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CAPABILITY BUILDING IN SSA: WHAT DIFFERENCE DO THE ASIAN DRIVERS MAKE?

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Abstract
As Sanjaya Lall was acutely aware, the ability to sustain income growth depends on the development of dynamic capabilities and the capacity to generate and appropriate innovation rents. This has often been conflated with the deepening of industrialisation, including by Sanjaya himself. But, with the extraordinarily rapid and global growth of Chinese manufacturing, there is no longer a simple one-to-one relationship between industrial development and sustainable income growth. In this paper, we will show that Sanjaya's many contributions provided the key to the promotion of a suitable response to this Asian challenge, but that he was mistaken in his conflation of industrialisation with the building of technological capabilities.

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1. FOUR RECURRING THEMES

Four linked themes pervade Sanjaya's formidable written output and his practical efforts to make the world a better place for poor people living in low-income economies. They resonate throughout his work, and here I only provide exemplar quotes to illustrate these themes.

First, Sanjaya was acutely aware of the intense nature of global competition, and the impact which premature exposure to this competition could have on employment and incomes – "Globalization is a pervasive influence on industrialization in the developing world. As the embodiment of technological progress and more open markets, it offers huge productive benefits to developing countries. However, its effects are very uneven. It is driving a growing wedge between the (relatively few) successful countries and the (large mass of) others. The wedge is not a temporary one, a 'J curve' that will reverse itself if countries persist with liberalization." (Lall, 2004:189). He was also driven by the recognition that global competition was dynamic, continually stretching the global technological frontier – "*Competitiveness in industrial activities means developing relative efficiency along with sustainable growth*…. Being a static low-wage exporter of simple products would not be considered genuine competitiveness, even given the narrow, possibly short lived, competitive edge in these products" (Lall, 2001: 6).

Second, the ability to participate in a global economy in a way which provides for sustainable income growth requires the development of what he called "technological capabilities". Here Sanjaya was very much informed by evolutionary economics which emphasised that these capabilities were both cumulative and path-dependent – "To summarize the main findings of the Technological Capabilities approach, the process of becoming efficient in industry is slow, risky and costly and often prolonged" (Lall, 1995:2021). This poses challenges for the firm which " …need[s] time and effort to learn to use technologies efficiently, and to conduct technological effort. Technical choice, mastery of technologies, minor improvements or adaptations, and more major technological innovations, are part of a continuum of technical effort, undertaken in a relatively risky and unpredictable world of imperfectly understood information and an even more imperfectly seen future" (2001:35).

But, third, the development of technological capabilities also poses challenges to government, since market failure in the accumulation of technological capabilities is pervasive. This calls for interventions in both factor and product markets – "In the presence of widespread market failures, simply leaving matters to the market can penalize the development process. In particular, it can hold back entry into activities with complex technologies, increasing of local content and the undertaking of demanding technological tasks locally, what may be broadly labelled "industrial deepening." (ibid:1995)

Sanjaya identified a range of policy domains, placing particular emphasis on the development of human resources (Lall, 1992; Lall 2003; Lall, 2005) making the most of the potentially productive role of FDI in technology transfer (Lall, 1993; Lall & Pietrobelli 2003; Lall & Narula, 2004), and for investments in R&D (Lall, 1979; Lall, 1998; Lall, 2004) and the national system of innovation (Lall, 2001). He also provided

an extremely useful taxonomy for thinking about different categories of policy and I will return to this in the concluding section of this paper.

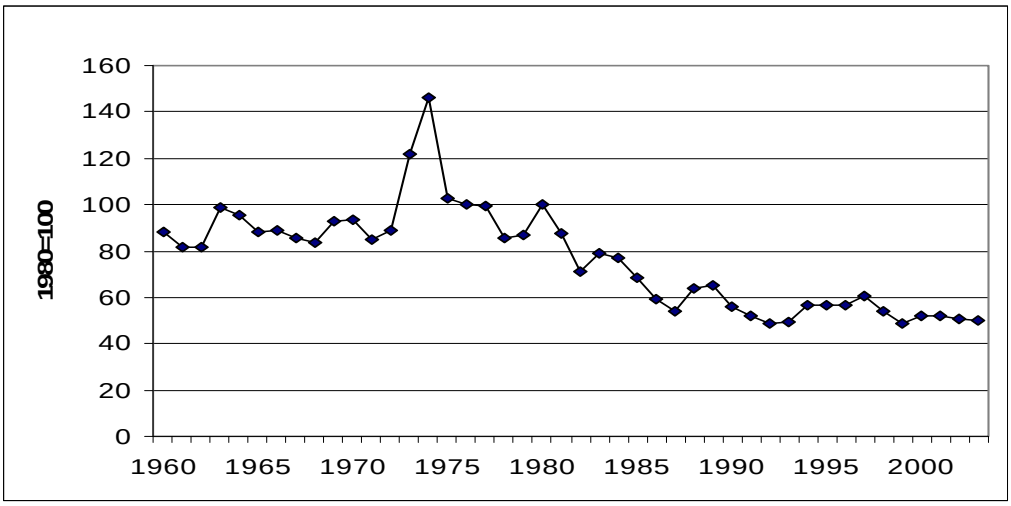
The fourth of Sanjaya's dominant themes was the primary role he gave to industrialisation. He saw the manufacturing sector as the primary embodiment of technological capabilities. For example, with respect to delivering sustainable growth in SSA, Sanjaya concluded that "…manufacturing is the only sector of the economy that appears to be able to act as a catalyst of economic development and modernization. As many other countries have done, Africa must industrialize efficiently in order to achieve growth and competitiveness and reap the benefits of modern technology.' (Lall & Pietrobelli, 2003:2)

2. FOCUSING ON INDUSTRY

Sanjaya was not alone in his commitment to industrialisation as the primary economic building block in development strategy. Indeed, the drive to industrialisation has been a central component of almost all growth and development agendas since the industrial revolution showed that the manufacturing sector was able to deliver faster and more sustained productivity growth than either the agricultural or service sectors.

Until the 1950s it was widely believed that this differential productivity growth would result in a declining terms of trade against manufactures, and in favour of agricultural products. It was Hans Singer, and then Raul Prebisch, who deflated this myth in the early 1950s (Singer, 1950; Prebisch, 1950). They showed that in actual fact, the terms of trade were turning in favour of manufactures and against commodities (Figure 1). In demolishing this orthodoxy, Singer and Prebisch explained these trends in the terms of trade as resulting from a number of factors – the lower income elasticity of demand and higher price elasticity of demand of commodities; the development of synthetic substitutes for primary products; and the fact that commodities were only one of many inputs into final manufactures meant that a proportionate increase in the price of manufactures would have a lower impact on commodity-producer incomes compared to those arising in the production of commodities.

Figure 1: Manufactures-commodities terms of trade, 1960-2004



Source: Drawn from UNCTAD-database

Singer-Prebisch added a further explanation for the declining terms of trade experienced by commodity producers, drawing on a framework subsequently developed by W Arthur Lewis on the structure of labour markets (Arthur Lewis, 1954). They argued that commodity production in low income economies occurred in the context of a reserve army of labour. This meant that wages were maintained at the level of subsistence agricultural incomes. In contrast, manufactures were produced in high income markets characterised by tight labour markets and with strong trades unions. In these labour-constrained (and, in the post war period, also supply-constrained) economies, product prices were set on a "cost-plus" basis. Implicit in this perspective on labour markets was a theory of rent, that is, that the level of incomes are determined by barriers to entry and scarcity. In this early 1950s Singer formulation, labour in low-income economies was in abundant supply and suffered from the absence of rents.

It is worth noting that this last Singer-Prebisch explanation for rising manufacturing terms of trade was really an argument about country endowments rather than product attributes. This being the case, the logic of their argument would have been to chart the relative prices over time of products emanating from labour-surplus and labour-constrained economies rather than commodity versus manufactured products. However the absence of a suitable database on trade and prices led them to use commodities and manufactures as a *surrogate* for labour-surplus and labour-constrained economies. This was an appropriate slight of hand in that at least for the first two decades after WW2 it was in fact the case that low income countries overwhelmingly exported primary products to high income countries; in turn, high income economies exported manufactures to low income economies and mostly traded manufactures with other high income economies.

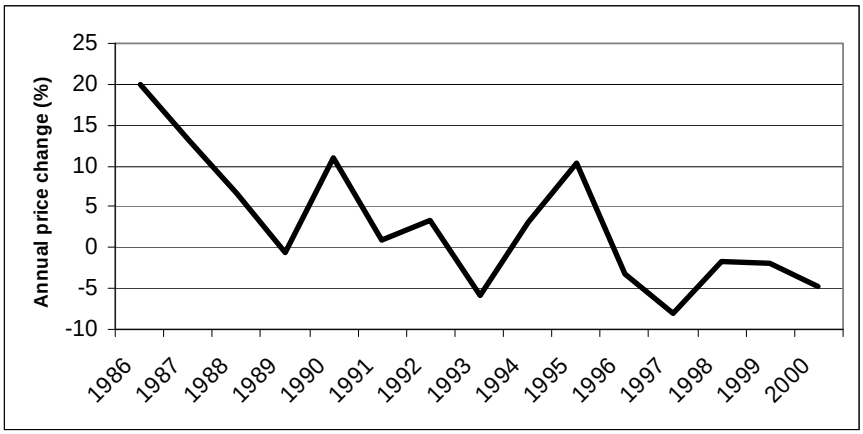
Sanjaya was schooled in this tradition. Like many in the post-war period he was influenced by India's commitment to industrial development (itself influenced by the Soviet drive to industrialisation during the 1930s and 1940s), a perspective reinforced by the extraordinary growth-success of Japan and then the Asian Tigers which he documented so clearly (Lall, 1994). It was only in very recent years that he began to

think about the possibilities opened by a specialisation in knowledge-intensive services, but he remained preoccupied by the need to promote and deepen industrial development. Grappling with these issues he developed a fourfold classification of industrial products which has become increasingly widely-used – primary, resource-based, low-technology, medium-technology and high-technology products.[1]

However, as we enter the 21st century, there is reason to question the automaticity of the link between a specialisation in manufacturing and high and sustainable incomes. As Asia in general (and China in particular) participates much more actively in global product markets, so historic patterns of relative price movements (as reflected in the terms of trade) have begun to alter. And this has important implications for the historic commitment to industrial development. Our route into the discussion of technological capabilities and a specialisation into industry is through the evolution of the global price of manufactures

Much of the second half of the twentieth century was a period of inflation in the global economy. Prices of most commodities rose, although (as we have seen – Figure 1) the price rise was faster for manufactures than for primary products. By the 1990s, most economies had begun to get on top of high rates of inflation and for the OECD economies as a whole the rate of inflation at the turn of the millennium was less than three percent. What followed was a period of price deflation in manufactures, beginning with a slowdown in the rate of inflation in the late 1980s, and then after 1998, in absolute nominal prices (Figure 2).

Figure 2: World Manufacturing Export Price, 1986-2000.



Source: Source: IMF, World Economic Outlook Database, September 2003

[1] Intrigued by this classification – which I have used in my own work – I asked Sanjaya how it had been drawn up. He responded by saying that he sat down over a weekend and worked his way through the SITC classificatory scheme and "guessed" the technological intensity of these products. Given that process data is recorded through the ISIC classificatory scheme which is different from the product-based SITC taxonomy, this clearly involved a number of heroic assumptions. In actual fact, using the citations index as a measure of impact, it will probably turn out to be the case that Sanjaya is more widely cited for this relatively casually-developed taxonomy than for any of the other major theoretical and empirical contributions he has made to our understanding of development studies!

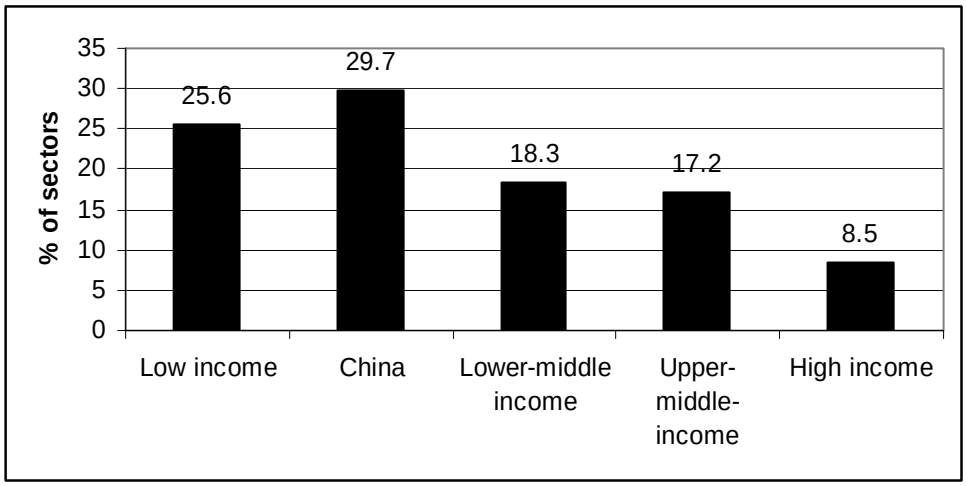
This falling in the price of manufactures is to a considerable extent a result of rapid industrialisation in East Asia in general, and China in particular (Lall and Albaladejo, 2004). To observe the impact of China's outward oriented industrial growth on global prices, we need to unpick the "manufacturing" category used in much of contemporary trade analysis, including that on the terms of trade. This literature is almost entirely based on the use of aggregated data, mostly using SITC 3- and very occasionally SITC 4 digit classifications. This is not adequate for a detailed examination of prices. The HS trade classification system introduced in the late 1980s has a much finer degree of disaggregation and provides greater scope for the detailed tracking of product prices. At the eight-digit level there are 10,000 different HS product categories. An analysis of these product categories tracked the extent to which prices of EU imports fell in the period 1988-2001 (Kaplinsky, 2005; Kaplinsky and Santos-Paulino, 2005a and 2005b).[2] The EU provides a unique data-set on international trade and is large enough to use as a surrogate for the behaviour of global product prices.

Figure 3 presents the results of this analysis. It focuses on the 151 major product-groupings (classified at the eight-digit level) imported into the EU where developing country exporters were prominent. It reports the proportion of the sectors for which the unit-price of imports from different income-groups (and China) fell between 1988 and 2001. It can be seen from this that in almost one-third of these sectors, the price of Chinese-origin products fell. In the case of products emanating from low-income economies, the proportion of product group in which unit-prices fell was around one-quarter. As a general rule, the higher the per-capita income group of the exporter, the less likely unit-prices were to fall. Thus, within a large number of product groups, the prices of products exported into the EU by China and low income economies was more likely to decline than the prices of the same products-groupings sourced from other high income economies.

We draw two conclusions from this price analysis. First, the greater China's participation in global product markets, the more likely prices will fall. And, second, this seems to have a disproportionate impact on the low income country group who face intense competition from Chinese producers.

[2] The data-set used for this detailed analysis of prices at the eight-digit HS level is only available from 1988. In associated work we have attempted to utilise the augmented Dickey-Fuller unit root test in an attempt to determine statistically significant price trends. Unfortunately neither this test, nor any others with which we are familiar, can cope with such a short time-series. For a fuller discussion of these imitations and the application of the ADF test to our price data, see Kaplinsky and Santos-Paulino 2005a and 2005b.

Figure 3: Percentage of sectors with negative price trends, 1988/9-2000/2001 by country groupings

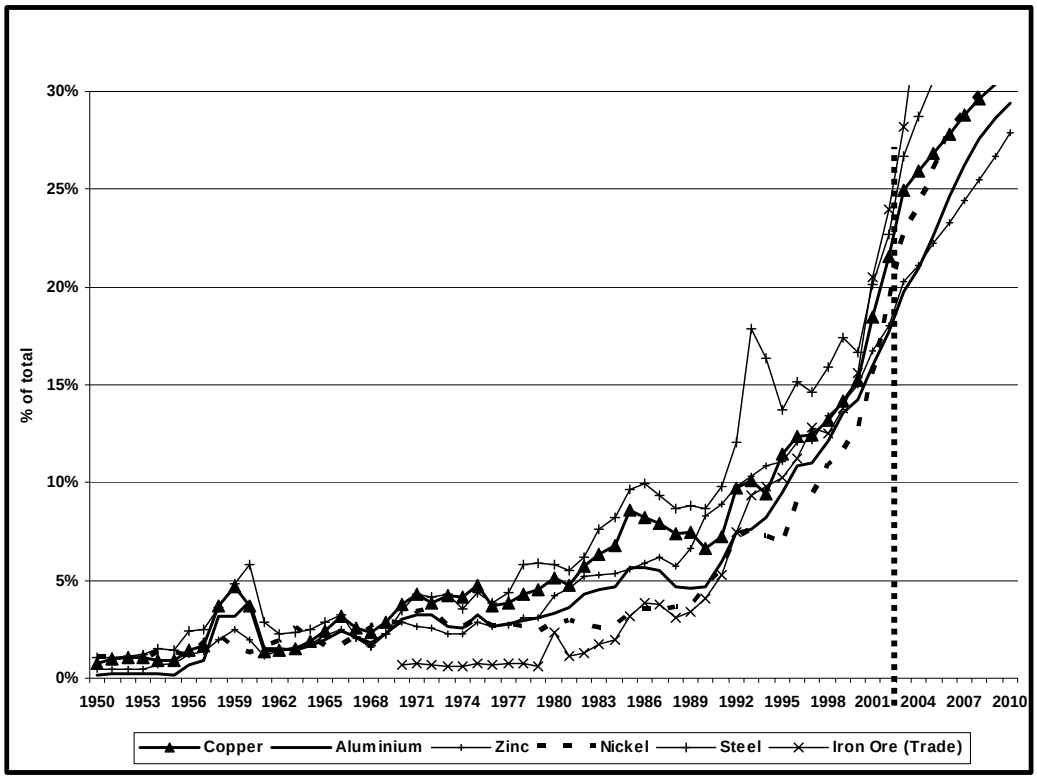


Based on an analysis of 151 eight-digit products, selected on the basis of their contribution to LDC exports to the EU.
Source: Kaplinsky (2005b)

At the same time that manufacturing prices were falling towards the end of the 1990s, commodity prices (particularly of the metal-based commodities and carbon-based oil, gas and coal used in the production of manufactures) began to rise. A key driver of these rising commodity prices was demand from China's burgeoning manufacturing sector.

Focusing on basic metals as an example, China's demand for imports has been fuelled by three factors. The first has been the rapid growth of domestic demand for household consumer goods and autos (where production has grown at a dramatic pace). Second, there has been very substantial investment in infrastructure, both in the public and private sector, and this has been particularly basic-metal intensive. And, third, many of China's exports have been of metal-based products. Consequently**,** China's share of global demand for the main base metals (aluminium, copper, iron ore, nickel, steel and zinc) grew from seven-ten percent of global demand in 1993 to 20–25 percent in 2003. In the case of steel, its share has grown from less than 10 percent in 1990 to more than 25 percent in 2003, equivalent to three times that of Japan, and more than either the EU or the US (around 20 percent each). Between 2000 and 2003, China's share of the increase in global demand for aluminium, steel, nickel and copper was 76 percent, 95 percent, 99 percent and 100 percent respectively. As Figure 4 shows, its projected utilisation of these basic metals is likely to grow even further in the future, in part because of its relatively low per-capita consumption of these materials (Table 1) – bear in mind, China accounts for more than 20 percent of global population, and it is inevitable that as incomes grow and the minerals-intensity of consumption grows as it has in other countries, this will continue to lead to rising demand for imported materials.

Figure 4: Actual and projected global share of China's consumption of base metals, 1950-2010.



Source: Macquarie Research Metals and Mining, personal communication (2004)

Table 3: The scope for China's increased consumption of basic metals, 1955-2003.

	Kgs/capita			GDP per capita ($US1995)
	Aluminium	Copper	Steel	
Japan				
1955	0.6	1.2	80	5,559
1975	10.5	7.4	599	21,869
Korea				
1975	1.0	1.3	84	2,891
1995	15.0	8.1	827	10,841
China				
1990	0.7	0.6	59	342
1999	2.3	1.2	108	756
2002	3.3	2.0	160	933
2003	4.0	2.4	200	1,103

Source: Macquarie Metals and Mining, personal communication (2004).

This expansion in Chinese commodity imports has been closely reflected in the global prices of many hard commodities. For example between 2002 and 2004, the price of hot-rolled coil steel rose from around $140/tonne to more than $500/tonne, much higher than the previous post-war peak of $400/tonne in 1994. Prices of spot steam coal (cif Rotterdam) leapt from $27/tonne to $82/tonne between 2002, and 2004,

higher than the previous post-war peak of 1981. Hard-coking coal prices jumped from $50/tonne to more than $100/tonne in the same period, a post-war high. Between 2001 and 2004, copper prices more than doubled from around 63 cts/lb to $1.40/lb, although in this case they were still lower than the previous post-war peak on $1.55/lb in 1989. [3]

This thirst for mineral imports is also reflected in the food sector, where falling land availability (a consequence of rising industrialisation) and stagnant agricultural productivity have led to rising food imports. In the first half of 2004, China had a trade deficits on foodstuffs of $3.7bn., including imports of 4.1m tonnes of foodgrains. It is predicted that this deficit will soar in the future - in the case of foodgrains, to around 40m tonnes by 2007 (Financial Times, 23rd August, 2004).

These are undeflated prices and represent a price spur which has been very recent (that is, since 2000). However, they reflect the data presented in Figure 4 above on China's augmentation of global demand in hard commodities. Will they endure? The data in Table 1, allied to China's continued rapid growth, suggests that this is not a short-term blip in commodity prices. However, it is too early to conclude from these developments that we have witnessed a decisive and/or a long-term shift in the manufactures-commodities terms of trade. But let us assume for the moment that this is the case. If so, what are the consequences for the specialisation in manufacturing which Sanjaya and others (including myself) have so long promoted?

3. THE END OF MANUFACTURING?

One reason why we might be relativity sanguine about these price trends is that they refer only to the barter terms of trade. The Asian NICs experience has shown that the ability to expand export volumes at a disproportionately higher rate than the fall in relative prices means that falling barter terms of trade may not be a problem as long as the rate of productivity growth is higher than the differential between the barter and income terms of trade (Maizels, 1999). However, this outcome depends on a world in which there are supply constraints, that is, one in which export volumes can continue to grow. The neo-classical trade framework is indeed contingent upon this assumption and provides for a global architecture in which countries find their relatively efficient niche in a world of specialisation and respecialisation. But what happens in a world of global excess capacity? In these circumstances, falling export prices in aggregate does not mean that all producers can compensate with rising export volumes; only those with absolute advantage are able to do so.

I believe that the contemporary global economy is indeed in a phase of structural excess capacity, particularly for manufactured products exported by low income countries (Kaplinsky, 2005b). I base this belief on two factors. First, in many of the buyer-driven consumer goods sectors such as apparel, footwear, furniture and toys (Gereffi, 1994), the rise of developing country exports has by now knocked-out most of productive capacity in the high-income countries. Thus, future export growth from the developing world depends either on sustained and very rapidly growing demand in the high-income countries (unlikely), or the ability to out-compete other developing

[3] All data from Macquarie Research.

countries. In this era of global industrial capabilities, East Asia in general, and China in particular, is so competitive that there is little scope for other developing countries to win this competitive battle.

The non-East Asian economies are therefore faced with a severe challenge. Given their inability to compete effectively in the market for global manufactures, wherein lies their development route? Should the widespread commitment to manufacturing be jettisoned? The answer to this conundrum – that is, to the extent that there is a viable response - is to be found in the ideas of Schumpeter, Singer and Sanjaya himself.

Schumpeter made a major contribution to our understanding of the centrality of growth in capitalist economies by showing how the pursuit for rents, protected by barriers to entry, provided the route to extra-normal profits and hence explained the endogenisation of innovation (Schumpeter, 1961, although a similar approach is to be found in Marx). Schumpeter provided an analytical framework to show how scarcity can be constructed. He distinguished the process of “invention” (having an original idea, a “new combination” in his words) from that of “innovation” (turning a new idea to commercial advantage), Entrepreneurship is defined in the act of innovation. If this innovation proves to be difficult to copy, then the entrepreneur earns a super-profit which exceeds not only the cost of the invention and the associated innovation, but the returns to economic activity in other activities which are less well protected from competition. Over time this innovation is copied (the act of “diffusion”) or superseded by a new, superior innovation. It is this “Schumpeterian motor”, the search for producer rents, which spurs the innovation process and subsequent diffusion and which drives forward economic growth. For Schumpeter, the entrepreneurial rents are almost always dynamic.

Moving beyond Schumpeter, we can distinguish two broad categories of rent. The first are those rents which arise from command over the production process, and which are largely endogenous to the firm and its partners in its value chain or the locality. They result from the purposeful actions of firms and groups of firms. The second set of rents and barriers to entry are those which are generated outside of the corporate world, or are gifts of nature. These exogenous rents may of course reflect the influence and lobbying of agents in the productive sector (for example, anti-competitive practices, or the search for tariff protection), but in general they lie in the domain of other parties, such as governments and actors in the National System of Innovation. Similarly, actors in the world outside of direct production may also be able to influence the capabilities and actions of producers who may be striving to take advantage of rents. The key element of capitalist competition is that these rents are dynamic, continually shifting as barriers to entry are overcome and new barriers are constructed (Table 2)

Table 2. Examples of shifting rents

Type of rent	Previous areas of rent	New and emerging areas of rent
Endogenous rents		
Technology: - Process - Product	Copy lathes Internal combustion engines	Computer aided design, electronic data interchange and flexible\ manufacturing systems Fuel cells
Human resources	Toolmaking artisans	Software engineers
Organisational	Mass production, quality inspectors	Single-unit flow, quality-at-source
Marketing/design	Levi-Strauss	Diesel, Earle, The Gap
Relational	Short-term arms-length suppliers	Long-term suppliers, obligational relationships, supply chain development
Exogenous rents		
Resources	High-grade copper deposits	High-grade platinum deposits
Policy	Support for plant-efficiency Import protection	Promotion of value chain efficiency and industrial clusters Export marketing support
Infrastructure	Roads and railways	Telecommunications
Finance	Low interest rates	Venture capital

Source: Kaplinsky, 2005.

Singer was very influenced by this Schumpeterian perspective (since he had been a pupil of Schumpeter). In 1971 he realised that in principle it was possible for manufactures, or some groups of manufactures, to be characterised by low rents as manufacturing capabilities became increasingly widespread (Singer 1971), and in 1991 with Sarkar, Singer first demonstrated this decline in the terms of trade for some groups of manufactures (Sarkar and Singer, 1991). Essentially this was a reworking of Singer's insight of the early 1950s that there were country-characteristics of the terms of trade, and what he now showed was that in addition to unskilled labour, low-income economies were also characterised by a surplus of low-level manufacturing capabilities. Although Singer never revisited his seminal terms of trade discussion adequately, the observation of falling terms of trade of manufactures as a widespread problem and a challenge to conventional manufacturing capabilities was a natural outcome of these developments in his work over four decades.

Finally, Sanjaya's own thinking also provided an important insight into this policy challenge. Drawing on evolutionary economics, he was aware that the technological capabilities could not be developed overnight, or indeed in an unprotected arena. He also had a long-term focus on human resources, believing that engineering and technological skills in particular were the key to competitive positioning. Sanjaya did not focus explicitly on the issue of rent. that is, that the accretion of human resource skills in themselves did not guarantee high and sustainable incomes. The skill frontier was a moving frontier and it was the accretion of relative skills (ie *human resource rents*) which is important. But it certainly was implicit in almost everything which he wrote on this topic. Also, although he participated centrally in the 2002 UNIDO

World Industrial Report (being responsible for pioneering work on the measurement of technological indicators and their performance outcomes), he was possibly not adequately attuned to the Report's discussion of the governance function in global value chains, and hence in the non-governmental drivers of upgrading in different parts of the global economy.

4. THE DIFFUSION OF MANUFACTURING OR THE DIFFUSION OF TECHNOLOGICAL CAPABILITIES?

So, how do we square this circle? We know that high and sustainable incomes depend on relative technological capabilities. We also know that for many decades, these scarce capabilities were predominantly to be found in the industrial sector in general, and manufacturing in particular. But, with the rise of China's globally competitive manufacturing sector (so ably documented by Sanjaya and foreseen in the early 1970s by Hans Singer), we now also know that technological rents are no longer as pervasive as they used to be in manufacturing. Many manufacturing sectors, particularly those in which low income economies play a central role, are characterised by low barriers to entry, falling barter terms of trade, and limited possibilities for rising income terms of trade.

The answer to this policy challenge lies in removing the identity between innovation rents and manufacturing, an identity which led Sanjaya (as we have seen in the Introduction) to the view that "…manufacturing is the only sector of the economy that appears to be able to act as a catalyst of economic development and modernization" (Lall & Poetrpbelli, 2003:2). On the one hand, we know that rents may be low in many industrial sectors. But at the same time, there has been a tendency to underemphasise the rents available in some agricultural and service sectors.

These non-manufacturing rents are illuminated by the post-war transition from the era of mass production (sometimes referred to as fordism) to mass customisation (sometimes referred to as post-fordism or flexible specialisation) (Piore and Sabel, 1984; Lipietz, 1987; Pine, 1993). The period before the 1970s, said to be the heyday of mass production, reflected a world of post-war reconstruction and shortages. Producers thrived in markets in which Henry Ford had argued of his customers that "they can have a Model T Ford in any colour they like as long as it is black". But as production capability and incomes grew in the post-war period, so consumers were no longer happy with black Model T Fords. Companies such as BMW and Mercedes-Benz carved out profitable market niches by emphasising individuality and variety. This capability to individualise products rapidly spread across the spectrum of manufactures, with the growth of numerous designer labels. There is an extensive literature on the role which this differentiation plays in the determination of relative income streams.[4]

But it is only recently that we have come to recognise the opportunities for the de-commodification of a variety of "soft commodities" (Jaffee and Gordon, 1993; Jaffee, 2003: Kaplinsky, 2005a). Two of the most-widely cited cases are horticultural

[4] For example, see the burgeoning value chain literature which relates this literature to developing countries – http://www.ids.ac.uk/globalvaluechains/

products and coffee. In the case of horticulture, relatively high incomes are earned by producers who are able to tailor their output to the needs of very dynamic markets (Dolan and Humphrey, 2004). For example, Kenyan horticultural producers fly their salads out to UK supermarkets every night, ready-packed and labelled for individual stores. Demand for salads is highly variable depending on the weather (for example, during warm weather, the demand for salads for barbeques mushrooms). The Kenyan producers are so sophisticated in their logistics that they allow their UK supermarket customers to vary their orders for pre-packed salads up to 1400 hours on the day of dispatch.

In the case of coffee, customers are beginning to appreciate the enormous variety of tastes. In the words of a Nestlé's senior executive, “there are as many varieties of coffee, with a greater variation in taste, than there are of wines” (Kaplinsky and Fitter, 2004). Producers who were able to target these niche markets were able to insulate themselves from the devastating fall in global prices in the early 2000s. For example, Jamaican Blue Mountain coffee is a premium product, with Japanese consumers prepared to pay up to $20 per cup. Its growers have been able to escape the severe price pressures which have characterised the industry, particularly in recent years. As the CEO of the Jamaican Coffee Board observed: "Blue Mountain coffee prices are not subject to the factors of supply and demand that affects other commodities. The price is fixed. This is useful in these times when coffee prices are low because of over-supply” (Financial Times, 18th October 2001). In early 2002 Blue Mountain coffee sold at $6-8,000/tonne compared to the London market price for arabicas of around $1,200/tonne.

It is helpful to show how this technological capability focused strategy can in fact be implemented for agricultural commodities by innovative firms. Illy is a privately-held Italian company operating in the quality-intensive segment of the coffee value chain, with a turnover in 2005 of more than $300m (Kaplinsky, 2005a and Business Week, August 7, 2006). It employs 500 people worldwide and is wholly-concentrated on the coffee chain. It performs at the premium end of the market, with excellence, with pre-tax profits of 10.4% on sales (and of course a much higher margin on shareholder funds). (Compare this with the zero profitability of most coffee growers)

Illy’s route into coffee was through technological innovation – in the 1930s the founder developed an end-seaming technology for tins which allowed coffee to be stored at 0.3-0.4 atmospheres, and therefore to serve distant markets with fresh coffee. (Their current technology provides coffee storage at 1.5-1.5 atmospheres, in distinctively shaped and branded aluminium containers which simultaneously fosters positional consumption). Over the years its core competences have changed from tin-making technology to a cluster of related capabilities - coffee-roasting, the management of its global coffee value chain, the manufacture of small espresso machines, and the ability to run a chain of coffee shops.

How does Illy manage to sell coffee at $10/250gm in the US, compared to competitors’ prices of $1.50/kg, and how does it manage to pay farmers 30 percent more than the prevailing world bean price? It does so by systematically applying knowledge at every point in the value chain. Coffee is a complex product, with more than 800 components of aroma alone. In some cases this effort involves high-science – for example, the analysis of the percolation process took half-an-hour on a Cray

supercomputer. 12% of employees have university degrees and Illy spends 1.5% of sales on R&D. But more to the point is Illy's systematic application of technology and knowledge (generally in disembodied procedures) throughout the chain often involving barely-literate workers, through:

- Heavy investments in understanding the *nature of flavour*. Building on genetic developments they work closely with farmers, since there is a complex interaction between ecology and genes; reducing water content from 65% to 11% provides plenty of scope for moulds and rot; and poor transport leads to coffee degradation. Illy runs courses for both buyers and farmers in countries where they purchase beans.

- Sophisticated *selection of the bean*. Most farmers have little knowledge of what constitutes "quality coffee", and they have to be taught how to recognise this. Bean selection also depends heavily on technology and in cooperation with a machinery supplier Illy developed a patented and scale-intensive sorting machine (costing $150,000 and processed 3-4 tonnes/hr).

- Temperature control in *roasting.* This is critical – $C3^0$ at $C200^0$ makes a significant difference to taste - and is not a simple process. Due to non-linearity when the roasting process is scaled-up, it involves heavy investment in sophisticated machinery.

- *Branding*. Packaging was Illy's historic core-competence and remains a key competitive branding advantage. Branding is of key importance and 9-10% of sales is spent on advertising

- Diversification down the chain - one of the family members has built a business manufacturing and selling *espresso machines* for home consumption.

- Assisting coffee houses (accounting for more than a third of sales) which are targeted for *education* since "dirty machines kill the best coffee". Illy also invests heavily in designing "coffee bar concepts", ways of improving the ambience of coffee bars.

A similar story can be told of a particular niche in the wool sector. Escorial wool is derived from the Maghreb sheep, and is characterised by its lustre and fineness. In 1828 100 sheep were taken to Tasmania in New Zealand from the Atlas Mountains. In the late 1990s, a group of New Zealand farmers banded together and spent $NZ6m on promoting the brand and characteristics of this sheep and describe their strategy in the following terms:

> *"The Escorial Company is a living example of the determination of a small group of growers of an old and characteristically quite different fine wool to improve their lot by taking control of the production, supply and marketing under a registered fibre brand, Escorial, right through to the highest end finished goods in EU and the USA. [This is] a first for branding a fibre, with a fascinating story dating back to the 14th century and the Palace of El Escorial in Spain….*
>
> *These sheep [are] a distinctive breed and [possess distinctive] wool quality/characteristics…. [T]hrough the closed controlled farming of them on one farm since 1834, and a few pure documented flocks emanating from that one farm,*

> *[we] are the sole pure survivors in the world. We have created 'clean air' between the generic commoditised 'Merino' and Escorial by physical differentiation. An Escorial suit sold by Brioni of Milan sells well above the top cashmere equivalent and many times above an equivalent fine merino. [In fact an Escorail scarf retails for more than €600, positioned well above cashmere].*
>
> *[The role] played by the [coffee] roaster is exactly that of the topmaker in the wool industry, a blender of wools of many origins to produce a consistent, numerically described (using very high tech calibration systems laser, optical fibre measurers etc) to supply their customer, the spinner with a consistent product all year round that masks rather than isolates or promotes specific characteristics ….[In contrast] we grow, select, organise all stages of processing around the world, then select the Houses who can sell Escorial fabrics with our label on each finished piece, which can be genuinely claimed as 'pure' and expresses itself in ways that are unique and the customer can experience. We started at the far end, to create the demand first and have found our place despite the machinations of the very wealthy and powerful brands that have made their money on the back of woolgrowers …" (Personal communication, Chris Stewart. Manager - The Escorial Company Limited, New Zealand)*

Five Scottish weavers formed the Escorial Guild working in close cooperation with a New Zealand company which exclusively markets the output arising from 40,000 sheep producing only 50 tonnes of wool a year. One of the Scottish weaver's designers positions Escorial in the following manner – "Cashmere has lost its cachet. There is now too much of it, and of all different qualities – some of it is extremely rough. You can even get it in GAP" (*Scotland on Sunday 4 July 1999)*

A key characteristic of these niche markets is that they are very demanding at the level of process, particularly with respect to certification. For example, FSC wood products have to be accompanied by a chain-of-custody which follows the product from forestry to the retail store. This sets standards in logging – for example, no cutting for a number of days after it has rained; not undermining biodiversity; respecting the needs and culture of local peoples. But it also requires specific environmental standards in manufacture, in transport and in retail. In the auto sector and in the electronics sector, buyers set basic standards concerning defective parts (measured in parts per million, and increasingly being targeted at zero parts per million) and delivery, as well as prices. In the horticultural sector, traceability is required at a very detailed level. This allows retailers and producers to identify individual growers and plots of land just in case there should be problems with pesticide residue at the point-of-sale.

It is in this extensive and demanding process of certification that barriers to entry are constructed and in which primary products are decommodified. This has become an increasingly important characteristic in the markets for very many "soft commodities" and suggests that falling prices are not an inevitable outcome in these product markets which are based on primary products. The impetus for the increase in the prices of niche-based "soft commodities" lies in the growth of per capita incomes in the high-income economies. This is a form of Engels Law reversal, which is reflected in the fact that the most accurate predictor of the per capita incomes of shoppers in UK supermarkets lies in the proportion of fresh fruit and vegetables in their shopping trolleys. Increasingly these fresh fruits and vegetable are sourced from developing economies.

5. FROM STRATEGY TO POLICY

If we thus adjust our strategic lens from industrial development specifically to innovation in all sectors, what policy environment best provides for these development objectives to be met? Here (with Teubal) Sanjaya provided a very useful theoretical architecture to push forward this agenda. Although they focused on the development of (narrow) technology policy, in so doing they provided a much broader framework for pursuing innovation policies. Lall and Teubal identified three types of policy, namely:

- "functional" policies improving market operations; for example, policies designed to enhance competitive pressures (such as competitions policy; lowering tariffs)

- "horizontal" policies which cross sectors, such as generalised incentives to promote greater R&D and training

- "selective" policies designed to promote the advance of particular sectors (for example, preferential access to capital; sector-specific subsidies) or particular firms (for example, the promotion of "national champions" such as the Proton auto firm in Malaysia).

This policy agenda of course ran against the mainstream during the 1990s. For example, the first half of the 1990s saw a vibrant debate on the efficacy of industrial policy in developing economies, after which there was solidification in the policy environment, both within multilateral agencies and in most developing country governments. The context was one in which the Washington Consensus of the early 1980s had led to the increasingly rapid spread of structural adjustment programmes in low income economies. These programmes privileged trade policy liberalisation, deregulation, FDI and the dismantling of policy and administrative regimes designed to promote industrial development. In response to this increasingly hegemonic policy agenda, the Japanese representatives in the World Bank sponsored a process of research enquiry into determinants of industrial success in eight "highly performing Asian economies" (HPAEs) – Hong Kong, Indonesia, Japan, Korea, Malaysia, Singapore, Taiwan and Thailand. The intent was to promote the policy agenda that Japan had itself used in its very rapid industrial development, one providing an active market-guiding role for the state in the promotion of selected industries.

The outcome of this industrial policy study (World Bank, 1993), and the process whereby it reached its conclusion is well known, and has been extensively documented (Wade, 1996; Lall and other papers in the Special Issue of World Development 1994). Briefly, the report concluded that the only positive role these governments had played was to promote generic economy-wide incentives in areas such as education and research and development to compensate for market failures. The Report explicitly argued that targeted industrial policies had failed, even though it acknowledged that providing unambiguous "proof" was difficult. At a general level, it concluded that "[o]ur judgement is that in a few economies, mainly in Northeast Asia, in some instances, government interventions resulted in higher and more equal growth

than otherwise would have occurred [a sop to the Japanese lobby]. However, the prerequisites for success were so rigorous that policymakers seeking to follow similar paths in other developing countries have often [in reality they meant usually] met with failure" (World Bank, 1993: 6). More specifically, it argued that targeted industrial policies cannot be shown to have had a net positive impact on industrial performance (although, as they point out, this is a matter of belief and judgement). And, secondly, even if it were true that targeted policies might be effective in some environments, the call on administrative expertise was so significant that few developing economies could hope to benefit from their use.

Sanjaya was steadfast in his opposition to this neoclassical Washington Consensus agenda. To the end he believed firmly in the role of progressive government, and in its ability to make a difference in the context of widespread and endemic market failures. These market failures were not accidental – they are a direct consequence of the cumulative and path-dependent nature of capability building. He was an optimist and even in discussing the capacities of Lesotho - one of the world's poorest and least educated countries - to achieve industrial development, he concluded:

> *"Lesotho may or may not be the torchbearer of a renaissance in African manufacturing competitiveness. Much depends on how effectively the government mounts policies to upgrade local capabilities, and tap FDI potential in the temporary period afforded by tariff protection" (SL, 2005:1017-1018).*

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