



Workshop Working Paper

Understanding Commodities, Linkages and Industrial Development in Africa: Developing a conceptual framework

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1. INTRODUCTION

The strengthening of the industrial sector lies at the heart of the development agenda since there is a close association between incomes, employment and industrialisation. The success of Asian emerging economies in expanding their manufacturing sectors, raising incomes, and enhancing their economic growth rates over the past two decades is suggestive of the fruits to be obtained from this development path. However, the challenge facing many developing economies in promoting industrialisation in the modern era is a complex one. Import substituting industrialisation is no longer an option, and following an export-intensive route is circumscribed for new entrants precisely because of the success of China and other successful Asian exporting economies. Global markets for manufactures are now intensely competitive, making it not just very difficult for new entrants in external markets, but also in competing with imports in their domestic markets. This raises the question as to whether there is a resource based industrialisation path for African economies built on the continents riches in commodities.

Between 2003 and 2011 commodity exporting economies have benefitted greatly from a sustained increase in the price of their exports. However there are great dangers to relying on these resource rents, since the capital intensive nature of many commodities sectors limits employment and the distribution of these rents. Moreover, the fall in commodity prices over the last two years and the resultant decline in GDP growth rates has only emphasized that a diversified economy is more robust and less vulnerable to the shocks which confront monoculture economies, particularly in the commodities sectors which have experienced, and will almost certainly continue to experience severe price volatility. Hence a reliance on extraction is unlikely to provide an alternative resource based industrialisation path. Instead a more reliable route to industrial development in such economies arises from the possibilities of building and strengthening linkages related to commodity production.

2. THE CONVENTIONAL WISDOM

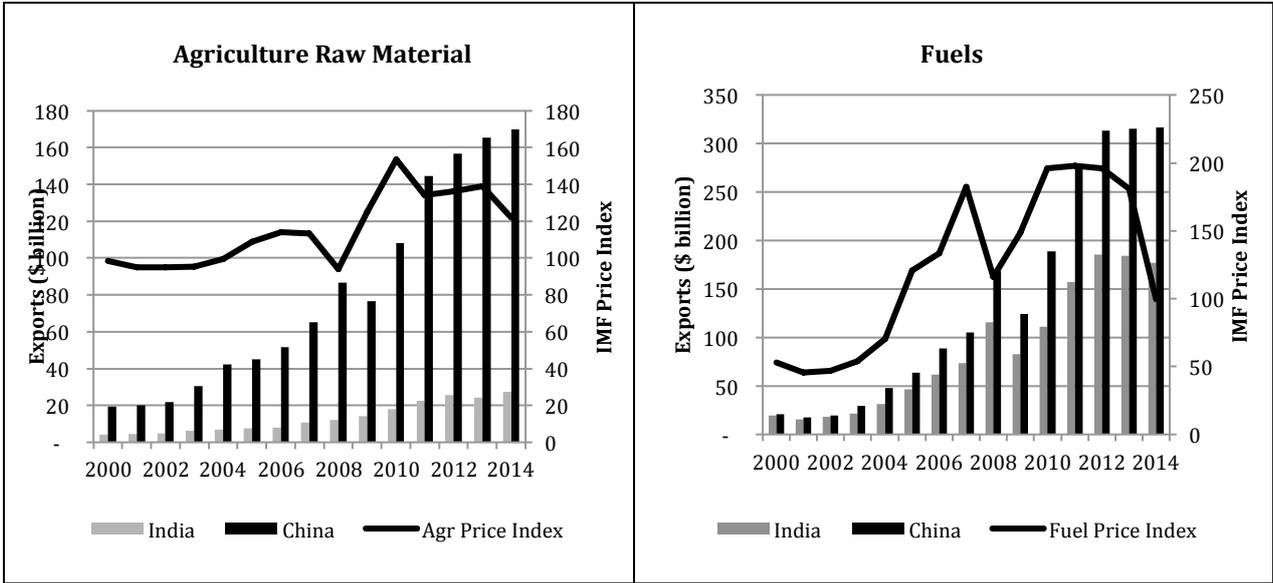
The prevailing orthodoxy has tended to run against using commodity linkage development as the basis for industrialisation. The conventional wisdom (the 'resource curse argument') has rather been that there are few synergies between the commodities and industrial sectors, and moreover that the exploitation of commodities undermines industrial development. This conclusion on the negative consequences for industry echoed a long tradition in development economics of the enclave nature of production in the commodities sector. However this inherited wisdom is problematic. First, there is evidence of synergistic links between manufacturing and the resource sector in the history of a number of industrialised countries – e.g. Canada, the USA, Sweden, Norway, Australia. These historical experiences involved a positive and interactive *symbiosis* in which industrial growth was stimulated by linkages from the commodities sectors. In turn, the capabilities developed in

industry fed back into commodities production by reducing costs and hence enabling the exploitation of less well endowed mineral seams, oil deposits, and agricultural land.

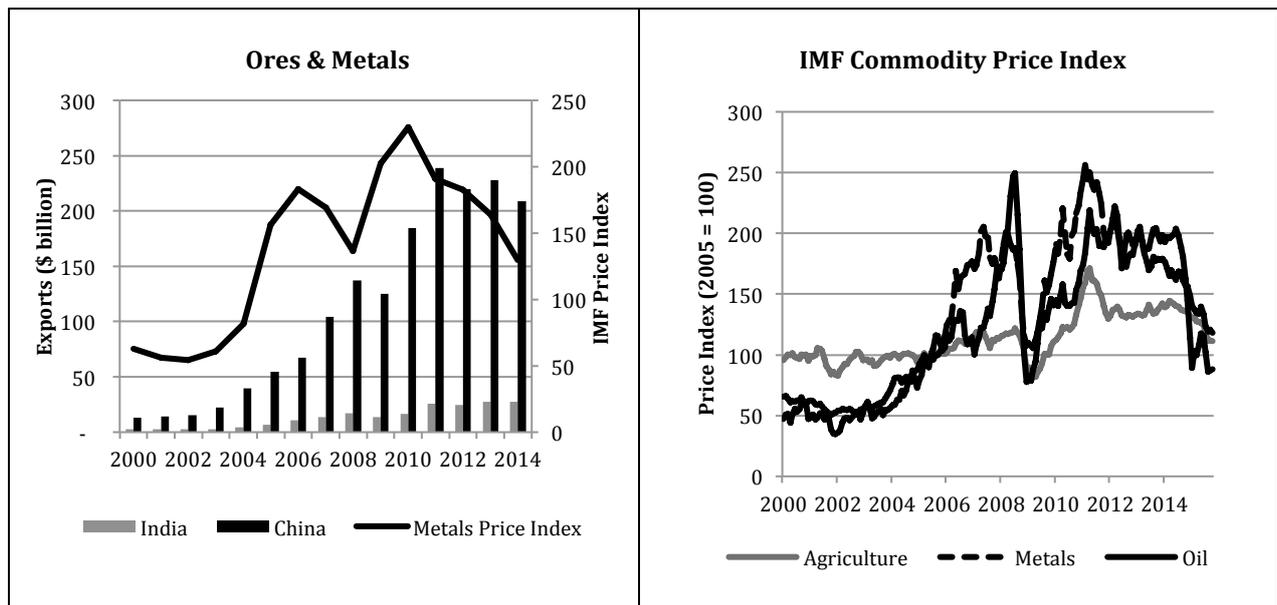
Moreover at the empirical level there have been a series of developments in the global economy in recent years which provide new opportunities for economies specialising in commodities. Key amongst these has been the very rapid rise of the Chinese economy. China’s resource intensive GDP growth triggered the commodity price boom in 2003, but as Chinese GDP growth rates have slowed, price levels have retreated. In August 2015, the Bloomberg Commodity Index crashed to a 16 year low¹. Various drivers, both political and economic, have affected the current price levels, and prices are not expected to experience a turn until the end of 2017 at the earliest.

However China’s slowing rates of growth often mask the volume of oil and minerals demand from the country. While it is true that the rate of growth for mineral and oil consumption is decreasing, overall there is still a positive addition to its consumption. Figure 1 shows the imports for oil, minerals and metals and agricultural raw materials (as a proximate value for consumption) for China and India over the past decade. Apart from a small slight dip in 2014 for metals (related more to a change in value rather than volume), the demand from China has been steady, even over the recent period of price decline.

Figure 1: Commodity Imports for China and India and Prices (2000-2014)



¹ <http://www.bloomberg.com/news/articles/2015-08-24/bloomberg-commodity-index-slides-to-lowest-level-in-16-years>



Source: Trade data from WITS <wits.worldbank.org>, Price data from IMF.Org accessed December 2015

Concerns are expressed that commodity prices are falling back again as happened after the short-lived booms of the 1970s. However, the global economy is increasingly driven by low and middle income economies focused on expanding infrastructure spend – where most minerals and energy commodities are consumed.

China has become a significant global importer of commodities, with India and Brazil being other rapidly growing low per capita income economies that in the coming decades will also be increasing their demand for commodities.

In the light of the continued growth in demand for commodities, the upturn in prices that is expected in the future, the long gestation period in increasing the supply of many commodities and the exhaustion of low-cost supplies, the case for commodities as a means to industrialisation remains a strong possibility, despite the current downturn in international prices.

3. COMMODITIES, GLOBAL VALUE CHAINS AND OUTSOURCING

The prospects for diversification in commodity producing economies have been lifted by four factors. First, Africa is the new frontier for commodity production. As the CEO of Glencore (the world’s leading commodity-trader-producer) remarked prior to its public flotation in 2011 – “Unfortunately, God put the minerals in different parts of the world. We took the nice, simple, easy stuff first from Australia, we took it from the United States, we went to South America and we dug it out of the ground there. Now we have to go to more remote [and unstable] places [in Africa]”. Second, the reconsideration of the link between commodities, industrialisation and growth does not support the resource curse gloom that has often characterised the challenge of structural transformation in low income economies.

Third, after very many decades of declining relative prices, it appears higher commodity prices (relative to the 1990s) are here to stay. Fourth, as we shall see, many of the lead-firms in commodity value chains do not seek to become enclave firms and instead are actively searching to reduce their costs and to outsource a range of activities which are not within their core competences.

In the context of the opportunities opened up by the boom in commodities prices, how can Africa act to ensure that the benefits are more widely spread in order to promote sustainable development for the population at large and to protect economies from the volatility of commodity prices? One key contributor to meeting this objective is the promotion of industrial and service linkages from the commodities sector. There are three categories of linkages. The first are fiscal linkages - the resource rents, which the government is able to harvest from the commodities sectors in the form of corporate taxes, royalties and taxes on the incomes of employees. These rents can be used to promote industrial development in sectors unrelated to commodities. The second major category of linkages is consumption linkages - the demand for the output of other sectors arising from the expenditures incurred by the commodities sector. Production linkages – backward, forward and horizontal – feeding into, out of and tangential to commodity extraction is the third set of linkages.

In line with the 'resource curse' argument there has been a widespread belief in policy circles that these production linkages are weak and hold little potential in the future, in part because of the *enclave mentality* of major resource producing firms. The tendency of resource producing firms to act in isolation from the economy may have been a historical reality. But the modern resource based lead firm operates in a similar fashion to all large MNC lead firms in the current era of globalisation. The deepening of globalisation after the 1970s led to intensified competition as firms were subject to a larger pool of competitors. One of the most important responses to this was the drive by firms to concentrate on their core competences – i.e. those activities in which they had distinctive competences, were unique to the firm, where there were barriers to entry, were difficult to copy, were valuable in the market place, and yielded the greatest rents.

As a consequence there was a growing trend for non-core activities to be outsourced to low cost suppliers globally and for firms and economies to specialise in capabilities rather than wholly manufactured products. This gave rise to the fragmentation and slicing up of production into a myriad of sub-processes able to be undertaken in parallel – that is, at the same time. Since there is little processing loss in production and no degradation of inputs, there is no intrinsic need for the various stages to be co-located. The more complex and extended the chain – that is, the greater the number of stages in value addition - the more likely it will be vertically specialised. In general this occurs in the manufacturing sector where final products are assembled using a variety of components (more than 3,000 in the case of an automobile). They therefore lend themselves ideally to global dispersion. Thus emerged the dominance of global value chains (GVCs), the global dispersion of production, and the

emergence of Asian manufacturing suppliers able to take advantage of this opportunity, in this era of globalisation.

Resource based sectors are also dominated by global value chains and follow a similar process of outsourcing. There is an important difference however in these sectors producing commodities. As a result of their fixed locational aspects, they create the opportunity to involve a process of sequentially adding value to each subsequent stage of the chain within the same country. For example, raw materials such as minerals and agricultural produce can be transformed and then processed in successive downstream stages before they are exported. Upstream inputs can be more easily sourced locally. Given the opportunity for accumulation of value addition these GVCs are therefore known as *additive value chains*.

The resource sectors tend to be dominated by additive value chains for a number of reasons. First, the options for advancing value addition inside the country are bounded by the technical characteristics of the processing activities. Resource extraction is relatively immobile, that is, it is determined by a gift of nature. In addition, it is often also highly specific, since no two deposits or plots of land are identical. These various stages of production are generally necessarily additive – that is, they are sequential outcomes of previous stages of transformation. Second, in the case of almost all natural resources there is extensive weight/volume loss in processing, or degradation in the quality of agricultural inputs if they are not processed soon after harvesting. But this is not always the case. For example, in order to preserve its flavour, coffee roasting and grinding have to be done near the consumption stage. Third, when there are few rents in forward processing (in other words, many producers can compete against each other), lead firms often encourage value additive value chains in resource producing economies.

Using input-output and trade data sets, It is estimated that 85% of global GVC trade occurs within three trading regions – East Asia, North America and Europe - and that three quarters of this trade involves the use of imported components in final exports. In other words, most GVC trade is vertically specialised, that is, 'backward specialisation'. These GVCs are also growing more rapidly than the additive, forward participation GVCs. However, the pattern of GVC extension in resource intensive low and middle income economies is a mirror image of these global developments. For example, the structure of Africa's insertion into GVCs is very different from the global picture. 75% of its trade is in additive 'forward specialisation' VCs and most of the vertical specialisation 'backward specialisation' value chains are in South Africa. This is because the resource sector GVCs are predominantly (but of course not exclusively) additive in nature.

Lead resource based MNCs in the global mining and oil and gas industries, although relatively late entrants to this trend towards specialisation and outsourcing, have come to operate in a similar manner as vertically specialised manufacturing value chains. They increasingly seek to concentrate on their core competences, and to *outsource* everything else to other firms. If these supplier firms are near resource extraction operations and can

provide low cost and quality inputs reliably, or process commodities effectively, than this is in the direct interest of the resource-extracting firm. Given the current investment climate, the global extractive sector is more so than ever, focusing on cost management; the internal drive to outsource is now stronger than before. Thus, far from the lead commodity firms obstructing linkage development as the resource curse literature mentioned earlier would argue, it is now increasingly one of their primary objectives.

Once the resource extraction lead firms have made the decision in principle to outsource non-core activities, the first task was to find the lowest cost suppliers able to produce to the required quality and meet delivery schedules reliably. Suppliers able to offer unique technological competences of their own were particularly attractive, especially in the first tier of suppliers. However, the logic is wherever possible to have these suppliers locate production and service delivery close to the doorstep, rather than located abroad, or some distance from the lead firm's activity. It follows from this that "local" is a relative concept meaning something like "nearer than faraway"! That is, in some circumstances it may be directly proximate to the extractive industry, in other cases in the local region, in the country or in the continental region. The substantive point is that it reflects a drive to minimise distance in the sourcing of inputs and the processing of outputs. An efficient proximate supplier provides the capacity for flexible and tailored responses to the needs of the lead firm, allows for value chain inventories to be reduced, and removes uncertainties associated with extended logistics. Again, with the current pressures for cost reductions, the lead firm's interest in closely locating its suppliers has increased.

Extractive firms have moved away from a high level of vertical integration towards outsourcing almost every stage in the process to independent firms, including the provision of capital goods and intermediate inputs. This desirability of finding an efficient local supplier is particularly attractive in Africa. This is because transport and logistics are poorly developed, because goods brought in from outside may be subject to long and unpredictable delays and because government policies have often mandated the deepening of local value added. Supplier firms have responded to these opportunities to be incorporated in the chain. For example, Bell Equipment in South Africa built competences in the domestic mining sector, and then became a supplier of these machines into a number of global markets, including the mining, construction, sugar and forestry sectors. There has also been growth in the outsourcing of knowledge intensive services, and this has led to the emergence of specialised knowledge intensive mining services providers (SKIMS), offering not only specialised services but also other high technology inputs. Companies such as SRK in South Africa, which started as a service provider to Anglo American, have grown into a global mining consulting firm. Anglo American runs a strong supplier development program in most of the countries it operates in, including the Zimele program in South Africa. The development of local suppliers is more advanced in Chile where global mining companies are actively involved in building capabilities in their suppliers. BHP Billiton, for example, has an extensive supplier development program in Chile.

to operate on an ongoing basis. Often these inputs involve considerable skills, and vary considerably. From high levels of complexity (earthmoving equipment) to the assembly and sub-manufacture of the cables which link sub-sea oil wells to surface vessels and to land in the Angolan oil industry. Or much less technology-intensive inputs which range from the provision of basic utilities (water and power), the provisions required to feed the workforce, spares, and office supplies and spares. In the soft commodities sector, the range of inputs required to facilitate production include seeds, fertilisers, packaging materials and transport.

In addition to these material inputs, ongoing production requires inputs from the service sector. Some of these services may be technologically demanding. But even here there are signs of developing backward linkages in African extractive economies. For example, in the Nigerian oil sector, there is evidence of considerable local supply in the provision of IT services. In Zambia, engineering, repair and maintenance services have played an important role in building industrial capabilities. Similarly Chinese owned oil companies in the Sudan have encouraged substantial local supply from around 90 locally based Chinese-owned enterprises employing over 4,600 workers. Other services, such as the provision of security staff to govern access to the site, transport and logistics, maintaining office equipment, and auditing services have fewer technological and skill barriers to entry.

Putting this range of backwardly-sourced inputs together with the active desire of lead firms to outsource activities which are not in their core competence, we can see that there is a large potential for backward linkages from the commodities sector. Whilst some operations in the commodities sector itself may be large scale and technologically complex by nature, this may not apply to many of the intermediate goods, provisions and services which this sector depends on. It is therefore not surprising that despite the widespread belief that commodities extraction is an enclave activity, there are in reality many linkages which have been, and are being forged with the local economies in which they operate. The extent of these linkages of course depends on the capabilities of local firms and logistics and infrastructure costs. But, whatever the level of these local capacities, there will be a categories of potential inputs that can be supplied, and are being supplied by local firms.

4. AN OVERVIEW OF LINKAGE DEVELOPMENT

Developing a more complex and detailed understanding of *production linkages* in relation to value chains in the resource sectors is therefore crucial for a more in depth understanding of the possibilities of a resource based industrialisation path for Africa. Production linkages feed directly and indirectly into and out of the resource sector and hold the key to a resource based industrialisation path for Africa. We can specify three sets of direct and indirect production linkages.

- Backward linkages refer to suppliers directly feeding inputs into the resource sector. These range in technological sophistication, down to the provision of basic consumption goods for workers, and involve varying degrees of barriers to entry. These backward linkages have historically played a crucial part in fostering

industrialisation trajectories in a number of countries, ranging from the USA in the 19th century to South Africa in the 20th century.

- Forward linkages refer to the range of direct downstream activities which use commodities to feed into other sectors. These range from simple processing (iron ore into steel, oil into petrol) to the conversion of raw materials into manufactured products (fabricated metal into pots and pans, timber into furniture).
- Horizontal linkages are more indirect. They describe the ability of ancillary firms to extend capabilities, originally developed in relation to and linked to the resource sector, but which have widespread application in other unrelated sectors.

Distinction can also be made between the breadth and depth of linkages. “Breadth” refers to the range of inputs that feed into and emerge from resource extraction. This is reflected, for example, in the share of locally sourced inputs in resource extraction. However, outsourcing means that these local supply links may merely be importers of inputs previously acquired directly by the resource extracting firm and may involve little addition of value in the supply chain. Thus, the “depth” of linkages is a separate aspect of linkage development, and refers to the degree of local value added. Clearly the development of an industrialisation path from resources is more concerned with this aspect of linkage development.

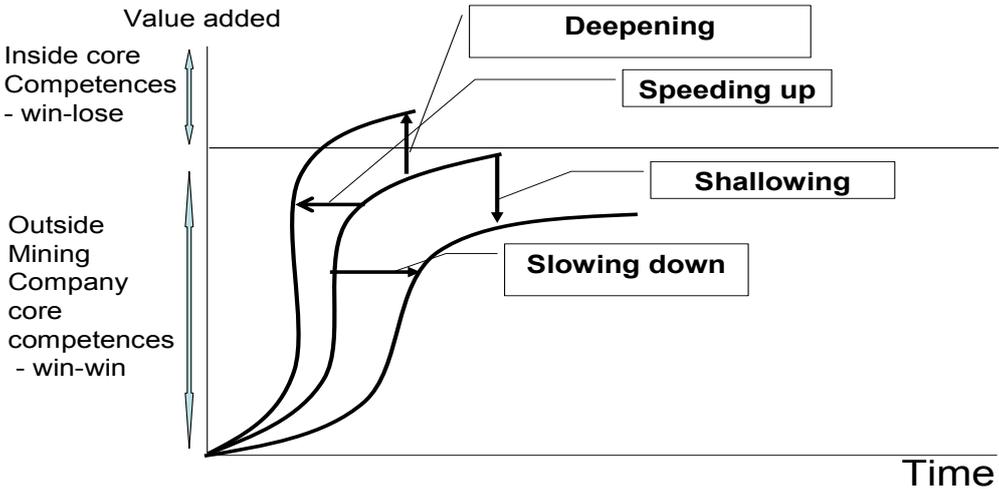
Finally one has to distinguish between local linkages and local ownership. In terms of the promotion of industrialisation, with its concomitant impacts on employment and incomes, deepening local value added through industrial and service development is a crucial aspect of linkage development. In this respect it is a mistake to conflate local linkage development with local (national) ownership. Many African governments appear to misunderstand this issue in linkage development, assuming it to be an extension of local ownership rather than that of deepening local value added, and local productive sector development. This is not to say that ownership is not an important aspect of linkage development, since locally owned firms are more embedded in a society’s social fabric and more likely to develop innovation processes.

On the basis of the framework set out above it is possible to construct a general model of linkage development aimed at resource based industrialisation and based on the localisation of what was previously imported and the growing trend towards outsourcing by lead commodity firms. Figure 2 sets out the basic parameters of this model. The vertical axis represents the accretion of value added in the provision of inputs into the production of a commodity. Based on the insights drawn from the core competences framework we can distinguish on the one hand inputs which the lead commodity producers have no intrinsic interest in maintaining in-house since they do not reflect their core competences. These are *win-win* linkages – i.e. lead commodity producing firms and local suppliers and customers have a common interest in developing local linkages. On the other hand, there are a range of productive activities which are central to the firm’s competitiveness and which it is reluctant to see undertaken by a competitor. These are therefore *win-lose* linkages, and lead

firms will only give up these productive spaces if forced to do so by effective policy or other contingent factors.

The horizontal axis reflects the passage of time. The curve therefore shows that, as a general consequence of the building of local competences over time and the active search by lead commodity producers to outsource the production of backward and forward linkages (inputs/outputs) which are not within their core competences, there is a market-driven process of linkage development. Over time an increasing proportion are initially sourced or processed outside of the lead firm, and subsequently to producers in the local economy. Initially the pace of outsourcing is slow. It then speeds up and subsequently tails off as the easy hits are exhausted. The rate of change is low when countries have weakly developed industrial competences, where commodity extraction is a relatively recent phenomenon, where relatively few inputs are required, and/or where the policy environment is poorly developed. The rate of change is high when the opposite factors prevail. When positive, it can speed up and/or deepen linkage development; when negative it can slow down/shallow linkage development.

Figure 2: Market driven linkages over time



The trajectory of the deepening of local linkages will change over time as a consequence of five major inter-related factors. The first is the bundle of critical success factors required by the buyers. This will involve a range of requirements, including price, quality and reliability of delivery, and these critical success factors will vary with the nature of the inputs. The second is time – the market-led incorporation of inputs is a natural function of time as lead commodity firms and potential suppliers assess competitive costing profiles and develop the capabilities to supply and to buy effectively. The third factor affecting deepening is scale – the larger the commodity extracting activity, the more likely that suppliers will be able to generate the scale economies to achieve competitive production. The fourth factor is the complexity of the input – the greater the degree of complexity, the less likely in most

environments that suppliers will be able to respond in the short- to medium-term. And finally, the capacity of local suppliers to respond to the needs of buyers competitively will depend on their *dynamic* capabilities. "Global competitiveness" is a moving frontier, and the challenge for domestic suppliers is at the very least to keep up with this rate of improvement and ideally to increase the rate of their competitive improvement.

5. THE ROLE OF GOVERNMENT AND LOCAL PRODUCTIVE POLICY

Government implementation capacity to effect policy change plays a crucial role in determining which direction these processes will follow. Governments often intervene in this process of linkage building in order to maximise the extent to which these outsourced activities occur domestically. Government involvement may be effective such that it acts to both deepen and speed up these linkages (the curve shifts up, and to the left), or where policy is badly-focused and implemented, to slow down and make the linkages shallower (the curve moves to the right and down) (Fig 2).

Governments are interested in the promotion of linkages from the commodities sectors for five major reasons. Firstly, most governments prioritise the promotion of growth and employment. In general, in the hard and energy commodities sectors which are characterised by capital-intensive processing technologies, the employment potential arising from forward linkages is limited. This does not apply though as a general rule in soft commodities, where forward linkages involving the processing of commodities are often labour intensive. By contrast, backward linkages into all three families of commodities are generally relatively labour intensive in nature, particularly at early stages of the development of local supply, and are thus an attractive source of diversification for governments. These forward and backward linkages may also increase GDP, although where the profitability of producers and users is wholly dependent on extensive government intervention and support, this increase may be nominal rather than real.

Second, this provides a major opportunity for economic diversification of the economy. The development of linkages provides some form of signposting for the development of the industrial and service sectors. But following a linkage thread from the commodities sector does not necessarily translate into the development of an efficient and competitive diversified economy.

Third, and related to the signposting involved in diversification, is the capacity which may be provided to develop dynamic capabilities over time. Whilst governments may know that in the short-term there is little prospect of developing efficient linkages activities, they may have good reasons to believe that this is a problem which may be solved, or at least be diminished over time. Hence they may actively target linkages in their industrial policy in the belief that complementary development of the national systems of innovation may result in

a competitive diversified economy in the future. This is a policy agenda which Botswana has explicitly adopted in the promotion of forward linkages from its diamond-mining sector.

Fourth, linkages from the commodities sector may lead to the generation of external economies. We have already given the examples of South Africa's hydraulic engineering industry. But these are examples drawn from the more knowledge-intensive side of the linkage spectrum. In Angola, which is characterised by a particularly weak metallurgical sector, the stimulation of a basic metal-working capability required in the manufacture and assembly of control lines between the subsea and the surface is helping to create a demand for metal-working capabilities which will have wide-ranging implications for other manufacturing sectors and for the construction and infrastructure sectors. In Nigeria, IT skills created in serving the needs of the oil sector, are also being applied to other sectors. Another important avenue for external economies are the intra- and inter-sectoral linkages arising from the development of infrastructure to meet the needs of the commodities sector. For example, the improvement of the Central Corridor, linking the Tanzanian coast with its interior, and then Rwanda and the DRC, is an example of how linkages developed in a mining sector could spill over into economic opportunities for agriculture and for mining in other sectors and other countries.

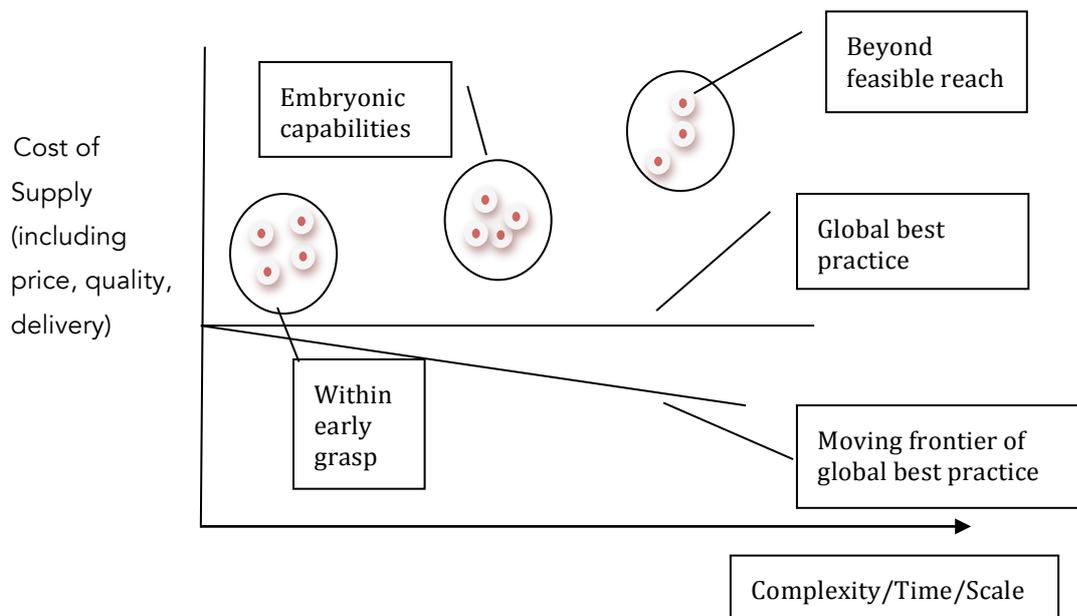
Fifth, government intervention to foster the development of linkages also follows from the failure of lead commodity producers to strategise effectively and then to implement the development of their supply base. They often fail to "walk the talk" and hence there are insufficient examples of MNCs effectively mentoring and guiding potential local suppliers, even though most claim that this is a central concern for them. Why does this happen when the development of local suppliers holds such competitive advantages for these lead commodity producers and where many of the mining houses have formally committed themselves to encouraging and supporting local development? In part, the explanation lies in the sociology of the firm, and the routines which it generates. Even in manufacturing - where supply chain management is most developed - outside of large Japanese firms and a few of their US and European competitors, supply chain development is generally a commitment rather than a reality. The commodities sector is a latecomer in its commitment to supply chain development, which compounds these problems of non-implementation.

A further reason why lead firms in the commodities sector fail to develop effective supply chain development strategies for local suppliers arises from the nature of the contracts which are struck when investments are committed to build new mines and oil wells. The general rule is for the mining firm/or the oilfield operator to sub-contract mine-building or well-construction to specialised construction and installation firms. These contractors operate at a global level and have long-established links with their own sub-contractors. More importantly, the firms involved in construction do not run the mine. Hence standards are set for the mine/oil builder which may be poorly geared for using local suppliers on an ongoing basis. For example, in Tanzania, the firm responsible for building one of the new gold mines was based in Australia. The specifications it used for plastic-piping and electric fittings met Australian standards, rather than Tanzanian standards, thereby effectively ruling

out local second- contractors in the mine-building process. A third reason why lead commodity producers do not make optimal use of local suppliers arises particularly when the mine or well is located in foreign, isolated, and often harsh conditions. Consequently supply chain management staff and the purchasing function characteristically work on short and intensive work cycles - typically six weeks on, and six weeks off. Coupled with their failure to speak the local language, their short residency militates against building the long-term personal relations with local suppliers which are often critical to an extension of local sourcing and to the successful implementation of supply chain development programmes.

From a government policy perspective it is possible to identify three sets of possible productive policy outcomes (Figure 3). The first are the “low hanging fruit” – linkage opportunities which are either available locally at lower or close to the acquisition costs than imported supplies. These provide short term returns to lead commodity firms and their suppliers and customers. The second set comprises local producers who have the embryonic capacity to be competitive, but who need time and support in order to grow their capabilities if they are to approach the global frontier. Finally there are the ambitious and often high profile linkages which are beyond feasible reach. It will be some time, if ever, before local producers can provide competitive inputs in these activities. The danger here lies in rent seeking activities from various stakeholders who wish to promote unrealistic policies to enrich themselves. Policy here should be focused on blocking the political pressures often exerted by local stakeholders to promote these overly ambitious linkages. These three categories are intrinsically contextual. Which are included in which group will reflect sectoral characteristics (for example, easier in agriculture than in deep-sea oil), country capabilities (linkages will be deeper and broader in South Africa than in Tanzania), technological change (the frontier of global competitiveness will shift to varying degrees), time (capabilities take some time to develop), and the critical role of productive policy.

Figure 3: The trajectory of local supply



Hence if linkage development is to be enhanced, governments and firms need to develop a strategic focus for linkage development. Central to this analysis of the attributes of successful policy design and implementation is the question of strategy. This is a critical precursor, midwife and parent to an effective programme of linkage extension. Guiding this process of strategic focus – affecting not just policies directed to the resource sector itself, but policies (such as those on infrastructure and skill development) which have indirect impacts on linkage development – is the need for stakeholders to align their visions to take advantage of the significant scope for win-win linkage development.

An important caveat to this model of the development of linkages over time, particularly when government has intervened to speed up and deepen linkage-development, is that some of the outcomes may not be “economically optimal”. That is, policies designed to increase local content in backward linkages or to promote forward linkages may be very costly, with inefficiencies in these linkage provision consuming some of the resource rents generated in the commodities sector. Similarly, where government policies hold back the development of linkages which would have occurred as a natural consequence of market forces, there may also be opportunity costs associated with not encouraging the development of linkages. In this case, it is the foregone benefits which are lost where faster and deeper linkage development would have provided local incomes, supported the development of local capabilities and saved foreign exchange expenditures. It is difficult to argue the case *a priori* whether short-run inefficiencies are an optimal way of developing efficient long-run capabilities, since this will vary across sectors and countries and over time.

It is however a prime consideration in the policies adopted towards increasing the breadth and depth of linkages in the commodities sectors.

6. CONCLUSION

In conclusion, the growing obstacles to traditional drivers of industrialisation – import substituting and export-oriented industrialisation – make it imperative that all economies, including commodity-exporting economies, develop effective strategies to promote their industrial sectors. As we have seen, there is a renewed opportunity open to commodity exporting low income economies which arises from a continuing, and probably prolonged commodity boom, and the development of corporate strategies designed to maximise the outsourcing of non-core activities. Handled effectively, this provides the potential to foster economic diversification by building on forward and (especially) backward linkages. But it is a strategic path which is littered with the corpses of failed attempts, undermined by a combination of weak and inappropriate policy support and grandiose and unrealistic expectations about the capacity of the economy to develop dynamic comparative advantages.

Thus, policy responses need to be evidence-based and strategic, aligned to corporate visions and implementation plans, and to be complemented by policy instruments which provide appropriate incentives and sanctions. Moreover – and here it is important to learn a lesson from China’s recent development experience – one-size-does-not-fit-all, and policy needs to be pragmatic and flexible. Context is important, since there are major differences between the three families of soft, hard and energy commodities, as well as important intra-family differences. Moreover, each economy is individual, and experiences a moving frontier of capabilities and political-economic characteristics. It is also clear from international evidence that effective policy is a process rather than a document, and that it necessarily involves close interaction between public and private stakeholders, and in some cases also civil society stakeholders.

Perhaps the most important lesson to be learned from the development of outsourcing strategies by lead firms in global value chains is that the enclave mentality to diversification in low economies is an anachronism. There is extensive scope for governments and the private sector - lead commodity producers and those firms with the potential to develop linkages in the commodities sector - to work together to identify the range of win-win outcomes available in promoting diversification. The consequence of the legacy of mistrust in many countries, the blinkered visions of firms (a form of pervasive market failure) and historically inappropriate and ineffective policies may have dampened linkages in the past. But by the same token they are suggestive of substantial opportunity in the future.

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