value of net food imports (or exports) scaled by GDP. By including commodity dependence (one component of the commodity growth exposure index) in addition to the index itself, it becomes harder to find significant results for commodity growth exposure. However, this component is included but not the other (growth in commodity revenues) because of its low correlation with commodity growth ex-

posure, thus avoiding multicollinearity problems. The coefficient for commodity growth exposure therefore reflects the effect beyond simple commodity dependence.<sup>33</sup>

To demonstrate how control variables matter, the regressions of economic growth (measured as the percentage increase in GDP per capita) on commodity growth exposure are shown with and without a varying set of control variables. Appendix table A.2.1 presents five model specifications, labelled a, b, c, d and e. These five models start with a simple regression beginning with the development level (model a); variables are then added sequentially to capture human and physical capital formation (model b), financial development and debt (model c), international financial position (model d), and economic and export structures (model e). This reveals, unsurprisingly, that the positive effect of commodity growth exposure on the percentage increase in GDP per capita is robust for all these variables. The size of the coefficient increases with more control variables added, which is better for approximating its real value. However, this is at the cost of a large reduction in the number of observations as more variables are added to the model, from 1,792 observations in the univariate model to 444 in the full model (e). However, this is theoretically the best model (with least omitted variable bias). There are no multicollinearity problems, as is clear from a variance inflation factor analysis (not shown here). Given the large number of controls in model (e), it also seems warranted to interpret the positive and very significant coefficient for commodity growth exposure (of 1.423) not just as a correlation, but as an indicator of causation. The evidence, then, is that commodity growth exposure has a stimulating effect on growth of GDP per capita.



**Table A.2.1. Effect of commodity growth exposure on income growth, with and without control variables**

Dependent variable: annual GDP per capita growth rate, per cent (in constant 2005 PPP-corrected dollars)<sup>a</sup>

Commodity growth exposure	Model a	Model b	Model c	Model d	Model e
	<i>0.687***</i>	<i>0.842***</i>	<i>0.889***</i>	<i>0.989***</i>	<i>1.423***</i>
	0.067	0.11	0.306	0.296	0.336
GDP per capita (\$)	<i>0.026***</i>	<i>0.027***</i>	<i>0.021***</i>	<i>0.021***</i>	<i>0.024***</i>
	0.001	0.001	0.004	0.004	0.004
Life expectancy (years)		0.533*	0.679	0.875	-1.002
		0.315	0.69	0.74	1.051
Gross capital formation/GDP		428.934***	444.090***	436.185***	487.761***
		35.042	75.73	92.801	110.872
Interest rate (%)			-4.129***	-4.498***	-4.666***
			0.947	0.978	1.063
REER (LCU/FCU) <sup>b</sup>			-0.26	-0.734*	-0.627
			0.336	0.38	0.417
Credit/GDP			-0.062	-0.141	-0.385
			0.266	0.266	0.295
Debt/GNI			-0.283**	-0.566***	-0.290*
			0.139	0.161	0.176
FDI/GDP				0.353	0.667
				1.757	1.905
Foreign assets/GDP				-0.912**	-0.950**
				0.408	0.431
Non-primary sectors/GDP					0.824
					0.612
Commodity dependence					-84.747**
					33.199
Net food exports/GDP					-1.02E+05
					107000
(constant) <sup>c</sup>	<i>-5.818***</i>	<i>-126.871***</i>	<i>-50.74</i>	<i>20.123</i>	<i>87.914</i>
	1.971	17.183	49.254	54.874	95.947
N <sup>d</sup>	1 792	1 234	469	463	444

Sources: UNCTAD secretariat calculations, based on World Bank, WDI database.

Notes: <sup>a</sup> Standard errors are in italics. One, two and three asterisks indicate a coefficient's statistical significance for  $p=0.1$ ,  $p=0.05$  and  $p=0.01$  respectively. All models are estimated assuming panel-specific heteroskedasticity.

<sup>b</sup> LCU/FCU=Local currency units per foreign currency unit.

<sup>c</sup> Most multiple regression models include a constant term, since this ensures that the model will be "unbiased" - i.e., the mean of the residuals will be exactly zero. In addition to ensuring that the in-sample errors are unbiased, the presence of the constant allows the regression line to "seek its own level" and provide the best fit to data.

<sup>d</sup> Sample size.

Table A.2.1 presents the average effect without distinguishing between time periods and income groups, even though the exploration above in section 2 suggested that these are important dimensions. Therefore the full model (e) (the economic and export structure model) was estimated separately for the periods 1995–2002 and the 2003–2009, and for the bottom two income quintiles (the poorest 40 per cent of the 142 countries each year in income per capita terms) and the top two income quintiles (the richest 60 per cent of countries each year). Thus the full model was estimated in four samples: the bottom 40 per cent in 1995–2002 and in 2003–2009, and the top 60 per cent in 1995–2002 and in 2003–2009. Table 4.1 in the chapter shows the observable effects for these subgroups.

The effect of commodity growth exposure was analysed for over 20 dependent variables, reflecting structural and financial effects. In the interest of presentation, not included below are the full regression output tables for each of the over 180 (5 x 20 + 4 x 20) models estimated. Instead, for the full model, the coefficient for commodity growth exposure, plus its standard error and level of statistical significance are presented in Table 4.1, section 3.3.

The results of Table 4.1 are interpreted first from an empirical perspective and then in theoretical and policy terms. The coefficients in the table are partial correla-

tions of commodity growth exposure with the variable in the first column, conditioned on a large number of other variables. By including many control variables, we increase the likelihood that the correlations reflect one-way causation – i.e. that they show the effect of commodity growth exposure on the variable in the first column (rather than only the correlation with that variable).

However, the strongest argument for one-way causality (from commodity growth exposure to the variable of interest) is theoretical. The variable under consideration is almost always unlikely to have an impact on commodity growth exposure in the same year. For instance, it is unlikely that the money stock has an instantaneous effect on commodity growth exposure, and in this case two-way causality is safely ruled out. Similarly, it is also unlikely that FDI has a direct impact on commodity growth exposure in the same year (though an effect after several years is more plausible). These are substantive (rather than statistical) arguments to interpret the conditional correlations in Table 4.1 as reflecting causal effects.

As Table 4.1 presents partial correlations, Table A.2.2 to A.2.4 below present the full regression results and specification for the following dependent variables: (i) foreign financial assets as a share of GDP (percentage change), (ii) debt service as a share of GDP (%), (iii) growth rate of GDP per capita and (iv) change (year-on-year difference) in the real effective exchange rate (REER).

**Table A.2.2. Dependent variable: share of foreign financial assets in GDP**

Periods	1995–2002		2003–2009	
	Bottom 40 per cent	Top 60 per cent	Bottom 40 per cent	Top 60 per cent
Commodity growth exposure	-0.043	0.042***	0.093***	-0.007
	0.036	0.013	0.026	0.008
GDP per capita (\$)	0.001	0	0.001	-0.000**
	0.001	0	0.002	0
GDP per capita growth rate (%)	0.018*	-0.003***	-0.006	-0.001
	0.009	0.001	0.011	0.001
Life expectancy (years)	-0.099	-0.024	-0.066	-0.023
	0.099	0.049	0.13	0.048
Gross capital formation/GDP	-7.124	-2.5	13.202	-5.723
	12.344	4.34	14.138	4.101
Interest rate (%)	-0.04	-0.047**	0.121	-0.002
	0.064	0.02	0.154	0.073
REER (LCU/FCU)	0.056**	-0.065***	0.009	0.002
	0.022	0.015	0.062	0.023
Debt/GNI	0.018	0	0.02	-0.020*
	0.013	0.012	0.02	0.011
FDI/GDP	0.107	0.218***	-0.101	0.02
	0.266	0.066	0.258	0.085
Non-primary sectors/GDP	-0.03	-0.097***	-0.027	-0.05
	0.052	0.037	0.071	0.039
Net food exports/GDP	13218.072*	13988.126**	10538.36	-12100
	7584.287	6553.464	14127.27	8400.232
(Constant)	9.311	18.398***	-1.184	9.444
	7.523	4.652	9.084	6.114
N	76	157	56	155

Sources: UNCTAD secretariat calculations, based on World Bank, WDI database.

Notes: Standard errors are in italics. One, two and three asterisks indicate a coefficient's statistical significance for  $p=0.1$ ,  $p=0.05$  and  $p=0.01$  respectively. All models are estimated assuming panel-specific heteroskedasticity. N: denotes sample size.



Periods	1995–2002		2003–2009	
	Bottom 40 per cent	Top 60 per cent	Bottom 40 per cent	Top 60 per cent
Commodity growth exposure	-0.004	0	0.007*	-0.001
	0.004	0.001	0.004	0.001
Life expectancy (years)	-0.013	0.008*	-0.027	0.038***
	0.01	0.005	0.017	0.006
Gross capital formation/GDP	1.129	-2.249***	0.936	-2.848***
	0.905	0.428	2.125	0.632
Interest rate (%)	0.011*	0.001	0.017	-0.021**
	0.006	0.003	0.02	0.01
REER (LCU/FCU)	-0.002	0.001	-0.018**	-0.005*
	0.002	0.002	0.008	0.003
Debt/GNI	0.008***	0.010***	0.013***	0.015***
	0.002	0.001	0.002	0.002
FDI/GDP	-0.019	0.003	0.029	0.017*
	0.015	0.006	0.035	0.009
Non-primary sectors/GDP	-0.004	-0.016***	0	0.003
	0.006	0.004	0.011	0.006
Net food exports/GDP	3080.950***	1746.042**	2159.755	-161.525
	736.99	771.841	1700.484	788.027
(constant)	-3.082***	-2.594***	-3.999***	-5.293***
	0.784	0.426	1.198	0.842
N	76	157	56	155

Sources: UNCTAD secretariat calculations, based on World Bank, WDI database.

Notes: Standard errors are in italics. One, two and three asterisks indicate a coefficient's statistical significance for  $p=0.1$ ,  $p=0.05$  and  $p=0.01$  respectively. Both GDP per capita levels and GDP per capita growth are omitted as they enter all models with zero, an insignificant coefficient. All models are estimated assuming panel-specific heteroskedasticity. N: denotes sample size.

Periods	1995–2002		2003–2009	
	Bottom 40 per cent	Top 60 per cent	Bottom 40 per cent	Top 60 per cent
Commodity growth exposure	0.987**	1.301*	0.087	3.982***
	0.428	0.718	0.203	0.73
GDP per capita (\$)	-0.01	0.013*	0	0.024***
	0.014	0.008	0.011	0.007
Life expectancy (years)	2.209	-1.235	0.112	-3.79
	1.346	4.081	1.591	4.17
Gross capital formation/GDP	264.119**	912.188**	93.693	772.704***
	107.555	356.607	124.35	257.503
Interest rate (%)	-0.528	-8.909***	2.36	-11.261**
	0.6	1.825	1.579	5.173
REER (LCU/FCU)	-0.174	-2.559***	-0.675	-3.979***
	0.211	0.877	0.617	1.305
Credit/GDP	-4.440***	-1.501***	0.849	-1.691**
	1.686	0.573	1.775	0.721
Debt/GNI	0.214	-0.63	-0.431***	-3.157***
	0.217	0.694	0.14	0.873
FDI/GDP	-2.59	6.571*	2.134	15.826***
	2.159	3.569	1.805	5.402
Foreign assets/GDP	-0.523	-3.350**	-0.362	-0.266
	0.404	1.625	0.376	1.228
Non-primary sectors/GDP	0.873***	1.7	0.476	2.703
	0.333	2.618	0.436	2.789
Net food exports/GDP	-2.39e+05**	2781.861	-136000	9.10e+05*
	101000	373000	90715.14	483000
(constant)	-123.341	305.289	22.406	724.390*
	84.501	335.297	121.165	410.444
N	76	157	56	155

Sources: UNCTAD secretariat calculations, based on World Bank, WDI database.

Notes: Standard errors are in italics. One, two and three asterisks indicate a coefficient's statistical significance for  $p=0.1$ ,  $p=0.05$  and  $p=0.01$  respectively. All models are estimated assuming panel-specific heteroskedasticity. N: denotes sample size.


**Table A.2.5. Dependent variable: change in real effective exchange rate**

Periods Income groups	1995–2002		2003–2009	
	Bottom 40 per cent	Top 60 per cent	Bottom 40 per cent	Top 60 per cent
Commodity growth exposure	0.092	-0.057**	0.157***	0.002
	0.068	0.024	0.053	0.009
GDP per capita (\$)	0.002	0	0.002	0
	0.003	0	0.002	0
GDP per capita growth rate (%)	0.009	0.005***	-0.004	0.006***
	0.012	0.001	0.016	0.001
Life expectancy (years)	0.184	-0.069	-0.318*	-0.190**
	0.178	0.065	0.163	0.083
Gross capital formation/GDP	-76.210***	4.482	-2.549	-7.946
	22.394	6.062	19.732	6.79
Interest rate (%)	0.250**	0.086*	-0.109	-0.188*
	0.121	0.047	0.298	0.113
REER (LCU/FCU)	0.064	0.078**	0.414***	0.254***
	0.049	0.036	0.132	0.044
Debt/GNI	-0.028	0.005	0.027	-0.058**
	0.024	0.015	0.025	0.023
FDI/GDP	0.801*	0.121	0.44	0.308***
	0.433	0.075	0.373	0.117
Non-primary sectors/GDP	0.099	-0.135**	-0.171***	0.061
	0.095	0.057	0.061	0.052
Net food exports/GDP	-16200	13890.145	24668.188	-7542.655
	12729.87	8478.682	15582.986	11303.344
(constant)	-22.746	5.489	-10.214	-14.597*
	14.099	6.989	14.63	8.741
	0.092	-0.057**	0.157***	0.002
N	0.068	0.024	0.053	0.009

Sources: UNCTAD secretariat calculations based on World Bank, WDI database.

Notes: Standard errors are in italics. One, two and three asterisks indicate a coefficient's statistical significance for  $p=0.1$ ,  $p=0.05$  and  $p=0.01$ , respectively. All models are estimated assuming panel-specific heteroskedasticity. N: denotes sample size.

## NOTES

1. Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, etc.); plant, machinery, and equipment purchases; and construction of public infrastructure (roads, schools etc.). Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales.
2. However, this could be pursued in future analyses to further enrich the research regarding the impacts of Dutch disease.
3. Heteroskedasticity refers to unequal variance in the regression errors. For example, where the standard deviations of a variable monitored over a specific amount of time is non-constant.
4. Available at <http://data.worldbank.org/data-catalog/world-development-indicators>.
5. In the sample of CDDCs, 14 transition economies are included. Summary statistics of this data set are presented in appendix 1.
6. This chapter presents and discusses unweighted sample averages.
7. According to the classification by the World Bank's WDI, "manufacturing" includes mining and public utilities; thus it may overstate the extent of transformation away from the primary sector (agriculture and extraction).
8. In this chapter, 2002–2003 marks a structural break in the time series, both for commodity price trends and structural variables.
9. Given the large changes in relative income positions over the period 1995–2009, the set of countries in each quintile may vary over time. The bottom (top) quintile for year  $x$  always contains the lowest-income (highest-income) economies in year  $x$ , but not necessarily in other years.
10. The GDP deflator is an economic measure that tracks the cost of goods produced in an economy relative to the purchasing power of the dollar. It measures inflation over time, similar to the consumer price index.
11. The HIPC Initiative aims to reduce to sustainable levels the external debt burdens of the most heavily indebted poor countries. Assisting these countries in achieving the MDGs requires the freeing up of additional resources, which the MDRI aims to do by providing full debt relief for some countries.
12. The analysis presented in this chapter covers the period before the global financial crisis caused a significant increase in the public debt of many developed and developing countries.
13. The REER is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs (2005 = 100) in a given year.
14. Foreign asset accumulation followed the same upward trend in poorer countries but was less than half the rich country level, which was 30 per cent of GDP in 2009.
15. FDI in the poorest quintile of economies was around 4 per cent of GDP in 2005, compared with the richest quintile economies which registered a rise to 8 per cent in 2005, and stabilized thereafter.
16. In creating the year-on-year growth variable the observation for the first year (1995) in the time series drops out.
17. The Syrian Arab Republic, for instance, experienced large food price rises and consequent food riots in early 2008, but these consumer impacts were different from the impacts on the structure of its economy and on its financial sector or its foreign financial position. With a commodity dependence of 0.81, but average annual growth of commodity revenues of only 8 per cent, this country is similar to Gabon, and scores 6.9 on our commodity growth exposure index, which puts it only in 70th place in the rankings (see appendix 1).
18. It should be noted that for five CDDCs in the sample, we report a negative commodity growth exposure. Thus a negative growth (i.e. decline) in commodity revenues times a positive share of commodities in total exports results in a negative value for commodity growth exposure. It appears that these five countries did not benefit from the boom in term of increased commodity revenues (see appendix 1).
19. Declining shares of social spending in GDP are not merely due to high GDP growth rates; spending in dollar terms was also observed to decline more in countries with high commodity growth exposure.



20. Including health and education variables was attempted, but this greatly reduced the number of observations. Note that most of the variations in life expectancy are between countries.
21. In response to the crises of 1998 and 2009, IFIs, such as the Basel Committee, the OECD, the Financial Stability Forum (FSF), the IMF and World Bank, have promulgated sets of international standards to regulate market behaviour (Claessens et al., 2003; UN Commission of Experts on Reforms of the International Monetary and Financial System, 2009). Also, since 2009 there have been many calls for developing countries to be better represented in international financial organizations (UN Commission of Experts on Reforms of the International Monetary and Financial System, 2009). The G20, even though it includes representation of developing countries, unlike the G8, still constitutes a club restricted to large and rich countries. Recognizing that this institutional reform process may be slow, the report of the UN Commission of Experts on Reforms of the International Monetary and Financial System (2009) focused on regional arrangements that many developing countries have begun to consider as an alternative option in case of failure to reform the global system.
22. These investment vehicles absorbed much of these countries' commodity revenues, and used them for investing in international financial markets. See table 3, which provides a list of developing and emerging countries with SWFs and their assets.
23. Since the REER is a measure of the value of a reserve currency against a weighted average of several foreign currencies (multiplied by a deflator), a decrease in the REER signifies appreciation – fewer local currency units have to be given up for one foreign basket unit.
24. Sterilization refers to the issuing of public debt by a central bank or treasury with the aim of absorbing excess liquidity (money supply) due to a surplus of foreign exchange. Some developing countries have followed such a strategy to meet tight inflation targets rather than to support the domestic development of productive capacities (Papadatos, 2009).
25. Akyüz (2008) argues that reserves impose costs only if they are derived from borrowing rather than from trade revenues.
26. See Extractive Industries Transparency Initiative at: <http://eiti.org/>.
27. UNCTAD (2009b) notes that South-South FDI in overseas land for agricultural production is primarily driven by food security concerns and remains in a cyclical upswing. The scale of some of these investments is large and controversial, as they have the potential to disrupt existing patterns of land use and production structures in the host countries.
28. For most of the nineteenth and twentieth centuries across sub-Saharan Africa, land laws have tended to protect private property, but have largely limited this to land with registered titles. For example, it is estimated, that in Africa formal tenure covers only 2–10 per cent of the agricultural land (Deininger, 2003: xxi; Deininger and Byerlee, 2010).
29. See Deininger and Byerlee (2010).
30. For a detailed discussion on how to reduce the vulnerability of an economy to Dutch disease in a context of increased aid flows, see UNCTAD (2006, especially pages 35–61).
31. A weighted least squares (WLS) type estimation was used, where each country (panel) is allowed to have its own error structure, and the weights are constructed by STATA so as to maximize fit. The analysis covered the period 1995–2009, which was then divided into two parts: 1995–2002 and 2003–2009; a panel regression was then estimated for each of the sub-periods. The estimated model draws on Newey WK and West KD (1987). A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix, *Econometrica* 55, 703–08.
32. Including health and education variables was attempted, but this greatly reduced the number of observations. Note that most variation in life expectancy is between countries.
33. The results of regressions excluding commodity dependence mostly increased the size and significance of the coefficient for commodity growth exposure.
34. Greater plausibility of causation may be obtained by more advanced estimation methods, such as accounting (controlling) for commodity growth exposure with an exogenous variable or estimating lagged models. But this introduces other problems (of instrument validity and a reduction in the number of observations, respectively), and is generally insufficient to rule out the main problem of endogeneity.

# PERENNIAL PROBLEMS, NEW CHALLENGES AND SOME EVOLVING PERSPECTIVES



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## 1. PERENNIAL PROBLEMS, NEW CHALLENGES AND SOME EVOLVING PERSPECTIVES

*The detrimental effects of commodity dependence on CDDCs are their high degree of exposure to shocks and the persistence of a poverty trap.*

*The overall impact of the commodity price boom has been limited.*

*Some developing countries, and especially those that are net fuel and net food exporters, saw their terms of trade improve during the period 2002-2008.*

Commodities are at the centre of the development process. Their production sustains the livelihoods of billions in the developing world, and they constitute essential inputs for a wide range of human and economic activities. Commodities are also an economically crucial resource for developing countries, providing export revenues and sustaining public expenditure. They continue to account for over half of most developing countries' total merchandise exports in value terms. Therefore, major changes in international commodity markets have a direct impact on the economic performance of these countries and on the well-being of their populations.

Early economic theories, going back to Adam Smith and David Ricardo, predicted that the differences between commodity production and manufacturing would result in a gradual improvement in the terms of trade for commodity producers over time. Similarly, early development economists saw commodity production as the engine of growth and diversification for most developing countries that possessed relatively abundant land and labour endowments.

These expectations have mostly failed to materialize. Terms of trade for commodity exporters have generally deteriorated over the long term. Moreover, with a few notable exceptions, commodity dependence has been associated with poor economic performance, and in some cases, civil conflicts and political instability. This commodity problem, as it has come to be known, has been attributed to a number of different factors. Falling terms of trade over a long period have been ascribed to structural differences in the labour markets of exporters of primary commodity and manufactures, among other factors that contribute to keeping commodity price increases low relative to those of manufactured products. Historically, commodity markets have also been prone to cycles, with short periods of boom giving way to relatively longer periods of bust. Beyond the medium- to long-term evolution of the terms of trade of these products, and the cyclical nature of commodity markets, there are a number of factors associated with the macroeconomic challenges involved in managing windfall commodity revenues, which partly explain the disappointing economic performance of CDDCs. Moreover, the detrimental effects of commodity dependence on development are closely related to economic vulnerability caused by an often excessive reliance of these countries on commodities as the main conduit for participating in world trade, resulting in their high degree of exposure to shocks and the persistence of a poverty trap.

Following decades of largely stagnating or falling prices, most commodities experienced rapidly rising prices from about 2003. This report has sought to establish the different ways in which this price boom affected CDDCs, and has examined these effects with reference to established theories concerning commodities and economic development. Overall, the rise in prices should have translated into increased export earnings for CDDCs (direct impacts). Provided the macroeconomic effects of these inflows were well managed, this windfall revenue should have helped CDDCs meet their development priorities (indirect impacts). However, the empirical evidence reviewed in this report suggests that the overall impact of the commodity price boom has been limited. This necessitates a re-examination of the commodities and development nexus to better reflect the current global context. In particular, how can the link between higher commodity prices, growth in the real sectors, and therefore sustained growth in incomes, be established or restored?

### 1.1. Main findings

Among developing countries, the direct impacts of rising commodity prices between about 2003 and 2011 varied widely based on the composition of the exports and imports of each country. Some developing countries, and especially those that are net fuel and food exporters, saw their terms of trade improve in the six years leading up to 2008. Several other developing countries, however, suffered a deterioration in their terms of trade. These included many of the poorest countries. Indeed, although they export other primary commodities, CDDCs are often net food and fuel importers. For some of them, the increase in the prices of the tropical agricultural products that make up the bulk of their exports was not sufficient to compensate for the increase in the import costs of food and fuel. The concrete outcome for these countries was a severely worsening trade balance, while their populations had to bear the higher costs of food and fuel.

The causes of the commodity price boom have been as complicated as some of its effects, such as the financialization of commodity markets, growth in developing-country markets of high-value agricultural commodities, supply and demand imbalances and climate change, among others. Among the most widely discussed causes has been the diversion of land and resources from food and animal feedstock production to fuel production, which has had the effect of pushing up food prices. For example, as a proportion of world maize consumption, ethanol use has increased sharply since 2003/04. But this is an immediate factor mainly in the maize (or corn) market, and so tends to have the greatest impact on food prices in those CDDCs where maize is the pre-



dominant staple food. Also, despite concerns raised about the potential impact of Chinese demand for commodities, this report shows that during the period 2005–2010 China's share of world imports was significant for several "hard" (mineral) commodities, but relatively small for most "soft" (agricultural) commodities. The "China effect" was therefore strongest in some of those commodities where prices rose the most, such as iron ore, copper and oil, but negligible in cereals and other arable crops (with the notable exception of soya).

However, the initial period of steadily rising commodity prices, including basic food commodities, placed the food security of poor households under stress and caused severe social unrest in several countries. It has been estimated that the food price crisis of 2008 caused an additional 119 million people to experience hunger, pushing the world total above the billion persons mark. This was followed by severe price volatility for many commodities during the period 2008–2011, over and above the usual volatility of commodity prices, which has posed a tremendous macroeconomic management challenge for all CDDCs. Such volatility makes it difficult for farmers and other suppliers to take optimal production decisions and serves as a disincentive for investment.

Beyond these direct effects, there are a number of indirect effects of the recent commodity price boom on CDDCs. These effects capture the nature and magnitude of the impact that the changes in revenue have had on various economic variables in these countries.

Overall, there is some indication that greater revenues from commodity exports led to moderate income growth, and that the effect was not limited to the agricultural sector; the manufacturing and services sectors also exhibited stronger growth rates. However, the respective shares of these two sectors in overall GDP fell due to a much higher growth rate of the primary sector. Therefore, the commodity price boom does not appear to have promoted economic diversification. Indeed, there is a paradox in expecting income growth from higher commodity prices to stimulate such change unless it is invested in strategic sectors, since diversification would help make economic growth less dependent on the commodities sector. It is therefore a difficult balancing act to prevent a strong commodity sector from building itself up and inhibiting the growth of other sectors. This is the essence of the Dutch disease, which, when combined with bad governance, can become a resource curse – a conundrum for economic development and policymakers.

Nonetheless, the fact that other sectors do not appear to have been negatively affected suggests that countries were able to avoid the Dutch disease ef-

fects that can accompany windfall revenues. This conclusion is strengthened by the finding that, overall, there was no evidence of exchange rate appreciation in CDDCs. One of the factors explaining the lack of appreciation pressure, in spite of CDDCs' increased revenues, is that these revenues appear to have been used largely for accumulating currency reserves, and for investing, particularly in foreign assets, notably through SWFs (in the richer countries in this category), as well as to meet external debt obligations. There was evidence of some debt reductions in the poorest countries as well as increased foreign investments after 2002, although part of the reductions in debt could probably be explained by the Multilateral Debt Relief Initiative that succeeded the HIPC debt relief initiative. The channelling of commodity revenues to international financial markets may have reduced pressures on the exchange rate, but this was at the cost of domestic spending and investment. This trade-off is particularly noticeable in the poorest developing countries. For many of them, the commodity price boom translated into only modest income growth and limited social and economic development. Indeed, spending on education even declined in this group of countries over the period 2003–2009. Moreover, for these countries the impact of the commodity boom was mainly evident in the large increases in their import bills, especially for food and fuel. Thus, the increased revenues generated by their exports of primary commodities did not greatly benefit their populations.

## 1.2. Severed link between higher export prices and domestic income growth

The tendency for countries to favour the reduction of external debt and accumulation of foreign assets over domestic spending and investment is strongly linked to the finance-driven globalization that has defined the past few decades. As international capital flows increased and developing countries were advised by donors and IFIs to liberalize their capital accounts, the economic stability of these countries began to depend increasingly on their ability to attract capital from abroad. Indeed, even during the commodity price boom the level of export revenues was dwarfed by that of net external financing, so that it was the capital account rather than the current account that determined countries' financial stability. Such financial stability has come to be seen as a prerequisite for growth, and explains why many countries have sought to accumulate foreign reserves at the cost of domestic real-sector investment. This is an aspect of the financialization of the world economy and of current development thinking that was unimaginable to the pioneers of development thought in the middle of the last century.

*The initial period of steadily rising commodity prices, including basic food commodities, placed the food security of poor households under stress and caused severe social unrest in several countries.*

*In the poorest developing countries, the commodity price boom translated into modest income growth as well as limited social and economic development.*



*Finance-driven globalization does not appear to be associated with a process of industrialization and structural change in CDDs.*

*The excessive influence on commodity markets of trading motivated by financial, not commercial, considerations should be curbed, at least for some key commodities.*

*CDDCs should seek to retain more of the end value of the commodities they produce.*

It is remarkable that the same logic of financial deregulation and the expansion of the role of finance in the development process also underpins many of the tendencies noted in the international commodity markets over the past decade. Since 2000, with the bursting of the dot-com bubble in the United States, there have been enormous inflows of capital into commodity markets. As noted in this report, this rapid financialization of these markets has contributed to rising prices, and especially to amplifying the volatility of commodity prices since 2003.

Finance-driven globalization does not appear to be associated with a process of industrialization and structural change (UNCTAD, 2011a). Thus there is need for a radical rethinking of the role of commodities in the development process. In the current context, and in the absence of corrective measures, CDDCs, especially the poorest ones, suffer from the high price volatility of commodities, while they are unable to benefit from increased revenues from commodities, as the link between higher export prices and income growth (via growth in the real domestic sector) has been severed. The prevailing theories which suggested that commodities could be an engine of growth for developing countries, provided the adverse macroeconomic effects of windfall revenues could be managed, may not fully apply in this new global context. The conceptualization of the commodities problem needs to be revisited to better take into account the constraints facing CDDCs due to finance-driven globalization.

### **1.3. Broad policy perspectives**

The recent commodity boom and its consequences for CDDCs also suggest a number of broad policy considerations. In the last couple of years, there has been increasing attention, particularly within the framework of the G20, to the issue of how to respond to the commodity problem discussed here. The inter-agency consultation process launched during the French presidency of the G20 in 2011 (and which is continuing under the current Mexican presidency of the Group) to discuss this issue and identify policy directions brought together 10 international organizations, including UNCTAD. This section does not intend to reiterate the conclusions or recommendations that have emerged from this process, nor comment on recent work on the issue (e.g. Farooki and Kaplinsky, 2012). Rather, it identifies some of the policy options that emerge directly from the discussion in sections 1.1 and 1.2 above.

First, the excessive influence on commodity markets of trading motivated by financial, not commercial, considerations should be curbed, at least for some key commodities. This can be achieved through a number of financial market regulations, some of which are already being implemented. These include

measures aimed at ensuring greater transparency and stability in futures trading, such as margin requirements and position limits. Other possible measures could be the imposition of price variation ceilings to prevent excessive price fluctuations over a given trading period.

At the national level, developing countries should seek a better balance between using their revenue in a way that improves their financial stability and investing it in the domestic economy for economic and social development. This requires that external debt levels and fiscal balances be kept at a sustainable level to maintain financial stability, while using some revenues for domestic investment, particularly in real sectors, in line with overall social and economic development objectives, and to stimulate domestic demand.

CDDCs should also seek to retain more of the end value of the commodities they produce. For minerals and fuels, this entails, among other things, revising their existing investment and/or mining regimes, including putting in place a more equitable and efficient taxation system for their extractive industries.<sup>1</sup> Many countries have already implemented such reforms following their growing confidence derived from the fact that the extractive sector may have become a “sellers’ market”, in the sense that power has switched to the sellers’ side, which means the sellers can dictate prices and other terms (Kay, 2011; Verma, 2011). The bargaining power of producing countries has therefore increased for the first time since the 1970s, as reflected particularly in the iron ore and copper markets (UNCTAD, 2011b; UNCTAD, 2012a). There are several options open to countries to take advantage of this situation, including the introduction of progressive taxation on profits, differentiated production taxes and export taxes. The policy choice should take into account the administrative and auditing capacities of their authorities.

In the case of agricultural commodities, countries can help by supporting their producers to improve their bargaining power with the international value chains in which they participate. The best way to achieve this is to promote collective action by producers, notably through the establishment of cooperatives, farmers’ associations and marketing boards. The development of market-based institutions, such as warehouse receipt systems and physical commodity exchanges, could also enable farmers to get better prices for their produce. Similarly, greater market transparency and the use of risk management strategies could transform small-scale informal agricultural undertakings into more efficient agricultural enterprises with increased profit margins. Countries could also seek to promote local processing of commodities in order to retain more value added, although this latter solution is



becoming more difficult as a result of the increasing complexity and internationalization of value chains. However, as noted by Farooki and Kaplinsky (2012), a critical choice for commodity-exporting countries is not to give in to “manufacturing pessimism” (i.e. allowing commodities to undermine manufacturing), but to shape policies that permit them to make the most of their commodities. It is still important for these types of economies to try to diversify towards manufacturing and services, particularly within the context of “the stepwise deterioration in real non-oil commodity prices with each super cycle, the mean being lower than the previous one” as observed by Erten and Ocampo (2012: 23).<sup>2</sup>

In order to avoid a repeat of the severe food crisis of 2008, poor countries also urgently need to establish some form of food reserve. As outlined in this report, the precise nature of these schemes can vary considerably according to local specificities. A mix of different instruments operating at different levels, such as local food storage backed by regional reserves, offers a good compromise. Alternatively, or in addition, a virtual reserve – a notional commitment to stabilize prices – could perhaps be set up at a regional level, in particular because the costs involved are much smaller relative to physical buffer stock management. This should be combined with strengthened protection for the most vulnerable and food-insecure segments of the population. Food security cannot be left to economic policy alone; it also requires social measures to provide the poorest families with the means to purchase food. Recent experience in several countries shows that this can be achieved relatively rapidly and at low administrative costs through a combination of cash payments along with support for local markets and communities.

## 2. DEVELOPMENT STRATEGIES AND REFORM OF THE INTERNATIONAL ARCHITECTURE

At the very least, the commodities boom has provided a welcome breathing space for CDDCs. However, whatever may be the future level of commodity export prices, their volatility has greatly increased over the past 10 years. But as stated above, it is not apparent that much diversification to national economies has occurred to reinforce the windfall gains to GDP from higher export prices. It remains to be seen whether the price boom indicates a long-term upturn in commodity prices or is merely the latest in an intermittent series of exceptionally large cyclical upturns, to be followed by years of depressed prices. Perhaps coincidentally, these big cycles have occurred at 30-year intervals, the last big spikes

in commodity prices having taken place in the late 1940s and in the 1970s.<sup>3</sup>

The essential development problem facing CDDCs is one of excessive reliance on exports to traditional markets. A country's commodity dependence implies a certain inability to control its destiny because of a reliance on markets for types of goods which are traded on global markets. It often reflects a high degree of economic vulnerability and evidence of limited diversification and structural transformation due to enduring problems of price volatility, and in particular due to non-tariff barriers to trade and to an excessive level of market concentration. Such a situation concerns countries that have nothing to trade except primary commodities, and in most cases tends to be an abiding inheritance from the colonial era. At that time, these countries' economic structures were developed to serve the needs of the colonial powers. This was especially true in Africa, due to this continent's late integration into the global economy and the character of its transformation which was initiated in the late nineteenth century by the European colonial powers. Tentative efforts to remedy this after independence were aborted by the experience of the 1980s debt crisis and structural adjustment in the 1980s and 1990s (UNCTAD, 2007).

This explains the continuing dependence of so many of the poorest countries on global commodity markets – a dependence that has actually increased under globalization, in two ways:

- Far from resolving the commodities problem for development, globalization has in effect compounded it. It has become an issue not just related to the export side of the poorest countries' trade but also to the import side. CDDCs have developed a growing dependence on imported commodities, especially cereals, fuels and the other inputs required by contemporary intensive agricultural practices. The price boom therefore had severe negative consequences for most developing countries because of the impact of the global price shock on domestic food prices and the profitability of domestic agriculture.
- Due to financial deregulation, it has become increasingly difficult to use higher commodity revenues to generate self-sustaining domestic economic growth and long-term social development, as discussed above.

The combined food, fuel and financial crises of 2008 therefore marked a turning point in the economic situations of CDDCs, just as much as the more widely discussed financial crisis which has affected the developed countries. The problem has been exacerbated by the financialization of the commodity markets, one aspect of which has been the increasing involvement of new actors, such as finan-

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cial players and traders, in commodities markets. This is a consequence of the slow shift in the pricing mechanisms of these markets, from long-term, fixed contracts to methods that create very sharp price fluctuations and therefore attract players who are motivated exclusively by financial gain. To quote the report of the Cannes B20 Business Summit, "In such markets, the importance of financial products grows exponentially, typically reaching gross volumes more than ten times that of the underlying physical markets. Trading volumes on the London Metal Exchange (LME) are between 20 and 30 times greater than physical production."<sup>4</sup> The historically low interest rates since 2009 seem to have added to this process and contributed further to price rises.

*The emergence of new "twists" to the commodity problem requires the direct engagement of all developing countries in its resolution.*

Partly because of the importance of the new "twists" to the commodity problem and the associated influences spreading from North to South, there needs to be direct input from representatives of all developing countries, and not only the G20, in resolving this problem. After all, it is the poorest countries that have tended to be the worst affected by both high and volatile commodity prices. And yet, after the crises of 2008, when the commodities issue became an important item on the international agenda, debate on potential policy responses was led by the G20. This group is more inclusive than the G8, as it includes emerging countries, such as Brazil and South Africa, and only India and Indonesia out of the 66 low-income food-deficit countries. However, none of the world's poorest countries, whether the 48 LDCs or the 35 defined by the World Bank as low-income countries, are represented. Future policy on trade in international commodities needs to consider the views of those countries whose economies are the most affected by that trade. This suggests that among the existing global country groupings the G77 should be directly involved, as well as regional organizations from the South. The considerable commodities-related expertise at the United Nations, especially at UNCTAD, FAO and the Common Fund for Commodities, could also provide significant input.

*Developed countries now share an interest in addressing price volatility, as they have experienced higher inflation as a result of the commodity price boom and might themselves seek ways to moderate prices.*

The situation also implies a need for at least some degree of reconfiguration of CDDCs' trade away from the current system based on unimpeded global markets over whose institutions they have little influence. Many countries in East and South-East Asia, the most successful subregions of the developing world, increasingly rely on their own subregions as a source of economic demand and transformation. They have benefited from the impetus provided by the earlier industrial breakthroughs of neighbouring countries – first Japan, then the Republic of Korea and the other newly industrializing economies of the 1980s, and more recently China and other, smaller countries in the region. However, the greatest concentration of CDDCs is in Africa, which do not benefit

from any local growth poles of industry and finance such as those of China and Japan. What can be done to substitute for them?

In this new context, it is necessary to rethink development strategies in order to maximize the gains to developing countries from the commodities trade, while drawing lessons from the unfulfilled promise of the commodities and development nexus which experts had forecast over the past 60 years. The following three lines of strategy are recommended for the CDDCs' consideration, together with certain changes in the international architecture that would be required to realize them:

1. Prepare for the possibility of falling commodity prices and a consequent decline in export incomes, government revenues and economic demand.
2. Rely on neighbouring countries' potential ability to generate autonomous economic development away from the pressures imposed by commodity dependence.
3. Harness the income gains from higher commodity prices to facilitate wider economic transformations and a reduced dependence on commodities.

These are discussed in more detail below.

1. *Prepare for the possibility of falling commodity prices and a consequent decline in export incomes, government revenues and economic demand.*

Whatever may be the general level of commodity prices in the future, volatility itself constitutes a serious danger. It benefits nobody except hoarders and speculators, who make profits on price movements. Developed countries now share an interest in addressing price volatility, as they have experienced higher inflation as a result of the commodity price boom and might themselves seek ways to moderate prices. For example, it was recently suggested that developed countries' central banks might wish to take positions on commodity markets in order to influence price movements, which would assist their task of controlling domestic inflation.<sup>5</sup> While central banks are not recommended here as the best agents for this kind of task, it should be possible to draw on both the public and private sectors, which have considerable experience, accumulated over many decades, in smoothing out prices at critical points along agricultural and mineral supply chains. This can take different forms, such as using physical or virtual stocks, controlling production and trade, and marketing arrangements, depending on the goals sought to be achieved and the possibilities provided by each market and value chain.

The best known model, which lasted from the 1930s until the 1990s, was that of international commodity



agreements (ICA), which were periodically negotiated between the leading exporting and importing countries. Overall, the ICAs were ultimately considered unsuitable, partly because of their one-size-fits-all nature in an area of the economy which is notable for the great diversity of its price formation systems and its patterns of supply and demand. Although many ICAs did achieve considerable success and might still be suitable for certain markets, no such prescriptive model is recommended. Each market and value chain needs its own particular type of arrangement or measures aimed at providing the greatest gains for participants in each case.

The architecture required for this task suggests a central role for international commodity bodies, which can research the kinds of market reforms that will provide the best possible defence against price volatility in each particular case, without giving any initial preference to one type of reform or another. The United Nations can play a wider role in developing innovative thinking in this area and coordinating efforts at reform on individual commodity value chains.

To provide urgent relief in the event of an import price shock, a related reform could be the establishment of a global countercyclical financing facility to support food-insecure countries, particularly LDCs. It should be able to rapidly disburse the funds it would have at its disposal because of the emergency nature of such needs. For the same reason, policy conditionality should be low and there should be significant concessionary elements. This would provide an important complement to an expanded system of food reserves, as recommended below.

2. *Rely on neighbouring countries' potential to enable economic development that is not subject to pressures imposed by commodity dependence.*

Intraregional trade can generate mutual gains for neighbouring countries that are at similar levels of development. This can avoid the problems that arise on global markets, of remoteness from final demand and the difficulties of market entry (as opposed to the formal possibility of market access), due, for example, to technical requirements such as rigid or very high quality standards. The intraregional approach thus helps countries to develop domestic businesses and accumulate capital domestically – in other words genuine, autonomous economic development. Over the past 50 years such mutual trade arrangements among countries at similar levels of development have benefited members, as in the EU, and, more recently, countries in East and South-East Asia. The growth of intraregional trade could enable countries to reduce the impact of global economic shocks such as the importation of food price inflation from commodity markets. It could also help to stimu-

late strong domestic and regional food and agricultural markets, the existence of which has provided an assured basis for economic activity in developed countries since the middle of the twentieth century.

In general, both public and private investment needs to be increased with the aim of boosting agricultural productivity and correcting the structural causes of food insecurity. The FAO has estimated that over \$80 billion a year in additional investment is needed in developing countries to solve the problem of food insecurity by 2050. Most of that will have to be from the private sector, but in many developing countries the initial push is likely to be from the public sector. Public investment can crowd in private sector investment in upstream and downstream activities such as supplying storage, transport and other facilities for food production.

At the same time, it would be useful to reduce reliance on the main globally traded crops (maize, rice and wheat), which have transmitted price shocks even in countries that had broadly secure food supplies. It is advisable to revive the production of other staple foods and to diversify agriculture more generally on nutritional and ecological as well as commercial grounds. It is also necessary to reduce imported inputs for agriculture, such as mineral fertilizers and oil, by adopting agroecological methods which do not use up scarce foreign exchange. In support of this, investment is needed in agricultural technology to raise food production levels in developing countries, including increased public spending on research and development. But the choice of technologies has to be considered carefully to reflect the specificities of each country or region.

Climate change is a growing constraint in many of the most food-insecure countries, for example in the Horn of Africa and in the Sahel region as well as in low-lying islands and delta regions in the Indian and Pacific Oceans. This is another reason for carefully considering the choice of agricultural technologies. The United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation (UN-REDD) is an important mechanism which seeks to mitigate or overcome this constraint on agricultural development.<sup>8</sup>

The following institutions and architecture could be considered for this purpose:

- The development of stronger regional economic blocs which adopt harmonized policies and standards, common external tariffs and preferential trade arrangements.
- An increased share in domestic and regional budgets for implementation of agricultural and food policies. The African Union could press harder for its members to allocate 10 per cent of

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*Research should focus on developing agroecological methods, especially those that apply to tropical agriculture and food production.*

*Regional policies for food reserves should help safeguard food security against future price shocks.*

*The G20 should explore the feasibility of a base metals market information system to encourage information sharing, improve data reliability, and enhance data analysis and market transparency.*

their domestic budgets to agriculture – a target that was set in the 2003 Maputo Declaration. Both the continent-wide Comprehensive Africa Agriculture Development Programme (CAADP) and domestic policies would be considerably strengthened if there were matching joint policies at the regional level in Africa – as is already happening in the area of food reserves. A similar goal is desirable in food-insecure CDDCs on other continents, if it does not exist already.

- In support of this, the creation of regionally based agricultural development banks or agencies that would pool the resources of member States to facilitate proactive agricultural policies is recommended. Alternatively, existing regional development banks, including the African Development Bank, could allocate a minimum level of their loan portfolio (5 or 10 per cent) to agricultural development. A global agency should also be set up, either separately or under the auspices of the FAO, to explore and coordinate new approaches in agricultural and food policy based on a revival of traditional cultures and the development of agroecology. It should work closely with farmers' and farm workers' organizations, especially regional ones such as the East African Farmers' Federation and the Network of Farmers' and Agriculture Producers' Organizations of West Africa (ROPPA), as well as global ones, notably the International Federation of Agricultural Producers and the International Union of Food (IUF) secretariat.
- Research should focus on developing agroecological methods, especially those that apply to tropical agriculture and food production. This should be undertaken by leading international institutions such as the International Institute of Tropical Agriculture (IITA), the World Agroforestry Centre and the World Vegetable Centre. The research work should be matched by a revival of agricultural extension, with an emphasis on farmer-to-farmer methods that facilitate the retention and adaptation of traditional knowledge relating to crops, production techniques and pest control – in other words, supporting the revival of long-established tropical methods for tropical agriculture. This will help reduce reliance on imported fuels, mineral fertilizers and agrochemicals.
- Regional policies for food reserves should help safeguard food security against the challenge of any future global food price shocks. The recent initiatives of the ASEAN+3 group and ECOWAS, discussed in chapter 3, provide contrasting models, both of which are well adapted to the specific conditions of their own regions.

- In contrast to agricultural commodities, price movements of energy, minerals, metals and ores tend to be determined by demand, and are closely linked to global industrial and economic activity. UNCTAD (2012b) has proposed, inter alia, that the G20 explore the feasibility of a base metals market information system to encourage information sharing, improve data reliability, and enhance data analysis and market transparency. There are already some intergovernmental commodity bodies, such as the three international study groups on copper, nickel, and lead and zinc, based in Lisbon, that have mandates to increase market transparency by promoting the exchange of information.<sup>9</sup>

In developing this architecture it would be necessary to consider its compatibility with existing international trade disciplines under WTO rules and agreements and elsewhere, including possible reforms of those rules where appropriate.

3. *Utilize the income gains from higher commodity prices to facilitate wider economic transformations and a reduction of dependence on commodities.*

This more traditional approach offers potential in two areas:

- Development of downstream commodity processing and commodity-related industries; and
- Stimulation of wider domestic trade and new economic sectors, including manufacturing.

These goals are necessary for development, whether the commodity boom continues or not. But the extra incomes provided by the boom provide an opportunity to finance such development. Indeed, many countries which have benefited from oil exports in recent decades have attempted similar strategies, with varying degrees of success. As discussed in this report, this process has also proved difficult for CDDCs during the recent boom. Nevertheless, there are several examples of countries, including Botswana, Malaysia, Mauritius, and particularly in recent years, Brazil, which have advanced as a result of commodity exports, and lessons can be drawn from their experiences. The new "architecture" or set of institutions recommended to support this strategy consists of the following:

- a. The establishment of economic development agencies alongside regional trade blocs, such as the Caribbean Community (CARICOM), MERCOSUR, SAARC, and others which cover various subregions of Africa (e.g. the African Union, East African Community, ECOWAS and SADC). Economic development strategies could then be pursued hand-in-hand with the development of regional trade, as discussed earlier. The re-



gional agricultural development agencies recommended above could form part of these wider agencies or be separate from them, in view of the special importance of resolving the food and agricultural problems.

- b. UNCTAD draws on nearly 50 years of experience in linking economic development with trade and, in particular, the commodities sector. It is therefore well placed to act as the lead global agency to provide guidance and coordination for this process.
- c. Revisit commodity-specific mechanisms which can assure exporting countries of a stable and sufficient share of the income earned along commodity value chains. This is a separate issue from the moderation of price volatility, discussed above. Such mechanisms might tie CDDCs to particular commodities in the short term, but with the benefit of ensuring adequate export incomes, which can then be more easily mobilized to plan for economic diversification in the longer term. An example of a country which made good use of such extended support for its main commodity export is Mauritius: It benefited from over 50 years of export guarantees for sugar under the EU-ACP Sugar Protocol and, before it, the former Commonwealth Sugar Agreement.
- d. Research and coordination in this area could be undertaken by the respective international commodity bodies, which already collate statistics and undertake other forms of coordination between participants in commodity chains, and have a sound knowledge of the specifics of the individual chains and associated commodity markets.

The proposed new architecture calls for some degree of reconfiguration of CDDCs' trade away from the current system based on unregulated global markets over whose institutions they have little influence. It would require a much stronger role for regional economic blocs, and regionally based agricultural de-

velopment banks or agencies, which together with other regional institutions could formulate economic development strategies based on: (i) the development of downstream commodity processing and commodity-related industries; and (ii) stimulation of wider domestic trade and new economic sectors, including manufacturing. At the international level, this new architecture envisages a greater and more coordinated role for the G77 (in addition to the G20), regional organizations from the South, and United Nations institutions that have considerable expertise on commodities issues, especially UNCTAD, FAO, and the Common Fund for Commodities, as well as international commodity bodies.

Convincing the national and international community of the need for some of the policy measures discussed so far will not be easy, in particular because of well-known practical difficulties that were encountered in previous attempts to achieve similar goals. However, the persistence of the problems of commodity dependence during the past three decades suggests that markets have not been able, and cannot be expected, to solve the problem alone; and perhaps more than other markets, commodity markets need a helping hand. Commodity cycles and price volatility are inherent aspects of commodity production and trade and will not disappear, no matter how desirable this might be. The commodity problem will continue into the future, in particular considering recent developments in global financial markets. It is now time to get all stakeholders involved in trying to find ways and means of coping with this problem. The problems are practical in nature and the search for solutions should consider all possible avenues, with no ideological preferences or preconceptions of what constitute the "right" methods or outcomes. It is only in this spirit that solutions will be found that could enable the majority of CDDCs to make the most of the cyclical and occasionally highly volatile commodity markets which are so important to their economic growth and to the security of livelihoods for their people.

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*The persistence of the problems of commodity dependence issues during the past three decades suggests that markets have not been able, and cannot be expected, to solve the problem alone.*



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## NOTES

1. This is already happening to some extent; for example, Zambia has increased its mining royalty rates for base metals and precious metals from 3 and 5 per cent, respectively, to 6 per cent for both (*Financial Times*, Special Report, 9 February 2012).
2. These authors are aware that manufactures, especially of the low-technology variety, are not immune to worsening terms of trade, but believe that the high price elasticity associated with them more than compensates for any such declining trend.
3. See chapter 2, for a discussion of the two more recent major price upturns.
4. G20 (2011), available at: [www.b20.fr/uploads/presse/Final-Report-with-with-appendices-B20-2011.pdf](http://www.b20.fr/uploads/presse/Final-Report-with-with-appendices-B20-2011.pdf): A55-A56 (accessed March 2012).
5. See *FT Alphaville blog*, 19 March 2012, 'A call for central bank action on commodity prices', at: <http://ftalphaville.ft.com/blog/2012/03/19/929081/a-call-for-central-bank-action-on-commodity-prices/>.
6. For a full discussion of this topic, see Lines (2007).
7. The importance of compensatory financing to address African commodity problems, in particular, was acknowledged in General Assembly resolution 46/151, paragraphs 31-32, at the 46th session, 18 December 1991.
8. For information on UN-REDD, see: [www.un-redd.org/AboutREDD/tabid/582/Default.aspx](http://www.un-redd.org/AboutREDD/tabid/582/Default.aspx).
9. In addition, UNCTAD produces an annual *Iron Ore Market Report and Statistics*.



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