The impact of the global crisis on commodity-dependent low-income countries: confirming the relevance of the concept of poverty trap?

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4th Annual Conference of the GARNET network: "Food Security and Sustainable Development: Challenges for the Governance of International Relations"
Invited session: the impact of the financial crisis and policy responses
Rome, CIDEI (Sapienza University), FAO, IFAD, IAI, WFP
11-13 November 2009

Firstly presented at the Development Studies Association (DSA) Annual Conference, University of Ulster, Coleraine (2nd-4th September 2009)

Abstract

Many low-income countries are commodity-dependent countries, and a key question is the impact of the crisis on countries that exhibit this specific market structure. These countries are indeed the most vulnerable to price volatility and fluctuations of global demand for their exports. This volatility is an intrinsic feature of commodities, which during the last commodity boom (2003-08) has been amplified by the increasing linkages between the commodities and the financial markets. This volatility was expressed in a particularly acute way in the second-half of 2008, and commodity-dependent countries are now fully exposed to a global recession. For many studies linked to the seminal theories of the secular decline of commodity prices (Raul Prebisch, Hans Singer, Alfred Maizels), this volatility explains the lower growth of the poorest countries. These processes may be analysed via the concept of the poverty trap, which is defined through notions such as feedback processes, increasing returns, spillovers, multiple equilibria, irreversibility and threshold effects. The latter make it difficult for low-income countries to reach the 'tipping point' above which they can trigger long-run growth, and prevent industrialisation, which is yet the privileged way for getting out of poverty. Poverty traps reinforce themselves through endogenous processes that involve low productivity, low value-added and the export of products – commodities – which, due to technological progress, represent a decreasing share of unit of GDP. However, other studies analyse price fluctuations via the conceptual framework of growth accelerations-decelerations, decelerations not proving the existence of 'traps'. Moreover, other studies consider that demand for commodities, and therefore prices, follows cycles, which can be investigated without the poverty trap thesis. Against these arguments, the paper underscores the theoretical features of the concept of the poverty trap, and, with a focus on Sub-Saharan African countries, confirms the relevance of its conceptual framework.

1. Introduction[1]

The impact on low-income countries of the 2008 financial crisis, which has progressively become systemic, is the subject of an increasing body of literature. Many low-income countries are commodity-exporters, and many commodity-exporters can be viewed as commodity-dependent countries: a key issue is therefore the impact of the crisis on countries that exhibit this specific market structure.

These countries – their fiscal balance and their macroeconomic management - are indeed the most vulnerable to price volatility and fluctuations of global demand for their exports, whether they export fuels, mineral or agricultural products. This volatility is an intrinsic feature of commodities, which during the last commodity boom (2003-08) has been amplified by the increasing linkages between the commodities and the financial markets, with commodities increasingly traded as financial assets. This volatility was expressed in a particularly acute way at the onset of the crisis in the second-half of 2008, and commodity-dependent countries are now fully exposed to a global recession. For many studies linked to the seminal theories of the secular decline of commodity prices - which were supported by the CEPAL and later by UNCTAD (Raul Prebisch, Hans Singer, Alfred Maizels) - this volatility ensnares low-income countries and explains their lower growth.

These processes may be analysed via the concept of the poverty trap. This concept may be defined through notions from different theoretical origins, e.g., feedback processes, increasing returns, spillovers, multiple equilibria, irreversibility and threshold effects. These make it difficult for low-income countries to reach the 'tipping point' above which they can trigger long-run growth, and prevent industrialisation, viewed as the privileged way for getting out of poverty, since industrial products are less subject to volatility. Poverty traps reinforce themselves through endogenous processes that involve low productivity, low value-added and the export of products – commodities – which, as recognised by the World Bank (2009a), due to technological progress, represent a decreasing share of unit of GDP.

However, while they acknowledge that in commodity-dependent low-income countries, growth closely follows the fluctuations of commodity prices, other studies analyse these fluctuations via the conceptual framework of growth accelerations-decelerations, and do not interpret growth decelerations or collapses as proofs of the existence of 'traps': hence they do not view commodity-dependent countries as caught in poverty traps.

Moreover, other studies consider that industrial countries, including emerging ones, need certain commodities as inputs for their industries (or industrialisation), which implies a demand for these commodities: the fact that this demand, and therefore

[1] The author is very grateful to Machiko Nissanke as well as Raymond Toye for their highly relevant comments, although the usual caveat applies.

prices, follows cycles (linked, e.g. to importing countries' income and product cycles), which are complicated by transmission effects across products and markets (including financial markets) can be investigated without the poverty trap thesis.

The paper is thus a theoretical analysis of the main features of the concept of the poverty trap. With a focus on low-income commodity-dependent Sub-Saharan African (SSA) countries, it shows that their current economic situation and past growth trajectories confirm the relevance of the conceptual framework of poverty traps. The 2008-09 crisis, another period of commodity boom followed by a slump - and the most severe recession in 50 years -, may be viewed as an additional example of the processes that are subsumed in the concept of the 'trap'.

The paper is structured as follows. Firstly, it presents the main theoretical features of the concept of poverty traps. Secondly, it highlights that market structures characterised by commodity dependence and price volatility have long been viewed as key factors of poverty traps in developing countries, which have been reinforced by the deepening of the linkages between commodity and financial markets over the 2003-08 period. Thirdly, it examines the theoretical critiques regarding the very existence of poverty traps, which propose competing explanations of poor countries' growth profiles. Fourthly, against these critiques, it reveals the explanatory power of the concept of poverty traps; it argues that commodity-dependent countries' growth trajectories exhibit all definitional features of traps: lock-in processes, low equilibria, diverging paths relatively to other groups of countries, and threshold effects. Finally, the paper shows that the assessment of causalities does not mean determinism and involves complex causal factors: other factors combine with the relationship between a market structure - such as commodity-dependence - and growth, which counter or reinforce the formation of traps, in particular domestic institutions.

2. The concept and properties of poverty traps: main theoretical issues

The concept of the poverty trap is an outcome of the crossing of different theoretical currents and is related to several other concepts: among others, irreversibility, cumulative causation, feedback processes, lock-in devices, multiple equilibria (high and low), threshold effects, non-linearity and non-convexity, and increasing returns (Sindzingre, 2007a).

The concepts of multiple equilibria or 'traps' have been explored by Arthur (1989, 1994a), taking stock of that of increasing return (Krugman, 1998). Arthur modelled a series of concepts now commonly used in economics, e.g. the concepts of positive feedbacks, path dependence, "lock-in by historical small events", self-reinforcing mechanisms, cumulative causation, multiple equilibria, with some equilibria able to lock in economies or individuals in inefficient behaviour and low levels of income.

As underscored by Kenneth Arrow in his preface to Arthur (1994a), others had emphasised the importance of increasing returns in economic growth, e.g., Allyn Young in the 1930s and Nicholas Kaldor in the 1950s. It is Arthur, however, who highlighted the dynamic nature of increasing returns and positive feedback processes, as well as their stochastic character, i.e. the existence of random deviations from long-run tendencies: this property means the possibility of multiple long-run states depending on initial conditions and random fluctuations, and of 'specialised' outcomes (e.g. in geographical terms). At the individual level, this implies that learning, experience and the perception of success may lead to the reinforcement of some processes, such as the transmission of some information at the expense of others: such processes lock individuals in inefficient behaviour. Another implication is that even with suitable initial conditions, the same mechanisms can lead to either optimal or inefficient equilibria.

The notions of lock-in (e.g. by technological choices) and positive feedback were used by Paul David for the elaboration of the concept of path dependence (David, 1985). Acknowledging his debt towards Arthur, David (2000) defines path dependence as phenomena that have the dynamic property of non-ergodicity in stochastic processes (i.e. not having the "ability eventually to shake free from the influence of their past states"), and which, beyond the observation of market failures and inefficiencies, imply the existence of "winners and losers".

Again referring to Arthur (1989), David (2000, p. 10) defines the 'lock-in' as the "entry of a system into a trapping region" - the basin of attraction that surrounds a locally (or globally) stable and self-sustaining equilibrium. A dynamic system that enters into such regions needs, in order to escape from it, external forces that alter its structure - this notion has been used in early development economics for justifying state intervention. Locked-in equilibria may be optimal or detrimental: for David, the key point is that whatever the equilibrium, individuals are happy doing something, "even though they would be happier doing something else if everybody would also do that other thing too", because incomplete information prevent them from coordinating and moving elsewhere collectively. Alternatives paths are possible, however, and David emphasises that path dependence does not mean determinism.

Traps as a central concept in theories of economic growth

The concept of poverty trap is related to that of 'club convergence' (Azariadis, 2006). The latter ensued from disagreements vis-à-vis conventional hypotheses assuming absolute growth convergence across countries or regions to similar steady-state income levels and that, if variations in income growth occurred, this was due to different initial conditions, e.g., different income levels.

The concept of club convergence was elaborated by growth theories in the 1990s. It stemmed from the observation that since the 1960s, only East and South East Asian countries caught up with industrialised countries, and that a group of developing countries – the less developed countries - are not catching up with the richest ones: i.e., the world distribution of per capita incomes follows a 'twin peak' shape (Quah,

1996). This shape expresses a polarisation of growth rates, which seem to converge but form different groups or clubs of countries – 'club convergence'. Among different explanations, the increase in the role of physical capital investment and population growth in output growth has appeared to be a key factor of the 'hollowing out' of world income distribution (Beaudry *et al.*, 2002 on the period 1960-98).

The concept of 'club convergence' and of this polarisation supports that of traps: it gives a role to history (i.e., past events may have large and lasting effects); it implies non-linear processes and lock-in constraints on the growth of certain countries that exhibit specific features. Different patterns of growth and convergence clubs have been highlighted in the literature on global inequality: e.g., patterns comparable to 'hills', 'plateaux', and so on (Pritchett, 1997; 2000) – supported by cross-country econometric exercises highlighting multiple equilibria that would explain the income gap between rich and poor nations, in particular the existence of a low equilibrium (Graham and Temple, 2006).

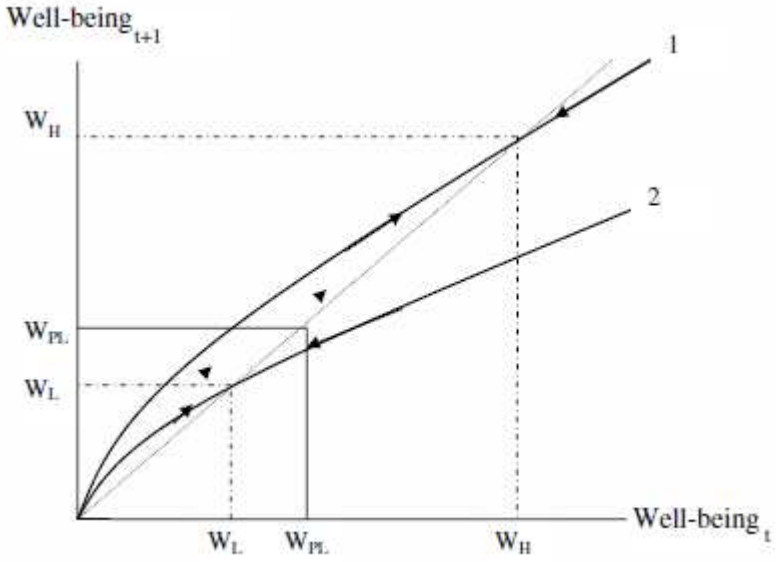
Poverty traps as major causes of underdevelopment

The first development theorists at the time of WWII – e.g., Gunnar Myrdal, Albert Hirschman, Paul Rosenstein-Rodan (1943) – wanted to address the question as to why some economies seemed unable to trigger the virtuous process of catching-up. They elaborated the concepts of spillover effects, linkages and complementarities, which have a great explanatory power for the understanding of economic stagnation. These concepts display much overlap with those of cumulative causation and path dependency (Toner, 1999).

Rosenstein-Rodan has defined spillovers as increasing returns to an activity proportional to the number of others who undertake the same activity. Their absence, as well as coordination failures, explains the possibility of multiple equilibria and the formation of underdevelopment traps: low equilibria, coordination failures and poverty traps are endogenous and self-reinforcing. The existence of coordination failures implies that markets alone cannot achieve the coordination that is necessary for triggering the process of development (Adelman, 2000; 2001), and that they do not necessarily lead from the lowest equilibrium to the best one (Hoff, 2000, revisiting Rosenstein-Rodan). This was the justification of the role of the state at the early stages of development, as the entity most able to reallocate factors and resources across markets, as well as important policy changes or financing – 'big push' policies (Murphy *et al.*, 1989).

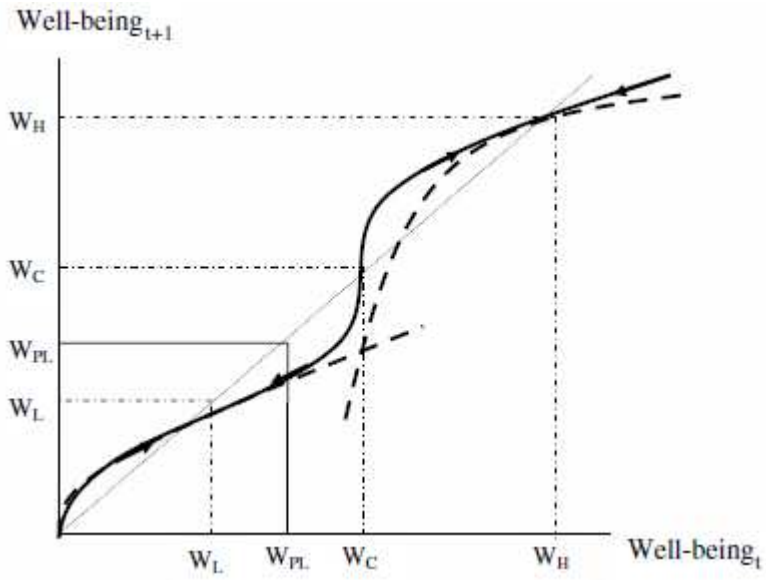
As shown by Barrett and Swallow (2006), in their comments of the figures below, in contrast with standard growth models assuming a single dynamic equilibrium, and hence convergence of growth paths toward a single level of welfare, multiple dynamic equilibria gives the growth function a S-shape, with stable dynamic equilibria at high and low levels of welfare (Wh and Wl), and implies at least one unstable dynamic equilibrium, a critical threshold (Wc). Only a large positive shock may make economies or households able to escape the basin of attraction of the low-level equilibrium and move toward a higher equilibrium.

Figure 1: Welfare dynamics under the convergence hypothesis.



Source: Barrett and Swallow (2006).

Figure 2: Welfare dynamics under the poverty traps hypothesis.



Source: Barrett and Swallow (2006).

Modern views of coordination failures (e.g., Stiglitz, 1997) give similarly a role to the state, but for different motives, e.g. as the entity being better able to provide macroeconomic stability, a credible legal structure and secure property rights.

Environments of imperfect information and incomplete markets, which characterise low levels of development, foster coordination failures, especially regarding investment, and the state has therefore an important role as a coordinator.

State capacity, however, is endogenous to the level of economic development (Bardhan and Udry, 1999): poverty or underdevelopment traps are thus likely at early stages of development, their determinants being numerous– economic, political, institutional. Political economy may contribute to the inefficiency of policies: in many developing countries the implementation of reforms during decades (e.g., liberalisation reforms) has been unable to tip countries out of the trap, due to the bad reputation of governments and the low trust in their commitments, both at the domestic level – signalled by high capital flight – and the international level – signalled by low levels of FDI and perceptions of high-risk, as in SSA (Rodrik, 1995).

3. A key determinant of poverty traps in low-income countries: commodity dependence

The vulnerability of commodity-dependent low-income countries: price decline and volatility

Commodity-dependence in poor countries

Most low-income developing countries are characterised by their dependence on commodities for their exports and their lack of economic diversification, particularly in SSA, where, for example, since the mid-2000s fuels represent more than half of exports (IMF, 2007, table 4.1).

Table 1: Commodity dependence by geographical region, 1995–1998; 2003–2006 (nb. countries where exports of commodities = more than 50% of total exports)

	Total primary commodities[a]		*Three or less commodities*		*One commodity*	
	1995–1998	*2003–2006*	*1995–1998*	*2003–2006*	*1995–1998*	*2003–2006*
Developing and transition economies	**118**	**113**	**82**	**84**	**47**	**50**
Developing economies	**108**	**103**	**78**	**78**	**45**	**46**
Africa	46	45	37	34	21	23
Latin America	30	27	15	17	6	7
East and South Asia	7	8	4	6	1	2
West Asia	9	9	9	9	8	6
Oceania	16	14	13	12	9	8
Transition economies	**10**	**10**	**4**	**6**	**2**	**4**
Memo items:						
Least developed countries	38	38	31	31	19	20
Heavily indebted poor countries	38	36	30	28	15	15

Source: UNCTAD secretariat calculations, based on *UNCTAD Handbook of Statistics* database.
a Primary commodities: SITC Rev. 2: 1 to 4 plus 68, 667 and 971.

Source: UNCTAD (2008b), table 2.4.

The decline in commodity prices

As is well-known, the correlation between economic stagnation and commodity dependence has been first highlighted by Raul Prebisch and Hans Singer in the 1950s, who demonstrated the secular decline in world real prices of commodities and the deterioration in the terms of trade for developing countries vis-à-vis industrialised countries – the deterioration in the terms of trade of commodities vis-à-vis manufactures. They viewed this as a proof of the necessity of industrialisation, as increasing productivity and technical progress are major factors of growth (Prebisch, 1959).

This negative relationship between growth and reliance on primary products is even found within developed countries, e.g., across regions within the United States (Papyrakis and Gerlagh, 2007).

This decline in commodity prices is acknowledged by the IMF (2009a, WEO, April), which underscores that over the long-run, prices for many commodities have declined relative to those of manufactures and services (Pfaffenzeller *et al*., 2007). Grilli and Yang (1988), however, have questioned the trend, arguing that the observed pattern of commodity prices may be explained by periodic structural breaks.

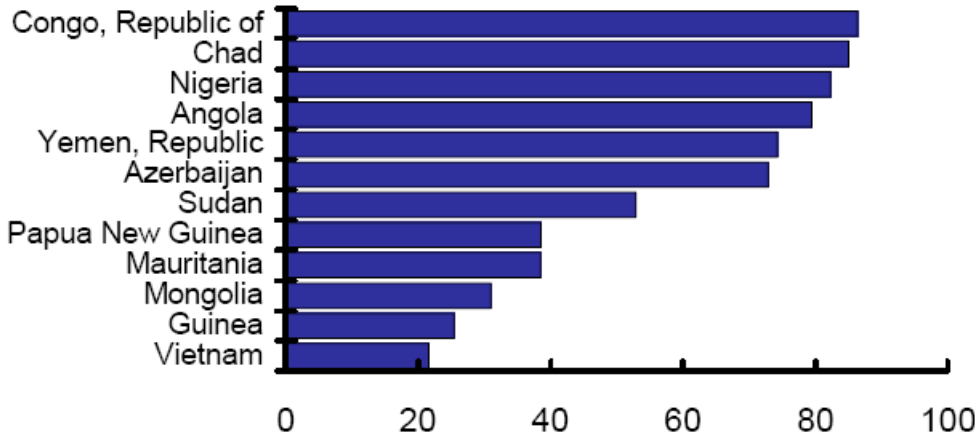
The IMF (2009a, April) agrees with the views that the secular decline stems from productivity gains in the commodity-extracting sectors and the fact that many commodities' share in total consumption declines as income increases: it mentions, however, that rates of decline vary across commodities (depending on available reserves in the case of non-renewable resources, industry structure, demand characteristics, and so on). The IMF views oil as an exception in this decline, due, e.g., to its oligopolistic supply structure and the concentration of reserves.

The key problem: price volatility

Beyond the long-term decline in the terms of trade of commodity-exporting countries, another key characteristic of commodities, inducing commodity-dependent countries to be caught in poverty traps, is commodity price volatility. Commodity dependence has a negative impact on growth and lock countries into low equilibria, not only because of the decline in prices, which remains a matter of debate, but because of price volatility, due to the transmission of world prices shocks and volatility to producing countries (Baffes and Gardner, 2003).

This volatility prevents diversification, risk-pooling and long term growth strategies and has a devastating impact on the macroeconomic management of countries: indeed, it is very difficult to maintain any fiscal balance and a credible state capacity with highly volatile and unpredictable revenues in countries where revenue from commodities may represent more than ¾ of total revenue.

Figure 3: Commodity revenues to total revenue, 2008 (ratio, in percent of total revenue)



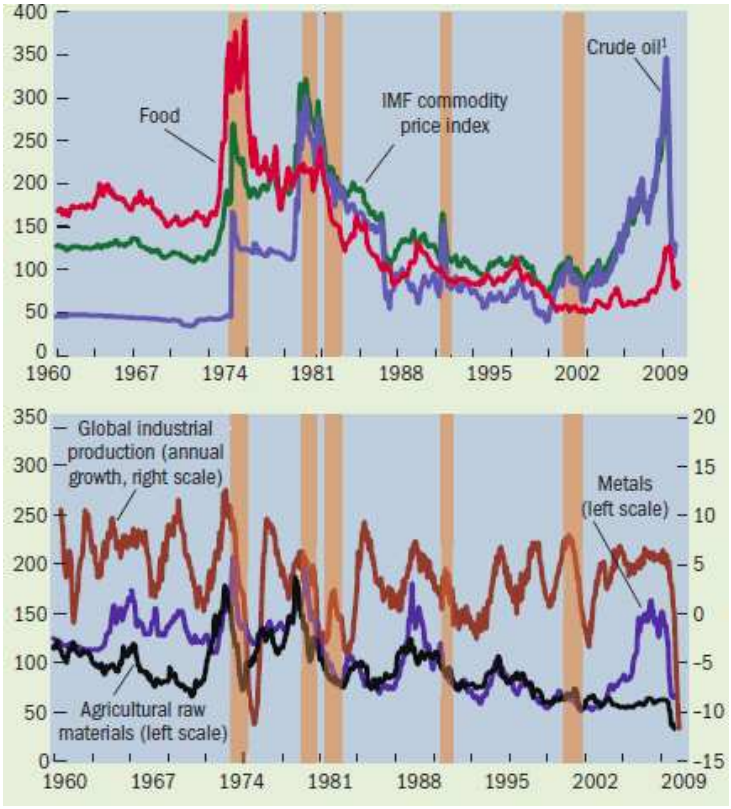
Source: Fund staff calculations; International Monetary Fund (2009b).

This volatility has been demonstrated on an historical scale, e.g. by Cashin and McDermott (2002) using *the Economist's* composite commodity price index over 1862-1999: moreover, they reveal a "ratcheting-up" in the variability of price movements, an increasing amplitude of price movements in the early 1900s, and a frequency of large price movements increased after the collapse of the Bretton Woods regime of fixed exchange rates in the early 1970s. A key point for Cashin and McDermott is that the downward trend in real commodity prices is "completely dominated by the variability of prices".

This volatility has been confirmed by the 2008-09 crisis and the collapse of commodity prices in the second half of 2008 ending the boom that started in early 2002. The IMF (Helbling *et al.*, 2009), however, emphasises that despite the integration of commodity markets, demand and supply characteristics of commodities differ, with commodity price fluctuations dominated by the prices of a few commodities: the 2002-08 price boom was thus an energy and metals price boom, prices having tripled between mid-2002 and mid-2008. Metals prices follow demand fluctuations according to the global industrial cycle, but major price gains were also recorded for other commodities.

The second half of 2008 witnessed a sharp drop in prices of most commodities - energy prices declined by about 70%, metals prices by more than 50%, and even food prices, which fluctuate less with global cyclical conditions, by about 30%. Despite a recovery, the 2009 prices remain below the peaks of 2008.

Figure 4: Historically, commodity prices have been volatile and subject to large swings (real commodity prices, constant U.S. dollars, 1990=100)



Sources: Helbling *et al.* (2009); IMF, Commodity Price System database; and IMF staff calculations. Note: Shading denotes periods of global recession (identified on the basis of a monthly index of global industrial production). 1: Average Petroleum Spot Price; average of Brent, West Texas Intermediate, and Dubai crude spot prices.

The negative impact of terms of trade volatility and shocks on growth is confirmed by many studies, e.g., for SSA, Kose and Reizman (1998), who show that shocks, i.e. fluctuations in the prices of exported primary commodities, have been costly to growth and caused a significant decrease in aggregate investment. The more a country is dependent on commodities for its export, the more relative prices of the economy (between tradable and non-tradable) may become volatile (Hausmann and Rigobon, 2002).

This is confirmed in a historical perspective by Blattman *et al*. (2004). They assess the negative consequences of the exporting of commodities, because they have been more volatile than other products, and countries with more volatile prices have grown slowly relative both to the industrialised countries and to other primary product exporters. On a panel of 35 countries (that does not include SSA countries, however) over the period 1870-1939, they show that the exogenous price volatility of each primary product generated internal instability, reduced investment and diminished economic growth. Volatility was much more important for accumulation and growth than was secular change - a channel of this negative impact is that

foreign capital inflows declined steeply where commodity prices were volatile. They also find an asymmetry between industrialised and developing countries (the 'core' and 'periphery'), as changes in volatility had a significant negative influence on income growth in developing countries, but not in industrial countries – this asymmetry of the impact of terms of trade shocks was also found by Hadass and Williamson (2003) regarding the 1870-WWI period.

Increasing vulnerability due to the linkages between markets

A key point is the integration not only of commodity markets among themselves, but of commodity and financial markets. This 'financialisation' of commodity markets has been first demonstrated by Alfred Maizels (1994).

Maizels (1984, 1987) underscored the intrinsic instability of commodity markets. Over the long term, the trend in the commodity terms of trade deteriorates for theoretical reasons, due to three key factors: the low price-and-income-elasticities of demand for commodities vis-à-vis manufactures; the technological superiority of developed countries and the economic power of their transnational corporations, which allows these countries to capture excess profits in trade with underdeveloped areas; the asymmetrical impact of labour union power in developed countries and labour surplus in developing countries on the division of the benefits of increased productivity.

These linkages across markets, and the increasing role of the financialisation of commodity markets in the 2000s in price volatility - especially due to the impact of derivative markets on price volatility - have been further demonstrated by Nissanke (2009).

Countries that share this commodity-dependence are likely to be caught in poverty traps. UNCTAD thus consistently emphasises the existence of poverty traps created by commodity-based market structures and the relevance of the concept in the understanding of the growth profile of some developing countries. 'International poverty traps' explain pervasive and persistent poverty in most LDCs: in countries depending on primary commodity exports, a combination of international trade and finance relationships reinforces the cycle of economic stagnation which, in turn, reinforces the negative impact of external relationships.

For UNCTAD, globalisation tends to tighten this international poverty trap (UNCTAD, 2002). The latter has been compounded by the integration of the global economy and the closer linkages between energy and agricultural commodity markets, as well as commodity and financial markets over the 2000s, and the subsequent increase in price volatility and therefore uncertainty, which has a detrimental effect on investment and governments' financial management (UNCTAD, 2008b; Sindzingre, 2009). The international poverty trap, and its underlying factors – e.g., low productivity, the debt trap -, is confirmed by the high commodity price fluctuation and succession of booms and busts that occurred in the 2003-2008 period (Gore, 2009).

4. The critiques of poverty traps as explanations of growth trajectories

There have been a number of critiques of the concept of poverty trap, which have used a variety of arguments: in particular, if traps exist, they may be generated by many other factors than commodity-based market structures; commodities do not always generate traps; and the very existence of poverty trap may be questioned.

Lack of correlation between commodity-based export structures and traps: traps may be caused by many factors unrelated to commodities

Critiques of commodity-generated traps theses may put forward two arguments. Firstly, the lack of convergence between certain groups of countries, with a group growing more slowly relatively to other countries, may be caused by many possible factors. Even in countries that export primary products, the negative relationship with growth may be questioned, e.g. it may hide other causes that are related to primary products, such as the greater probability of debt overhang (Manzano and Rigobon, 2001).

Poverty traps may be, for example, a product of poor public policies, such as insufficient trade openness, or of certain initial economic conditions, e.g., low savings rates as the latter depend on the level of per-capita income, or credit market imperfection and borrowing constraints (Banerjee and Newman, 1994).

For Azariadis and Drazen (1990), 'low growth traps' or 'underdevelopment traps', i.e. multiple and stable equilibria for economies exhibiting similar initial conditions, may result from the existence of 'threshold externalities' created by increasing returns in the accumulation of human capital. Examining the reasons why similar countries do not converge to the same steady state, Azariadis (1996) identified many possible causes of poverty traps: e.g., having a subsistence consumption, limited human capital, demographic transitions when fertility is endogenous (indeed, this may be found in many SSA low-income countries) and political economy problems such as coordination failures among voters. Pursuing his exploration of non-ergodic growth theory, Azariadis (2006) views 'misbehaving governments' and incomplete markets as the determinants of poverty traps, among others.

At the microeconomic level, i.e. explaining per capita income not at the country level but at the individual or household level, location effects may intensify microeconomic poverty traps: living in certain places entails lesser education, income, health care and access to the institutions (e.g., the rule of law), with a dynamic dimension, as the place of residence restricts future opportunities (notion of discrimination). Traps are here generated by spatial processes (Benabou, 2000 on the example of the reproduction of inequality), or, as coined by Durlauf, 'neighbourhood effects', which explain the persistence of poverty in particular areas and why poverty traps exist and persist (Durlauf, 2003). Poverty traps here refer to a group that if composed initially of poor members, will remain poor over generations

– an example being persistent racial inequality, viewed as "a sort of neighbourhood in social space" (Durlauf 2003, p. 5). Spatial poverty traps are strengthened by self-reinforcing processes such as a low level of education, poor schooling infrastructure, low levels of taxes and limited supply of public goods.

The key point in this concept of neighbourhood effects is the crucial role of interdependence. In these types of traps, the decision for an individual to acquire an education strongly depends on the prior existence of other educated members in a group, and this interdependence of behaviour induces 'neighbourhood effects', which generate different types of groups that have different steady states (with/without educated members) (Durlauf, 1996; 2003). This interdependence is intertemporal, i.e. it affects future social interactions. The dynamics of these combinations explain persistent income inequality: Durlauf (1996) models the incentives they create for wealthier families to segregate themselves into economically homogeneous neighbourhoods. Economic stratification combines with neighbourhood effects: their reciprocal feedback transmits different types of economic status across generations.

This concept of spatial poverty traps considers reciprocal feedbacks between the micro and macro levels, which may mutually reinforce each other. The question (which requires control for latent heterogeneity in micro growth processes) is: do poor people live in 'poor areas' or do the characteristics of some areas create poorer people? For Jalan and Ravallion (1997), does residence make the difference between growth and contraction in living standards for otherwise identical households? If so, poverty traps may be spatial, externalities may be geographic, whereby neighbourhood endowments of physical and human capital influence the productivity of a household's own capital: an example being post-reform rural China's spatial poverty traps (as Hoff, 2000, on China's 'local underdevelopment traps').

Lack of correlation: the export of commodities may be a basis for sustained growth

Secondly, the thesis of commodity-generated traps has been criticised with the argument that many commodity-exporting countries have enjoyed a continuous increase in their per capita income. Indeed, there are several commodity-exporting countries that have not been caught in a poverty trap, and have historically grounded their growth on the harnessing and export of primary products, including key Western countries, e.g., Australia (metals), New Zealand (agricultural products), Canada, Scandinavian countries, among many others.

At the historical level, growth in developed countries has also been based on commodities, e.g., the industrial revolution in England (wool, coal) in the 19th century, facilitated by changes in institutions and improvement in infrastructure (railways, overseas transportation). Commodities have been efficiently used as inputs in the industrialisation process, supported by colonisation of countries following the 'small open economy' model (Hopkins, 1973), i.e. the imports of commodities from colonised countries and exports of manufactured products to

them. Though the argument remains disputed, the exploitation of commodities in their colonies contributed to the growth of colonial powers.

Many developed countries have based their industrialisation on the exploitation of natural resources. In particular, this has been the case of the United States: Wright (1990) thus argued that the rise of US manufacturing during the 1890s was associated with a rise in the resource intensity of exports (e.g., natural gas, petroleum, copper) and that natural resource abundance lowered input prices and hence fostered industrial production, e.g. steel products, and therefore the increase in manufactured exports.

Theoretical arguments: the irrelevance of the very concept of trap in explaining developing countries' growth profiles

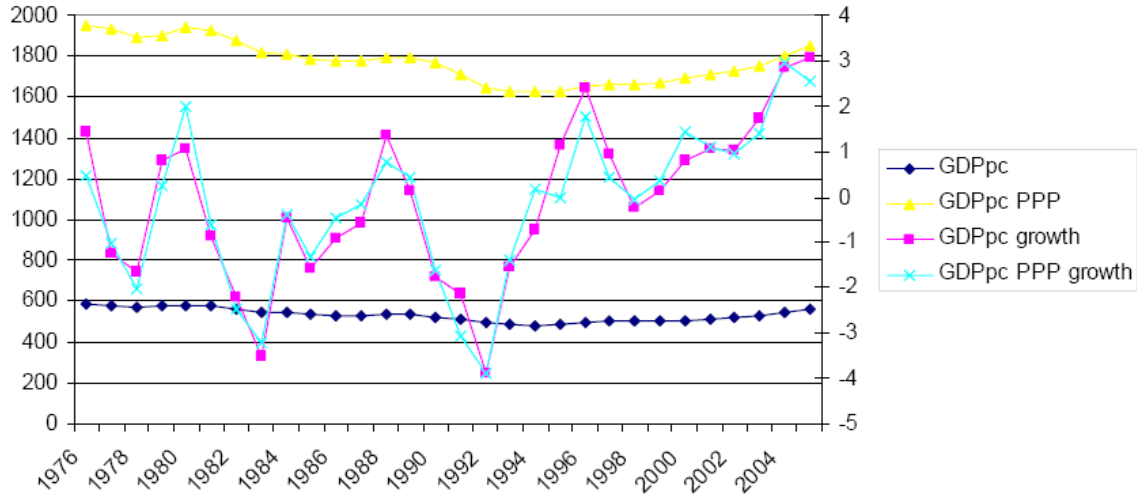
The relevance of the concept of a poverty trap created by commodity dependence as the best explanation of the low level of development in poor countries may be criticised on the argument that problems of commodity-exporting countries are already well-explained by more powerful theories, the most well-known being that of Dutch disease (Corden, 1982; Corden and Neary, 1984). More recently, theories of the 'resource curse' that underscored a negative relationship between resource abundance and growth claimed to be the most relevant approach (Sachs and Warner, 1995).

Moreover, critical arguments may go beyond commodity-exporting countries and refute the relevance of the concept of trap for analysing growth trajectories in poor countries. These arguments refer to price profiles in commodity markets. Prices follow both trends and cycles (Cashin and Mc Dermott 2002), or 'supercycles'. As shown by Boussard (2007) for the case of agricultural markets, prices are determined by endogenous fluctuations and 'cobweb'-shaped adjustments. These arguments emphasise that a cycle is not a trap, and for example, that over the long-run, SSA growth has moved closely with global real GDP growth: with the slowing of global growth, SSA exports are affected by lower external demand and declines in commodity prices (IMF, 2009b).

As underscored by Chang and Helbling (in IMF, 2009a, April, box 1.5), long-term trends in commodity prices are not relevant to the understanding of medium term price fluctuations, as rates of change are highly variable and the trend component shifts over time, reflecting changes in longer-run price determinants, such as average costs of marginal fields or mines. For Chang and Helbling, the key point is to understand the importance of the fluctuations in the trend component relative to those in the cyclical component: if fluctuations in the cyclical component dominate, long-term trends provide useful signals; if not, past trends provide little guidance.

On the example of the analysis of growth in 44 SSA countries between 1975 and 2005, Saba Arbache and Page (2007a) argue that SSA is characterised by low and volatile growth since 1975, but find no evidence that growth volatility is associated with economic performance over the long run. They find a turning point in SSA growth in the 1990s and the possible formation of clubs, and that initial conditions matter for income distribution but not for growth.

Figure 5: GDP per capita and growth rate (constant international $, PPP and non-PPP)



Source: Saba Arbache and Page (2007a).

Different time horizons may lead to different assessments. For Easterly *et al*. (1993), terms of trade shocks explain a large part of the variance in growth, but the fluctuations of growth rates do not necessarily build a poverty trap, and these fluctuations do not predict what long-run performance and per capita income will be: global technological change determines long-run growth, while country characteristics determine relative income levels.

Likewise, Easterly (2005) denies the pertinence of the concept of poverty trap for explaining the situation of the least developed countries, and consequently the relevance of 'big push' policies (e.g., massive aid inflows). His argument is that in SSA countries, for example, over the last 50 years, levels of income per capita have increased slowly despite high fluctuations in terms of growth rates. Criticising the literature on the factors of poverty traps, Easterly argues that there is little evidence proving their existence, and that poverty traps in the sense of zero growth for low income countries are rejected by the data in most time periods. The evidence of divergence between rich and poor nations in the long run does not imply zero growth for the poor countries.

Kraay and Raddatz (2005) also argue that there is no evidence of traditional determinants of growth and poverty traps, i.e. low savings and low technology in low-income countries, and that therefore the thesis of unfavourable initial conditions is weak. For them, poverty depends on policies (in coherence with an institution financing in exchange for policies such as the World Bank), and causes of traps (e.g. low saving rates, low productivity) are unconvincing. Interestingly, for Easterly as well as Kraay and Raddatz, institutions may create poverty traps: divergence between countries is more associated with institutions rather than the disadvantages of initial income (Easterly, 2005).

The concept of poverty trap is also challenged by those of growth 'acceleration' and 'deceleration' (Hausmann *et al.*, 2005), which focuses on turning points in growth performance - rapid acceleration being growth sustained for at least 8 years and 80 such episodes having occurred since the 1950s. Growth accelerations tend to be correlated with increases in investment and trade, and with real exchange rate depreciations. Significantly, Hausmann *et al*. reveal that external shocks produce growth accelerations that are short-lived and that growth accelerations are highly unpredictable. Such approaches do not consider that growth 'decelerations', or 'growth collapses' imply poverty traps.

Although they agree on the importance of volatility, Saba Arbache and Page (2007b) thus do not find any evidence that growth volatility has a relationship with long-term economic performance. The analysis of growth acceleration and deceleration episodes in SSA between 1975 and 2005 reveal many growth acceleration episodes and as many growth collapse episodes, which offset the previous ones. Significantly – and, interestingly, it could be a basis for an analysis in terms of trap – Saba Arbache and Page observe that growth accelerations and decelerations have an asymmetric impact on human development outcomes.

Econometric tests of the existence of traps may also be inconclusive. Rodriguez (2008) thus tests this existence on a UNIDO sample of 44 developed and developing countries via the estimation of economies of scale in manufacturing, thanks to the observation that if positive spillovers and increasing returns are the basis for multiple equilibria, then the former should be particularly prevalent when countries are transitioning either into or out of poverty traps, i.e. during periods of growth collapses and growth accelerations. Rodriguez, however, finds no evidence of systematic differences in economies of scale between transition and non-transition episodes, which questions the thesis that increasing returns in manufacturing generate poverty traps. Rodriguez acknowledges, however, that this finding does not mean the absence of increasing returns in other sectors, such as agriculture.

5. The concept's explanatory power: recognising its definitional features in commodity-dependent countries

The relevance of traps' definitional features: lock-in, low equilibria, relative paths, threshold effects

The key definitional features of poverty traps

The concept of poverty trap, however, retains a full accuracy in the description and explanation of the processes underlying growth trajectories and evolution of commodity-dependent developing countries.

Firstly, the critiques of the concept of poverty traps overlook the crucial definitional features and properties of the concept, which have been presented in section 2: poverty traps refer to growth processes that are non-linear, non-convex, subject to cumulative causation, increasing returns, multiple equilibria and threshold effects.

As underscored by Arthur and David, a central feature is that 'small events' may induce large effects that may be irreversible.

Critiques did not see that the key feature of the concept is its dimension of path dependence, irreversible processes (i.e. the existence and the weight of history), and the possible existence of thresholds. The concept refers to the existence of phenomena of lock-in - economies being attracted within a low equilibrium attraction basin – and their dynamic consequences, e.g. increasing lock-in, stabilisation, etc., which makes structural breaks more difficult and the reaching of a higher-growth path more costly – the 'self-discovery' explored by Hausmann and Rodrik (2003). This is why a trap cannot simply be assimilated to growth rates movements such as decelerations, or fluctuations: lock-in processes are a crucial dimension of the concept.

Secondly, the concept of trap refers to processes that are dynamic and relative to other countries' dynamics: countries appear to be caught in low equilibria, trapped in basins of attraction (in terms of growth, efficiency) that are lower than in other countries - a key issue being the time horizon that is considered, e.g., secular scale or short-term fluctuations.

Low equilibria trapping commodity-dependent countries

Do commodity-dependent low-income countries exhibit these definitional features? Volatility (of international prices, of supply and demand) appears to be the key channel by which commodity dependent countries are ensnared in a low equilibrium, i.e. a trap of low growth. Their dependence on commodities for their earnings, because of the intrinsic volatility of the latter's international prices, entails the intrinsic volatility of these countries' macroeconomic aggregates. Volatility obviously makes anticipations and fiscal and debt management very difficult for low-income countries governments and increases the likelihood of irreversibilities. Moreover, commodity markets are integrated, which fosters increasing returns and feedback effects.

It could be argued that oil-exporting countries will have better prospects, as has been the case during the recent commodity boom of 2005-08, which underlay impressive growth rates of these countries, and in particular in SSA. However, since the boom's inception, even the IMF consistently emphasised the fragility of this type of growth (IMF, 2006, chap. 5). Indeed, there is a negative relationship between macroeconomic volatility and growth (Loayza *et al*., 2007; Ramey and Ramey, 1995).

In addition, there is a relationship between volatility and non-linear phenomena. As shown by Subbotin *et al.* (2009) regarding the concept of volatility of financial variables (exchange rates, stock prices), volatility has a series of empirical properties, which all suggest the possibility of lock-in and cumulative processes as well as multiple equilibria: among others, becoming rapidly excessive, absence of linear correlations in returns, and the link between the trading volume and volatility.

The argument that many developed countries started their growth with the harnessing of primary products may not hold for most low-income countries. In contrast with these countries, in low-income countries commodities have not been or could not be utilised as inputs in industrial processes. In SSA, for example, there are many obstacles for agricultural commodities such as cocoa or coffee to constitute inputs in industrialisation, and it is even the same for oil, as shown by Nigeria.

As emphasised by Hausmann and Rodrik (2006), the industrialisation process requires structural transformation, i.e. changing the exported products: this is, however, difficult, because structural transformation is confronted with large market failures: for any given level of development, countries that have a more advanced export package are likely to grow more rapidly in the future, while the other countries are constrained by the low productivity associated with their export package. Indeed, long before Hausmann and Rodrik, Albert Hirschman and Paul Rosenstein-Rodan had underscored the necessity of linkages and complementarities for countries to be able to get out of the underdevelopment trap and trigger industrialisation.

Similarly, observing the fact that commodity-based market structures can even increase income inequality, Leamer *et al* (1999) show in a comparison between Latin America and East Asia that natural-resource-intensive sectors (e.g., agriculture) absorb capital that might otherwise flow to manufacturing, which reduces skill accumulation and therefore impedes industrialisation.

The argument that it is difficult to demonstrate the existence of long-lasting low equilibria as, if they exist, some countries (e.g., in Asia) have been able to get out of them, is questionable. Countries and regions exhibit very different characteristics. Commodity-dependent low-income countries, especially in SSA, do not have the features of the few developing countries that were able to trigger a growth path in the 1960s, such as the Asian 'developmental states' and now China, i.e. a growth based on the state-led creation of industrial sectors, some degree of protection, limited endowment in natural resources, a focus on education, a not too unequal income distribution, among others (Sindzingre, 2007c).

Cumulative causation and increasing gaps between groups of countries according to their export structure

The concept of poverty traps has to be understood as a relative concept. Even if poor countries do grow, this does not refute the fact that they may be caught in traps, since specific market structures create traps relatively to other countries' growth trajectories.

Commodity-producing countries, which most often rely on one or two exported primary products, grow because their products are the object of international demand (e.g., oil, copper): beyond the detrimental fact this demand is external (over which domestic policies have little control), fluctuating and unpredictable, global demand is boosted by technology intensity. In dynamic terms, even if these countries appear to grow slowly, as argued by Easterly citing the case of SSA countries over the last 50 years, the elevation of their income per capita is slower

than other group of countries: they do not converge, which suggests discontinuities and the existence of clubs of countries exhibiting differing growth profiles, in particular a group of countries that share a common market structure, i.e. commodity-based exports, a narrow industrial base and low degree of economic diversification.

This dynamic and relative dimension of the concept of poverty trap is underscored by the large literature regarding the change of the world distribution of output per worker towards a 'twin peak' shape, mentioned above, with low income countries market associated with a specific export structure.

Table 2: Annual growth rates in p.c. GDP, 1870-1994 (std. deviations in parentheses)

Subsample	1870-1960	1960-1979	1980-1994
17 Industrial nations	1.50 (0.33)	3.20 (1.10)	1.50 (0.51)
28 LDCs	1.20 (0.88)	2.50 (1.70)	0.34 (3.00)

Source: Pritchett (1997).

As commented by Azariadis (2006), the table above shows that LDCs grow a bit slower and less predictably than the world average. Outside East and Southeast Asian countries, less developed countries are not catching up with OECD countries. For Azariadis, catching up can be observed only by including in models a great number of structural features that are *ad hoc* and questionable, such as ethnic or political features.

This dynamics of an increasing gap between commodity-exporting countries and other groups of countries may be read in the empirical observation of the secular decline in the price of commodities. In 1999, the composite index of commodity prices built by *The Economist* in 1864, with figures stretching back to 1845, illustrates a continuous decline since 1845: in 1999, the industrial commodities index had fallen to a record low in real terms, i.e. 80% below its level in 1845 (1845-50=100, and 1999=20) (*The Economist*, 1999). Using the same index over 1862-1999, Cashin and McDermott (2002) confirm the downward trend in real commodity prices by about 1% per year over that period, with little evidence for a break in this long-run trend.

This divergence is confirmed by historical data. Booth (2008) thus reveals this divergence via the comparison of West Africa and South East Asia, and highlights a widening gap between the two regions throughout the 20th century regarding agricultural development, export growth and the impact of a shock such as the 1930s slump, South East Asian countries benefiting from increases in productivity and public policies, in contrast with West African countries.

This divergence also finds a confirmation with the asymmetry of the impact of terms of trade shocks highlighted by Blattman *et al*. (2004) and Hadass and Williamson (2003), who support the hypothesis made by Hans Singer, i.e. the long-run impact of

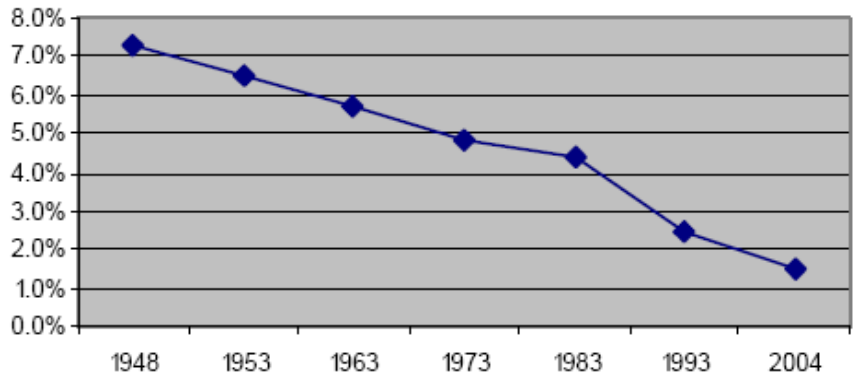
relative price shocks reinforced industrial comparative advantage in the 'center' and favoured the sector that carried growth while it reinforced primary product comparative advantage in the 'periphery', harming the sector that fostered growth.

A great number of commodity-exporting countries exhibit the following features - stabilisation in a low equilibrium, in a low basin of attraction, path dependence, weight of past market structures, remarkable stability of their export structure over decades – e.g., at the beginning of the 20th century, Senegal produced 141 000 tons of groundnuts, which represented 68% of its exports in 1929, and 80% in 1960, and this commodity was still Senegal's principal export at the end of the 20th century (Freud, 1988); e.g., in 1990, oil represented 97% of Nigerian exports, in 2002, 100%, and 98% in 2005 (World Bank *World Development Indicators* 2004, 2006, 2007).

They are similarly characterised by the persistence of a low industrial base: in 1990, SSA thus represented 0.79% of world industrial output, and in 2002, 0.74 %; without South Africa, in 1990, 0.24%, and in 2002, 0.25% (UNIDO, 2005).

Poor commodity-dependent countries are caught in endogenous processes where low productivity, low value-added and the export of commodities reinforce each other. These factors cumulate and push economies towards lower equilibria: indeed, among other causes, due to technological progress, the quantity of commodities used in a unit of GDP has steadily decreased since 1971 (World Bank, 2009a, figure 2.12). The continuous decrease of the share of SSA in world trade is another signal of the divergence of a 'club' of countries.

Figure 6: Sub-Saharan Africa's share of world exports



Source: Subramanian and Matthijs (2007).

Threshold effects, tipping points, random deviations and lasting effects created by external events

Commodity-dependent countries exhibit the other key feature of poverty traps, by which small shocks may generate large effects and make countries fall into lower equilibria. These countries are indeed not only exposed to small shocks, but to

important and recurrent shocks, world business cycles and commodity prices cycles, which affected international trade after the 1970s, and particularly in the 2000s.

Commodity-dependent countries are indeed more likely to be exposed to external shocks. Funke *et al*. (2008), analysing the terms of trade series for goods and services for a panel of 159 countries over 1970-2006 and the persistent terms of trade shocks, find that SSA and the Middle- East have been more affected than Western Hemisphere and Asia-Pacific countries, because of these two regions lesser degree of diversification, dependence on a few natural resources and a lower manufacturing base. During this period, SSA countries exhibited in average more than two persistent terms of trade shocks.

The price shock of 2003-2009 is the largest and longest one since 1900, after three major commodity booms and slumps in the 20th century (1915–17; 1950–57; 1973–74 (World Bank, 2009a, table 2.1).

The 2008-09 global recession, although ongoing and therefore with still unpredictable effects, entails threshold effects. Oil countries experienced the sharpest fluctuation within a year (by one-third, from 150 to 50$). Following past cyclical patterns, commodities linked to industrial activity (e.g., fuels and base metals) have been most affected.

Food prices were less affected, given the lower income elasticity of underlying demand (IMF, 2009a, WEO, chap.1). According to the IMF (2009a, April, chap. 1), the magnitude of price changes and volatility rose to unprecedented levels for many major commodities (as shown in the table below).

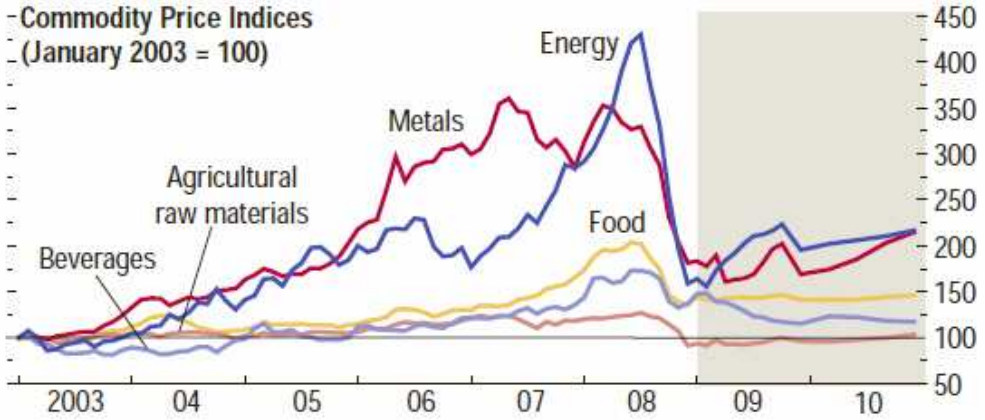
Table 3: Comparison of commodity price volatility (weekly; in percent)

	Six-Month Change			Standard Deviation[1]			
	Largest six-month decline in 2008	Largest six-month decline during 1970–2007[2]	(year)	2008	Highest during 1970–2007[2]	(year)	Average during 1970–2007[2]
Crude oil (WTI)[3]	–76.8	–60.1	(1986)	18.4	16.1	(1999)	8.5
Aluminum	–52.9	–33.4	(1991)	12.1	8.9	(1994)	5.6
Copper	–54.8	–52.6	(1974)	12.2	13.0	(1974)	6.7
Nickel	–68.0	–49.0	(1990)	23.6	17.7	(2006)	9.2
Corn	–52.4	–51.8	(1997)	13.9	13.6	(1988)	7.6
Wheat	–45.2	–38.0	(1996)	16.0	12.9	(2007)	6.4
Soybeans	–44.1	–51.3	(2004)	12.8	15.5	(2004)	6.3
Memorandum							
Gold	–25.4	–30.1	(1981)	8.7	13.3	(1979)	5.1

Sources: Datastream; and IMF staff calculations. 1: Standard deviation of weekly changes in commodity prices over a 12-month period. 2: Data beginning in 1983–2007 for crude oil; 1988–2007 for aluminium; and 1979–2007 for nickel, corn, wheat, and soybeans. With increased financial turmoil in September–October, the price decline accelerated. 3: WTI: West Texas Intermediate.

Similarly, the IMF commodity price index had declined by almost 55% between the July 2008 peak and December 2008.

Figure 7: Commodity and petroleum prices



Source: IMF (2009a)

Developing countries that had an outward-oriented and export-based market structure face a fall in demand from rich countries for their products: this put an end on investment projects and increased unemployment – an immediate effect of a world recession (IMF, 2009a) - investment and employment being the aggregates that have the largest impact on future incomes. For SSA, for example, due to the drop in external demand, falling export prices, and lower capital inflows, in particular FDI, the World Bank forecasts a growth rate of 1% for 2009, down from 5.7% on average over 2006-08 (World Bank, 2009b). The ILO estimates that 73% of SSA workers are in vulnerable employment, which could rise to more than 77% in 2009 (ILO, 2009).

Commodity dependent countries have an undiversified export structure and usually export a very small number of primary products. UNCTAD (2008a) thus builds a dependency rate, which is defined as the average share of the four main commodity exports value, of the value of total exports for the period 2003–2005. A dependency rate above 50% implies that more than 50% of earnings from exports come from the four commodities. It finds that more than half (78) of all developing countries rely on four commodities for 50% of their exports earnings, and 31% rely on four commodities for more than 75% of their export earnings. There is evidence of a relationship with low per capita income: among the 45 least developed countries, 30 exhibit a dependency rate above 50%; moreover, in Africa, 34 of the 52 countries are more than 50% dependent.

Significantly, countries with a dependency rate above 80% are West African countries and Western Asian countries, because they export oil. UNCTAD also underscores that agricultural products such as cotton, cocoa and coffee create high dependence, some SSA countries (Benin and Burkina Faso) exhibiting a dependency rate above 65%. The key point is that commodity prices booms, such as that of 2003-08, may constitute shocks that have a negative impact, i.e. increased dependency due to higher prices.

This highly undiversified export structure, dependence on volatile and declining earnings, obviously generate vulnerability to external shocks and are the exact ingredients of a lack of resilience to shocks: for economies at the tipping point - in various areas, e.g., export earnings, fiscal equilibrium, institutional, individual income, etc – these ingredients may precipitate a fall to a lower equilibrium.

An obvious example is the 1979 global drop in commodity prices (1986 for oil countries), which, despite their growth rates in the two previous decades (and in some cases, high levels of investment and premises of industrial base and diversification, as in Ivory Coast), toppled most commodity-exporting countries into lower equilibrium that still endures 3 decades later, and has transformed them into 'prolonged users' of IMF financing (IMF-IEO, 2002). Three decades later, the cost for these countries of getting out of these 'bad' equilibria – in terms of policies or financing- appears to be very high – and much beyond the capacities of any 'big push', in particular official aid that is often inefficient.

Commodity-dependence also makes these countries highly dependent on imports of the commodities they do not export. For example, the volatility that accompanied the 2005-08 commodity boom hit food-importing countries where the income of a significant part of the population is at subsistence level, and available data suggest that it pushed entire groups into poverty or into deeper poverty.

Macroeconomic volatility – e.g. the growth rate – increases the likelihood of being caught in a lower equilibrium, because it entails asymmetrical processes. At the macro level, past experience shows that periods of bust last longer than booms: commodity prices experience long slumps after short booms (Cashin, McDermott and Scott, 2002).

The simultaneity of macro and micro trapping processes

At the micro-level, macroeconomic volatility – e.g., shocks on commodity prices which are transmitted to producers' earnings, or which create fiscal deficits that reduce publicly provided social security - triggers irreversible processes for the individuals that are close to subsistence income. These individuals sell the assets that are necessary to their future income and productivity, which pushes them in a lower equilibrium and poverty trap, e.g., selling land or reducing spending on children's education.

As emphasised by Zimmerman and Carter (2003), poverty is a dynamic process, and different households respond differently to income shocks depending on the level of their assets. Change in technology enhances productivity, but requires capital and access to credit, which creates thresholds and traps at the household level: the richer have access to credit, investment, higher productivity and higher returns. The poor are caught in a poverty trap that is often compounded by indebtedness due to limited access to credit markets and moneylenders' distorted interest rates. Rates of return are positively correlated with initial wealth, which creates threshold-based multiple equilibria (Barrett and Carter, 2005). This asset-based approach of poverty thus confirms the distinction between deep-rooted, persistent structural poverty and poverty that passes with time due to systemic growth processes, as well as bifurcated

accumulation strategies and dynamic asset poverty thresholds (Carter and Barrett, 2006).

Past experience of shocks on producers' earnings provides evidence of such behaviour: in Indonesia, during the 1997-98 Asian crisis, for example, household spending on education declined – e.g., children were withdrawn from schools -, and even more among the poorest households (Thomas *et al*., 2004).

The 2008-09 recession may induce similar effects. As highlighted by the World Bank (2009b), the fall in internationally traded food prices should alleviate the increases in poverty that occurred during the first half of 2008: however, this does not offset the increase in extreme poverty that ensued from the increase in local food prices between January 2005 and mid-2008, and domestic food prices may decrease, but with a lag. Even if the number of people in extreme poverty decreases, there are here the ingredients of irreversible negative effects on the human capital of future generations and hence intergenerational poverty traps (Dasgupta, 1997).

6. Traps as outcomes of combinations of many determinants

Causality does not mean determinism: the endogeneity of the 'commodity-poverty trap' relationship with other determinants

As presented above, some arguments dismiss the view that commodity-based export structures foster the formation of poverty traps in putting forward the existence of countries that initially grounded their spectacular growth on the exploitation and export of natural resources - oil or non-oil resources (e.g., Scandinavian countries, Canada, etc).

This does not constitute a valid argument: as any macro-level causal process, the impact of this market-structure on the formation of traps may be modified, reoriented, countered or intensified, by a great number of other processes: in particular, these countries' 'initial conditions', such as the history and credibility of their economic and political institutions, their level of education, or demographic and geographic characteristics.

This is this endogeneity that is explored by Barrett and Swallow (2006), with the seminal concept of 'fractal' poverty traps. They define a 'fractal' poverty trap as a trap in which multiple dynamic equilibria involve simultaneously the three "– micro (households, individuals), meso (communities), macro - scales of analysis", these three levels being "self-reinforcing through feedback effects". This simultaneous involvement of all levels makes it so that an economy that has stabilised in such equilibrium has great difficulties to get out of it and reach a different one. When poverty traps are 'fractal', governments, markets and communities are simultaneously trapped in low-level equilibria.

Countries which caught up with rich countries harnessed a variety of factors, such as human capital, education, capacity of innovation (Thorbecke and Wan, 2004; Kim, 2006 on the case of Korea). This contrasts with most commodity-exporting low-

income countries, characterised by slow per capita growth and erratic growth rates: their low levels of human capital together with the lack of industrial sectors and labour markets able to absorb an educated workforce confine them in dualistic market structures, and impede the possibility of spillover effects. This is typically the case of oil countries (e.g., in SSA, Gabon, Angola, Equatorial Guinea, etc.).

Low-income countries not only are not endowed in the factors that endogenously cause growth, but moreover, they are endowed in another factor, i.e., primary products, which generate disincentives for these growth-enhancing factors – commodity-based economies typically generating disincentives for education, and being often associated with oligarchic and corrupt political economies that limit education to a limited elite.

Institutions as key factors of the transformation - countering or reinforcing - of the causality

A key point is the endogeneity of these causalities: i.e., the endogeneity between growth and factors of growth, and secondly, among the latter, institutions in particular, as highlighted by a vast literature, e.g. Acemoglu and Robinson (2006). This endogeneity fosters cumulative and non-linear processes.

Countries which succeeded in the catching-up process developed specific sets of institutions and in turn were helped by them, whether these countries lacked natural resources (e.g. Asian developmental states) or grounded their economy on primary products. The exact form of these institutions, which would have a linear positive or negative relationship with growth, is difficult to assess *ex ante* (Engerman and Sokoloff, 2003). Growth and the content of these institutions co-evolve: simultaneously, growth modifies institutions and the aspiration to certain institutions (e.g., equity, democracy) and institutions modify the type of growth, especially the distribution of its gains. Institutions create or intensify existing threshold effects, and the precise impact of particular institutions can be assessed only *ex post* (Sindzingre, 2007b).

Institutions are a key element of the feedback processes that constitute a commodity-poverty trap. Poor institutions combined with commodity dependence on exports maintain slow growth. Slow growth combined with commodity dependence maintains poor institutions. Commodity dependence, volatile commodity prices and volatile growth rates maintain poor institutions, e.g., predation, cronyism, rent-seeking, the poor quality of which, in turn, reinforces the negative effects of commodity dependence (Mehlum *et al*., 2002; Robinson *et al.*, 2002; Auty, 2001; 2006).

Symmetrically, institutions may shape the exploitation of natural resources in a way that prevents the formation of a trap: they may even trigger a type of harnessing of natural resources that fosters industrialisation. As shown by Wright (1990), David and Wright (1997), in the end-19th century United States, it is a set of specific institutions that transformed the endowment in natural resources (in particular minerals) in engines of industrialisation and increasing returns: in particular, an appropriate legal system, geological research, investment in the infrastructure of

public knowledge, and an education system linked to industry: to quote Wright and Czelusta (2002), mineral abundance was here "an endogenous historical phenomenon driven by collective learning, increasing returns, and an accommodating legal environment".

For example, Norway draws its wealth from oil: it can reach among the highest per capita income level because the risks entailed by the exporting of oil have been countered by another process, resulting from a *longue durée* path dependence, i.e. the consolidation of institutions centred both on equality and efficiency, and rulers having a long time horizon. Significantly, it devised institutions able to lock-in governments' commitments and policies - meta-institutions in the sense of Acemoglu (2003) and Kydland and Prescott (1977) -, in order to prevent a worse lock-in, i.e. a fall into a worse equilibrium such as Dutch disease: oil resources cannot be utilised and go directly to a fund for future generations (the Petroleum Fund) (Mehlum et al., 2008).

Similarly, a combination of appropriate policies and existing institutions were able to modify the potentially negative effects of commodities in Scandinavian countries (Blomström and Kokko, 2003): when institutions are 'producer-friendly', more natural resources may increase income (Mehlum et al., 2006). When such institutions and policies are lacking, this may not be the case (e.g. in Russia, Venezuela). At the extreme, some initial conditions may even accelerate the falling in a commodity-created trap, such as a history of political instability, predatory rulers and high inequality, as is often the case in SSA.

Multiple equilibria as outcomes of self-enforcing combinations of market structures and institutions

Institutions transform the impact of market structures on growth and combine with them. This question has been powerfully analysed by Bowles (2006), who wondered why institutions that have implemented "highly unequal divisions of the social product" have been so widespread since the domestication of animals and plants in prehistoric times, and why they persist even in those cases "where they convey no clear efficiency advantages over other feasible social arrangements". Adopting an evolutionary perspective, Bowles argue that unequal institutions persist over long periods because these arrangements are "self-enforcing conventions", and because in essence the poor have difficulty in coordinating the types of "collective action necessary to 'tip' a population from an unequal to a more equal set of institutions" – this collective action being moreover difficult to trigger when inequality is moderate, while conventions supporting very high levels of inequality can be changed only through collective action implemented by very large fractions of the poor.

The key point that defines the concept of trap is that these processes generate multiple 'growth-export structures-institutions' equilibria - 'low' or 'high'. They are subject to increasing returns and therefore create tipping points that are very costly to reach for economies that are in a low equilibrium. This is why many cross-country regressions exercises trying to find a relationship between institutions and

growth find non-linear effects (as for political institutions, e.g., democracy, Barro, 1994): e.g., the impact of certain institutions on growth (e.g., inequality), or the impact of growth on certain institutions (e.g., on inequality, as in the 'Kuznets curve'). The same applies for the impact of commodity exports.

Typically, 'low' equilibria include institutions that generate the lock-in of social groups, e.g., common kinship norms inciting trust among members and discrimination against non-members, and what Hoff and Sen (2006) coin as "collective conservatism", as well as inequality (Sindzingre, 2007a). These equilibria are not created by divisive norms and inequality alone – as shown by the growth of emerging countries, e.g., Brazil – but by a combination, which stabilises in a low equilibrium and involves a low level of income, high inequality, narrow and 'enclave' industrial sector, an export-structure based on a few commodities, as in many SSA countries.

More than elements taken in isolation, 'combinations matter'. Easterly *et al.* (1993) argued that country characteristics alone, e.g., institutions or geography, could not be relevant determinants of growth, because they are much more stable than the highly unstable growth rates they are supposed to explain. As highlighted by Blattman *et al*. (2004), it is the combination of a commodity-based export structure, of the key characteristic of their price, i.e. volatility, and local institutions, which results in lower growth performance.

Engerman and Sokoloff, in several papers (e.g., 2006) about the impact of institutions, in particular inequality, on growth paths and their divergence in the two Americas, also showed that institutions may create poverty traps, as institutions shape opportunities. Certain economic and political institutions can persist though they close to a large number of individuals the opportunity to own land, or to access education or capital. In Latin America and the Caribbean, these institutions have combined with endowments and market structures, e.g. climate, soils, labour abundance, which fostered slave-based scale economies and resulted in a growth path characterised by slow growth and unequal income distribution.

7. Conclusion

This paper has highlighted the theoretical legacy of the concept of the poverty trap, as well as its main features, such as low equilibria, increasing returns and feedback processes and threshold effects. With a focus on low-income Sub-Saharan African countries, it has assessed the negative effects stemming from market structures characterised by commodity dependence and their price volatility, which had been demonstrated half a century ago by Raul Prebisch and Hans Singer and later by Alfred Maizels. This negative effects have been compounded by the financialisation of commodity markets over 2003-08.

The paper has critically examined the theoretical debates regarding the very existence of poverty traps against competing explanations of African growth

profiles, which have questioned the negative effects of commodity dependence as well as the very existence of 'traps'.

It has shown that commodity-dependent low-income countries exhibit market characteristics that differ from the few developing countries that succeeded in triggering growth and reaching higher equilibria, e.g. in East Asia. The key argument of the paper is that the key features of their past growth experience as well as the ongoing effects of the 2008-09 global recession confirm that poor commodity-dependent countries exhibit all the properties of the concept of the poverty trap: non-linear growth processes; small events' irreversible effects; low equilibria; cumulative causation and increasing gaps with other groups of countries; thresholds and lasting effects created by external events; and simultaneity of macro and micro trapping processes.

Against the critiques of the concept and of a 'commodities-trap' link, the paper has finally underscored that causalities do not constitute determinism: commodity-based market structures combine with other determinants of growth, in particular local institutions, which may aggravate the negative impact or, on the contrary, transform the link towards a basis for growth. As these other determinants are endogenous to growth, it is unlikely that institutions have this latter capacity in low-income countries: this endogeneity is indeed one of the features of poverty traps.

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