United Nations TD/B/C.I/MEM.2/14

United Nations Conference on Trade and Development

Distr.: General
2 February 2011

Original: English

Trade and Development Board
Trade and Development Commission
Multi-year Expert Meeting on Commodities and Development
Third session
Geneva, 23–25 March 2011
Item 4 of the provisional agenda

Policy actions to mitigate the impact of highly volatile prices and incomes on commodity-dependent countries, and to facilitate value addition and greater participation in commodity value chains by commodity-producing countries

Note by the UNCTAD secretariat*

Executive summary

Commodity markets are inherently volatile, as demonstrated by the 2007–2008 cycle of boom and bust. To cope with such volatility, various international, regional and national support measures have been designed and implemented. This paper discusses commodity price instability and reviews some of these strategies employed by commodity-dependent developing countries (CDDCs) to mitigate the exposure to the risks of price volatility. It notes that it is important to understand the specific nature of commodity price volatility as a means of informing policy responses and designing suitable schemes to mitigate its adverse effects, in particular because a large number of CDDCs are highly dependent on a limited number of commodities for most of their export earnings. It concludes that it is necessary to continue exploring innovative ways at all levels in which price volatility, faced by CDDCs, could be addressed in order to and achieve self sustaining growth and development as a means of reducing poverty levels.

* This document was submitted on the above-mentioned date as a result of processing delays.

Introduction

1. The Accra Accord, in paragraph 92, states, "UNCTAD should enhance its efforts… to help commodity-dependent developing countries… to deal with trade and development problems related to commodity dependence". In this context, it should "assist commodity-dependent developing countries, particularly small commodity producers, in their efforts to: develop national commodity strategies, including mainstream commodity policies into their national and regional development strategies; build supply-side capacity and attain competitiveness; move up value chains and diversify commodity sectors; … and develop commodity financing and risk management schemes (including commodity exchanges)" (para. 93(a)).

2. The objective of this paper is to examine commodity price instability and to review the strategies employed by commodity-dependent developing countries (CDDCs) to mitigate the exposure to the risks of price volatility. It is important to capture the specific nature of commodity price volatility for informing policy responses and designing suitable schemes to mitigate its adverse effects. This will help in filling knowledge gaps, as well as updating and broadening our understanding of the initiatives used to mitigate exposure to commodity price volatility. It should also contribute to identifying new and more efficacious measures that could potentially assist CDDCs to manage price volatility more effectively and therefore limit the damaging impact it has on their development processes and prospects.

I. Commodity price volatility

3. Commodity prices have historically been among the most volatile of international prices and they tend to follow general business cycles of boom and bust. During periods of global economic expansion – for example, between 2002 and 2008 – the factors that drove prices were a combination of strong global demand caused by the increasing weight of China and other emerging markets in global commodity consumption,[1] a slow supply response and low inventories. Low stocks create tight markets thus reducing the market's ability to respond to unforeseen events, hence contributing to higher overall prices and increased price volatility. Bust or recession periods reverse demand levels below the supply constraints, causing the markets to swing from severe deficits to massive surpluses which cause prices to fall accordingly. Shifts in supply and demand (market fundamentals) are a key factor in explaining price movements over the medium and longer term supply levels

4. In addition to the fundamental factors explained above, the growing participation of financial investors in commodity markets has been intensely debated as a factor driving price volatility during the recent boom and bust in commodity markets. A number of studies have investigated the role played by these investors (speculators – hedge funds, sweep dealers, etc.; index investors – pension funds, etc.) in commodity markets, but the evidence on the extent of a relationship between an increase in the financialization of commodity markets is not conclusive. An UNCTAD report on the role of speculation suggests that the "acceleration and amplification of price movements can be traced for commodities as a group. Regarding the impact on individual commodities, some effect can

[1] A major factor in the current rise in demand for some agricultural commodities, particularly maize and sugar, is the heightened demand for biofuels, which is closely linked to developments in energy prices.

be observed in the oil market but it appears that most of the impact occurred in the smaller and less liquid markets for agricultural commodities".[2]

5. Other studies have argued that that spot prices cannot be influenced by financial investors because they "only participate in futures and related derivative markets, and that they will affect spot prices only if they take delivery and hold physical commodities in inventories".[3] Analysis by Goldman Sachs points out that "index investors have little, if any, impact on prices This is because index investors pursue commodity allocations for strategic diversification, and are effectively paid to take risk off the balance sheet of commodity producers, who derive little benefit from holding price risk. Accordingly, index investors provide little fundamental information to the market that would impact physical markets and, in turn, prices".[4]

6. Overall, while the evidence on the extent of the role played by speculative factors is not conclusive, it has been argued that speculation in the actual physical exchange of commodities influenced prices as speculators bought and stored commodities while betting on price increases. Such positions are bound to have resulted in a decrease in the supply of goods therefore directly affecting price movements.

II. Price volatility in agricultural, metals and minerals, and energy markets

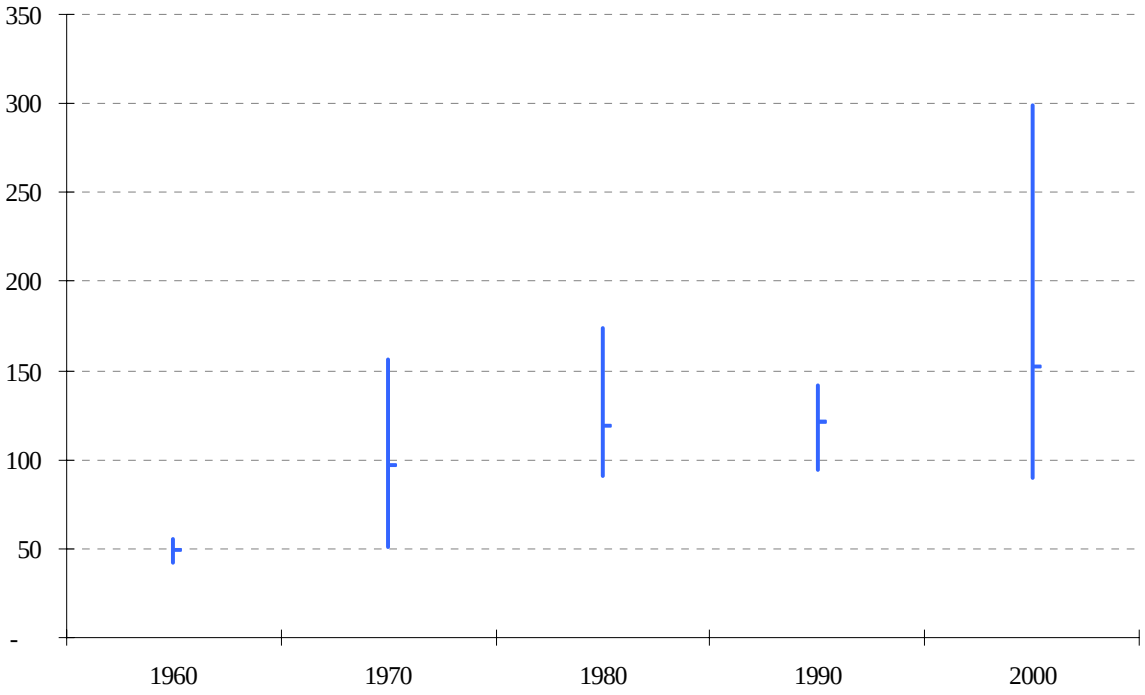
7. Over the last decade, price volatility of non-oil commodities appears to have increased significantly (see figure 1).

[2] UNCTAD (2009). *Trade and Development Report: Responding to the global crisis, Climate change mitigation and development*. United Nations publication. Sales No. E.09.II.D.16. New York and Geneva.

[3] Ibid.

[4] Strongin S, O'Neill J (2010). Global Economics Paper No: 194, Goldman Sachs Economics, March.

Figure 1
Historical instability of UNCTAD non-oil commodity price index (base 2000 = 100)



Source: UNCTAD, UNCTADstat.

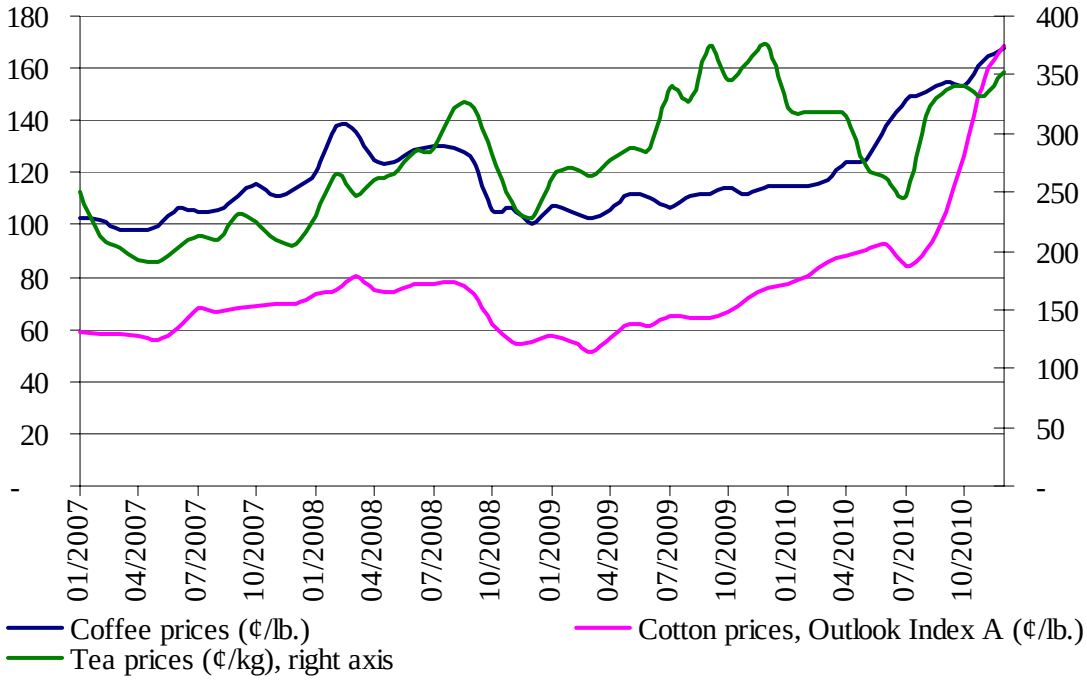
8. Individual commodities have shown remarkable price fluctuations. For example, coffee prices have jumped from $.64/lb. in 2000 to $.89/lb. in 2005, and skyrocketed to a 13-year high of $2.20/lb. in November 2010.[5] Tea prices also experienced high volatility during the period, rising by 29 per cent between July and October 2010.

9. In recent times, instability of cotton prices has also been extremely high. The Cotlook A Index averaged 57 per cent from August to October 2010, compared to 11 per cent over the same period in 2009/10, and 16 per cent on average over the same period in the last decade. This was the highest volatility recorded in the first three months of a season since the Cotlook A Index was published in the 1960s, and it has already exceeded the seasonal volatility of the A Index for the last 23 years.[6] (See figure 2.)

[5] Steve Suppan, a senior policy analyst at the United States Institute for Agriculture and Trade Policy, estimated that, from 2006 to 2008, a fifth of all coffee contracts were influenced by commodity indexes speculation.

[6] Outlook of world cotton market, issued on 1 November 2010 by the International Cotton Advisory Committee.

Figure 2
Price volatility in coffee, tea and cotton markets



Source: UNCTAD, UNCTADstat.

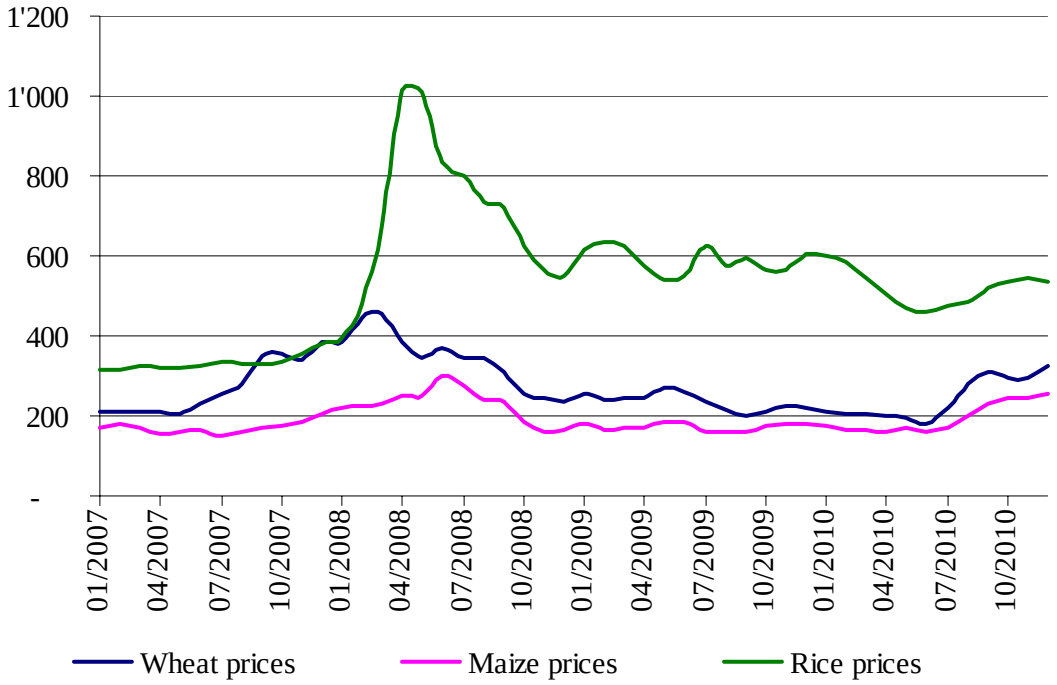
10. World sugar prices have been on a rollercoaster ride in 2010. After hitting a 29 year peak of nearly $.30/lb. in early 2010 and falling back to half that level over the second part of the year, sugar prices renewed an upward trend reaching $.30/lb. on November 9, 2010.

11. The cereals market[7] has also exhibited price instability in recent years. Wheat prices, for instance, by nearly 25 per cent in July 2010 and by more than 70 per cent between June and September 2010. Maize price increased by more than 50 per cent between June and October 2010,[8] while rice, a commodity for which no international futures price benchmark exist, went up by a "barely" 16 per cent (figure 3).

[7] The European Parliament resolution on the crisis in the EU livestock sector (B7-0607/2010) of 3 November 2010 recognized, inter alia, that "whereas wheat prices are 60 to 80 per cent higher than at the beginning of the season in July, whereas, however, prices are still one-third below their peaks in 2008, and whereas in the same period the price of maize increased by about 40 per cent", (…) "calls on the Commission, as a matter of urgency, to propose measures in order to stop the increase in feed costs and stabilise prices of feed on the internal market".

[8] In the case of sugar and maize, new potential sources of volatility represent factors that drive the demand for bio-fuels, among them oil price volatility. For instance, roughly 40 per cent of United States maize outputs (corresponding to around 120 millions tons) are currently produced for the biofuel industry.

Figure 3
Price volatility in wheat, maize and rice markets

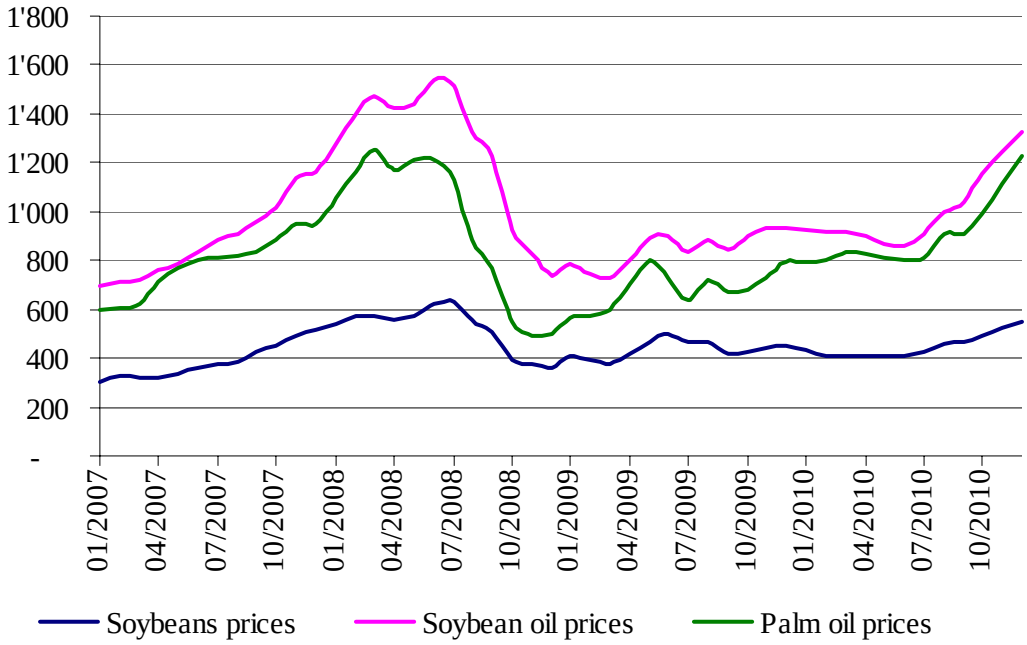


Source: UNCTAD, UNCTADstat.

12. Similar trends can be observed in other commodity markets such as soybean oil and palm oil which rose respectively by roughly 26 and 22 per cent between June and October 2010.[9] (See figure 4.)

[9] At the end of 2010, maize and soybeans were characterized by US inventory levels far below the critical stocks-to-use ratio of 10 per cent.

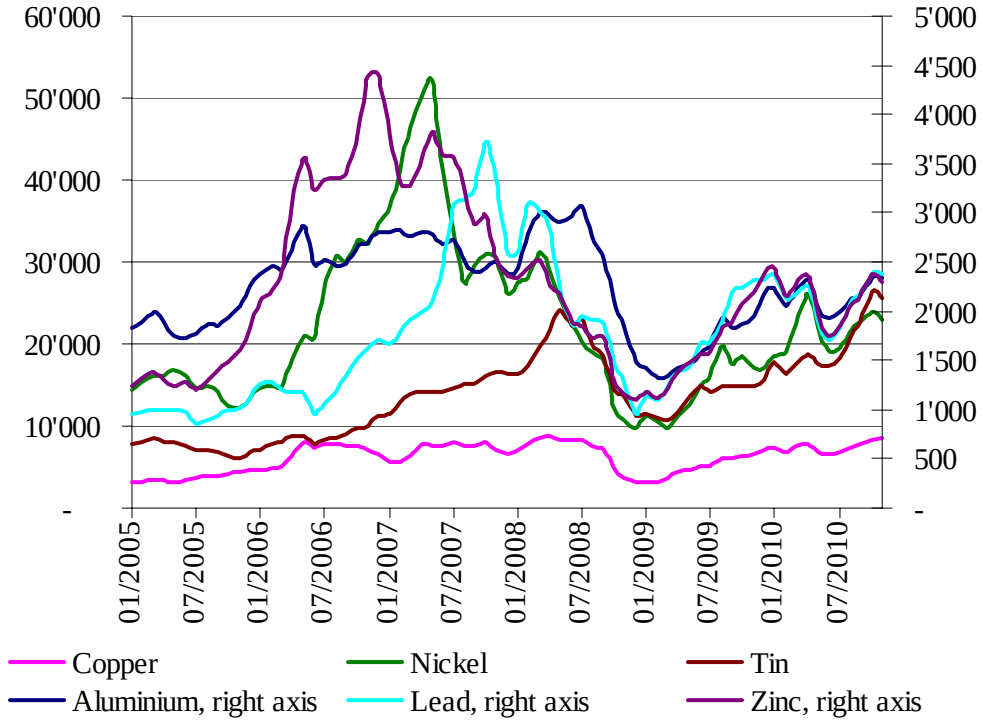
Figure 4
Price volatility in soy bean and palm oil markets



Source: UNCTAD, UNCTADstat.

13. Similar trend can be observed for minerals and metals as prices increased sharply over the same period (figure 5). For instance, between June and October 2010, tin, zinc, lead, copper, nickel, aluminium prices rose respectively by roughly 52, 36, 40, 27, 23 and 21 per cent. Despite very high level of aluminium stock (of roughly 4.3 in the London Metal Exchange) price increase was quite high, most probably influenced by a Chinese decision to restrict energy-intensive aluminium processing capacity (Chinese output account for around 40 per cent of world production).

Figure 5
Price volatility in the metal markets



14. High price volatility is also observed in energy markets. In December 1998, for example, oil prices slumped to a low of $11 from a high of $25 in January 1997. Oil prices steadily rose the following year and by November 2000, peaked at $34 before falling again to $19.31 in December 2001. From 2002, oil prices began a steady rise but in the last few years prices have entered into a new era of volatility. For example, oil surged from a price of $60 a barrel in 2006 to a high of $147.27 a barrel in 2008 before plummeting to below $40 a barrel in the first quarter of 2009. Prices have since regained some of their losses but are still well below the peak attained in 2008.

15. Natural gas prices show some correlation with crude oil but appear to be slightly less volatile because of the substitution effect between these fuels. However, short-term dynamics in the markets can result in considerable price variations. In the United States, Henry Hub, for example, one of the major regional markets where natural gas is traded, data show price movements during the 1990s within a narrow band. Prices followed an upward trend and rose form $1.70 per million Btu at the beginning of the decade and peaked in 1996 at $2.76 per million Btu before falling in 1998 to $2.08 per million Btu. Prices moved steadily upwards afterwards and by 2008 had more than quadrupled to $8.85 per million Btu in 2008. In 2009, prices fell by more than 50 per cent as the effects of the economic crisis took hold and sustained technology improvement now allows non conventional shale gas exploitation,[10] a revolution as gas began flooding the market.

[10] According to Cambridge Energy Research Associates, schist gas accounted for 20 per cent of United States output in 2009, against 1 per cent in 2000. The pursuance of this trend is foreseen by the International Energy Agency since it forecasted, in its World Energy Outlook 2010, that “around 35

Liquefied natural gas (LNG), which has a single worldwide market, also exhibited a similar roller coaster price movement, albeit less volatile during the 1990s. LNG prices quadrupled from $3.05 per million Btu in 1998 to $12.55 in 2008 before dropping in 2009 to $9.06 per million Btu.[11]

16. Analysts suggest that volatility recorded in the oil markets during the late 1990s was a result of a slump in demand driven by a period of slow economic growth following the Asian financial crisis. This caused a glut in the markets and pushed prices downwards. Cutbacks in production, recurrent underinvestment and a sudden pickup in demand reversed the downward trend but prices fell again in 2001. The recent price movements have been attributed to demand shocks and the financialization of commodity markets, where investors have moved in droves into commodities. The hypothesis is that speculative investments have contributed to the roller coaster ride.

17. To sum up, commodity price movements occur very frequently over time in small values but, occasionally, suddenly in large values or shocks. As previously analysed, over the last two decades commodity prices have risen sharply and declined, particularly from the early part of the 2000s to the latter part of the decade. Large increases of prices were recorded for several commodities but the global economic crisis caused the price movements in some of these commodities to reverse rapidly in the second half of 2008 and this continued through 2009 albeit in a relatively less volatile manner. But in 2010, commodity prices saw a return to rising volatility as the global economy recovered and concerns over risky assets and the euro zone debt crisis cause investors to flee back into the commodities sector.

III. Impact of price volatility on CDDCs

18. High commodity price volatility, if not properly managed, can have negative development implications on CDDCs. mainly because of volatile and uncertain revenue flows which can complicate not only fiscal management, but also budgetary and long-term planning. High price volatility also undermines CDDCs' development efforts as it could discourage investment, widen trade deficits and aggravate household poverty,[12] particularly as commodity sectors generally constitute the major source of livelihoods of millions for large sections of the population in low-income and least developed countries (LDCs).

19. Commodity price volatility could also lead to terms of trade fluctuations which could have profound negative effects on development. Many authors have highlighted real exchange rate volatility stemming from terms of trade volatility and the resulting negative impact on investment and growth,[13] increases in cost of foreign borrowing and the capacity to service such debt.[14]

per cent of the global increase in gas production [up to 2035] comes from unconventional sources – shale gas, coalbed methane and tight gas".

[11] BP Statistics: www.bp.com.

[12] Suryanarayana MH (2008). Agflation and the PDS: Some Issues, Indira Gandhi Institute of Development Research, Mumbai, April.

[13] Bleaney M and Greenaway D (2000). The impact of terms of trade and real exchange volatility on investment and growth in sub-Saharan Africa, Journal of Development Economics, Vol. 65 (20019 491-500, October).

[14] Catao L and Kapur S (2006). Volatility and the debt-intolerance paradox, IMF, Vol 53, No. 2.

20. Overall, commodity price volatility generates instabilities in economic growth if appropriate strategies are not designed to mitigate exposure to the risks associated with it. Thus, it is important to the review of schemes which have been used to address it with the objective of identifying their weaknesses and improving their effectiveness.

IV. Attempts in mitigating impacts of volatile prices and incomes[15]

21. Many attempts have been made to address commodity price volatility, both at the international and domestic levels.[16] The need to stabilize commodity prices, with a view to assuring returns that are considered as "remunerative" to producers is not a new concept in the development debate. Historically, however, two distinct trends have emerged, with respect to producers in the "North"[17]and those in the "South". The first serious consideration of commodity price variability in the post-Second World War period was the negotiations leading to the 1948 agreement on the Havana Charter (which was not ratified by member States). The approach enunciated in this Charter was to influence international commodity negotiations in the following decades, as the search for solutions to the problem subsequently shifted to the Economic and Social Council of the United Nations. The Council established an Interim Coordinating Committee for International Commodity Agreements (ICCICA) with responsibility for convening commodity study groups, recommending the convening of conferences to negotiate commodity agreements and coordinating the activities of study groups and councils administering commodity agreements. The Secretary-General of UNCTAD and developing countries prioritized this issue in agenda of first Conference of the new institution in 1964 in the midst of continuing downward trend in the terms of trade for commodity exporting countries combined with instability in commodity prices and revenues.

22. In general, these attempts have included measures to reduce price variability, and to increase mean price levels through specific interventions to control the supply of a variety of commodities. In the South, these have mainly revolved around the international commodity agreements (ICAs) for several agricultural commodities and the quota arrangements of the Organization of the Petroleum Exporting Countries (OPEC). Other strategies that have been employed to mitigate impacts of volatile commodity prices include (a) income support programmes to protect CDDCs from declines in export earnings; (b) market-based mechanisms; (c) revenue management schemes,[18] including

[15] This section, except as otherwise stated, is extracted from UNCTAD (2003) *Economic Development in Africa – Trade Performance and Commodity Dependence*, Sales no. E.03.II.D.34, New York and Geneva.

[16] The problematic of commodity price instability was already food for thought in the 1940s. In 1943, John Maynard Keynes included a commodity control organization in his well-known design for the Bretton Wood Institution.

[17] Volatility in national farm incomes arising from fluctuations in supply and demand of agricultural products has been at the centre of concern of industrialized countries for many years. Many industrialized countries have thus persistently pursued protectionist domestic agricultural policies, which prioritize income stabilization and protection of their farming populations at great financial cost. The discussion in this section is limited to those measure that have been adopted in the "Siuth" to address commodity price volatility. For a discussion of the historical background of agricultural protectionism in OECD countries, see Shonfield A and Oliver H (Eds.) (1976). *International Economic Relations of the Western World 1959–1971, Volume 1, Politics and Trade*, Oxford University Press, London: 292–303.

[18] IMF (2007). The role of fiscal institutions in managing oil revenue boom. March.

fiscal rules stabilization funds; (d) budgetary price forecasts; and (e) diversification and value addition programmes.

A. Supply management schemes – ICAs

23. Attempts by the international development community to develop a viable international commodity policy that addressed price volatility and stabilized incomes for producers were carried out within the framework of UNCTAD. These led to proposals for an Integrated Programme for Commodities (IPC) in August 1974, which was approved at UNCTAD IV in 1976. Subsequently, negotiations were launched on a basket of commodities. The idea then was to negotiate the establishment of commodity agreements with economic clauses that could – through their own resources as well as resources borrowed from a common financing facility to be established for this purpose – be able to finance buffer stocks in order to reduce price fluctuations, and stabilize prices at levels remunerative to producers. Negotiations with respect to such a facility were soon initiated, which later led to the establishment of the Common Fund for Commodities (CFC).[19]

24. Despite intensive negotiations for several years, the only new commodity agreement containing economic clauses that was negotiated within the context of the IPC in UNCTAD was the International Rubber Agreement. With the advent of a global recession in the 1980s and severely depressed prices, some existing commodity agreements (e.g. tin and sugar) were discontinued, while economic clauses in agreements such as coffee and cocoa were removed.

25. In the 1980s, intervention in markets was no longer deemed acceptable, or feasible in a context of global recession and subsequent decline of commodity prices as a whole, combined with the breakdown of multilateralism in international economic relations and the ascendancy of market-oriented strategies. Instead, the free play of market forces via price liberalization and deregulation was held up as promising the most efficient allocation of resources and welfare gains. The concept of international commodity price stabilization thus suffered a major setback.

26. Several reasons have been advanced in the literature why commodity agreements failed to function, or were simply impossible to negotiate. The first is that the breakdown of these agreements reflects the difficulties of influencing prices via output management, or other means, in a context of supply expansion due to productivity increases.[20] The second is the difficulty of agreeing to price ranges that would be "equitable" to producers,[21] or the difficulty of determining accurately a long-term price trend around which to stabilize prices. The third underscores the problems in coordinating the interests of different parties to the agreement, as well as the lack, or weaknesses, of enforcement mechanisms and the problem of free-riding.[22] On the other hand, it has been argued that these challenges, as serious as they may be, were not insurmountable had there been sufficient political will, backed by adequate financial resources, to make these agreements work.[23] For example,

[19] The Agreement establishing the CFC, which was adopted in 1981, entered into force only in 1989, with its first window designed to finance buffer stocks suspended.

[20] Reinhart CM and Wickham P (1994). "Commodity prices: Cyclical weaknesses or secular decline?" IMF Staff Papers, 41(2), June, International Monetary Fund, Washington, D.C.

[21] Gilbert CL (1996). "International commodity agreements: An obituary notice", World Development, Vol. 24, No. 1, pp. 1–19.

[22] Cashin P, McDermott CJ and Scott A (2002). "Booms and slumps in world commodity prices". *Journal of Development Economics*. Vol. 69, pp. 227–296; see also, Gilbert, op. cit.

[23] Rangarajan LN (1983). "Commodity Conflict Revisited: from Nairobi to Belgrade", Third World Quarterly, Vol. 5, No. 1, 1983.

while a commodity such as petroleum shares many of these difficulties (albeit of a slightly different nature) OPEC, through cooperation among its members (and with some non-members), has been able to maintain a certain measure of price stability in the market.

27. One of the main issues regarding price stabilization (excluding a food security consideration) is how to isolate the intrinsic characteristic of commodity price volatility. In other words, do commodity prices fluctuate around a trend, or does the trend itself fluctuate? In reality, it was not always easy to effectively differentiate between the notions of cycle and trend and, after recurrent debate, it was assumed that commodity prices were following a random (stochastic) trend and not a determinist one. Such a conclusion means that price shocks tend to have some permanent characteristics (i.e. resilient effects). Nevertheless, a large number of econometrical studies have suggested that different commodities (such as tea, banana, soy, etc.) tend to follow a determinist trend.

28. Supply management schemes have also been implemented via the establishment of Marketing Boards and "*Caisses de Stabilisation*". These organizations performed a role in stabilizing prices via national stockpiles and buffer stock facilities but were dismantled in the 1980s and 1990s under the structural adjustment programmes.[24] Apart from their role in stabilizing prices, they were important for providing ancillary extension services, including input provision, quality control, storage, product distribution services and credit. While some of these boards were indeed afflicted by a few problems, including governance and rent seeking, it is now widely recognized, in hindsight, that clearly defined policies that addressed these problems would have been better than outright scrapping.[25]

B. Oil supply management – OPEC

29. The objective of the Supply management scheme by OPEC is to ensure "stabilization of prices in international oil markets with due regard being given to the interests of the producing nations and to the necessity of securing a steady income to the producing countries".[26] To achieve this objective, quotas are periodically adjusted to market conditions. Despite some problems of quota enforcement and of free riding, OPEC's supply management generally helped to relatively stabilize world oil prices, thus increasing the foreseeable nature of export earnings and smoothing income to producers. Dialogue between suppliers and consumers has also been used to control supplies to the market and the tightness that contributes to instability in prices.

[24] In fact, due to fiscal constraint and generally unhedged exposures to commodity price risk, it was difficult for developing countries to provide any safety net service to their farmers such as the one of the Canadian Wheat Board for non-feed wheat and barley.

[25] This problematic was already identified by UNCTAD in the 1990s. For instance, in May 1998, UNCTAD's Trade and Development Board (TD/B/COM.1/EM.5/L.1) agreed that "the withdrawal of the government had led to some gaps in the services provided to producers and others active in the commodity sector. …" The meeting therefore recommended the use of other mechanisms such as commodity price risk management and warehouse receipt finance, among other things. See also UNCTAD, 2003, Op cit.

[26] http://www.nccr-trade.org/publication/oil-supply-managment-practices-the-organization-of-petrloleum-exporting-countries-opec-under-the-w/.

C. Income support programmes

30. Compensatory financing facilities,[27] designed to compensate for shortfalls in income and short-term price shocks, have not fared any better than ICAs, in part because many commodities, until arguably during the 2007–08 boom, suffered from secular price declines. The best-known examples of compensatory finance are (a) Contingency and Compensatory Financing Facility (CCFF) of the International Monetary Fund (IMF) (1988), proceeded by the Compensatory Financing Facility (CFF), which commenced in 1963; and (b) the European Union's Stabilization of Export Earnings (STABEX).[28]

31. The objective of the CCFF was to smooth the effects of a temporary, exogenously caused shortfall in merchandise export receipts below the medium-term trend in a particular country. It sought to provide countries lacking either sufficient reserves, or the capacity to borrow externally, with the capacity to smooth the path of national consumption in the face of a temporary shock to export earnings. The eligibility requirements for access to the compensatory financing element of the CCFF include (a) a *temporary* export shortfall and/or excess cereal import, which is attributable to factors largely beyond the control of authorities; (b) the country having a balance of payments (BoP) problem; and a (c) willingness to cooperate with the IMF to address the problem.

32. STABEX was introduced under Lomé I (1975–1979) to act as part of a comprehensive international commodity policy, based essentially on good functioning of ICAs. It was to compensate the African, Caribbean and Pacific (ACP) countries' shortfalls in export earnings due to fluctuations in the world price or domestic supply of agricultural commodities. Compensation payment was triggered if there was a loss of export earning to the European Union (EU) relative to a four-year trend. The scheme underwent a number of changes since its inception, including an increase in the number of products covered, compensation conditions and derogation clause, among others.

33. Such schemes are predicated on the assumption that temporary shortfalls in export earnings will be self-reversing. It is, however, difficult to distinguish between temporary and permanent shocks, as even those considered temporary might turn out to be of a long-term duration. These facilities were also cumbersome, pro-cyclical or too expensive to use

34. Income support programmes, while pursuing goals similar to those of compensatory mechanisms, provide a protection against sharp drops in export earnings, considering commodity price aspect as well potential decline in yields. The United States, for instance, created the Risk Management Agency (RMA)[29] in 1996 to administer Federal Crop Insurance Corporation (FCIC) programmes and other non-insurance-related risk management that help support domestic agriculture. Programmes are generally based on the sale of crop insurance via licensed private contractual brokers, but FCIC ensures the backing by providing reinsurance facilities (subsidies). Such a scheme combines yield and price coverage or in other words, protects against potential loss in value due to a change in market price during the insurance period, in addition to the perils covered by the standard loss of yield coverage (e.g. due to diseases, droughts or floods, etc.).

35. More traditional crop insurances generally only take into account yield risk (protecting against "physical" loss that may occur during the crop year), but they can be combined with price risk mitigation mechanisms to ensure full protection. A few countries

[27] The discussion of these schemes is based on UNCTAD, 2003, *op. cit.*, pp. 35-37.

[28] Two other compensatory financing schemes are the EU's System for Safeguarding and Developing Mineral Production (SYSMIN) and the Swiss Compensatory Financing Programme.

[29] http://www.rma.usda.gov/.

– such as South Africa, Ethiopia, Kenya and Malawi[30] – presently use crop insurance schemes, but with climate change exacerbating this type of risk, the relevance of these schemes is likely to become increasingly important and will likely be hotly debated in the foreseeable future.[31] An initiative to develop such a risk-pooling scheme in Caribbean countries (e.g. for coffee in Jamaica) is under consideration and may be backed by Caribbean Catastrophe Risk Insurance Facility which currently does not cover agriculture.

D. Market-based mechanisms – financial instruments

36. Among the many options available for mitigating the commodity price risk, the least used are market-based instruments. The hedging instruments used range from the basic types such as forward contracts,[32] futures,[33] options,[34] to complex combinations (e.g. collars, over-the-counter, tools, among others.) depending on the end user's strategy to shift risk.

37. Commodity producers in developed countries are increasingly relying on hedging programmes to mitigate the exposure to price volatility. But the extent of hedging in developing countries remains limited, even though the risks faced are high. A few countries, however, have used market-based instruments to mitigate the income risks. For example, Mexico hedged, via options, all of its oil sales for 2009 in 2008 at a strike price of $70 a barrel when the oil price was $100 a barrel.[35] The cost of purchasing options at $1.5 billion enabled the programme to make a savings of more than $5 billion.[36] Mexico has spent nearly $1.2 billion on purchasing options to hedge 230 million barrels of oil exports in 2010 at $57 a barrel, the second year in a row the nation has done so to protect government spending from price fluctuations.[37] Also using options, coffee millers in Costa Rica propose a minimum price guarantee to the farmers.[38] The advantage of market-based instruments is that they can be combined (or with other schemes such as warehouse systems or crop insurance) to build a tailor-made strategy.

[30] In 1995 the European Union established TARSIM, a management entity to provide, in partnership with a pool of insurance companies, crop insurance facility (backed by government contributions, subsidizing part of the insurance premium).

[31] Derviş K (2008) "Given that mitigating climate change requires investment, how much should we invest and when?" The Climate Change Challenge, UNU World Institute for Development Economics Research Annual Lecture 11.

[32] Forward contracts are agreements to buy or sell an asset (e.g. crude oil) at a certain time in the future and at a certain price fixed or a price predetermined by a formula at the time of delivery to the location specified in the contract.

[33] A futures contract allows a buyer to accept and a seller to deliver a given quantity of a particular commodity at a specified place, price and time in the future. It is another form of forward contract that has been standardized for the amount to be delivered or bought.

[34] Options are financial tools that allow the holder the right to buy or sell an underlying asset at a certain price known as exercise or strike price and a specified quantity by a certain date, but is under no obligation to do so.

[35] http://www.eeri.eu/documents/wp/EERI_RP_2010_23.pdf.

[36] Ibid.

[37] Ibid.

[38] An introduction to market-based instruments for agricultural price risk management, FAO working document, 2006 by Myong Goo Kang and Nayana Mahajan as well as farmers and farmers' association in developing countries and their use of modern financial instruments, UNCTAD study, (UNCTAD/ITCD/COM/35) 10 January 2002.

38. The main reason for the low use of financial instruments is the lack of familiarity on the part of both private sector operators (especially farmers and exporters) and, in a few instances, the lack of interest from government officials. Using financial instruments in hedging requires technical and managerial expertise and an institutional framework that ensures adequate reporting, recording, monitoring and evaluating mechanisms. Furthermore, it is also necessary to establish internal control procedures that avoid and protect against speculative transactions.[39] Additional reasons that have impeded the adoption of these schemes in several CDDCs include misconceptions (e.g. confusing hedging with speculation), suspicions fuelled by negative publicity, political costs of hedging arising from loss of scarce foreign exchange, and the costs of implementing the hedge, as well as sovereign risk, regulatory and institutional barriers, and creditworthiness problems that make it difficult for developing countries to access financial markets. The last particularly so because of the limited number of (unsophisticated) financial products and the shallowness of the financial sector in several poor CDDCs.

39. It is generally claimed that market-based instruments can play a fundamental role in building tailor-made facilities to address commodity price instability, both at the macro and micro levels. However, it is doubtful if the futures markets are as suitable for addressing problems emanating from price variability as they are for reducing uncertainty in revenue flows. This notwithstanding, futures sales do allow governments to eliminate uncertainty associated with variability over an annual time horizon. On the other hand, while this could increase the collateral value of commodity stocks and permit budgetary control, it does not amount to revenue stabilization or altering the terms of trade in favour of commodity exporters.[40] The futures market is certainly not the correct instrument to address the issue of long-term decline in commodity terms of trade for CDDCs. It is best suited to managing risks resulting from short-term movements in prices. These instruments have clear limitations and, in the short term, their widespread use for commodity risk management is unlikely in Africa without technical assistance in building the required institutional infrastructure, experience and expertise.[41]

40. The increasing level of speculation has also created new anxieties for policymakers and has drawn attention to the need for proper legal and regulatory framework that should be adopted to avoid excessive price swings resulting from high levels of speculation. A set of measures to regulate futures exchanges and over-the-counter markets and improve transparency have been proposed as a means of curbing index-based speculation. This has led to the passing of the Dodd–Frank Act in the United States, which "requires the CFTC to place limits on the number of commodity futures, options and swap contracts that any one speculative trader can hold at a given time to prevent one company from controlling too much of the market. The law requires the CFTC to place limits on commodity contracts traded across all derivatives markets that play a role in setting market prices."[42] Domestic initiatives are clearly useful as a starting point, but frequent consultations and effective coordination – including with developing countries, particularly those with emerging futures exchanges and over-the-counter markets – would be useful in developing effective and efficient regulatory mechanisms that address excessive speculation on commodity markets.

[39] Claasens S (1992). How can developing countries hedge their bets? Finance and Development. September 1992.

[40] See Gilbert, 1996, *op. cit.*

[41] UNCTAD (2003). *Op. cit.*, p. 47.

[42] http://online.wsj.com/article/SB10001424052748704828104576021581553616562.html.

E. Revenue management

1. Fiscal rules

41. Fiscal rules or institutional mechanisms designed to enhance the robustness of fiscal policy design and implementation[43] can play an important role in improving the resilience of CDDCs vis-à-vis natural resource price shocks by contributing to reducing procyclical fiscal policies and related "Dutch Disease" in CDDCs. In some countries, fiscal rules often have constitutional or legal requirements, such as fiscal responsibility legislation,[44] but in others, the rules are laid down on an informal basis as guidelines.

Box 1. Nigeria's fiscal rule

Nigeria adopted its fiscal rule in 2004, to allocate revenues above a Government-established benchmark price of oil and volume of production to a special account called "Excess Crude Account". The objective of this account was to decouple expenditure from the fluctuations in oil revenue, stabilize expenditure programmes and control the size of deficits.[1] At the end of 2004, the surplus account had a savings of $5.1 billion recorded, which increased by 239.2 per cent to $17.3 billion in 2007. However, the steep fall of oil prices from its peak in mid-2008 as well as a political agreement in 2007 to draw down some of the accumulated savings revenues as per the constitution, and share between federal, state and local governments drained the savings made in the account. Extreme oil prices in 2008 helped to swell the account to $20 billion but dropped in consecutive years to $1.16 billion in 2010.[345] It is estimated that as much as $30 billion of surplus revenues has flowed out since the new agreement was signed, partly in regular payments to state governors, and partly in federal spending on infrastructure.[46] A legally binding framework has been proposed for a Sovereign Wealth Fund (SWF), which is expected to replace the crude account. The SWF will be used to support budget expenditures acting as a stabilization fund and at the same time a savings account for the future. Similar funds have been established in several countries around the world. (See table below.)

Sovereign wealth funds backed by commodities				
Country		**Amount**	**Creation**	**Source**
Libyan Arab Jamahiriya	Reserve Fund	50.0	n.a	Oil
Oman	State General Stabilization Fund	8.2	1980	Oil & Gas
Chile	Economic & Social Stabilization Fund	6.0	2007	Copper
Norway	Government Petroleum Insurance Fund	2.6	1986	Oil
Azerbaijan	State Oil Fund	1.5	1999	Oil
Timor-Leste	Timor-Leste Petroleum Fund	1.2	2005	Oil and Gas

[43] Ossowski R, Villafuerte M, Medas PA, Thomas T (2008). Managing the oil revenue boom: the role of fiscal institutions, IMF.

[44] IMF (2007). The role of fiscal institutions in managing the oil revenue boom, March.

[45] Wallis W (2010). Rainy day fund runs dry, FT.com. London: 29 September.

[46] Ibid.

Source: Deutsche Bank Research, September 2007 / Kern (2007) / Banque mondiale (2006) / OCDE 2008 ; amount is in $ billion.
1 IMF Country report No. 08/64, February 2008.
2 http://www.swfinstitute.org/fund/nigeria.php.
[3] Wallis W (2010). Rainy day fund runs dry, FT.com. London: 29 September.

42. A number of CDDCs have adopted fiscal rules but they have faced numerous challenges in making them work. For instance, a problem exists with rules that are designed to target overall or primary balances as they could result in transmitting commodity fluctuations to expenditure and to non-commodity balance.[47] Furthermore rules for accruing revenues to a special account have been repeatedly changed or challenged as to the legality of their existence.

43. Another problem is how to ensure tax recovery. For instance, in 2008 Zambia[48] decided to raise taxes on mining companies (as copper and cobalt account for more than two third of national export earnings), introducing a 25 per cent windfall tax and raising the mineral royalties rate to 3 per cent. However, some mining companies did not comply with such a resolution, leading to USD 300 millions in taxes in arrears. An agreement was reached on November 2010, in which mining companies agreed to pay their back taxes and Zambia pledged to keep tax rates for mining industry unchanged for at least 10 years.

2. Stabilization funds

44. Price stabilization funds have been established and operated by several CDDCs to help reduce the fluctuations in budgetary revenues. The fund accumulates revenue above a reference value during boom periods and allows for transfers to be made to the budget or the economy during the bust periods. The aim is to smoothen spending over the boom–bust cycle and avoid sudden changes in spending, for example on capital expenditure, and financing of public services, such as health, education and basic infrastructure, which could have severe consequences for budgetary discipline.

45. Fiscal stabilization funds have been used by a number of commodity exporting countries for some time and have been the subject of interest for many developing countries in this era of increased volatility and uncertainty in revenues. The Bolivarian Republic of Venezuela set up a Macroeconomic Stabilization Fund in 1998 with the aim of "preventing fluctuations in petroleum-related income from affecting the country's necessary fiscal, exchange rate and monetary balance"[49] The legal framework supporting the fund has changed a few times and at times the operations of the fund were suspended to reconcile differences between overall fiscal policy and asset management.[50] Mexico also established an oil income stabilization fund in 2000 for the purpose of protecting budgetary expenditure from volatility in oil revenue and movements in the national currency–dollar exchange rate. However, it ran into difficulties because the low cap in savings was unable to completely cover gaps during a significant shortfall. The fund is also used, among other activities, to

[47] Ossowski R, Villafuerte M, Medas PA and Thomas T (2008). Managing the oil revenue boom: the role of fiscal institutions, IMF.
[48] A country in which there was often policy failures to address the impact of copper and cobalt price boom–bust shocks.
[49] Clemente L, Faris R, Puente A (2002). Natural resource dependence, volatility and economic performance in Venezuela: the role of a stabilization fund, February.
[50] http://www.imf.org/external/pubs/ft/wp/2010/wp10251.pdf.

create ways of enhancing the country's hedging strategy against price risk through the use of derivatives.[51]

46. A number of challenges can arise when operating stabilization funds thus making it difficult to operate them successfully in CDDCs. These challenges include keeping rules for the operation of funds unchanged since operating rules can be easily amended and resources used for purposes other than those originally stipulated. This is particularly so when there is a large and unanticipated increase in revenue accruing to the fund,[52] and the possibility of establishing a parallel budget mechanism which has less oversight than the regular budget becomes attractive.[53] Also, weak institutional frameworks in developing countries do not always allow for the funds to be managed in a transparent and accountable manner, and to perform in the way they should – that is, in providing countercyclical stabilization. This is exacerbated by uncertain revenue streams, the difficulty in predicting the magnitude and duration of commodity price shocks, and consequently in effectively employing countercyclical stabilization policies.[54]

47. Developing country experience of stabilization funds has shown that transparency and accountability are essential in making them work effectively. An inclusive multi-stakeholder approach such as the Extractive Industries Transparency Initiative[55] involving the private sector and civil society organizations, has helped in promoting transparency, accountability and governance in the use of these funds in some countries as well as in uncovering financial irregularities which contribute to the demise of these funds. In other oil- and gas-dependent countries, information on the operations and financial position of the fund is kept secret. This lack of transparency has contributed to the collapse of many stabilization funds in several developing countries. Improving the performance of these funds can benefit from regular reporting on their revenues, commitment to EITI, investment strategy and performance, and transfers to the national budget.[56]

3. Budgetary price forecasts

48. Most commodity-producing countries have a policy to use conservative estimates of commodity prices when forecasting revenues in budgeting. Such assumptions are viewed as a prudent way to reduce the risk of a large deficit or fiscal adjustment in the event of an unanticipated decline in export revenue. For example, in 2004, 2005 and 2006, estimates used in Nigerian Government budgeting were based on conservative oil prices that were 75 per cent less than the actual realized at the end of year.[57] According to the World Bank, this rule enabled Government expenditures to be delinked from commodity revenue earnings. It also limited transmission of external shocks into the domestic economy.[58] The downside,

[51] McCallion P (2010). In crude health, Energy Risk. London: February.

[52] Jimenez JB and Tromben V (2006). Fiscal policy and the commodities boom: the impact of higher prices for non-renewables in Latin America and the Caribbean, CEPAL Review, December.

[53] Ahmad E and Mottu E (2002). Oil revenue assignments: Country experiences and issues, IMF Working Paper, WP/02/203, November 2002.

[54] Cashin P, Liang H and McDermott J (1999). Do commodity price shocks last too long for stabilization schemes to work? Finance and Development, Volume 36, Number 3, September 1999.

[55] http://siteresources.worldbank.org/INTSDNET/Resources/5944695-1254248728084/IDA_EITI_2010.pdf.

[56] http://www.treasury.gov.au/documents/1783/HTML/docshell.asp?URL=05_SWFs_in_the_Pacific.htm.

[57] http://go.worldbank.org/DNNGRXKP30.

[58] http://go.worldbank.org/DNNGRXKP30.

however, is that this is unlikely to be sustainable because of the random movement of prices, and may lead to spending inefficiencies.[59]

49. None of the above attempts to mitigate impacts of volatile prices. Alternatives trade initiatives based on "standards" have been developed to reduce exposure to volatile commodity prices. Such initiatives offer price premiums for the certified products and provide income stabilization during periods of adverse price movements. (See box 2.)

Box 2. Alternative trade initiatives: What are they and how do they work?

Standards-based, alternative trade initiatives are programmes that allow agricultural producers who meet certain requirements to differentiate their products through a certification mechanism (such as the fair trade or organic labels).

These programmes are defined by the specification, monitoring and enforcement of sustainable production and trade practices, and are typically identified by some sort of logo, label or certificate. Labelling helps differentiate the certified product from conventional supply. Ostensibly, each programme's conditions will help counter the economic, social and environmental risks faced by producers, and offer them a price premium for the certified products. Some of the best known initiatives, such as Fair Trade, Organic Certification, Rainforest Alliance and Utz Kapeh, started in the coffee sector, but there are now sustainability standards and/or labeling initiatives operating in most major agricultural commodities.

Alternative trade initiatives have developed in response to the perceived failure of supply management and risk-hedging tools to address the income and social risks borne by agricultural commodity producers. Although these initiatives address risk factors in a variety of ways, one of their most important elements is their stabilizing impact on prices. Depending on the criteria associated with a particular label, the price stabilizing effect can manifest itself in different ways.

Source: Brown O, Crawford A and Gibson J (2008). Boom or bust: how commodity price volatility impedes poverty reduction, and what to do about it? International Institute for Sustainable Development, (IISD), January.

F. Diversification

50. The long-term effects of commodity price instability are greater for commodity-dependent countries (particularly for those for which over half of their exports rely on one, two or three commodities). Thus, in the long run, reducing commodity dependence can contribute to indirectly addressing the price volatility. Three diversification measures exist: horizontal diversification into alternative crops, vertical diversification into agricultural products and processes that capture a higher proportion of the value chain as well as diversification into non-agricultural activities that exploit comparative advantage.

51. However, several factors can impede diversification. These include (a) structural barriers in international trade (tariff and standards escalation); (b) scarce resources to invest in the sector, which in turn can be affected by commodity price volatility;[60] (c) weak infrastructure, particularly as regards both cost and availability of transportation and storage; (d) lack of skills in producing and marketing alternative products. Other constraints

[59] http://www.imf.org/external/pubs/ft/survey/so/2007/res0830a.htm.

[60] According to ISSD research, "commodity price volatility itself can also impede economic diversification by encouraging the dedication of productive assets to straightforward exploitation when prices are high and then denying the investment capacity to diversify when prices are low".

limiting the extent to which CDDCs diversify include social and political factors; and macroeconomic factors such as debt burden and devaluation which favor increasing the production and exports of the traditional product because it is easier to do so in the short to medium term.[61]

52. In summary, diversification and value addition require various measures at different levels. To achieve successful economic diversification, it is imperative to have a stable and predictable macroeconomic and political and regulatory environment, as well as a fair and open international trading framework.

V. Policies to facilitate value addition and greater participation in the commodity value chain

53. In fact, commodities create numerous opportunities for employment, supply of goods and services at all stages of the value chain. However, local businesses or entrepreneurs face a number of impediments in their attempts to participate in commodity value chains. Some of these constraints include (a) lack of requisite skills to match the opportunities available; (b) low capabilities of using cutting edge technologies to reduce costs; (c) limited access to finance (long-term finance is not always available and short-term facilities may be available attract high interest rates); (d) lack of marketing knowledge by local entrepreneurs in foreign markets (which makes it difficult to supply goods that are not available on local markets on time and of the right quality).

53. A number of CDDCs have successfully increased local participation in the value chain in spite of the challenges they face. For example, Brazil and Malaysia boosted local participation in the oil industry value chain by adopting policies and by building capacity through learning from worldwide experiences and best practices. Over time, these policies have helped to increase the level of knowledge, transfer of technology and create the necessary skills, to establish a competitive workforce.

54. Experience shows that success in facilitating greater participation can often be achieved through comprehensive partnerships with various commodity stakeholders, training and good educational systems that churn out skills aligned to the needs of the industry. It is therefore important that the various companies engaged in developing resources be encouraged to take an active part in enhancing the skills in domestic companies. This could be achieved through incentives and joint ventures where the direct participation of local enterprises in the industry as well as in the supporting services could result in a significant transfer of technology and acquisition of management skills. This policy may support the creation of a pool of competent local industry expertise. In addition, policies that stipulate technology transfer to domestic organizations in licensing agreements could have a positive impact, in particular if these are systematically evaluated, and organizations are rewarded when there is evidence of domestic capacity-building.

55. Policies could also be developed to support specific expertise and set up proper integrated business schemes. The example of diamonds in India may be enlightening in this regard. This country is the world leader in the export of cut and polished diamonds and has taken a fundamental step to be a global trading hub for the gemstone by creating on 17 October 2010, the Bharat Diamond Bourse. In Botswana, De Beers in 2008 moved its Diamond Trading Centre from London to Gaborone and shifted sorting, cutting, polishing,

[61] For a detailed analysis, see UNCTAD, TD/B/COM.1/EM.18/2, 19 April 2002.

aggregating, and marketing. In addition to increasing local value added within the mining sector, this move contributed to developing national skills.[62]

VI. Concluding remarks

56. Commodity markets are inherently volatile, as the 2007–08 cycle of boom and bust showed. To cope with such volatility, various international, regional and national support measures, some of which have been described above, have been designed and implemented. Recent developments in commodity markets have added new and complex dimensions to commodity price volatility. This has led to some innovative approaches being advanced at the international level to address the issues. These include regulatory initiatives, improved transparency, position limits and virtual stocks. The last one has not been addressed in this note.[63]

57. Volatile commodity markets create many challenges for CDDCs. Nevertheless, a large number of these countries remain largely dependent on a limited number of commodities for most of their export earnings, and indeed, for the livelihood of a large share of their populations. This has made them highly vulnerable to sharp price movements of these limited numbers of commodities. It is therefore necessary to continue exploring innovative ways, both at national, regional and international levels, in which the challenges facing CDDCs could be addressed in order to and achieve self-sustaining growth and development as a means of reducing poverty levels.

[62] http://www.miningweekly.com/topic/diamond-trading-centre-botswana.

[63] See Nissanke M (2010). Mitigating commodity-dependence trap in LDCs through global facilities. School of Oriental and African Studies, Department of Economics, University of London, June 2010.