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CHINA'S DEVELOPMENT TRAJECTORY: A STRATEGIC OPENING FOR INDUSTRIAL POLICY IN THE SOUTH

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Daniel Poon

United Nations Conference on Trade and Development (UNCTAD)

Abstract

A revival in South-South economic relations has raised the possibility of a shift in global power with profound implications for economic progress and poverty reduction in the developing world. This discussion paper delves behind the headline numbers to examine the underlying factors driving South-South relations and areas of strategic developmental cooperation. For now, South-South economic flows are being driven by China and its ability to deploy an unorthodox growth model that tilts the economy in favour of investment, which is crucial to its ambitious climb up the industrial value chain. Five key sectors (food, fertilizer, cement, steel and machinery) outlined by Arthur Lewis are used to assess China's economic trajectory, which clearly remains a work in progress, but shows signs of indigenous technological capabilities taking root – particularly in medium technology capital goods industries.

The gap between China's industrial ambitions and its current capabilities provides a strategic opening for other developing countries to bargain for enhanced opportunities for domestic investment, learning, technical change and structural transformation. At the same time, China's "real-time" formulation and practice of industrial policy processes are a source of inspiration for other developing countries searching for an alternative growth path. In a post-crisis setting, such demonstrations act as a useful template for re-thinking development priorities and to gradually begin re-casting economic policies within a national framework more conducive to catch-up and self-sustaining growth.

I. INTRODUCTION

The recent revival of "South-South" (i.e. between developing countries) economic relations and cooperation has been touted as part of a seismic shift in international relations as global economic power shifts away from advanced industrialized countries (the "North") towards the countries of the developing world (the "South"). The implications of this global power shift for economic development and poverty reduction in the world's poorest and most vulnerable countries and regions could be profound.

Rapid economic growth performances in some large developing countries have given new impetus to South-South economic relations as witnessed in trade, investment, development assistance, and other financial flows. For instance, in trade, the South's share in total world exports rose from 19.7 per cent in 1990 to 42.0 per cent in 2010; for imports, the South's share grew from 18.9 in 1990 per cent to 38.9 per cent to 2010 (Nayyar, 2013: 6). In terms of merchandise trade, the share of South-South exports in total Southern exports increased from 45.0 per cent in 1996 to 53.2 per cent in 2010; similarly for imports, the share of South-South in total Southern imports grew from 32.8 per cent to 51.4 per cent over the same period (Athukorala and Nasir, 2012: 181).

To understand the drivers of burgeoning South-South economic interactions, however, it is imperative to go beyond the aggregate headline numbers in order to grasp the underlying dynamics at play and to better identify the strategic developmental opportunities in South-South relations and cooperation (SSC).

First, optimism surrounding "South-South" ties is not new. Writing at a time of heightened interest in South–South cooperation, Arthur Lewis, in his 1979 Nobel lecture, presaged much of the recent discussion around global economic decoupling and catch-up growth. In his lecture, Lewis argued the South could continue to grow at 6 per cent per annum if the North slowed down sharply. The critical link for Lewis was trade; sustained rapid growth would require strong export growth, but if demand was shrinking in Northern markets, where would the demand come from? Lewis suggested that South–South trade could fill the gap, in the aggregate, but also for potential sectoral bottlenecks in agriculture and capital goods. In particular, Lewis argued that expanded production in developing countries in five key sectors – *food, fertilizer, cement, steel and machinery* – could lessen dependence on advanced industrialized countries for key industrial inputs and buttress "self-sustaining growth" in a critical number of developing countries (Lewis, 1979).

Second, neither the "South" nor the "BRICS" (Brazil, the Russian Federation, India, China, and South Africa) are homogenous entities. Differences in country growth strategies and domestic economic conditions among leading countries of the South determine to a large degree their pattern and extent of economic relations with other developing countries (not to mention advanced industrialized countries as well). To be sure, the implication of individual BRICS growth models goes well beyond the neat labelling of China, Brazil and India as the respective factory, farm, and back office of the world economy (Milberg et al., 2014). For now at least, convergence among leading emerging markets is led by China, which accounts for 67 per cent of total BRICS trade with the world, and whose economy accounts for 56 per cent of total BRICS gross domestic product (GDP) (in current US$) in 2012 (Freemantle and Stevens, 2013a). Even among the BRICS, China acts as the bilateral trading partner in 85 per cent of intra-BRICS trade flows (Freemantle and Stevens, 2013a). At the regional level, for example, China is by far the leader among BRICS countries in exports of goods to Africa, accounting for a growing share of total BRICS exports to Africa, from 37.4 per cent in 2001 to 56.6 per cent in 2012. China's exports to Africa surpassed the combined exports to Africa from the other BRICS countries as of 2007 (figure 1).

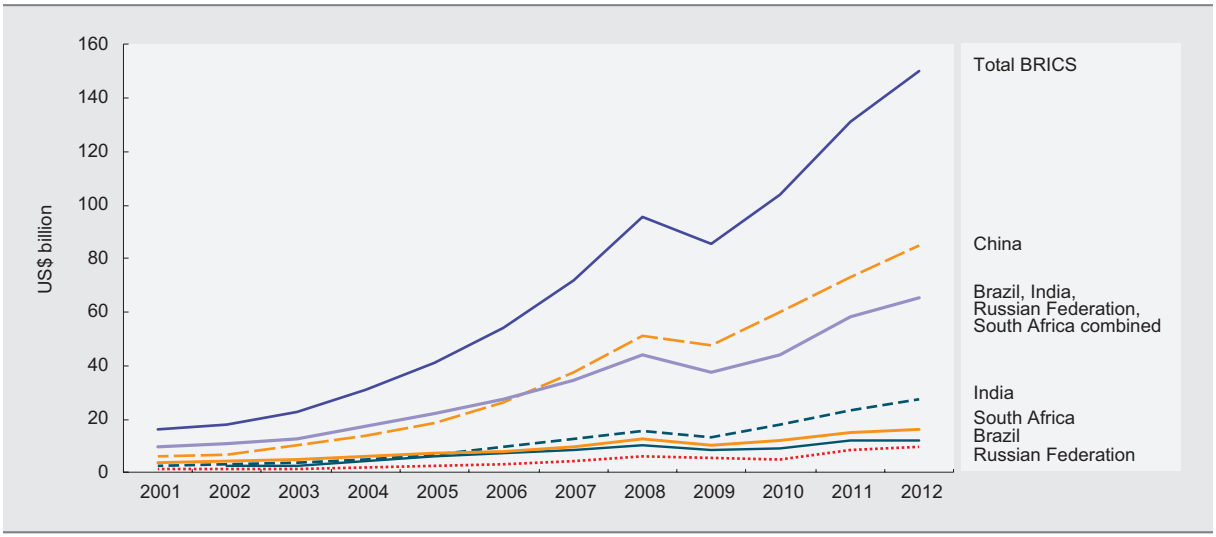
This state of affairs, it will be argued, is closely linked to China's ability to wield unorthodox policy tools – for example, capital controls, stable and competitive exchange rates, low interest rates, State banks and enterprises – that have been decisive in tilting the economy towards sustaining high rates of domestic investment over the course of three decades and export growth since the 1990s. This policy framework has allowed China to mobilize, channel and accumulate capital resources over time to the point where it can now deploy this capital not only in accessing natural resources and foreign technologies and brands, but also as a competitive advantage in diversifying its trade and investment patterns, creating beachheads to previously lightly- or under-served markets as part of its overall "going out" strategy that began in the early 2000s (Freemantle and Stevens, 2012; Wolf Jr. et al., 2011; Salidjanova, 2011).

A key question in assessing China's overall economic trajectory, with likely ramifications for SSC, is the extent it is deepening its industrial capabilities and diversifying into productive sectors and activities up the industrial value chain, and at what pace. At this point in time a definitive answer is not possible, but China finds itself at a crucial crossroads where it is at once the preferred low-cost assembly platform of many global value chains (GVCs) – the low value-added "workshop" of the world – as well as a stronghold for heterodox economic policymaking, mixing degrees of openness with protection, including through the use of industrial policy and State ownership that on some accounts threatens to "buy the world".[1] With industrial policy in the leading economies of the South likely to gain more prominence in a post-crisis

[1] Fortune, 2009, China buys the world, October, see, http://money.cnn.com/galleries/2009/fortune/0910/gallery.china_shopping_list.fortune/index.html.

Figure 1

BRICS exports of goods to Africa, 2001–2012



Source: International Trade Centre (ITC). See, http://www.trademap.org/.

setting (Salazar-Xirinachs et al., 2014; Gereffi, 2013), whether China is able to work through this stage of its development process will likely resonate with other developing countries actively seeking their own viable path to growth and (shared) prosperity.

In many ways, the variety of analytical and empirical interpretations of China's development experience (and its consequences for other developing countries) represents a replay of the heated debate in the 1990s over the lessons from earlier successful East Asian economies, such as Japan, the Republic of Korea and Taiwan Province of China.[2] During that time, the World Bank (1993) published its landmark report of these experiences, the *East Asian Miracle: Economic Growth and Public Policy*, which controversially recognized the significant role of government in guiding growth and fostering strategic sectors, but ultimately denied the effectiveness of such measures – much to the chagrin of many heterodox economists and policymakers (Poon, 2009: 6–7).

Analysis of China's experience was largely left out of the World Bank report, leaving the field open to the growing number of studies on "policy lessons from China" that have been published in recent years (OECD-IPRCC, 2011a, 2011b). As in the 1990s with East Asia, there appears a tendency to assess China's experience mainly in terms acceptable to conventional neoclassical economic prescriptions and Western donor government preferences, rather than using China's experience as an objective "complement to imperfectly developed theory" (El-Erian and Spence, 2008: 27) to improve decision-makers' sensitivity to relevant variables that drive growth and other specific policy outcomes. And it remains just as pertinent that this time around, "real headway in understanding China's variety of capitalism will come by analysing the system on its own terms, rather than principally by reference to something it is not" (Lin and Milhaupt, 2013: 4).

Unlike the 1990s, however, heterodox economists have generally been hesitant to suggest China's experience as a viable and relevant alternative model for other developing countries, as was readily done

[2] A Sheng and X Geng, 2012, The East Asian Miracle Revisited, *Project Syndicate*, 12 July, see, http://www.project-syndicate.org/commentary/the-east-asian-miracle-revisited.

in reference to the earlier cohort of East Asian economies. There are a number of reasons for this, such as those relating to country size and history, but also perhaps due to an "implicit but substantial authoritarian penalty" that colours views of its political regime.[3] Still, it is worth noting that current evaluations of China are taking place at an earlier stage of its development than was the case in the World Bank report, which evaluated those East Asian economies at a later, more advanced stage of their catch-up development processes (particularly Japan). In China's case, successful convergence with living standards in advanced economies still remains some ways off, which makes crisp conclusions about the impacts of its policy choices more difficult and risky to make at this point in time.

Through the lens of the five key sectors outlined by Lewis, this discussion paper argues that increasing signs of independent technology capabilities, particularly in medium technology machinery equipment sectors, is indicative of the Chinese Government and firms gaining momentum toward a "big push" in competitive homegrown heavy industry capital goods sectors broadly analogous to the stage of economic development in the Republic of Korea and Taiwan Province of China in the 1970s/1980s, and Japan's in the 1950s/1960s. This stage of China's development is particularly critical, given cross-country evidence revealing strong positive relationship linking favourable supply conditions for equipment machinery investments – the ability to make or acquire industrial capital goods cheaply – with economic growth and productivity gains, which also turns out to be a key feature distinguishing East Asia from other post-war development experiences (DeLong and Summers, 1991 and 1993).

The structure of the discussion paper is as follows. The next section sets the context for discussion by juxtaposing the evolution of broad export and import trends of China's conventional and processing trade regimes, highlighting the main trend where processing trade imports have not kept up with that of processing trade exports since the mid-2000s. Setting the stage for the later application of the Lewis five sector framework, developments in the Chinese motor vehicle industry are used to illustrate some of the sectoral dynamics underpinning the changing trends in trade flows.

Section III interprets these trends through China's so-called "dual track" economic reform strategy that blended ongoing support for import-substitution in selected sectors with an evolving array of export processing activities. China's export processing prowess is quite widely documented, but the strategic policy regime of import-substitution in selected strategic sectors is often less appreciated despite its close connection to the heart of China's bank-centric investment-led growth model. This model is now said to have outlived its usefulness, but the shift from investment- to consumption-led growth is not likely to be a straight-forward linear process, in light of the reasons for which Chinese leaders adopted an investment-led model in the first place.

Section IV shifts gears by applying Lewis' five key sectors as a framework to assess China's development trajectory and the extent of South-South trading linkages in this regard. The section then focuses on the machinery sector, identified by Lewis as "more bothersome" in which to gain international competitiveness, to underscore the growing role of Chinese firms and their enhanced production capacities in this area. Overall, China does not appear in a position to anchor Lewis' vision of self-sustaining growth writ large across the South, but there are indeed persuasive signs that indigenous technological capabilities are taking root in medium technology capital goods and intermediate input industries on a scale and scope that carries significant structural implications not only for China, but also for other countries of the South.

With the China story unfolding and the outcome still uncertain, sections V and VI address the reality that if Chinese firms are gradually moving up the value chain, ultimately the high degree of global corporate concentration across a wide range of economic sectors presents an enormous competitive challenge to China's industrial ambitions (and any resulting impacts on SSC). Here, the discussion revolves around the extent that China can be said to have sufficient policy space to use as leverage against globally dominant

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[3] M Pei, 2010, Why the west should not demonise China, *Financial Times*, 26 November.

foreign companies, with a special focus on the current state-of-play in anti-monopoly legislation and regulatory implementation to provide a litmus test of China's overall industrial policy orientation and potential room for manoeuvre.

The last section's concluding remarks stress that China's industrial ambitions remain a work in progress, and although Beijing's competitive challenge is surely more North-South in nature, calculations of bargaining power are equally important to developing countries. However, a static assessment of China's dynamic economic trajectory will not do – whether excessively positive or negative. In either case, policymakers would take-for-granted or dismiss the fine-grain details that would allow for better identification of specific bilateral opportunities (or threats), which could over time be leveraged (or mitigated) in accordance with domestic development priorities. At the same time, China's "real-time" formulation, sequencing and implementation of industrial policy processes provides other policymakers with a powerful learning example of a viable and durable alternative growth path. In a post-crisis setting, such demonstrations act as a useful template for re-thinking development priorities and to gradually begin re-casting economic policies within a national framework more conducive to catch-up and self-sustaining growth.

II. A TALE OF TWO CHINAS

China's spectacular export performance is a prominent feature of the country's economic post-1980s reform process that saw China's share of global merchandise exports increase from 1.8 per cent in 1990, to 3.9 per cent in 2000, to 11.2 per cent in 2012. Some observers forecasted that by 2030, China will account for 15 per cent of global merchandise exports, roughly double the share forecasted for the United States (Subramanian and Kessler, 2013). By the early 1990s, structural changes in China's export basket from lower value-added manufactures such as apparel and clothing accessories, towards higher value-added manufactures such as electrical, computers, and telecommunications equipment, has led some to argue that China's export bundle resembled the sophistication of a country with an income-per-capita level three times higher (Rodrik, 2006).

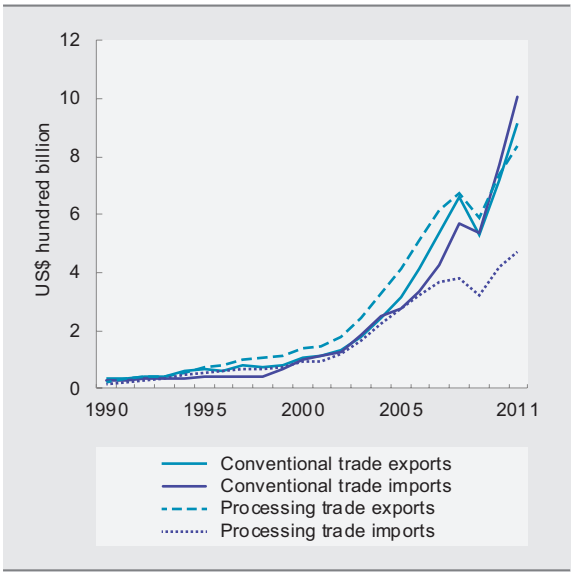
Critics point out, however, that China's apparent export sophistication is misleading given elevated degrees of imported high-value parts and components that are assembled in factories based in China and subsequently re-exported. This is known as China's "triangular" trade or "processing" trade whereby China acts merely as the preferred low-cost assembly platform, the last stage in GVCs whose design and architecture are ultimately orchestrated by multinational corporations (MNCs) based in advanced economies (Hanson, 2004; Gilboy, 2004; Amiti and Freund, 2007; Moran, 2011). As a share of China's total exports, processing trade rose rapidly as of the mid-1990s from about 46 per cent to 55 per cent in 2003, a level roughly maintained with the onset of financial crisis in 2008. An examination of the production chain for an Apple iPod, for example, revealed that only about US$5 out of the total value of US$180 can be attributed to assembly and testing activities of (mostly from the Taiwan Province of China) producers located in China while most of the value accrues to lead firms based in the United States, Japan and the Republic of Korea (Dedrick et al., 2008: 30).

For these reasons, some observers generally contend that China has integrated with the global economy on terms that only reinforce its dependence on foreign technology and investment, thus restricting the country's potential to become an industrial and technological challenger to advanced economies. By extension, China's difficulty in moving up the industrial value chain implies that its economic production structure could remain competitive only in low-value labour-intensive goods, which could be detrimental to industrial growth of other developing countries since light manufacturing sectors often act as a first step to wider processes of industrialization (Renard, 2011; Kaplinsky, 2008).

Figure 2 below tracks China's export and import trends for conventional and processing trade over the period 1990–2011. "Conventional trade" is understood as goods not reliant on the use of duty-free imported parts and components that are re-exported (in the case of exports), and as goods that reach

Figure 2

Trends in China's conventional and processing trade, exports and imports, 1990–2011



Source: China Trade and External Economic Statistical Yearbook, 2012: 520–521.

the domestic market either for investment or final consumption (in the case of imports). In contrast, "processing trade" involves imports of goods to be assembled or transformed in China and re-exported. In this type of trade, customs tariffs on imported inputs (raw materials, semi-finished goods, parts and components) are waived and neither these imported inputs nor the output normally enter China's domestic market (Gaulier et al., 2005: 15–16).

As shown in figure 2, processing exports overtook (by nominal value) conventional exports for the first time in 1993 and remained higher until 2011. Processing trade imports surpassed conventional trade imports for the first time in 1994, but this lasted only until 2000 when conventional imports overtook processing imports. By the mid-2000s, conventional imports experience a pronounced surge relative to processing imports, largely due to the rapid rise of primary commodity prices which tripled (at constant 2005 prices) during the period 2003 to 2008 (Akyüz, 2013: 28). Raw materials and fuels, by comparison, generally only account for a very small proportion of processing trade exports and imports (Gaulier et al., 2005: 21), which make processing trade trends less affected to changes in primary commodity prices.

Most striking in figure 2 are the two trend changes observed in conventional and processing exports and imports. First, in processing trade, thin surpluses are maintained up until 2002, after which the surpluses begin to grow with a widening divergence between processing trade exports and imports, suggesting greater use of domestically-sourced inputs. Second, conventional exports generally stay above conventional imports for most of the period, but by 2009 conventional imports surpassed exports and the deficit in conventional trade appears to gradually widen up to the current period – helped by economic stimulus and the recovery in primary commodity prices from the beginning of 2009 (Akyüz, 2013: 28). Though conventional trade is in deficit, by 2011, conventional exports exceed processing exports for the first time since 1994, which is significant given that domestic value added is estimated to be much higher for conventional exports (on average 65 per cent) than for processing exports (on average 36 per cent) (Hanson, 2012: 46).

What explains this apparent divergence in export and import processing trade and the rise of conventional over processing exports after 2008? If China's processing trade is assumed to remain dependent on imports of key parts and components, processing trade imports should be expected to roughly track trends in processing trade exports. But this is clearly not the case, as processing exports have continued to grow at a faster rate compared to processing imports. Domestic production capacity in a number of key intermediate products from chemical fibres, to steel, to plastics, to industrial boilers and semiconductors, has grown by several multiples since 2000. Within the ambit of processing operations, FDI has played an important role in these trends, as China's processing trade moved away from simple assembly operations to other stages of production with greater scope for using domestic inputs. By 2006 assembly operations accounted for about 10 per cent of processing trade balance, compared to more than 30 per cent in the late 1990s (Cui and Syed, 2007: 6–7).

The declining import content of exports can also be seen in examining more specific trends of China's exports and imports of computers, computer parts, and computer peripheral devices: in 1994 exports were 1.6 times imports in the sector; by 2008, they were 4.2 times imports. As Hanson (2012) explains:

"While it is unclear how much one can generalize from China's experience, growth in trade involving middle-income manufacturers does not necessarily go hand in hand with greater back and forth flows of intermediate inputs" (Hanson, 2012: 47). While some of this increased domestic sourcing was a result of foreign companies bringing more production stages to China in a process of offshoring, there are other dynamics at play related to the style of Chinese reforms and different treatment of FDI depending on the type of sector and investor motivations. This is often referred to as China's "dual-track" reform strategy and is further explained in the next section.

For now, a brief example using the motor vehicle industry, a quintessential "pillar" sector, will help illustrate some of the emerging sectoral drivers underpinning trends observed in figure 2. A typical automobile consists of greater than 15,000 parts and represents one of the most difficult manufacturing products in which to gain competency (Canis and Morrison, 2013: 11). The motor vehicle sector was not included in Lewis' five sector framework, and in this regard acts as a higher benchmark with which to assess China's development trajectory. Thus, while Chinese domestic auto-makers have yet to attain international competitiveness, the sector broadly reflects the enhanced production and indigenous technological capabilities taking root across a range of medium-technology capital goods, including key intermediate inputs for export and/or domestic markets (Naughton, 2007; Brandt and Thun, 2010; Bouffault et al., 2011; EIU, 2011).

The output from FDI in the manufacture of complete motor vehicles was entirely destined for the domestic Chinese market, particularly prior to WTO accession in the late 1980s and 1990s, which was protected using high tariff duties (80–100 per cent) and import quotas on vehicles and parts. The government has also enforced a number of stipulations such as a 50–50 joint venture (JV) ownership structure with a local partner and other requirements such as technology transfer and local content targets.[4] On this latter score, for example, the local content for the Santana model from the SAIC-Volkswagen JV was only 2.7 per cent (by unit) in 1987, namely: the tires, radio, and antennae, but this grew rapidly to 80 per cent in 1993, and to 92.9 in 1997, as Shanghai municipality strove to build a strong auto supply base (Thun, 2006: 105; Harwit, 2001: 663).

By the late 1990s and early 2000s, however, the government expanded the number of auto joint ventures and more aggressively negotiated for foreign partners to bring their latest technologies to further upgrade Chinese production capabilities. To this end, by 2004, the government removed similar JV requirements for foreign parts companies, effectively encouraging more and more suppliers to follow their original equipment manufacturers (OEMs) to China. Also in 2004, the government waived the JV requirement for motor vehicle manufacturers based in export processing zones, with other rules such as minimum project values, capital investment levels, and technical requirements for automobile and engine producers also waived. For instance, Honda was permitted a 65 per cent ownership stake in its auto assembly plant in Guangzhou, as the factory's output was solely for export (Stewart et al., 2012: 55–56; Haley, 2012: 8; Tang, 2012).

Boosted by these policy changes, by the mid-2000s, China started raising exports of complete motor vehicles and in motor vehicle parts. Automotive parts exports have grown rapidly from $10bn in 2004 to $48bn in 2010, with many of the "Tier 1" auto suppliers (supplying entire assemblies like braking systems and steering systems) such as Delphi, Visteon, Johnson Controls, Lear, Arvin Meritor, TRW, Bosch, Denso, Magna, among others, all with manufacturing bases in China (Canis and Morrison, 2013: 7–8). The United States market accounts for nearly one quarter of China's auto parts exports (by value),

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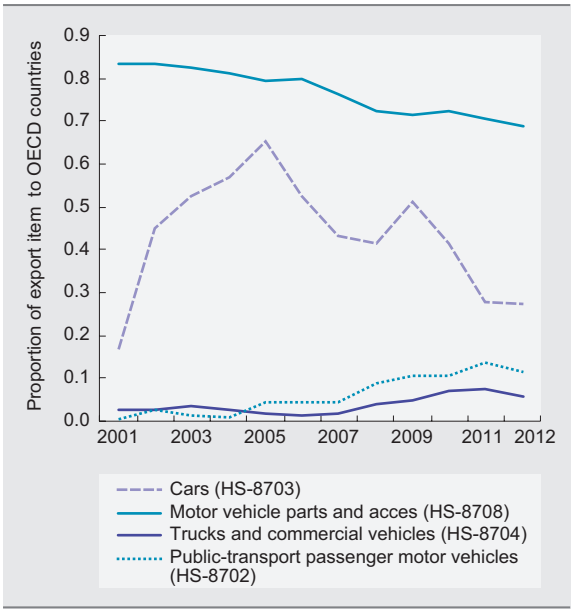
[4] The 2011 version of China's Foreign Investment Industrial Guidance Catalogue removed automobile manufacturing from the "encouraged" category, while still keeping an emphasis, for example, on manufacturing of automobile engines and engine R&D, key automobile parts and components and R&D of key technologies. Encouragement of certain foreign investments in the manufacture and R&D in automobile electronic devices, and the manufacture key parts and components of "new energy vehicles", such as high energy power batteries, include ownership ceilings of 50 per cent (Dezan Shira & Associates, 2011: 8–9; Tang, 2012: 19–20).

Figure 3

Share of Chinese exports to OECD countries, various motor vehicles, parts and accessories, 2001–2012



Source: ITC.

and while it was long believed that Chinese auto parts exports served the United States aftermarket, there is also evidence that United States-based automakers are relying on parts provided by their traditional auto parts companies, but supplied from their operations in China instead of the United States. One study found that in 2010 and 2011, Chrysler, Ford and GM imported not only relatively simple parts from China, such as knobs, lights, rearview mirrors, and exhaust manifolds, but also more sophisticated products such as transmission electro-hydraulic control modules and control resistors (Stewart et al., 2012: 72–81).

Nonetheless, some of these auto parts exports are likely also linked to exports of domestic Chinese branded vehicles: in 2011, China exported nearly 850,000 units of which 70 per cent were manufactured by homegrown upstart firms such as Geely and Chery, with the remainder by foreign-Chinese JVs.[5] The main destinations of these exports are developing markets in South America, Africa, and the Middle East, though overall auto exports still only account for a very small proportion of total auto output (Canis and Morrison, 2013: 3–4). Previewing section IV's application of Lewis' five sector framework to assess China's development trajectory, figure 3 provides a glimpse of Chinese export shares to OECD markets of different motor vehicles and motor vehicle parts and accessories for 2001–2012. Keeping in mind the current stage of China's development, if the share of exports to OECD markets is relatively high, then the share of that same item to the South is low, implying that China's involvement is likely part of an offshoring process, the governance of which constrains the extent that trade patterns can diversify to the South – a rough proxy for the outgrowth of improved Chinese indigenous technological capabilities[6] (and vice-versa if the export share to OECD markets is low and to the South is high).

In light of the discussion above, it is not surprising that exports in motor vehicle parts and accessories show the highest reliance on OECD markets, though this appears to be declining, from 83.7 per cent in 2001 to 68.7 per cent in 2012 of total Chinese exports in this category. By comparison, the share of exports of cars to OECD markets grew rapidly in the mid-2000s to 65.4 per cent in 2005, before falling back to 27.3 per cent in 2012 – though the export value was only $4.6bn in 2012, compared to $25.5bn in exports of parts and accessories.[7] In other motor vehicles such as trucks and commercial vehicles and public transport passenger vehicles, Chinese export shares to OECD markets are very low, although rising in 2012 to 5.5 per cent in the case of trucks and commercial vehicles, and to 11.3 per cent for public

[5] Of course, roughly the reverse is true in the domestic market, where the market share (by sales) of Chinese-branded automobiles peaked at 31 per cent in 2010, and has since declined to 27 per cent by February 2014. [T Mitchell, 2014, Chinese carmakers yet to make their marque, *Financial Times*, 4 February.]

[6] This is particularly the case, as further elaborated in the section III, given the careful attention to domestic ownership levels and degrees of effective control in what are considered "strategic" or "pillar" sectors of the domestic economy.

[7] Note that these figures are different and much lower than those reported in Stewart et al. (2012: 75), largely because the ITC statistics in figure 3 do not include auto parts and accessories outside of the HS-8708 category, whereas the trade statistics from Stewart et al. (2012) also include parts from other categories used for automobile motor vehicle production, such as laminated safety glass (HS-7007), furniture parts (HS-9403), hinges of base metal (HS-8307), among a wide range of other HS-categories (Stewart et al., 2012: see exhibit 1).

transport passenger vehicles. As in cars, the export volume is also relatively low – in 2012, $4.0bn for trucks and commercial vehicles, $2.1bn for public transport passenger vehicles.

From these broad trends, it appears that indigenous Chinese technological capabilities in the manufacture of complete automobiles and auto parts are gradually being established but face significant challenges – although this is less the case in manufacturing of other motor vehicles like commercial vehicles and passenger transport vehicles where foreign brands are largely confined to premium niches in the domestic market (Lang et al., 2012: 18–20; Chu, 2011: 1244).

The picture presented above is a messy one that does not lend itself to clear-cut conclusions, but this is perhaps to be expected for a country in the process of upgrading its productive and indigenous technological capabilities rather than one that is on the cusp of the technology frontier. Nonetheless, this more detailed analysis of sectoral level dynamics reveal emerging trends of a different kind of manufacturing competition across a range of capital goods sectors in China and are further pursued in section IV, with a focus on machinery. The next section first delves into the broad contours of China's "dual-track" reform strategy and its close connection to China's investment-led growth strategy, to better understand the catch-up policy framework China used to get where it is today.

III. INVESTMENT-LED GROWTH THROUGH DUAL-TRACK REFORMS

Broadly speaking, the difficulty in assessing China's development trajectory stems from the "dual-track" nature of its economic reforms (McMillan and Rodrik, 2011; Lin and Wang, 2008; Qian, 2003; Potter, 2003; Green, 2003; Lin et al., 1996). In economic development and trade policy, in particular, the reform package combined ongoing support for import-substitution in selected sectors, while simultaneously conducting export processing activities considered as "new" for the domestic economy. The strategy itself is hardly novel, and is most closely associated with the past successes of Japan and first-tier Asian newly industrialized economies (NICs), the Republic of Korea and Taiwan Province of China, that also placed significant emphasis on building strong productive capacities in medium-technology capital goods sectors, referred to as the "secondary import substitution" phase that was key to the upgrading process in the domestic economy and for raising the contribution of domestic value-added in exports (Studwell, 2013: 84–136; Perkins, 2013; 66–121; Weiss, 2005a: 17–24).

Though it is commonly held that it is now in China's interest to shift from an investment-led growth strategy to one that is more driven by domestic consumption, often such statements are made with little consideration to the sequencing or pacing of this transition, which relate to the underlying policy objectives that led Chinese leaders to adopt an investment-led model in the first place. Given the close relationship between the ability to invest, economic diversification, and technology upgrading, this section ultimately argues that Chinese policymakers are likely to be very attentive to the link between the pace of economic rebalancing, on the one hand, and informed assessments that domestic firms are indeed progressing up the industrial value chain, on the other.

The defining feature of this dual-track approach was to effectively cordon-off strategic parts of the domestic economy from the processing trade regime's outputs and imported inputs. This is the essential difference in policy regime toward incoming FDI to China that is "market-seeking" (to gain access to the domestic market), and FDI that is "efficiency-seeking" (to utilize China as a low-cost assembly platform) (Dullien, 2005: 130–131; Lardy, 2004: 128). In the former, which in Chinese parlance are portrayed as sectors forming the "lifeline" of the domestic economy, the policy regime adopted more familiar industrial policy instruments such as foreign ownership limits (i.e. joint ventures), technology transfer and local content requirements, research and development (R&D) expenditure targets, government procurement and other financial incentives, industry restructuring and merger incentives, and demand-side consumer subsidies, among other supportive policies.

The policy regime for efficiency-seeking FDI was not without its own set of incentives generally related to special economic zones, such as selective value-added tax rebates, corporate tax holidays, infrastructure provision (not to mention stable and competitive exchange rates), but was relatively more permissive in terms of limitations on economic activities (Zhang, 2013; Zeng, 2011; Evenett et al., 2012).

The concepts of "strategic", "key", "backbone" and "pillar" sectors have a long history in China, but it was only in 2006, and after the establishment of the State-owned Assets Supervision and Administration Commission (SASAC) in 2003, that the Chinese Government more clearly delineated the role of the State in these categories of industries. SASAC was mandated to own and manage State assets at the central level, while giving guidelines for SASAC bureaus in local governments. Initially, SASAC was bestowed 196 of the country's largest enterprises, with the plan to reduce the number of firms to 80–100 by 2010. As of year-end 2013, 113 enterprises remain under SASAC's ownership.[8] Including firms overseen by provincial- and municipal-level SASACs, the total number of State owned enterprises (SOEs) are estimated to exceed 100,000 (Szamosszegi and Kyle, 2011).

Most of the firms overseen by SASAC are found in natural monopoly sectors, but it also maintains assets in competitive downstream manufacturing and service sectors as well. For instance, defence, electrical power and grid, petroleum and petrochemical, telecommunications, coal, civil aviation, and shipping are categorized as "strategic" sectors where the State will maintain sole ownership or absolute control. Other sectors, such as equipment manufacturing (machinery), automobiles, information technology, construction, iron and steel, non-ferrous metals, chemicals, land surveying, and R&D and design, are categorized as "pillar" industries where the State will maintain strong control and influence (Szamosszegi and Kyle 2011; Mattlin 2007, 2009; SASAC 2006). For these reasons, it is commonly observed that Chinese State firms still retain control over the "commanding heights" of the economy (Chatham House, 2012: 4; Lo and Wu, 2014).

An important contributing factor to the confusion surrounding China's development trajectory, particularly in pillar sectors where FDI has been market-seeking, is often due to the difficulty in accurately assessing the role of the State in the economy following the complicated process of transactions involving SOE (partial) privatizations, restructuring, joint ventures, and mergers and acquisitions over the past three decades. As Szamosszegi and Kyle (2011: 7) further explain,

> State-owned enterprises are business entities established by central and local governments, and whose supervisory officials are from the government. In official statistics, this category of firms includes only wholly state-funded firms. This definition excludes share-holding cooperative enterprises, joint-operation enterprises, limited liability corporations, or shareholding corporations whose majority shares are owned by the government, public organizations, or the SOEs themselves. A more encompassing category is, "state-owned and state-holding enterprises". This category includes state-owned enterprises plus those firms whose majority shares belong to the government or other SOE. This latter category, also referred to as state-controlled enterprises (SCEs), can also include firms in which the state- or SOE-owned share is less than 50 percent, as long as the state or SOE has controlling influence over management and operation.

For the most part, it is the large State-owned firms that are the principal beneficiaries of China's bank-centric financial system that drive the high investment, rapid expansion of infrastructure inside the Chinese economy. The core of the State sector, namely the oil, metallurgy, electricity, telecommunications and military industry sectors, accounting for three-quarters of the capital of SASAC-owned firms, and producing less than four per cent of China's total exports (Naughton, 2007). Overall, China's level of investment has been strong since at least the beginning of reforms in the late-1970s, but particularly so in the last decade. During the 1980s, China's investment rate averaged 36 per cent of GDP, which reflected the emphasis on labour intensive light industry while capital intensive State firms underwent adjustment following industrialization efforts in the pre-reform era (1950s–1970s). The investment rate increased

[8] See SASAC's website: http://www.sasac.gov.cn/n1180/n1226/n2425/index.html.

Table 1

Breakdown of financial sectors and markets as a share of GDP, 1999–2010

(Per cent)

	Assets of banking institutions	*Assets of insurance companies*	*Assets of securities companies*	*Government bonds outstanding*	*Financial bonds outstanding*	*Corporate bonds outstanding*	*Stock market capitalization*
1999	137.0	2.9	-	11.8	7.2	0.9	29.5
2000	138.5	3.4	-	13.1	7.4	0.9	48.5
2001	145.4	4.2	-	14.2	7.8	0.9	39.7
2002	169.8	5.3	-	14.8	8.2	0.5	31.9
2003	179.7	6.7	3.6	18.0	8.7	0.7	31.3
2004	175.0	7.5	2.1	22.4	9.1	0.8	23.2
2005	175.2	8.3	-	27.3	10.8	1.7	17.5
2006	204.0	9.1	-	28.9	12.1	2.6	41.3
2007	179.6	10.9	6.5	32.4	12.7	3.0	123.1
2008	204.3	10.6	3.8	31.3	13.4	4.1	38.6
2009	237.8	11.9	6.0	29.3	15.1	7.1	71.6
2010	241.6	12.7	4.9	28.1	15.0	8.6	66.7

Source: World Bank and DRC, 2012: 144.

further, exceeding 40 per cent of GDP in 1993 and again in 2005, before reaching just under 50 per cent of GDP in 2008 (Lo and Wu, 2014; Hofman and Wu, 2009; Lardy, 2006; Kuijs, 2005).

With the continued State control and ownership of the Chinese banking system[9] and the practice by China's central bank, the People's Bank of China (PBoC), to set bank lending and deposit rates while also limiting other investment channels for depositors, Chinese policymakers have mobilized resources mainly by engaging in so-called "financial repression" in making low-cost pools of savings/capital available to the banking system. This was a conscious policy decision to rely on domestic bank credit, rather than turning and tapping into international capital markets and the benefits/risks such an option entails. Although the role of bank credit has been reduced through reform measures that have led to developments of other capital sources (bond and stock markets), as shown in table 1, China's financial system remains predominantly bank-centric (WB and DRC, 2012: 116; Kruger, 2013).

This feature can also be highlighted through international comparisons in the structure of financial systems. According to one estimate, in 2012, bank credit to the private sector totalled 128 per cent of GDP in China, compared to 48 per cent in the United States. The bond market in China, by comparison, provided credit equivalent to about 41 per cent of China's GDP, while in the United States, this figure was 243 per cent. Chinese stock markets had an aggregate market capitalization of 44 per cent, which contrasts with advanced economies where capital provided by the stock market is typically lower than that of the bond market (Elliott and Yan, 2013: 8; JEC, 2006: 17).

[9] China's five large commercial banks – the Agricultural Bank of China (ABC), Bank of China (BOC), Bank of Communications, China Construction Bank (CCB), and Industrial and Commercial Bank of China (ICBC) – account for about half of the total assets in China's banking sector in 2010. Through reforms, these banks have become joint stock companies, but for four of these five banks, the majority of shares are held by the People's Bank of China (PBoC), the Ministry of Finance (MoF), or other government entities. Foreign banks, by comparison, accounted for just 1.8 per cent of total assets in the Chinese banking sector (Martin, 2012).

In turn, the banking system channels household savings and other domestic resources disproportionately toward enterprises, especially State-owned enterprises, instead of households. A major turning point also came in 1998–1999, when the major banks were given a sizeable capital injection and their non-performing loans transferred (at book value) to four newly-created asset management companies (Okazaki, 2007; Ma and Fung, 2002). A breakdown of total loans from the banking system to the resident and corporate sectors for 2007–2010 reveal the share of loans to the corporate sector remained at roughly 80 per cent, which is supported by large-scale deposits in the banking system, equalling 186 per cent of GDP in 2010. This level of deposits-to-GDP is far higher than that of most other major reserve currency economies and also other major emerging countries (Prasad and Ye, 2012: 17–18).

Banking sector reforms took place alongside industrial sector reform in the 1990s, as government sought to raise the efficiency of SOEs by closing some and merging others, reducing government ownership by selling shares on domestic and international stockmarkets, and allowing SOEs to shed redundant labour. In 1997, for instance, there was an explicit drive to return a great majority of SOEs to a healthy profit within three years. From 1997 to 2006, profits as a share of GDP in State-owned and State-holding enterprises rose from 0.5 to 4 per cent. Improved management practices, a leaner State sector, WTO accession and a return to fast growth all contributed to bringing the State sector back to profitability. The establishment of SASAC in 2003 further enhanced management and oversight of State assets, and as the Chinese market structure stabilized, and State sector profits grew rapidly (Poon, 2009; Yusuf et al., 2006; Nolan and Wang, 1999).

Continued State ownership occurred in the context of increasing degrees of market competition. In all sectors in which State ownership is dominant, Chinese policymakers have built in some competitive forces in what has been called "limited and managed" competition rather than full on market competition. In sectors designated as "strategic", the government typically structures these sectors with two or three large State enterprises often competing with each other as well as with a fringe of smaller firms generally supported by local governments. The practice is similar in "pillar" sectors, albeit often with a lesser degree of concentration. Thus, while incumbent firms are partially protected against competition by new entrants, whether private or domestic Chinese firms or foreign firms, Chinese policymakers have consciously built some competitive forces in all sectors, even when the government is the only real customer, as a way of keeping managers of State firms on their toes (Naughton, 2007 and 2010; Pearson, 2005).

China's 2009 stimulus plan for the auto sector, for example, organized the industry into a "top 10" group split into two distinct tiers: Tier 1 firms have an annual capacity of 2 million units and are encouraged to acquire smaller firms throughout China, Tier 2 firms have an annual capacity of 1 million units and are encouraged to drive regional consolidation. The plan also specifically identifies four domestic companies for each tier, with two companies unnamed to ensure a degree of flexibility (Tse et al., 2009b: 3–4). In the steel industry, by the end of 2009, eight of the ten largest steel groups are 100 per cent owned and controlled either by central or local government. Of the top ten steel groups, the top three produced between 30–40 million metric tonnes (MT), the next three produced 20–29 million MT, and the remaining three produced 10–19 million MT (Price et al., 2010: 6–8). Moreover, China's 12th five-year plan includes consolidation targets for China's top 10 producers to represent 60 per cent of total steel output by 2015, and 70 per cent by 2020 (Ko, 2011).

A key factor that makes China's growth model different than other emerging countries is that increasing State sector profitability, in turn, led to higher levels of State enterprise retained earnings (i.e. enterprise savings), which was subsequently re-invested in the domestic economy. During the period 1990–2003, investment by the enterprise sector distinguished China from other countries, and accounted for most of the cyclical variation in investment. During the cyclical upturn in the early 2000s, the share of enterprise savings were roughly as large as household savings in 2000 and surpassed household savings levels in 2002 (Kuijs, 2005). Critically, it appears China's State sector was embedded with what Hirschman (1958) referred to as decision-making "inducement mechanisms" or "pacing devices" that compensate for organizational deficiencies by compelling investment decisions "because there is some extra pressure

behind them as a result of pacing, routine responses, threatened penalties, certain and high profitability, or other forces" (Hirschman, 1958: 27, 39–41).[10] As Naughton (2010: 449) helpfully illustrates:

> One of the most striking ways the Chinese Government has encouraged investment is through the simple expedient of allowing Chinese SOEs to retain their after-tax profits. This policy, adopted quietly in 1994 in the context of overall fiscal reform, gives state firms strong incentives to increase profits, and few alternate uses of the profits created. Paying out too much of the profits in bonuses or managerial compensation can get a state-run firm in trouble; expanding the business through re-investment is the best, if not the only, alternative. ... Flush with retained funds, China's state firms poured money into expansion and new investment projects.

In this way, China's growth framework is highly reminiscent of animating an "profit-investment nexus" that was also the main distinguishing feature of the major growth phases of Japan and first-tier NIEs (Akyüz and Gore, 1996; Singh, 1996). The nexus is particularly crucial in accelerating capital accumulation and growth, due to the dynamic feedback interactions between profits and investment that result because profits are simultaneously an incentive for investment, a source of investment and an outcome of investment. As in other East Asian cases: first, high rates of investment were crucial to rapid catch-up growth and this investment was sustained by domestic savings; second, savings and capital accumulation were increasingly derived from corporate profits; third, government interventions accelerated capital accumulation through policy-induced economic rents, which elevated rates of profit over and above those that could be achieved under free market conditions (Akyüz and Gore, 1996: 461–462).[11]

The workings of this nexus are at the heart of current debates surrounding the rebalancing of China's economy towards greater final domestic consumption and away from fixed asset investment (Akyüz, 2011; Kroeber, 2011).[12] While there is much consternation that China's high investment rates have contributed to global imbalances, led to wasteful excess industrial capacity, environmental degradation and income inequality, an accumulation of non-performing loans and economic overheating, high investment rates are also associated with higher rates of learning, technical progress and structural change (Ocampo, 2005: 16). From this perspective, while China's pace of growth is very likely to slow, the pace of domestic economic rebalancing from investment-led to consumption-led growth is not likely to be a linear process, nor should it be.

For example, the debate surrounding drawing dividends from State firms in order to fund a more comprehensive social security system could indeed boost consumption by reducing one of the main drivers behind high levels of household savings. However, the proposal is controversial at this mid-stage of China's development process precisely because it has clear financial and competitiveness implications for the firms involved and the overall economy (Mattlin, 2011). Given China's current stage of development, a decision to rigidly implement the dividend policy solely for rebalancing purposes would in turn limit the simpler policy options for boosting investment levels, if not potentially preclude the ability to reverse those decisions, should such an objective be considered desirable at a later date.

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[10] Ocampo (2005: 4) refers to these features as "accelerator mechanisms".

[11] Animating the investment-profit nexus appears to address the dilemma confronting policymakers seeking degrees of political control in the direction and overall development of the economy, or as Galbraith (1967) put it: "The choice being between success without social control and social control without success" (Galbraith, 1967: 104). In this way, Chinese policy makers seem to implicitly realize that there is more "to the case for the autonomous public corporation than the modern socialist now sees" (Galbraith, 1967: 104).

[12] J Anderlini, 2014, China's rebalancing requires more investment of the right kind, *Financial Times*, 23 January. J Zhang, 2014, Making sense of China's growth model, *Project Syndicate*, 20 January, see, http://www.project-syndicate.org/commentary/jun-zhang-argues-that-the-dichotomy-of-extensive-and-intensive-growth-is-a-red-herring-when-it-comes-to-china-and-other-asian-economies. Y Huang, 2013, Understanding China's unbalanced growth, *Financial Times*, 4 September, see, http://carnegieendowment.org/2013/09/04/understanding-china-s-unbalanced-growth/glgx.

A decision to, say, promote modern corporate governance practices and market-determined dividends could be envisioned by abolishing government programmes, such as the Qualified Foreign Institutional Investor (QFII) programme, that limit the participation of foreign investors to influence Chinese stock market valuations.[13] Combined with a rash of other wholesale reforms, such as fully commercializing domestic financial institutions (WB and DRC, 2012: 118), a preference may develop for lending to sectors with "easier" profits within a shorter timeframe, seeing less reason to provide riskier longer-term financing in reaching higher rungs on the value chain. Once entrenched, it is relatively easy to see how such kinds of reforms would be very difficult to reverse (as is the case in many other developing countries), especially if China's macroeconomic fundamentals were to weaken, making the economy more reliant on foreign finance. Indeed, it is these kinds of features to China's model that set it aside from so-called "fragile five" emerging countries (Brazil, India, Indonesia, South Africa, Turkey) whose economies are structurally more reliant on foreign capital inflows.

Perhaps it is no coincidence that some analysts point to the link between a developing country having a "balanced" economy – with shares of investment and consumption roughly constant over time – and falling into the "middle-income trap", as is the case in some major Latin American countries. As argued by Huang and Lynch (2013), only a handful of developing economies have escaped the middle-income trap in the post-war era – notably Japan, the Republic of Korea and Taiwan Province of China – "[t]he common thread linking all these successful East Asian countries is that widening imbalances are associated with sustained high growth [and investment] rates that propelled these economies from middle-to high-income status, and eventually more balanced outcomes as their economies matured".

Indeed, the two different growth models (investment- or consumption-led) entail separate approaches to the underlying drivers of growth and the policy instruments that can be marshalled for developmental objectives. In this way, Chinese policymakers are well aware of the limitations and drawbacks in the current growth pattern,[14] but given their "invest first, consume later" approach and the availability of policy instruments under an investment-led growth model, they are likely to be very attentive to the connection between the pace of rebalancing, on the one hand, and assessments that Chinese firms are effectively progressing up the industrial value chain, on the other. On the latter score, while the evidence is not yet incontrovertible, there are increasing signs that such trends have built momentum and are making headway, notably in medium-technology capital goods sectors.

IV. LEWIS' SELF-SUSTAINING GROWTH? SINO-REDUX

The implications for South-South self-sustaining growth stem from understanding the key competitive features and dynamics of China's investment-driven development stage, which lies in-between the more rudimentary stage driven by factor accumulation (land, labour, capital) and the more advanced stage driven by innovation. The investment-driven stage has been aptly described as a stage when competitive advantage is "based on the willingness and ability of a nation and its firms to invest aggressively" (Porter, 1990), effectively using access to affordable capital as a source of competitive advantage in domestic, but also foreign markets.

China's annual FDI outflows have grown rapidly over the course of a decade commensurate with the government's "going out" strategy, rising from about $2bn in the late 1990s, to $5.5bn in 2004, to $21.2bn

[13] J Noble, 2014, Hong Kong and Shanghai unveil plan to link bourses, *Financial Times*, 10 April.

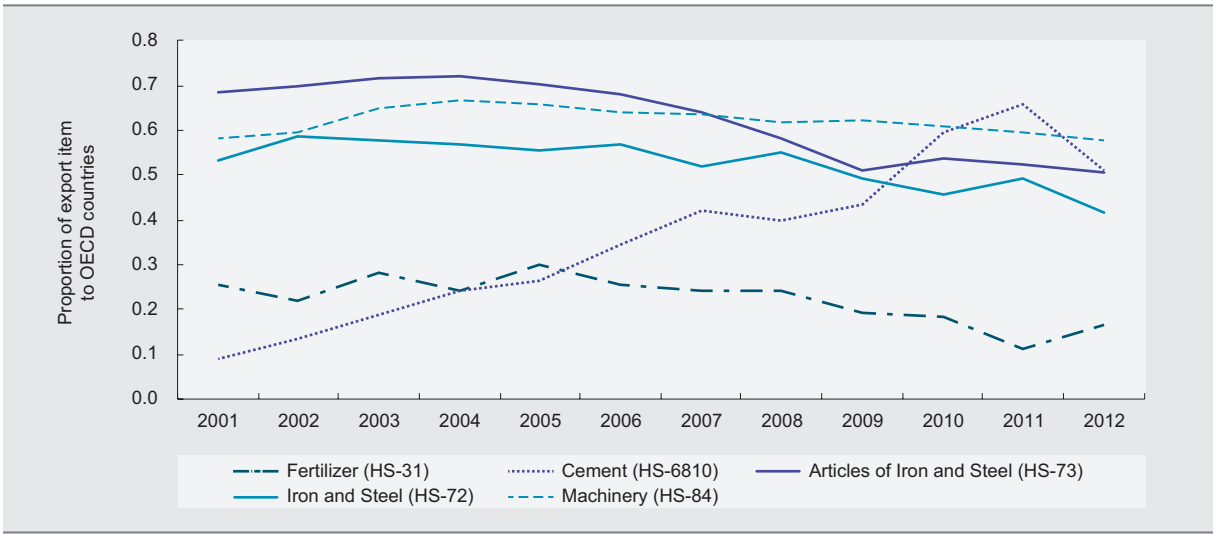
[14] J Anderlini, 2013, China premier Li Keqiang commits to financial reform, *Financial Times*, 11 September. M Wolf, 2014, China's struggle for a new economy, *Financial Times*, 25 March.

in 2006, to $56.5bn in 2009, and to $84.2bn in 2012.[15] While these FDI outflows are still small in relative context, accounting for only 6 per cent of total global FDI outflows in 2012, China's outflows are often in the form of financing packages related to tied-aid and overseas projects involving natural resource extraction and/or infrastructure-building with project loans often used to procure a majority of equipment, materials, technology and services from China. The level of tied-procurement can vary, but these features of China's "going out" strategy have been a major catalyst in diversifying China's trade and investment patterns and to bolstering SSC (Gallagher et al., 2012; Mlachila and Takebe, 2011; Brautigam, 2011a).

The key SSC question remains: has China sufficiently expanded production capacities in the five key sectors identified by Lewis – *food, fertilizer, cement, steel and machinery* – that could potentially lessen dependence on advanced industrialized countries for industrial inputs and support "self-sustaining growth" in a broad number of developing countries? Figure 4 provides an analysis of China's export flows in four (minus food)[16] of Lewis' five key sectors for 2001–2012. As done in figure 3 with motor vehicles and parts, figure 4 compares China's respective exports to OECD countries in the four Lewis sectors. Thus, if the share of a given export good to OECD markets is high (or low), then the implication is that the share of that same good going to the South is low (or high), suggesting China's production capacity

Figure 4

Share of Chinese exports to OECD countries, Lewis' four key sectors, 2001–2012



Source: ITC.

[15] There are reasons to believe that China's official outward FDI statistics are possibly overestimated and/or underestimated. To the extent that outward FDI is channelled through foreign jurisdiction to re-invest these funds back in China to take advantage of policy incentives – the process of "round-tripping" – official statistics may overestimate outward FDI, although round-tripping should logically be reduced given that domestic and foreign enterprise tax rates were unified at the beginning of 2008. Possible underestimation of China outward FDI stems from the fact that official figures mainly show outward FDI from SOEs, which is likely to underestimate private sector outward FDI (Davies, 2012: 3–4).

[16] China is also a major producer and exporter of a wide range of agricultural commodities, for example, in fruit, vegetable, and livestock products, including apples, garlic, aquaculture products, poultry and pork. Meanwhile, agricultural imports have also grown sharply since China joined the WTO in 2001, particularly for commodities like soybeans and cotton, making China one of the world's top agricultural importers. Although China has generally remained self-sufficient in its own traditional measure of 'grains' (including cereals, soybeans, and potatoes), this policy objective is becoming harder to attain as China's consumption expands and domestic production faces resource constraints. In 2012, China's traditional measure of self-sufficiency in grain fell just below 90 per cent (Gale, 2013; Lohmar et al., 2009). In February 2014, China announced the abandonment of its grain self-sufficiency policy. For these reasons, 'food' is not included in the analysis of China's production capacities in Lewis' five key sectors.

is part of an offshoring process that generally limits the ability to diversify trade flows to the South – a rough proxy to assess current status of Chinese indigenous technological capabilities.

While China is a major global producer in all four of these broad categories (which are all considered "pillar" industries), the pattern of trade flows to the South reveals mixed results. Three of the four sectors show declining Chinese export reliance on OECD markets, with exports of fertilizers exhibiting the lowest share going to those markets, leaving cement as the only item among the four showing an increasing reliance on OECD markets. Given the sector's close links with the processing trade, machinery exports are given closer scrutiny to highlight the growing role of Chinese firms and their enhanced production capacities. Importantly, parts of this sector have grown on the back of domestic (rather than foreign) demand and thus represent a more domestically-integrated kind of manufacturing competition emerging from China.

Fertilizer exports, of which China exported $7.2bn in 2012 (ranked third globally, by value), have shown a declining dependence on OECD markets, representing only 16.4 per cent of total Chinese fertilizer exports in 2012, and where the large majority of export destinations are other developing countries. **Cement**, by contrast, where China exported $983.5m in 2012 (ranked first), revealed an increasing proportion going to OECD markets, accounting for 50.9 per cent of total Chinese cement exports in 2012, where many of the export destinations are not other developing countries but developed or high-income countries. Similarly with exports of **iron and steel** and **articles of iron and steel**, where China exported $37.1bn (ranked second) and $56.2bn (ranked first) respectively, the proportion of Chinese exports going OECD markets has declined over time but still remain relatively high. For China's iron and steel exports, the share going to OECD markets declined from 53 per cent to 41.7 per cent from 2001 to 2012, whereas for China's articles of iron and steel exports, reliance on OECD markets declined from 68.6 per cent to 50.6 per cent.

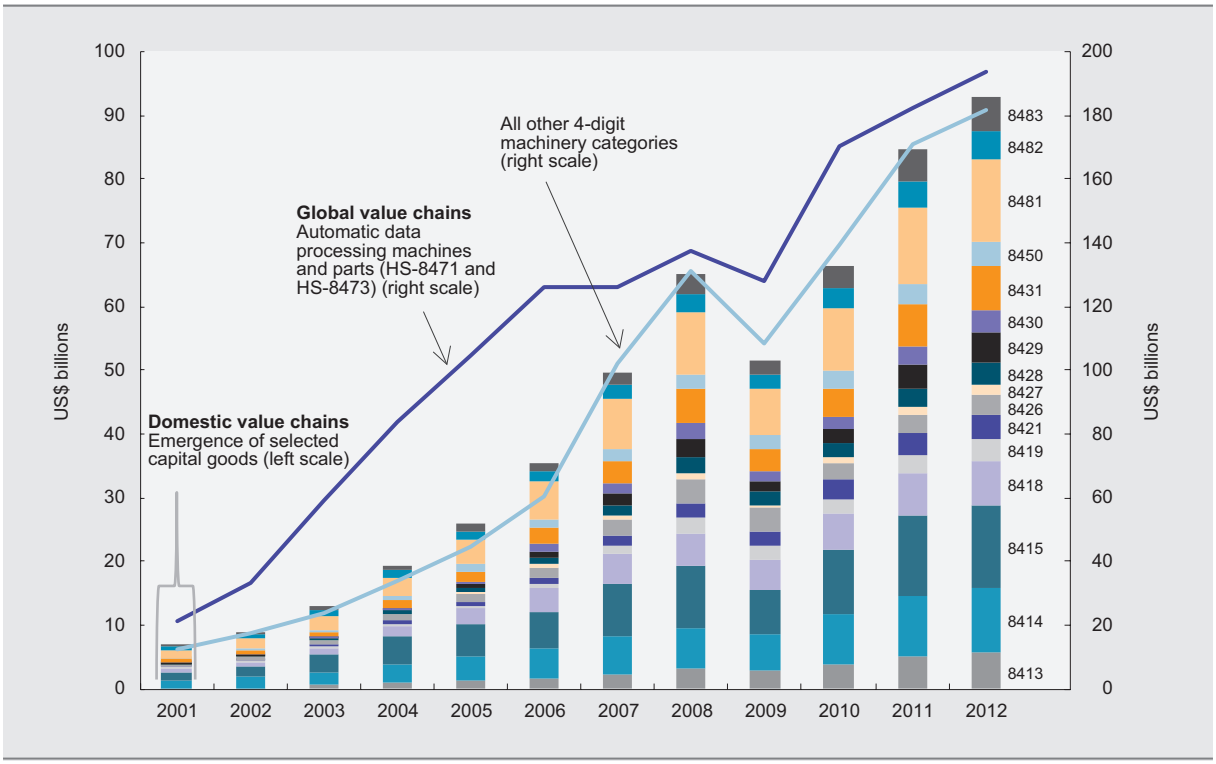
Machinery is a special case not only because Lewis considered this sector more difficult to gain competence due to "economies of scale, continually improving technology, and patented or secret knowledge", but also due to its much larger scope compared to other sectors examined above. China exported $375.9bn in 2012 (ranked first), but like in iron and steel, the share of these exports going to OECD markets has declined (to a lesser degree) but remains high, from 58.3 per cent in 2001 to 57.6 per cent in 2012. However, a different picture emerges once two sub-sectors closely linked to the processing trade are isolated, namely HS-8471 and HS-8473 automatic data processing machines and their parts and accessories. Crucially, Chinese exports of HS-8471 and HS-8473 show an increasing reliance on OECD markets from 59.1 per cent in 2001 to 63 per cent in 2012, whereas the rest of the machinery (HS-84) category reveal a declining trend, going from 56.7 per cent to 51.9 per cent.

Figure 5 provides a further glimpse of the changing structure of China's machinery exports over the period 2001 to 2012. In 2012, HS-8471 and HS-8473 combined for a total of $193.9bn in Chinese exports, representing 51.6 per cent of all machinery (HS-84) exports. This figure remains substantial but is down significantly from 63.3 per cent in 2001. Over this period, the weight of all other HS-84 four-digit categories grew from 36.7 per cent to 48.4 per cent of total Chinese machinery exports, to a value of $182bn in 2012, nearly equalling the combined value of HS-8471 and HS-8473. Some of these other four-digit HS-84 categories are displayed in the stacked columns of figure 3 to highlight the emergence of a set of machinery exports that counter the narrative of China's engagement with the global economy primarily through investment from MNCs. Domestic Chinese firms are taking an increasingly prominent role not only in driving the country's "new wave" of exports, such as in construction machinery and equipment, but also in diversifying China's exports markets to other developing countries.

For example, China's exports of HS-8429 self-propelled bulldozers, excavators, etc. reached $4.9bn in 2012, only 10.8 per cent of which went to OECD markets. This share is down from a level of 31.4 per cent in 2001 (not shown in figure 5 or in the annex). Similarly, China's exports of HS-8426 derricks, cranes, trucks with cranes reached $3bn in 2012, 26.3 per cent of which went to OECD markets. This share is

Figure 5

Changing structure of China's machinery exports (HS-84), 2001–2012



Source: ITC; Hanson, 2012: 47; EIU, 2011: 5.
Note: See annex for HS four-digit categories in stacked columns.

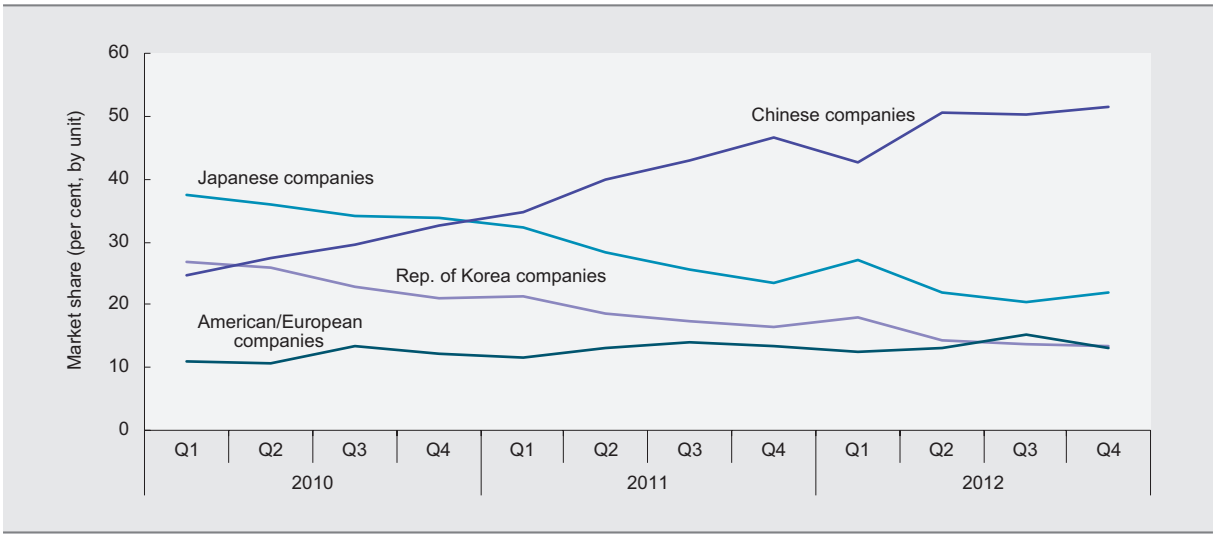
down from a level of 46.1 per cent in 2001. For China's exports of HS-8428 lifting/handling/loading machinery reached $3.5bn in 2012, 28.8 per cent of which went to OECD markets. This share is down from a level of 50.3 per cent in 2001. To put this into a wider context, these three categories (HS-8429, HS-8426, HS-8428) alone total $11.4bn, representing only a small proportion of China's total machinery (HS-84) exports. Nonetheless, this amount is at roughly the same level of other respective BRICS countries' total machinery exports in 2012: Brazil – $13.9bn, India – $11.1bn, the Russian Federation – $7.6bn.

These structural changes reflect improvements in domestic firms' productive capacities, particularly in precision levels of metal-cutting/shaping facilities, and in metallurgical processes, as well as enhanced thresholds for strength and durability. In construction machinery, for instance, China's solid foothold in the production of cranes, cement trucks, and pumps has evolved to include earth-moving equipment, a market normally dominated by firms from the United States, the Republic of Korea and Japan. These trends suggest a different kind of competition emanating from China: unlike the processing trade and even joint-venture-driven sectors such as the automobile industry, the construction equipment sector does not rely on FDI to nearly the same extent. Moreover, construction equipment manufacturers grew rapidly in response to domestic demand, rather than through exports to advanced country markets. For these reasons, "the growth of the construction equipment industry – and heavy machinery in general – has been more organic. A relatively comprehensive domestic supply chain has emerged" (EIU, 2011).

A recent study by CLSA, a broker and investment group, tested a range of Chinese-made and Chinese-branded excavators and found them to be dependable and high-performing, suggesting that leading Chinese brands such as Sany, Zoomlion, and Liugong, are likely to increase their presence on building sites across the globe. The onset of the global financial crisis proved to be a turning point for Chinese domestic construction machinery firms. Prior to the crisis, it is estimated that roughly 90 per cent of

Figure 6

China domestic excavator market share trends, by quarter, 2010–2012



Source: China Construction Machinery Industry Association, 2013: 33.

Note: *American/European companies*: Caterpillar, Volvo, Liebherr, Atlas Copco, Xuzhou Zhengling (John Deere).
Chinese companies: Sany, Yuchai, Liugong, Strong, SDLG, Lovol, Xiamen XGMA, Sunward, Zoomlion, Lishide, Shandong Carter, Rongsheng, Guangxi Kaiyuan, Jonyang Kinetics, Pengpu.
Japanese companies: Komatsu, Hitachi, Kobelco, Sumitomo, Yamaha.
Republic of Korea companies: Doosan, Hyundai-Beijing, Hyundai-Jiangsu.

excavators on Chinese construction sites were foreign-branded, but often made in China. The government's massive fiscal stimulus in 2008–2009 (while advanced countries saw sinking equipment sales), however, led to a construction boom that procured construction machinery from Chinese makers and allowed them to further expand. According to one account, $250m in government subsidies went to Sany and $50m went to Zoomlion during 2011–2012. While domestic Chinese firms still lagged foreign firms in terms of technical know-how, Chinese firms offered buyers such generous financing and discounts that by 2011 their excavators held a 41.1 per cent share of the domestic market, which grew to over 50 per cent in 2012 (see figure 6).[17]

The CLSA study subjected foreign- and domestic-branded made-in-China excavators from six companies – Sany, Caterpillar, Doosan, Hitachi, Komatsu and Kobelco – to two weeks of robust tests of their productivity, durability and fuel efficiency. The results indicate that Sany's performance was not quite as good as the best, made by Caterpillar, but outperformed their rivals from Japan and the Republic of Korea. The study concluded that technology gaps, particularly in the medium-sized 20–24.9 tonne weight class,[18] between the best Chinese firms and their foreign rivals are now "almost non-existent", and the CLSA expects that Sany and other larger Chinese brands will lead a consolidation drive of the domestic industry. As shown in table 2, it is the medium-sized 20–24.9 tonne weight class (shaded rows) that accounts for the greatest share of Chinese excavator exports, adding up to 46.8 per cent and 57.6 per cent of the total in 2011 and 2012, respectively.

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[17] EIU, 2014, China's best makers of construction gear are now world-class, 21 December, see, http://www.economist.com/news/business/21591864-chinas-best-makers-construction-gear-are-now-world-class-digging-victory. L Abaffy, 2013, China's uphill battle, *Engineering News-Record*, 2 December, see, http://enr.construction.com/products/equipment/2013/1202-where-east-meets-west-china-hits-a-speed-bump.asp.

[18] H Winn, 2013, CLSA unearths the truth about made-in-China excavators, *South China Morning Post*, 14 December, see, http://www.scmp.com/business/article/1380078/clsa-unearths-truth-about-made-china-excavators.

Table 2

China excavator exports, by weight class, 2011–2012

	2011		*2012*			
Weight (Tonnes)	*Quantity (By unit)*	*Share (Per cent)*	*Quantity (By unit)*	*Share (Per cent)*	*Year-on-year change (Per cent)*	*Change in share (Percentage points)*
<6	853	18.8	787	9.8	-7.7	-9.0
6 to 10	320	7.1	485	6.0	51.6	-1.1
10 to 15	344	7.6	665	8.3	93.3	0.7
20	174	3.8	873	10.9	401.7	7.1
21	1 162	25.7	2 046	25.5	76.1	-0.2
22	785	17.3	1 697	21.2	116.2	3.9
25	95	2.1	256	3.2	169.5	1.1
30	154	3.4	140	1.7	-9.1	-1.7
35	456	10.1	908	11.3	99.1	1.2
40	187	4.1	164	2.0	-12.3	-2.1
Total:	**4 530**		**8 021**		**77.1**	

Source: China Construction Machinery Industry Association, 2013: 37.

A spate of acquisitions of foreign companies in recent years, some struggling from the economic downturn in advanced countries, has provided further upward lift to technology upgrading and export diversification by Chinese firms in the construction machinery sector. For instance, in April 2012, State-owned Xuzhou Construction Machinery Group (XCMG) purchased a majority stake in Schwing, one of Germany's leading high-end concrete pump makers. In January 2012, Sany Heavy Industry acquired 90 per cent of Germany's Putzmeister, also an up-market concrete pump maker, based in the Mittelstand. In February 2012, Guangxi Liugong Machinery also purchased Poland-based Huta Stalowa Wola (HSW), manufacturer of bulldozers and other crawler machines. In September 2012, Shandong Heavy Industry acquired a 20 per cent stake in German forklift company Kion Group, and a 70 per cent stake in Kion's hydraulics business. In December 2013, Zoomlion Heavy Industry acquired leading German producer of dry mortar, M-TEC. This deal follows the 2009 purchase of a 60 per cent majority stake in Compagnia Italiana Forme Acciaio (CIFA), a leading concrete equipment manufacturer. By January 2013, Zoomlion purchased the remaining shares of CIFA from Goldman Sachs and other investors, reportedly funding the deal off its balance sheet.[19]

China's rise in heavy equipment certainly remains a work in progress, but in terms of SSC, it is important to note that the higher-value capital goods that most developing countries are already importing, mainly from OECD countries, are those very same economic sectors in which Chinese manufacturers are increasingly building capacity. Table 3 provides a sense of these trends, where OECD countries' global

[19] B Zhang, 2012, Buyouts prime machine maker for global growth, *Caixin Online*, 23 February, see, http://english.caixin.com/2012-02-23/100359965.html?p1. *Reuters*, 2012, China's XCMG buys majority of Germany's Schwing, 19 April, see, http://www.reuters.com/article/2012/04/19/xcmg-schwing-idUSL6E8FJC4720120419. P Marsh, 2012, Chinese industry faces Mittelstand-off, *Financial Times*, 12 June. C Bryant, 2012, China's Sany to acquire Putzmeister, *Financial Times*, 29 January. J Du, 2013, No longer poles apart, *China Daily*, 29 November, see, http://europe.chinadaily.com.cn/epaper/2013-11/29/content_17140193.htm. *Xinhua*, 2013, China's Zoomlion acquires German dry mortar producer, 30 December, see, http://news.xinhuanet.com/english/china/2013-12/25/c_132995948.htm. C Murphy, 2013, China's Zoomlion buys Germany's M-Tec, Dow Jones Newswires, 26 December. Asia Private Equity Review, 2013, Hony & Mandarin to exit CIFA, 7 January.

Table 3

Global exports shares of HS-8429 self-propelled bulldozer, angledozer, grader, excavator, etc., 2001–2012

(Per cent)

	2001	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*
World ($bn)	13.93	15.03	19.50	25.51	30.66	36.91	47.50	52.19	23.84	36.80	51.83	51.95
OECD	93.54	93.38	90.28	89.74	88.40	87.54	87.02	85.17	81.88	81.56	81.75	80.35
Republic of Korea	4.20	4.74	5.52	5.76	5.96	6.40	6.34	5.95	5.15	7.64	8.93	9.08
China	0.66	0.54	0.46	1.06	1.55	2.74	3.88	5.30	6.40	6.09	7.48	9.40
Brazil	2.26	2.23	2.15	3.36	3.85	3.72	3.06	3.27	2.49	3.67	4.19	4.16
South Africa	0.20	0.17	0.15	0.17	0.20	0.24	0.32	0.40	0.48	0.43	0.41	0.46
Russian Federation	0.56	0.44	0.37	0.34	0.47	0.50	0.53	0.48	0.60	0.36	0.24	0.41
Indonesia	0.08	0.12	0.16	0.19	0.29	0.42	0.30	0.21	0.27	0.32	0.33	0.39
India	0.03	0.01	0.04	0.07	0.06	0.04	0.08	0.14	0.39	0.17	0.31	0.30
Turkey	0.18	0.12	0.11	0.07	0.07	0.11	0.18	0.21	0.31	0.21	0.20	0.25

Source: ITC.

export share in HS-8429 has fallen from 93.54 per cent to 80.35 per cent from 2001 to 2012. Over that same period, China's exports in this category have grown rapidly from 0.66 per cent to 9.40 per cent, roughly equalling the Republic of Korea's (growing) global export share. (As mentioned above, only 10.8 per cent China's exports in this category were destined for OECD markets in 2012.) While other selected emerging countries also saw their global export shares rise quickly (except the Russian Federation), their global shares remain below half of one per cent. The exception is Brazil, which saw its share almost double from 2.26 per cent to 4.16 per cent.

Although China's increased competence in excavators represent only one product category within construction machinery, not to mention one among a large number of overall machinery[20] and other capital goods categories, these trends provide a glimpse of China's current technology and economic development trajectory. Further research is needed to confirm the scope and depth of these trends, but the findings in this section imply that a wider Chinese "big push" in capital goods is certainly possible, if not in progress across a range of sectors (Lang et al., 2012; Bouffault et al., 2011; Alberts and Ting, 2010; Alberts et al., 2010; Price et al., 2010). In this vein, the OECD (2010: 77) has already hinted at some of the possible South-South development implications: "Such a downward shift in the relative price of capital goods could represent a major growth payoff from the expansion of India and China for the world economy as a whole, but especially for low-income countries where prices for capital goods have historically been excessively high".

Although Chinese technological indigenous capabilities are generally still relegated to lower-end market segments that appeal to cost-conscious consumers in many of these capital goods (and other) sectors, the discussion presented above also speaks to mounting momentum of Chinese producers in upgrading product quality and dependability. As occurred in other East Asian cases, it is not uncommon for new market entrants to seek to capture entry-level consumers based on price and try to expand from this base as the brand evolves over time (Tse et al., 2009a). Indeed, it is this upgrading imperative of Chinese domestic producers that some suggest will lead to a battle for fast-growing "middle-market" segments in

[20] Other broad machinery sectors are: agricultural machinery, machine tools, basic components of machinery, heavy machinery, power generating machinery, petrochemical general machinery, auto machinery, instruments, office supply machinery, food and packaging machinery, and others (EU SME Centre, 2011).

emerging countries, where customers demand more sophisticated products than those traditionally offered by low-cost Chinese producers, yet less sophisticated and costly than those high-end market segments dominated by foreign companies (Brandt and Thun, 2010; Lang et al., 2012; Tse et al., 2009c: 2–4).

Incidentally, an important component of China's "going out" strategy has included an apparent openness to financing and investing in infrastructure, resource processing activities and industrial projects, in Chad, Ghana, Liberia, Niger, and Nigeria, among others, which are often tied to procurement of equipment, supplies and services in China (Freemantle and Stevens, 2013b; Brautigam, 2009, 2011b; Downs, 2011, 2012; Rogers, 2008). Gallagher et al. (2012) also note the tendency for Chinese bank loans in Latin America to focus on infrastructure and heavy industry. The country case below briefly illustrates how China's process of industrial upgrading could have potentially dynamic knock-on effects on other developing countries.

Country case – China and oil refining in Nigeria

The lower pricing points for capital goods (and for industrial financing) could have transformative impacts for other developing countries in light of China's apparent willingness to invest in value-added activities, like processing/refining projects. Viewed as an "un-economic" proposition by traditional investors, such projects often have a hard time securing long-term financing, but from the Chinese side, are likely considered from a longer-term investment perspective. China's offer to build the refineries is linked to gaining a strategic edge over commercial rivals in winning access to oil reserves,[21] but not surprisingly aspects of the bid play to its strengths: from China's relative ease of access to capital, to its (over)capacity in some of these heavy industry projects, both of which stem from China's current development stage of investment-led growth.

In May 2010, the China State Construction Engineering Corp. (CSCEC) signed an MOU with the State-owned Nigerian National Petroleum Corporation (NNPC) agreeing to spend up to $23bn to build three greenfield oil refineries and a petrochemical plant in Nigeria as part of China's efforts to secure 6bn barrels of crude oil reserves. According to the United States Energy Information Administration (EIA), Nigeria is Africa's largest oil producer at 2.5m barrels per day (bpd) in 2012, 89 per cent of which was exported. In contrast, consumption of petroleum products amounts to an equivalent of 0.27m bpd, but with refineries running at an average capacity utilization of only 20 per cent in the last few years, Nigeria imported roughly 76 per cent of petroleum products in 2011, including premium motor spirits (petrol), automotive gas oil (diesel), and dual purpose kerosene (NRSTF, 2012: 7,17). The EIA estimates that Nigeria imported about 85 per cent of its demand for petroleum products in 2009.[22]

In light of this high proportion of fuel imports, the cost of providing fuel subsidies in Nigeria has fluctuated in recent years, but remains at an elevated level. According to some estimates, as international fuel prices rebounded in 2011, the estimated cost of Nigeria's fuel subsidy was about $9.30bn, up from $4.31bn in 2010, $3.01bn in 2009, and $5.17bn in 2008 (Schiere, 2012). According to the Central Bank of Nigeria, government capital expenditure in 2011 was $5.94bn (or N918.5bn)[23] equivalent to 2.6 per cent of GDP, and which accounted for 19.5 per cent of total government expenditure, and 25.8 per cent of total federal government revenue. In 2010, the government's capital expenditure amounted to $5.88bn (or N884.02bn)[24] (CBoN, 2011: 111). Due to limited refining output, the government's fuel subsidy was

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[21] T Burgis, 2010, China's offer oil Nigerian relations, *Financial Times*, 18 May; T Burgis, 2010, China in 423bn Nigeria oil deal, *Financial Times*, 15 May.

[22] EIA, 2012, Nigeria, Analysis Brief, 16 October, see, http://www.eia.gov/countries/analysisbriefs/Nigeria/nigeria.pdf.

[23] Using the average exchange rate for 2011 of $1: N154.75.

[24] Using the average exchange rate for 2010 of $1: N150.30.

about 1.6 times the amount of its capital expenditure in 2011, and in 2010, the government's fuel subsidy bill was equivalent to 73 per cent of its capital expenditure.

Domestic improvements in the production of petroleum products – gaining a degree of self-sufficiency – would presumably provide a fair degree of "policy space" for the Nigerian authorities by freeing up financial resources that could be re-allocated from fuel subsidies to other development objectives such as infrastructure and social services. Ultimately, however, the deal was sidelined by the 2013 announcement that the Nigerian-owned Dangote Group will invest $9bn in a new refinery. The conglomerate already operates in sectors from concrete and construction, to sugar, salt, and other consumer staples, and it has been argued that with close political connections, the company is far better placed than Chinese companies to navigate the complex web of entrenched political-economic interests and to absorb associated political risks.[25] Nonetheless, with cement production being one of the industrial sector's most energy-intensive,[26] the project carries strategic significance for the company, especially given its ambitions to become a global cement brand.[27]

Doyin Okupe, senior assistant to Nigerian President Goodluck Jonathan, believes the Dangote deal will "change the economic and industrial landscape of Nigeria".[28] From a South-South perspective, although the CSCEC-NNPC deal now appears sidelined, the case reveals perhaps three key points: (i) a sense of the potentially transformative opportunities for host economies of strategic bilateral Chinese trade and investment flows; (ii) that despite the benefits such agreements are not assured and still require hard-nosed negotiation; and more controversially, (iii) the possible reaction to competitive pressures placed on local (and foreign) companies and investors from these (potential) arrangements.

V. STATE CAPITALISM MEETS MONOPOLY CAPITALISM

Any advances made by Chinese firms in climbing up the industrial value chain (and the resulting impacts on SSC), must be seen in the context of the clear trend toward greater industry consolidation, through mergers, acquisitions and FDI, of a limited number of globally dominant businesses that are primarily based in developed countries. In a paper assessing the pros and cons of the "Beijing consensus", Williamson (2012: 9) added an important caveat to the "Washington consensus" policy package by critiquing the concentrated form of capitalism that prevailed in advanced countries in the lead up to the financial crisis,

> One should surely distinguish monopoly capitalism from free-market capitalism. It is true that the Washington consensus, as first articulated by this author, endorsed privatization as a policy, and clearly this stance is as antithetical to state capitalism as to socialism. But privatizing in order to replace a nationalized industry with a private monopoly is not what I had in mind.[29]

This process of consolidation has taken place across a wide range of sectors, from high-tech products, to branded consumer goods and capital goods, to financial services: sectors where a huge increase in global output was accompanied by a reduction in the number of leading firms in many industrial sectors

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[25] B Mezue, 2013, Nigeria's big gamble on one indigenous entrepreneur, Harvard Business Review Blog Network, 12 September, see, http://blogs.hbr.org/2013/09/nigerias-big-gamble-on-one-ind/.

[26] EIA, 2013, The cement industry is the most energy intensive of all manufacturing industries, 1 July, see, http://www.eia.gov/todayinenergy/detail.cfm?id=11911.

[27] C Kay, 2014, Africa's Richest Man Dangote Mulls Buying Nigeria Oil Fields, *Bloomberg*, 21 January, see, http://www.bloomberg.com/news/2014-01-20/africa-s-richest-man-dangote-considers-buying-nigeria-oil-fields.html.

[28] D Hinshaw, 2013, Africa's richest man bets big on oil refinery, *Wall Street Journal*, 27 December, see, http://online.wsj.com/news/articles/SB10001424052702304607104579210322347689090.

[29] It is perhaps no coincidence, as Nolan and Zhang (2010: 107) pointed out, that "companies headquartered in the high-income countries were in prime position to benefit from the liberalization of international economic relations that was at the heart of the Washington Consensus".

(Nolan, 2014). Indeed, not only do Chinese (and other emerging economy) firms have to catch-up to lead firm "system integrators" at the apex of GVCs that possess superior technologies and powerful brands, but also with other powerful supplier firms "that now dominate almost every segment of global supply chains" (Nolan and Zhang, 2010: 98).

For instance, using data from 2006–2009, the number of system integrator firms in the manufacture of large commercial aircraft was two; of mobile telecommunications handsets and infrastructure, three (each); of pharmaceuticals, ten; and of construction and agricultural equipment, four and three, respectively. In these cases, these firms held between half and all of global market share, except in the case of the four construction equipment firms which held 44 per cent of global market share. Similar trends hold across many industries for major component firms that supply the system integrators, as well as in the expenditure of corporate research and development (R&D) resources.

This high degree of industry concentration reinforces the enormous competitive challenges faced by Chinese "national champion" firms in catching-up to the technological frontier and challenging head-on the world's leading MNCs. Some might dismiss China's support for its firms as a throwback to a pre-globalization mindset, but a post-financial crisis perspective suggests that China's concerns may not be misplaced: "Companies still have national attachments that shape how they behave and, in particular, their role in developing a particular country's competences".[30] Given the well-known barriers that limit the possibility of upgrading in GVCs (Park et al., 2013: 84–86), the Chinese government's ambitious industrial policy goals would be even harder to achieve, if not utterly impossible, if it was not consciously (and sometimes creatively) making use of key policy instruments to further its goals. As the Chairman of the United States Export-Import Bank forcefully argued,

> Believe me, China and other countries will not be shy about using any tool – as much as they can and for as long as they can – to put their people to work. State-owned enterprises, sovereign wealth funds, state-directed capital – they will leverage every single one in an attempt to outcompete us (Hochberg, 2012: 9).

Table 4 provides a brief overview of the main industrial policy instruments deployed by Chinese policymakers. Missing from table 4, however, is a key consideration that makes China's industrial strategy resonate with that of Japan and the first-tier NICs (and distinctive from that of other developing countries); China's unorthodox ability to better align macroeconomic policies as part of a broader development strategy (i.e. meso- and microeconomic sectoral policies) in contributing directly to long-term growth. First, fiscal policies have prioritized development spending, particularly investment in infrastructure and education, along with subsidies to export industries. Second, monetary policy was integrated with banking/financial sector and industrial policies, including directed credit and favourable interest rates in order to directly influence investment and savings behaviour. Moreover, the selective use of capital controls to ensure a competitive exchange rate was considered as indispensable to encouraging exports and export diversification (Ocampo and Vos, 2008: 41; Yu, 2008; El-Erian and Spence, 2008; Flassbeck, 2005).

While it is not uncommon to find other developing countries with a similar set of industrial policy instruments and sector-specific strategies, it is the Chinese Government's relatively strong financial position combined with strong macroeconomic fundamentals that make its various industrial policy instruments and sectoral strategies all the more credible and viable. Below, three examples are briefly provided to illustrate the strategic nature of China's competitive advantage in its "ability and willingness to invest" (Porter, 1990) the capital resources it has painstakingly accumulated:

- In September 2007, the Government created the China Investment Corp. (CIC), a sovereign wealth fund that was initially provided $200bn from the country's foreign exchange reserves (now $500bn).[31]

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[30] M Wolf, 2013, Why China will not buy the world, *Financial Times*, 9 July.

[31] R Sullivan, 2013, Desperately seeking Chinese SWF chairman, *Financial Times*, 3 June.

Table 4

China's industrial policy toolbox: Overview

Policy instrument	*Explanation*
Fiscal Incentives	The Chinese Government can use a powerful set of fiscal incentives, including: tax exemptions, preferential tax rates, tax offsets, value-added tax refunds, R&D tax deductions (150 per cent deduction, meaning a 50 per cent subsidy for R&D), special amortization and depreciation rules, and the lowering of import duties for core technologies, raw materials, and equipment.
Grants	The Government runs a number of nationwide R&D programmes that direct grants and personnel to key areas and research institutions. Research grants can offer grants to individual companies: Huawei, for instance, was provided $150m from State R&D grants in 2010.
Financial support	Start-up capital, access to cheap land, access to bank loans (often at subsidized rates), and lines of buyer credit can be provided by the Government. Strong State control over the banking sector means that credit can be directed towards strategic economic activities that can prove to be a critical factor behind the failure of success of an industry or company.
FDI guidelines	Through an investment catalogue, FDI can be encouraged or discouraged in various areas. Where it is encouraged, FDI brings financial and human capital and technology. The State has used foreign ownership limitations and required technology transfer in many sectors.
Government procurement	Government procurement is a proven way to stimulate innovation. It can help new technologies achieve scale, help young firms bridge funding gaps, and direct funding to key areas. China has actively promoted domestic standards, requiring indigenous ownership of intellectual property rights, fast-tracking patent applications, and steering purchases to domestic companies.
Standards	The State has encouraged the development of indigenous Chinese technology standards. Not only does it prioritize purchase and usage of the standards, it can also restrict the usage of competing international standards. It can also erect entry barriers for foreign products by requiring compliance with complex and burdensome localization requirements and standards.
Human resources	The Government has made great efforts to attract professionals, mostly Chinese, who have studies and worked abroad. These returnees (known as 'sea turtles', in Chinese) bring with them a good deal of human capital (and tacit knowledge).
Infrastructure projects	Government commitment to infrastructure is a critical factor for developing industries. Whether telecommunications infrastructure or highways and high-speed train lines, these investments create the environment necessary for the other factors listed above to bear fruit.

Source: Ahrens, 2013.

Officially, the CIC is to make long-term investments that maximize the risk-adjusted financial returns to its shareholder, the State Council, by diversifying investment into a wider range of assets including equities, bonds, and hedge funds. However, it is likely that CIC's mandate includes strategic aspects such as: managing China's investments in its domestic State banks, supporting outward expansion of Chinese firms, and managing China's external investment portfolio that will be more diversified than China's foreign exchange reserve portfolio. In November 2007, the CIC assumed the responsibility for the assets and liabilities of Central Huijin Investment Ltd., which is a major stockholder in China's State-owned commercial banks, policy banks, and other joint-stock financial institutions (Martin, 2010).

- In February 2008, the combined $13bn effort by Chinalco and Alcoa to buy 9 per cent of Rio Tinto's outstanding shares was a bid to thwart the acquisition of Rio Tinto by BHP Billiton that would have further enhanced BHP's pricing power over iron ore, a key input for steel-making. The investment

by Chinalco did not draw on financing from CIC, but Chinalco did receive loans from the China Development Bank (CDB), which was recapitalized with $20bn from the CIC in December 2007. In return, CIC received a large equity stake and as of end-2009, CIC held a 48.7 per cent equity stake in CDB (Martin, 2010; Setser, 2008). In a separate deal, in 2010, Chinese automaker Geely acquired Swedish automaker Volvo for $1.8bn, where the Volvo's technology and engineering capabilities were key aspects for Geely. To finance the deal, Geely secured a $2.1bn of loans from Bank of China, China Construction Bank, Export-Import (Exim) Bank of China, Geely Automobile Holdings (the group's listed arm), and the government of Gothenburg (where Volvo is headquartered).[32]

- The construction machinery sector benefitted from a large government stimulus package and industry-specific plans (the latest issued in 2009) that included an array of measures from value-added tax, procurement, and R&D preferences, to financial incentives to promote the restructuring and merging of domestic firms, among others (Poon, 2012: 46). As a consequence, cash-flush Chinese firms were well positioned to gain domestic market share from foreign rivals, but also to opportunistically acquire leading European construction machinery firms, many of which faced financial difficulties with the advent of the global financial crisis and the subsequent European debt crisis.[33]

  With regards to the XMCG-Schwing deal,[34] in support of "going global" projects by Chinese companies, the Industrial and Commercial Bank of China (ICBC) arranged a €160m international loan syndication to finance the deal. Both international and Chinese banks joined in the loan syndication, including the China Development Bank.[35] In the case of Zoomlion, its 2012 annual report shows that the Hunan provincial government's SASAC is the company's largest shareholder with a 16.2 per cent stake, although other small equity stakes are held by Chinese investment groups, such as Hony Capital Fund, which was involved in both the CIFA and M-Tec deals (Zoomlion, 2012: 12). The Sany-Putzmeister deal was worth €525, and was reportedly financed straight off of Sany's balance sheet.[36] Sany is a private company, although the founder and Chairman of the board of directors, Mr. Liang Wengen, was elected a representative to the 17th CPC National Congress, and was a representative of the 8th, 9th, and 10th National People's Congress (NPC).[37] Sany President Mr. Xiang Wenbo was also a member of the 11th NPC.[38] The deal's remaining 10 per cent equity was bought by CITIC PE Advisors (Hong Kong, China), which is an affiliate of CITIC Group Corp., which is a wholly State-owned company.[39]

By integrating macroeconomic policies as part of a broader development framework, Chinese policymakers are attuned to the idea that there is room for manoeuvre within the confines of the multilateral trading system, such as in areas of industrial tariffs and subsidies (including export credits), intellectual property rights, State enterprises, and services (Akyüz 2009: 4; Weiss 2005b: 731–732). In addition, China's

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[32] Harvard Business Review, 2010, Geely's Volvo Gamble, 16 April, see, http://www.businessweek.com/managing/content/apr2010/ca20100416_353527.htm. *Reuters*, 2012, Volvo technology transfer a lifeline for Geely, 21 April, see, http://www.reuters.com/article/2012/04/21/us-volvo-geely-technology-idUSBRE83K05H20120421.

[33] B Zhang, 2012, Buyouts prime machine maker for global growth, Caixin Online, 23 February, see, http://english.caixin.com/2012-02-23/100359965.html?p1.

[34] It should be noted that the United States private equity firm the Carlyle Group's attempt to acquire a majority stake in XCMG in 2005 was ultimately blocked by the Ministry of Commerce (Mofcom) (Poon, 2012).

[35] Credit Agricole, 2012, Credit Agricole CIB in China closed a major syndication facility for Xugong group, August, see, http: //www.ca-cib.com/news/major-deals/august-2012-credit-agricole-cib-in-china-closed-a-major-syndication-facility-for-xugong-group.htm. *Oreanda News*, 2013. ICBC arranges syndicated loans to support economic growth, 29 March.

[36] P Marsh, 2012, Chinese industry faces Mittelstand-off, *Financial Times*, 12 June; C Bryant, 2012, China's Sany to acquire Putzmeister, *Financial Times*, 29 January.

[37] See Sany Group website: http://www.sanygroup.com/group/en-us/about/zhonggong.htm.

[38] National People's Congress, 2012, Deputies to 5th Session of 11th NPC talk about promoting real economy, 13 March, see, http://www.npc.gov.cn/englishnpc/news/Events/2012-03/13/content_1713370.htm.

[39] See, CITIC Group Corp. website: http://www.citicgroup.com.cn/wps/portal.

policymakers also appear well aware of significant room for manoeuvre in policy areas outside or not comprehensively covered by multilateral disciplines, including: in the choice of exchange rate and capital account regimes, in the so-called "Singapore issues" of investment, competition policy, government procurement, and in other areas such as labour and environmental standards, among others (USTR, 2014: 59–70; Drake, 2014; Koch-Weser, 2014; Howell, 2007: 86–91; Hersh, 2014).[40]

China's multi-faceted "indigenous innovation" initiative is a good example of China's creative blending of industrial policy instruments. Formally introduced in 2006, the initiative links government procurement preferences to products whose intellectual property rights are owned and originally trademarked in China. Other aspects include active support for Chinese technological standards that are bestowed to State-owned or State-backed enterprises, increased research and development spending in targeted sectors, and the trading of domestic market access to foreign firms based on their willingness to share technology. Since MNCs are often reluctant to physically locate their latest technologies in China for fear of knowledge leakages to domestic commercial rivals, some critics liken the indigenous innovation initiative as little more than an elaborate attempt at forced technology transfer (Segal, 2011; Suttmeier and Yao, 2011; Chai et al., 2011).

With the rise of so-called "covert protectionism" that falls outside the WTO's narrower definition for traditional protectionism, there appears to be growing recognition that the main barriers to a borderless world are no longer tariffs, but a wide range of different behind-the-border policies and regulatory standards (Evenett, 2013).[41] However, from the discussion above, the ability to identify and use these policies and standards to bolster the State's strategic bargaining position is precisely the tactic coaxing China's move up the industrial value chain over the longer term. As UNIDO (2013: 140) has argued, "As trade policy is a key component of any industrial policy, the current policy space (such as under WTO rules) may need to be fully assessed and taken advantage of, or recovered if needed to promote structural change, particularly in developing countries".[42] Indeed, China's bold policy strategy has not gone unnoticed and some other emerging countries have already started adopting their own indigenous policy initiatives, albeit crafted to their own objectives and circumstances (Garfield, 2012: 8).[43]

Past research efforts have attempted to catalogue, to varying degrees, China's extensive use of industrial and sectoral policies (CSIS, 2013; Lin and Milhaupt, 2013; Zhang, 2013; Dinh et al., 2013; Haley, 2012; Cliff et al., 2011; Ernst, 2011; Price et al., 2010; Howell et al., 2010; Dahlman, 2009; Poon, 2009; Stewart et al., 2007; Rosen and Houser, 2007; Pearson, 2005). Given the attention of this section on the challenges to China's industrial policy ambitions posed by the high degree of global corporate industrial concentration, a special focus examining China's evolving competition policy (i.e. anti-monopoly, anti-trust) regime would seem a fitting litmus test of China's overall industrial policy orientation and potential room for manoeuvre.

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[40] *Inside US-China Trade*, 2014, U.S. says China's newest GPA offer falls short of the finish line, 29 January; *Inside US-China Trade*, 2014, USCBC head sees ITA collapse as casting doubt on Chinese reforms, 14 February; *Inside US-China Trade*, 2013, U.S. signals greater caution on China's bid to join services deal than EU, 6 November; *Inside US-China Trade*, 2013, Shanghai FTZ has not yet yielded major results, could stall broader reforms, 13 November.

[41] S Donnan, 2013, Former WTO head urges reform of global body, *Financial Times*, 25 November; *Economist*, 2013, Protectionism: the hidden persuaders, 12 October, see, http://www.economist.com/news/special-report/21587381-protectionism-can-take-many-forms-not-all-them-obvious-hidden-persuaders.

[42] Or put less eloquently, one United States industry lobbyist opined, China "has thoroughly examined all the [loop]holes in the WTO system and it is working to drive trucks through those holes" [S Otteman, 2010, China defends innovation policy, but U.S. industry wants overhaul, *Inside US-China Trade*, 3 March.].

[43] G Chazan, 2012, Indigenisation: Legislation suggests better prospects for local groups, *Financial Times*, 23 July; *Inside US-China Trade*, 2011, U.S. watches India telecom rule for China-like innovation aspects, 6 July.

VI. ANTI-MONOPOLY POLICY WITH *CHINESE CHARACTERISTICS*[44]

Following 13 years of deliberation, China's first comprehensive anti-monopoly law (AML) came to force in August 2008. Since then, China has quickly emerged as an important anti-trust jurisdiction both for domestic companies and for MNCs with activities in China. Since its enactment in 2008, various drafts of implementing rules have been devised to provide further guidance and clarity on the broad legal framework established in the AML, covering the main areas of: (i) rules prohibiting restrictive (horizontal, vertical) agreements and the abuse of a dominant market position; (ii) merger rules to control large M&A activity and prevent mergers that restrict competition; (iii) rules prohibiting the abuse of administrative power that leads to restrictions on competition (Norton Rose, 2012; Poon, 2009).

Although the various elements of implementing rules have shown a degree of convergence between Chinese AML rules and international anti-trust norms, particularly as Chinese antimonopoly agencies gain more experience, some practitioners worry that factors such as industrial policy, protectionism and employment effects have unduly influenced aspects of AML implementation (Ohlhausen, 2013; Sokol, 2014; Tucker, 2013).[45] Recently the State Administration for Industry and Commerce (SAIC)[46] issued the sixth draft of "Rules on the Prohibition of Abuses of Intellectual Property Rights for the Purposes of Eliminating or Restricting Competition" (the *Draft IP Rules*) which still contain a number of controversial provisions surrounding firms with a dominant market position and which is likely to have a major impact on intellectual property rights (IPRs) licensing and technology transfer practices in China.

Under the Draft IP Rules, companies with a "dominant market position" are prohibited from certain types of behaviour in exercise of their IPRs that result in abuse of that market power. A dominant market position is defined as the ability of a firm to control the price, quantity or other trading conditions in the relevant market, or to obstruct or affect the entry of another firm into the relevant market. Three key non-exhaustive types of behaviour are identified that will be considered by the SAIC as an abuse of a dominant market position: (i) discriminatory refusals to license, or a refusal to license essential IPR; (ii) unjustified tie-in/bundling clauses; and (iii) attaching unreasonable trading conditions to an IPR agreement.

While the prohibition of "unreasonably high pricing" on IPR licensing has been removed from this draft after being criticized for effectively introducing price regulation into the market, the Draft IP Rules maintain that companies with a dominant market position are prohibited to refuse to license IPR in an unequal and discriminatory manner and without justification. Moreover, the Draft IP Rules appear to introduce the application of an "essential facilities doctrine" IPR regulation in China. Under the current daft, the essential facilities doctrine will prohibit a dominant firm's refusal to license IPR:

- where the IPR is necessary for the licensee to compete in the relevant market and cannot in practice be avoided;
- where the refusal will render the licensee unable to compete effectively in the relevant market;
- where the refusal will have an adverse impact on competition and innovation, making it impossible to satisfy consumer demand in the market.

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[44] Unless otherwise indicated, this section is based on Han and Bird (2013).

[45] MK Ohlhausen, 2013, Illuminating the story of China's anti-monopoly law, Antitrust Source, October, see, http://www.ftc.gov/sites/default/files/documents/public_statements/illuminating-story-chinas-anti-monopoly-law/1310amlstory.pdf.

[46] The SAIC is one among the four main Chinese antimonopoly enforcement institutions. The others are: the Antimonopoly Commission (reporting to the State Council), the Ministry of Commerce (MOFCOM), and the National Development and Reform Commission (NDRC). These institutions are mandated with different aspects of antimonopoly enforcement, with the SAIC responsible for enforcing the rules and the prohibition on the abuse of administrative power in relation to non price-related matters (Norton Rose, 2012).

Importantly, the approach used in these clauses of the Draft IP Rules is significantly broader than in related provisions found in anti-trust laws in the European Union and the United States. In the EU's case, the refusal to license by a dominant firm will only be prohibited in "exceptional circumstances", generally limited to a refusal by a dominant firm in an upstream market to license IPR without objective justification: (i) where it is indispensable to the emergence of a new product in a secondary market; and (ii) where the refusal excludes competition in that secondary market.

In the United States, judicial courts have been cautious in applying the essential facilities doctrine to refusals to license IPR and have generally limited its application to market dominant positions of secondary downstream markets. By comparison, China's Draft IP Rules focus on the "relevant market", which could also include a market at the same level or segment in the supply chain. A policy briefing by the law firm Freshfields Bruckhaus Deringer contemplates the following possibility:

> Equally there is no requirement in the Draft IP Rules that the refusal to license prevents the emergence of a new product, only that consumer demand is not met. This could include consumer demand for an existing product. The provision is therefore troubling in that it remains open as to whether companies in China could force a dominant competitor at the same level to license essential IPR so that it can then use that IPR to produce the same product as the licensor and compete directly against him. Much will depend on the definition of the market in any individual case (Han and Bird, 2013: 4).

Ultimately, it remains to be seen how China's anti-trust regime and implementation will evolve, but Chinese authorities have shown increasing self-confidence and have intensified their efforts on domestic firms and MNCs. Beijing's enforcement activism have recently included handing-out stiff penalties on manufacturers of infant milk powder, liquid crystal display panel and liquor price-fixing, and a wide ranging investigation into graft and price-fixing in the pharmaceuticals, auto, and semiconductor industries, among other actions (Ha et al. 2014).[47] Looking forward, these signs bode well from a Chinese policy space perspective.

VII. CONCLUDING REMARKS: CAN CHINA BE LEVERAGED?

China clearly has yet to attain sufficient production capacities in all of the five key sectors to anchor Lewis' vision of self-sustaining growth in the South, but observable progress is being made in medium technology capital goods, particularly in machinery equipment sectors. That China is still in the process of upgrading its productive capacities and carrying out its industrial policy ambitions is of primary strategic relevance to many developed country governments and firms, and inextricably linked to assessments of their bargaining power vis-à-vis China's economy and domestic firms. On this front, Chinese authorities seem adept at utilizing policy levers to strengthen their power at the bargaining table.

The strategic relevance is perhaps even greater for other developing country governments and firms, in light of China's continuing developing country status and the common catch-up development objectives that entails. Though most developing country firms do not possess the technological, managerial know-how to leverage against China, most do hold valuable bargaining chips in various guises related to natural resources, access to markets, geographical location and logistics, and some human capital, not to mention other areas related to geo-political, diplomatic and military interests that can also be carefully considered. Some cases have already emerged, for example, in Mongolia and Myanmar, where the smaller country

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[47] J Anderlinin, 2014, Multinationals fret as China's antimonopoly probes intensify, *Financial Times*, 6 August; W-G Cheng, 2013, Watchdog intensifies efforts to enforce regulatory conditions, *Financial Times*, 27 November; T Mitchell, 2013, Foreign companies under heavy scrutiny in China, *Financial Times*, 9 August; T Mitchell, 2013, Europe urges China to cede business control, *Financial Times*, 5 September; D Pilling, 2013, Beijing takes on big beasts of global drugs industry, *Financial Times*, 24 July; S Zadek, 2013, China's corporate crackdown, *Project Syndicate*, 20 August, see, http://www.project-syndicate.org/commentary/corporate-responsibility-with-chinese-characteristics-by-simon-zadek.

pressed its demands on China (with varying degrees of efficacy),[48] which could also lead to spillover effects on other foreign investors.

The trick for developing countries, perhaps, will be a shift in the perception of their own bargaining power on the narrow basis of bilateral relations, to a "triangular" (or "multi-nodal") concept that deliberately yet carefully recognizes the heightened competitive nature that exists between a host country's respective bilateral partners, say, China and the United States/EU (Magnus, 2013: 2–3; Sutter, 2014). This is already apparent in some cases, such as when foreign investors compete to gain access to natural resources, or when leaders pronounce a "look east" foreign economic policy, or over security/political issues. Taking a step further, some Chinese scholars have even argued that developing countries, "are the strategic support, foundation and prerequisite for China's better relationship with great powers and its neighbors" (Sun 2014: 15).

In light of China's stage of industrialization, however, developing countries may be able to garner more lasting economic benefits in bilateral negotiations by showing a degree of cognizance of Beijing's own strategic industrial policy goals and efforts to gain any edge over advanced country MNCs (and vice versa for other foreign investors concerned about competition from China and other emerging countries). In return, developing countries should sharpen their demands to stress enhanced opportunities for learning, technical progress, investment and ultimately structural change in their own domestic economies. In short, a "triangular" approach could allow a host country to more effectively build bargaining leverage vis-à-vis foreign investors in general, which is not dissimilar from China's own strategic approach to foreign investment.

It is also important, in the longer term, for developing countries to benefit from trying to make use of policy spaces that China has carved out for itself and, to some extent, legitimized within the global economic governance system in light of its newfound economic heft. Concepts such as "industrial policy", "indigenous innovation" and "State capitalism" were not invented by China, but have regained policy cogency mainly because China has convincingly demonstrated how they can effectively contribute to growth, poverty reduction, and development.[49] For instance, it is not unreasonable to suggest that China would have less of an issue partnering with other SOEs, or conducting "less ambitious" free trade agreements (Wise, 2012),[50] or even contemplating strategic barter trades,[51] should other developing countries decide to more aggressively pursue such alternative options as part of their developmental strategies. Even some advanced economies have taken advantage of China's policy flexibility, as witnessed in a "creative" deal that saw Peugeot Citroen sell equity stakes to China's Dongfeng Motor and the French Government without contravening EU rules on State aid for companies.[52]

In China, precisely because its lofty industrial policy ambitions remain unfulfilled, other developing countries have an influential ally pursuing an East Asian State-led developmental strategy that was assumed to be obsolete and irrelevant in the Washington Consensus era of globalization. Even in a so-called post-

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[48] H Warrell and T Johnston, 2011, Burmese junta grows wary of China's ever closer embrace, *Financial Times*, 7 April; L Hook, 2011, Burma sends vice-president on China visit in effort to calm dam tensions, *Financial Times*, 8 October; L Hook Leslie, 2012, Mongolia plans legislation to curb foreign investment, *Financial Times*, 3 May; L Hook, 2012, China drops effort to buy Mongolia mine, *Financial Times*, 4 September.

[49] In this regard, Sun (2014: 12) contends that, "From Beijing's perspective, the popularity of the China Model is the best way to validate the viability of the Chinese system".

[50] T Etsushi et al., 2013, China asserts self at ASEAN, seeks alternative to TPP, *Asahi Shimbun*, 10 October, see, http://ajw.asahi.com/article/asia/china/AJ201310100071; K Brown, 2010, Biggest regional trade deal unveiled, *Financial Times*, 1 January.

[51] L Bingyang, 2013, Stock market likes the idea of Thai rice for Chinese rails, *Caixin Online*, 15 October, see, http://english.caixin.com/2013-10-15/100592163.html; M Peel, 2014, China ditches deal to buy 1.2m tonnes of Thai rice, *Financial Times*, 4 February.

[52] S Gordon, 2014, Peugeot must transform to justify French rule-bending, *Financial Times*, 26 February; T Mitchell, 2014. Dongfeng reveals ambitions after Peugeot deal, *Financial Times*, 28 March.

Washington Consensus era, with the rules of the global trading system showing no signs of rebalancing in favour of developing country interests, these kinds of kindred "fellow traveler" development partners are hard to come by (Lin and Wang, 2014). Far from relying on the kindness of strangers, though, maximizing dynamic South-South benefits will require an attitudinal change in other developing countries to shed their passive growth strategies to also increasingly devise their own active industrial policies tailored to their developmental stages (UNIDO, 2013: 148–150; Chang, 2012; Rodrik, 2010; UNCTAD, 2007; Lall, 2004). Indeed, some of these South-South dynamics appear to be already in play under the rubric of "indigenous" innovation/development.

From a two-economy (the United States and China) global imbalances perspective, Jim O'Neill of Goldman Sachs simply argued, "this decade is all about the United States becoming a bit less like the old US and a bit more like the old China and China becoming a bit less like the old China and bit more like the old US" (Chatham House, 2012: 13). Similarly, from a South-South viewpoint, can other developing countries contemplate being more like the "old China"? In lamenting the inability of Indian Government institutions to cope with the demands of fast economic growth, Raghuram Rajan noted, "in addition to more investment, India needs less consumption and higher savings".[53]

Here, economists often raise the issue of the "fallacy of composition" or the adding-up problem: if all developing countries were to suddenly switch to an investment-led growth strategy that boosted production and exports, which economy would have the wherewithal in demand to absorb all of this production? Though an important consideration, it should be noted that the "fallacy of composition" is a narrow construct based on an export-oriented strategy rooted in static comparative advantage, which precludes wider dynamic considerations of an evolving basket of production and export items and the policy tools needed to spur this process of diversification and industrial upgrading.[54]

Moreover, all developing countries are unlikely to forcefully shift to investment-led growth all at the same time and to the same degree; indeed, it took China's policymakers some time before the pieces of this puzzle were in place. This view stems from insights provided by Hirschman (1958: 28; emphasis added), who argued that the main bottleneck holding back development was not the lack of one or even of several needed factors or elements (such as capital, education, industrial subsidies or tariff protection, good governance, rule of law, etc.) that must be combined with other elements to produce development, "but with the deficiency in the combining process itself". As Hirschman further explained,

> Our diagnosis is simply that countries fail to take advantage of their development potential because, for reasons largely related to their image of change, they find it difficult to take the decisions needed for development in the required number and at the required speed. As such, this diagnosis is less meaningful than others: it does not focus immediately on the factor which, once imported or generated within the economy in sufficient quantities, will solve the problem. Rather, *the shortages in specific factors or "prerequisites" of production are interpreted as a manifestation of the basic deficiency in organization*.

For these reasons, other developing countries that are able to gradually overcome these basic deficiencies in organization may encounter South-South "first-mover" development benefits in actively understanding and engaging China's dynamic development model. Such efforts, especially at China's current stage of development, will also allow other countries selective learning opportunities from China's experience, which could be part of a strategic longer term objective to re-shape economic policies within a national framework more conducive to catch-up and self-sustaining growth.

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[53] R Rajan, 2013. Why India Slowed, *Project Syndicate*, 30 April, see, http://www.project-syndicate.org/commentary/the-democratic-roots-of-india-s-economic-slowdown-by-raghuram-rajan.

[54] In contrast, for example, the broader concept of the "flying geese" pattern of economic development describes a sequential (but not automatic) ordering of the catching-up process of industrialization of latecomer developing economies. The "flying geese" concept more explicitly incorporates dynamic temporal production cycle considerations, and policy responses, in relation to evolving intra-industry, inter-industry, and international division of labour dimensions (Lin, 2011; Commission on Growth and Development, 2008: 94–96; Akamatsu, 1962).

ANNEX

HS categories listed in stacked columns in figure 5

HS-4 digit category	*Description*	*China's export share to OECD markets, 2012 (Per cent)*
8483	Transmission shafts and cranks; bearings housings; gears and gearing; flywheels and pulleys	65.5
8482	Ball or roller bearings	55.4
8481	Taps, cocks, valves and similar appliances for pipes, boiler shells, tanks, vats and the like	63.7
8450	Washing machines – household or laundry-type	55.9
8431	Parts suitable for machinery of headings HS-8425 to HS-8430	61.4
8430	Other moving, grading, levelling, excavating, extracting etc. machinery; snow ploughs/blowers	23.1
8429	Self-propelled bulldozers, scrapers, graders, levellers, shovel loaders, taping machines and the like	10.8
8428	Lifting, handling, loading or unloading machinery, not elsewhere specified	28.8
8427	Self-propelled works trucks – powered by an electric motor	43.7
8426	Derricks, cranes, mobile lifting frames and other lifting machinery	26.3
8421	Centrifuges, filtering or purifying machinery and apparatus for liquids or gases	48.9
8419	Non-domestic dryers and temperature changing apparatus; instantaneous water heaters	41.2
8418	Refrigerators and freezers; heat pumps other than for air conditioning	59.7
8415	Air conditioning machines (air conditioners)	52.2
8414	Air/vacuum pumps, air/gas compressors and fans; ventilating hoods with fans	51.9
8413	Pumps for liquids; liquid elevators	49.0

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