

TRADE AND GLOBALIZATION  
MSC FINANCIAL ECONOMICS 2009-2010

# Harnessing the Silk Road

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## The Development Impact of Increasing Chinese-African Trade

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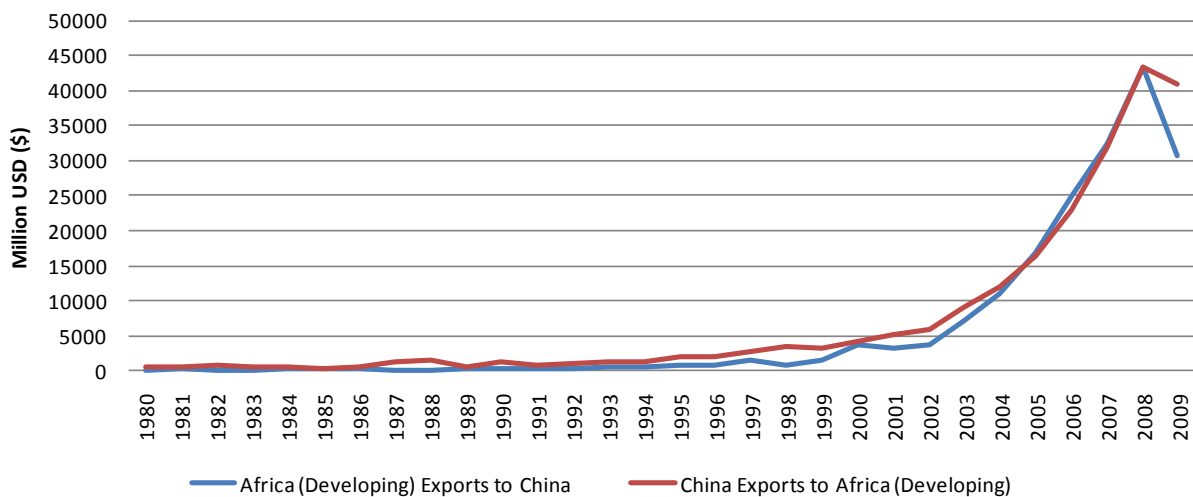
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## Introduction:

China's integration into the world economy has fundamentally changed the dynamics of the global macroeconomic system. Notably, China's increasing presence in Sub-Saharan Africa – driven by its voracious appetite for commodities – has generated much controversy, but rigorous economic analysis remains nascent. In light of economic complementarities, Africa has growing demand for China's manufactured products and capital goods, while China benefits from Africa's natural resources. Notably, Chinese commodities demand have buoyed world prices – a positive terms of trade shock for many African countries.

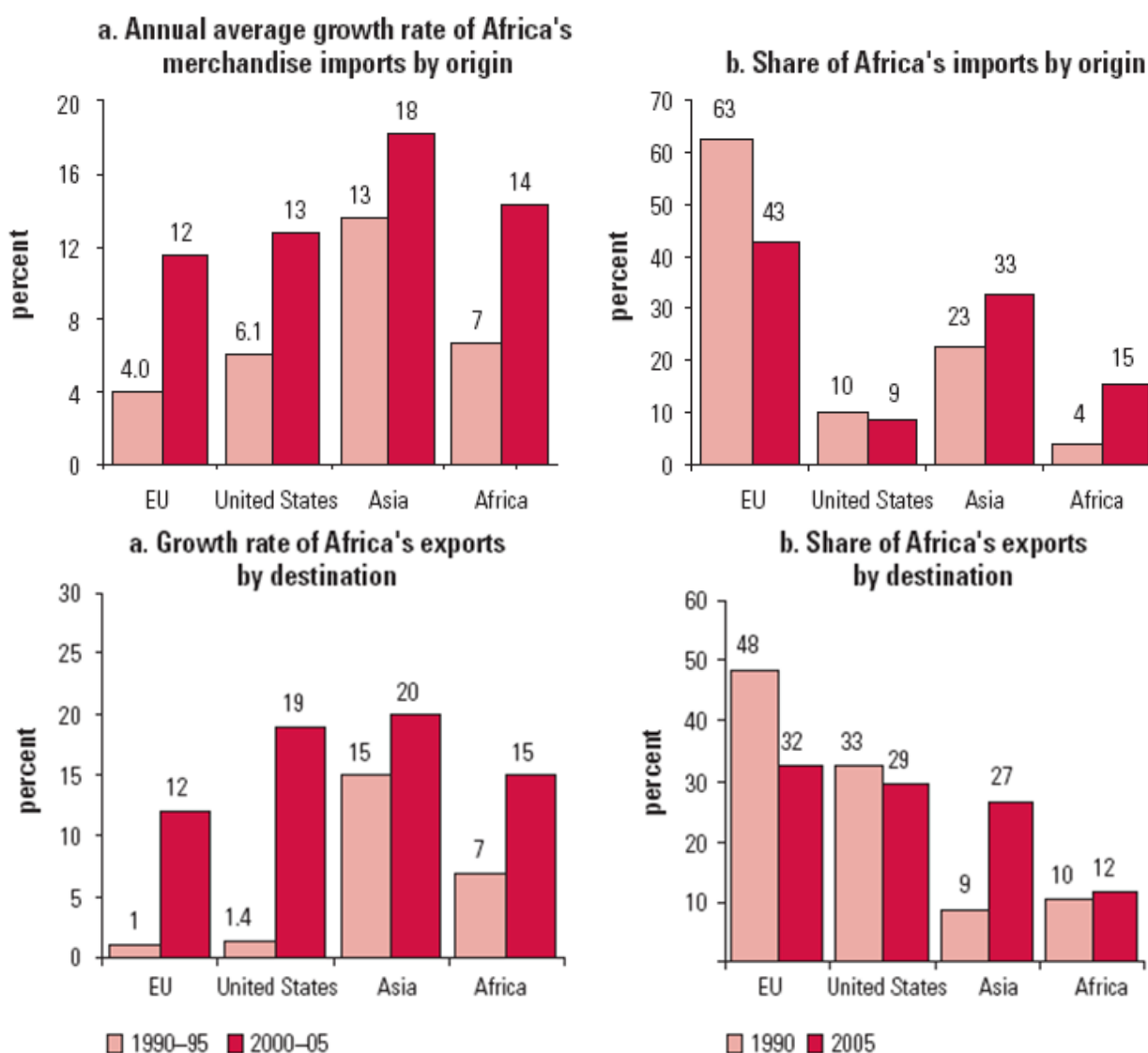
**Chart 1. Africa's Trade with China (1980-2009)**



Source: IMF, *Direction of Trade Statistics* (2010)

In aggregate, exports to China grew 37% annually between 1999-2009 (Chart 1), and over 10% of Sub-Saharan total exports now go to China (IMF, 2010). Furthermore, China has driven up the relative share of trade to Asia (Figure 2), with Asian imports comprising 33% of total African imports, second only to the European Union (World Bank, 2007). With the influx of Chinese imports, some African manufacturers confront escalating competition both at home and internationally, resulting in job losses and output contraction. Conversely, African consumers have benefitted from the influx of goods, and competition has spurred productivity and export-intensity of surviving firms.

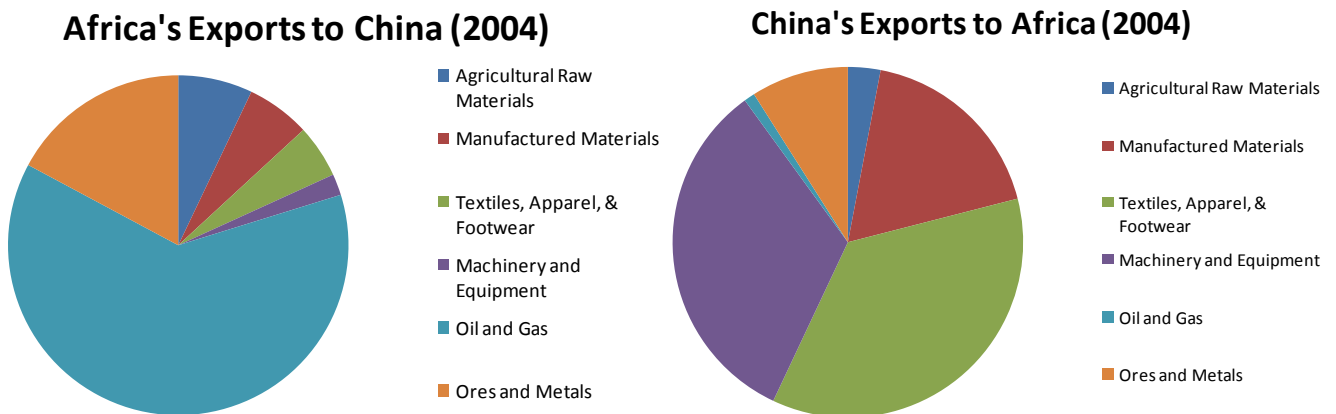
Figure 2. Growth and Proportional Change in Africa's Import and Export Destinations (1990-2005)



Source: World Bank (2007) using IMF, Direction of Trade Statistics

Africa's trade composition with China remains roughly consistent with its trade with the rest of the world. Africa mainly exports petroleum and raw materials, while importing more value-added commodities (Figure 3). Notably, Chinese imports are highly concentrated in a few oil-rich countries lacking product diversification in their economic structure – in fact, 85% of China's trade occurs with four countries: Angola, Equatorial Guinea, Nigeria, the Republic of Congo, and Sudan (Hanson, 2008).

**Figure 3. Composition of China-Africa Trade**



Source: World Bank (2007) using IMF, *Direction of Trade Statistics*

## Research Question

This paper seeks to address the question: ***What is the development impact of increasing Chinese trade on African economies?*** Given the heterogeneity of African countries in terms of endowments and policy environments, this paper attempts to generalize emergent patterns, recognizing that country-specific analysis is essential. Moreover, although beyond the scope of this paper, trade has important linkages with Chinese FDI and aid.

First, this paper will discuss the macroeconomic effect of China's commodities consumption and the Dutch Disease. Next, this paper will analyze African exports to China, revisiting the deindustrialization debate and trade complementarities. Finally, this paper will investigate the competitive effects of Chinese imports to Africa, both domestically and internationally. I conclude that the positive terms of trade shock driven by Chinese consumption of commodities, access to Chinese imports, and greater geographic trade diversification benefits Africa, but harnessing the long-term development potential depends on efficacious government policies to evade Dutch Disease effects, promote product diversification to mitigate output volatility, and spur competitiveness by investing in human capital and improving the business climate.

## Development Impact of Increasing Chinese Trade

### China's Macroeconomic Effect

#### Terms of Trade

China's impressive growth has been fueled by the consumption of commodities – a driver of Chinese-African trade. Furthermore, China's massive dollar reserves have created a global glut of savings artificially pushing down US Treasury yields (Bernanke, 2005). Low interest rates have buoyed commodity prices by decreasing incentives for extraction and increasing the demand for inventories (Frankel, 2006). To assess China's impact on terms of trade in Africa, Zafar (2007) calculated a relative contribution of China to global demand for African export commodities from 2000-2005 (Table 4). From the ratio of export to import prices attributable to China, Zafar classified a list of winners and losers.

**Table 5. Africa Commodity Prices, Terms of Trade, and Chinese Demand (2000-2005)**

Country	Export commodities	International price change, 2000–2005 (%)	China effect <sup>a</sup> (%)	Terms of trade index <sup>b</sup>				Change, 2002–2005 (%)
				2002	2003	2004	2005	
Angola	Oil	89.1	18.4	85.9	75.6	93.6	108.7	26.5
Benin	Cotton	–6.5	78.1	94.2	97.5	115.1	94.4	0.2
Botswana	Diamonds	38.6	–50.9 <sup>c</sup>	83.3	85.5	68.5	83.9	0.7
Burkina Faso	Cotton	–6.5	78.1	84.5	77.0	74.7	60.3	–28.6
Burundi	Coffee	30.2	0.0	79.3	79.6	99.8	114.3	44.1
Cameroon	Oil	89.1	18.4	100.2	99.3	96.3	109.8	9.6
Central African Republic	Cotton	–6.5	78.1	82.8	84.9	70.9	66.4	–19.8
Chad	Oil	89.1	18.4	126.2	172.9	228.8	229.0	81.5
Congo, Dem Rep	Diamonds	38.6	–50.9 <sup>c</sup>	107.8	124.6	129.1	131.1	21.6
Congo, Rep of	Oil	89.1	18.4	104.0	114.0	120.3	128.9	23.9
Côte d'Ivoire	Cocoa	69.8	1.0	135.1	119.1	100.5	109.5	–18.9
Equatorial Guinea	Oil	89.1	18.4	43.0	61.7	67.8	83.3	93.7
Ethiopia	Coffee	30.2	0.0	86.4	77.8	71.9	81.2	–6.0
Gabon	Oil	89.1	18.4	88.1	109.8	111.6	131.9	49.7
Ghana	Cocoa, gold	69.8, 59.4	1.0	110.8	127.2	108.1	101.5	–8.4
Guinea-Bissau	Cashew nuts	–30.2	0.0	66.7	75.9	60.5	57.5	–13.8
Kenya	Tea	–27.2	0.0	101.6	83.9	77.8	71.5	–29.6
Lesotho	Cotton textiles	NA	0.0	104.7	85.3	72.7	67.0	–36.0
Madagascar	Vanilla	51.5	0.0	107.3	118.0	116.0	73.2	–31.8
Malawi	Tobacco	–7.1	5.5	82.7	80.7	79.7	71	–14.1
Mali	Gold, cotton	59.4, –6.5	0, 78.1	97.4	96.5	99.9	87.6	–10.1
Mauritius	Sugar	19.9	4.4	104.6	107.9	109.6	102.8	–1.7
Mozambique	Aluminum	22.5	23.3	93.8	91.8	103.4	107.7	14.8
Niger	Uranium	275.0	0	111.6	108.7	103.5	103.4	–7.3
Nigeria	Oil	89.1	18.4	89.1	91.3	110	148.8	67.0
Rwanda	Coffee	30.2	0	83.1	69.8	93	69.7	–16.1
Senegal	Fish	10.2	26.7	99.4	95.7	95.1	93	–6.4
Sierra Leone	Diamonds	38.6	–50.9	102.3	100.4	95.7	98	–4.2
South Africa	Gold, platinum	59.4, 160.2	0, –6.6 <sup>c</sup>	103.2	105.2	105.2	102.5	–0.7
Sudan	Oil	89.1	18.4	97.8	105.8	120.9	116.1	18.7
Tanzania	Gold	59.4	0	92	86.8	79.6	78.9	–14.2
Togo	Cotton	–6.5	78.1	105.7	118.7	122.6	114.0	7.9
Uganda	Coffee	30.2	0	70.3	70.6	77.8	69.3	–1.4
Zambia	Copper	102.9	47.6	92.5	96.2	114.5	114.1	23.4
Zimbabwe	Tobacco	–7.1	5.5	96.5	90.9	84.6	79.1	–18.0

<sup>a</sup>The change in Chinese demand over 2000–2004 divided by the change in world demand over 2000–2004.

<sup>b</sup>The signs for gold and platinum are negative, because the large increase in Chinese imports could not compensate for a reduction in world supply.

<sup>c</sup>Export prices divided by import prices.

Source: Terms of trade and main export commodity data from IMF databases; commodity data from FAO statistics; commodity price data from World Bank Development Prospects Group; China and world import data from UN Comtrade; and price data for select commodities from industry websites.

Source: Zafar (2007)

As shown in Table 5, the majority of countries experienced a positive terms of trade shock, particularly oil & gas producers (ie: Angola, Sudan, Nigeria) and base metal producers (ie: Zambia, Mozambique, South Africa). Conversely, oil-importing African countries with agricultural goods and textiles as primary exports suffered, such as Madagascar and Mauritania. Table 6 summarizes the composition of winners and losers, capturing the asymmetric effects of China on African economies.

**Table 6. Summary of Terms of Trade Patterns**

	<b>Economic Factors</b>	<b>Select Countries</b>
<b>Winners</b>	<ul style="list-style-type: none"> <li>Oil exporters and resource-rich countries (+89% price surge from 2000-2005, China accounting for 18% of global oil demand growth)</li> <li>Base metal exporters</li> </ul>	<p><b>Oil:</b> Angola, Sudan, Congo, Gabon, Nigeria</p> <p><b>Metals:</b> Mauritania (iron ore), Mozambique (aluminum), South Africa (platinum), Zambia (copper), Ghana (gold)</p>
<b>Losers</b>	<ul style="list-style-type: none"> <li>Oil-importing countries</li> <li>Textile exporters, furniture and shoe producers (the volume of Chinese exports resulted in a negative ToT shocks as global prices declined for light manufactures)</li> <li>Agricultural commodity producers (prices stagnated, especially since African producers do not have strong comparative advantage in agricultural products corresponding to Chinese imports, unlike Latin America)</li> </ul>	<p><b>Textiles:</b> Lesotho, Madagascar, Mauritius, Swaziland</p> <p><b>Light Manufactures:</b> Kenya, Madagascar, South Africa</p> <p><b>Agricultural exporters</b> (particularly for coffee/cacao): Kenya, Ethiopia, Rwanda, Cote d'Ivoire, Tanzania, Malawi</p>
<b>Mixed</b>	<ul style="list-style-type: none"> <li>Resource-rich, but oil-importing countries (higher commodity prices offset by oil prices)</li> <li>Cotton producers (benefit from exporting intermediate inputs into Chinese textile production, but struggle with oil costs)</li> </ul>	<p><b>Diamonds:</b> Botswana, Central African Republic</p> <p><b>Cotton:</b> Benin, Burkina, Mali</p>

Source: Generalized from Zafar (2007), Kaplinsky (2006), Kaplinsky (2007), and Rotberg (2008)

### Addressing Dutch Disease

Utilizing Corden and Neary's (1983) model of a small open economy<sup>1</sup>, a natural resources windfall benefitting the booming tradeables sector (extractive industries) drives up demand for nontradeables, resulting in a real exchange appreciation detrimental to the lagging tradeables sector (manufactured goods). Given the capital intensity of the extractive industry, expansion of the booming sector may not increase employment, hence limiting poverty reduction. Thus, in theory, a natural resources windfall increases national income in the short term, but creates deindustrialization harmful to long-term growth. The Leamer Triangle identifies further problems with: (1) worsening inequality with unemployment, (2) limited skill spillovers in the extractive sector impeding incentives for human capital accumulation, (3) increased capital risk in undiversified countries due to volatility in commodity price (OECD, 2006).

Real exchange rate appreciation as a result of commodity and/or aid booms to Africa has been well documented (Younger, 2002; Davis, 2000; Adenauer, 1998), but conclusive evidence on the harmful long-term growth consequences of Dutch Disease remains tenuous. Adam and Bevan (2003) show that capital inflows resultant from aid (similar to a commodity boom) can be welfare-improving if invested in public infrastructure projects aimed at delivering a productivity bias in favor of nontradeable production – such as human capital development – to induce supply-side gains. Furthermore, countries maintaining fiscal prudence can utilize the windfalls to accumulate foreign exchange reserves as a stabilization fund to buffer the economy from commodity price volatility, known to be detrimental to growth (Bleaney & Greenway, 2000). As such, the development impact depends on governance and stewardship of natural resources<sup>2</sup>. Furthermore, the sustainability of development fueled by a natural resources windfall depends on the inclusiveness of the growth process – in highly unequal societies, such as Nigeria and Sierra Leone, poverty reduction is limited (DFID, 2005).

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<sup>1</sup> Under this model, economic production is divided into three sectors: (1) nontradeables, (2) booming tradeables (natural resources), and (3) lagging tradeables (manufactured goods). With expansion of the extractive sector and capital inflow, demand for nontradeable goods increases, resulting in a real exchange rate appreciation. Consequently, the lagging tradeables sector further weakens as a result of both an uncompetitive exchange rate and the inter-sectoral flight of labor and capital.

<sup>2</sup> The international community has heavily invested in providing best practices for harnessing natural resources wealth. For example, the OECD publication "Natural Resources and Pro-Poor Growth" provides policymakers with guidelines to maximize the development impact of a commodity windfall. Furthermore, the Extractive Industries Transparency Initiative seeks to promote strengthen accountability and governance by engaging countries, firms, and civil society. Nevertheless, however, progress remains sluggish, with many African governments resistant to reform.

## Complimentary Effects: Africa's Exports to China

The pattern of trade between China and Africa appears highly consistent with Heckscher-Ohlin predictions, with China exporting labor-intensive and higher-technology goods manufactures and Africa specializing in raw materials, and increasingly, agricultural products to satisfy a rising Chinese middle class (Table 7). A DFID (2005) study argued that since exports to China are primarily resource-based, the *direct* impact on poverty reduction is minimal, although increased government revenue may benefit the poor.

**Table 7. Structure of China's Imports from Selected African Countries, 2003**

	Angola	Mozambique	Nigeria	Somalia	South Africa	Sudan
Labor Intensive Agriculture	0.0%	0.1%	0.0%	0.0%	0.3%	0.0%
Other Agriculture	0.0%	0.0%	0.7%	<b>100.0%</b>	0.9%	0.7%
Timber	0.0%	<b>99.9%</b>	0.8%	0.0%	2.0%	0.0%
Mineral and Petroleum	<b>100.0%</b>	0.0%	<b>97.0%</b>	0.0%	34.3%	<b>99.3%</b>
Labor Intensive Manufacture	0.0%	0.0%	1.3%	0.0%	0.6%	0.0%
Other Manufacture	0.0%	0.0%	0.1%	0.0%	61.8%	0.0%

Source: DFID (2005)

Although China contributes to African destination diversification – of critical importance for primary commodity exporters to reduce demand volatility – product and source diversification have not occurred. The Herfindahl-Hirschman Index<sup>3</sup> shows that Chinese imports into Africa appear well-diversified, but African exports remain highly concentrated. In fact, 80% of value-added exports originate from only three countries: refined petroleum from Nigeria and South Africa, pharmaceuticals from South Africa and Swaziland, and electronics & machinery from South Africa (Broadman, 2007).

**Table 8. Herfindahl-Herschman Index of African Trade with China vs. Rest of the World**

	Exports to World	Imports from World	Exports to China	Imports from China
Geographical concentration of African exports/imports	0.08	0.04	0.17	0.09
<b>Product concentration of African exports/imports</b>	0.15	0.01	0.40	0.02
<p>**Exports to China exhibit a substantially greater degree of geographical and product concentration compared to Africa's trade with the world.</p> <p>**Imports from China are more geographically concentrated than Africa's trade with the world, as expected, but product concentration is roughly similar, suggesting a high degree of diversification in Chinese imports.</p>				

Source: Broadman (2007)

<sup>3</sup> The Herfindahl-Hirschman Index is a measure of trade diversification, and is calculated in the following manner:  $HHI = \sum_{i=1}^n s_i^2$ , where  $s$  represents the share of total exports (or imports) of sector  $i$ . A high HHI (above 0.18) indicates a great degree of concentration, while a low HHI (below 0.1) suggests diversification.

### **Specialization in natural resources harmful for development?**

Intersectoral complementarities between Africa and China suggest that given the scarcity of human capital and abundance of natural resources, Africa's foray into manufactured products is not economically efficient. Yet, given the exhaustible nature of primary commodities, low-value added, and limited knowledge spillovers & intersectoral linkages, greater commodities trade with China – undoing Africa's efforts to promote manufactured exports – has serious dynamic implications.

The “natural resources curse” literature (Sachs & Warner, 2001; Gylfason, 2001; Kroneberg, 2004) finds a negative relationship between growth and natural resource abundance, even after controlling for a variety of factors. Lack of product diversification exposes African countries to growth-harming terms of trade volatility, exacerbated by financial sector underdevelopment and inability to adopt countercyclical fiscal policies due to credit constraints and incomplete insurance markets (Loayza and Hnatkovska, 2004). Moreover, Bond (2006) argues capital-intensive extraction offers low incentives for education investments, and erodes institutional quality with rent-seeking behavior. Although political economy effects are beyond the scope of this paper, evidence shows that by circumventing western sanctions, Chinese trade, aid, and investment in conflict-torn countries (ie: Angola, Congo, Sudan) erode accountability, fuel conflict, and undermine efforts for political reform, corruption reduction, and institution-building, with grave consequences for long-term development (Alden, 2007).

Nevertheless, initial specialization in natural resources also has positive development consequences. First, utilizing natural resources as a base, Africa can move into resource-based manufactured products, such as steel, iron, and aluminum. As suggested by Wood (2002), given fundamental differences in endowments, Africa need not develop by promoting labor-intensive manufacturing as in land-scarce Asia, but rather, move into value-added industries related to its underlying resource base, similar to Latin America and the United States. Second, broader participation in global value chains can facilitate eventual integration of African exporters into light-manufactures production, especially with rising Chinese wages and expected Renmenbi appreciation<sup>4</sup>. Third, exposure to international markets initially through natural resources foments policies conducive to openness. In particular, regional integration can spur intra-industry trade and promote forward and backward linkages (Broadman, 2007).

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<sup>4</sup> CGE modeling by Deutsche Bank (2005) concludes that with expected gradual Renmenbi appreciation, the substitution effect would boost the profitability of foreign competitors at the expense of China, favoring African exporters. The debate about development in tandem, or in sequence persists – whether Africa's development take-off can occur only after that of China's.

## China's Exports to Africa: Consumption and Competition

Imports from China have a dual effect - although they provide cheaper and variegated goods to consumers and capital goods and intermediate inputs to producers, competition with domestic producers may reduce employment and output. The net effect on poverty differs by country: a DFID (2005) study found that countries that import a relatively high proportion of basic consumer goods—such as Ghana, Uganda, and Tanzania – have seen a rise in the real income of the poor, while competition outweighed consumer gains, such as in Ethiopia and Nigeria. To study the impact of China, a standard gravity model can be augmented to include Chinese trade as an additional regressor, in which a positive coefficient suggests complementarity and a negative coefficient identifies competition (Gehu, 2006). Although economists have estimated such gravity models for China's Asian neighbors (Eichengreen and Tong, 2006), no similar analysis has been conducted on African countries, with most evidence of “winners” and “losers” purely qualitative (Kennan and Stevens, 2005).

### **Direct Effects: Competition in Home Markets**

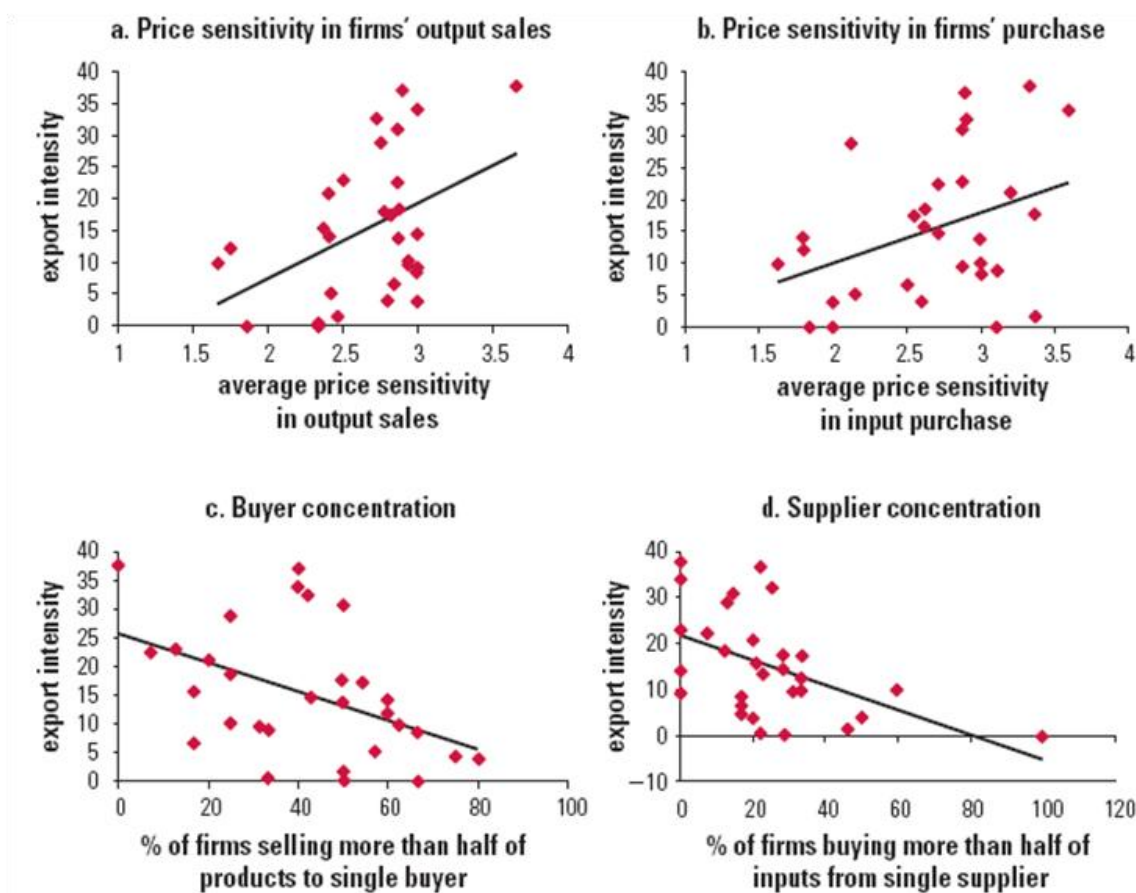
A comprehensive study of the World Bank using firm-level survey data shows that import competition has strongly affected domestic production of agriculture and food, machinery, nondurable, non-construction services, and textiles, resulting in reduced output, plant closures, and job losses.

Competition, however, can be a powerful force for development, especially since a competitive domestic market promotes international integration and motivates innovation and productivity growth (Broadman, 2005). Schumpeterian economic models and empirical literature suggest a positive relationship between competition and economic growth, although intensified competition induced through greater openness may have a negative effect on firms and industries initially far from the technological frontier – a risk faced by many African countries (Aghion & Griffith, 2008). Specifically, rigorous empirical research on the role of competition in the African private sector remains limited to country-specific analysis, with mixed results<sup>5</sup>. Nevertheless, the World Bank's survey data suggest that firms facing more competitive input and output markets exhibit higher median value-added per worker and per unit of capital, resulting in better average export performance (Figure 9A). In addition, the survey identifies a unique positive correlation between export intensity of a sector and import competition from China, with no particular association with local competition (Figure 9B).

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<sup>5</sup> Analysis of competition using survey data on firms from Cote de Ivore by Azam, et al (2001) shows that the probability of a firm exporting decreases with competition. Conversely, analysis of a pooled panel data set from Ghana, Kenya, and Tanzania over a period of five years by Harding et al (2004) identifies a positive effect of competition through productivity growth and greater allocative efficiency domestically. Overall, given the great heterogeneity in the market structure and policy environment of African countries, it is difficult to generalize the effect of escalating competition with China on local markets, but most studies find a favorable association.

Figure 9A. Market Competition in Africa on Export Intensity



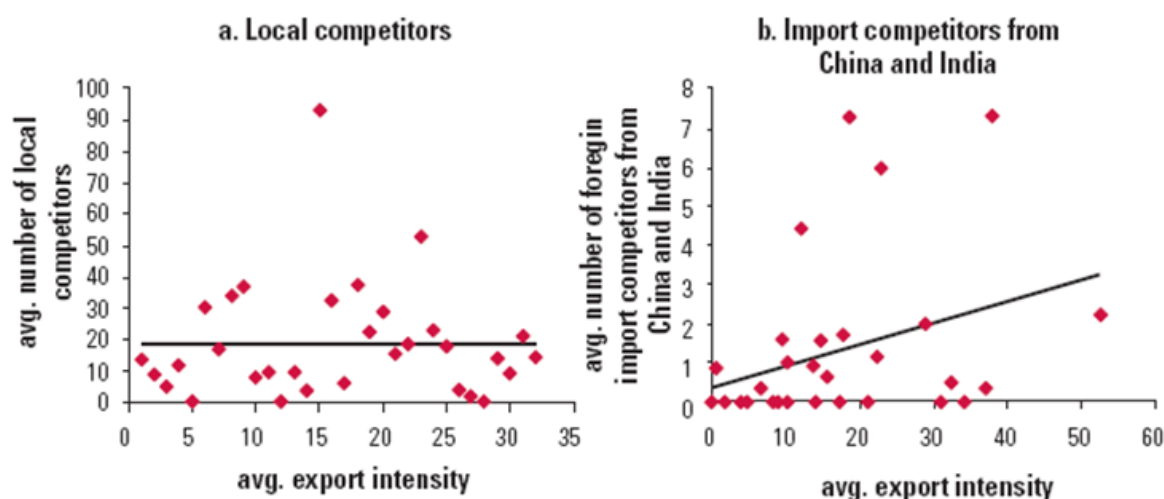
Source: World Bank staff.

Note: Each plot represents an individual sector in a country among the four African countries covered by the WBAATI survey. Firms with 10 or fewer workers or age less than 5 years are not included. Price sensitivity in sales (purchases) is based on the expected responses in quantity sold to existing buyers (quantity purchase from existing suppliers) from a hypothetical increase of 10 percent in the price of main outputs (inputs). It is measured on a scale of 1–4, where 1 = no quantity change or *not sensitive*; 2 = a small quantity reduction with limited switch to competitors or *moderately sensitive*; 3 = major quantity reduction with significant switching to competitors or *sensitive*; or 4 = complete switching to competitors or *very sensitive*.

Competitiveness and Concentration	Median Value Added per Worker (\$)	Median Value Added per capital (ratio)
<b>Sales Market - Price Sensitivity in firms' output sales</b>		
- High competition	12,424	1.08
- Low competition	15,114	2.53
<b>Input Market - Price sensitivity in firms' input purchase</b>		
- High competition	13,677	1.50
- Low competition	12,447	2.40
<b>Concentration in Buyer Relations</b>		
- Less concentrated	14,455	2.40
- More concentrated	11,098	1.00
<b>Concentration in Supplier Relations</b>		
- Less concentrated	14,160	1.71
- More concentrated	11,930	1.41

Source: World Bank (2007)

**Figure 9b. Number of Competitors and Export Intensity**



Source: World Bank staff.

Note: Each plot represents an individual sector in a country among the four African countries covered by the WBAATI survey. Firms with 10 or fewer workers or age less than 5 years are not included. The average number of competitors is based on the actual number of competitors and not on the scale used in other tables and figures.

Despite difficulties in drawing conclusive evidence validating export-led growth hypotheses due to econometric issues in time-series and cross-sectional estimation (Giles & Williams, 2000)<sup>6</sup>, Wagner’s (2005) survey of 45 microeconomic studies with data from 33 countries concluded that exporters tend to be more productive than non-exporters, although exporting does not necessarily improve productivity as more productive firms self-select into export markets. As such, the development impact of escalating competition with Chinese imports remains mixed, though generally, Chinese competition has a positive association with greater export-orientation (Figure 9b).

**Indirect Effects: Competition in International Markets**

As shown in Table 10, Jenkins & Edwards (2006) calculated an Export Similarity Index (ESI) using 3-digit SITC classification<sup>7</sup>, in which a low score indicates very different export structures. China and Africa have very low export similarity, with the exception of South Africa with its relatively sophisticated industrial sector and Lesotho with its developed textile sector, suggesting limited third-party competition in world markets. The textile industry – a springboard industry for development – provides unique insight. The removal of the Multi-Fiber Agreement corresponded with a contraction of textile production in Sub-Saharan Africa by 40% (Brambilla et al, 2007). Zafar (2007) argues that although Africa’s overall share of world textiles is small, the share in output and employment is significant. Furthermore, since most workers in the textile industry tend to be women, job losses due to increased competition with cheap Chinese imports have negative implications for gender issues.

<sup>6</sup> The authors survey 150 export-growth applied papers and cast doubt on the standard techniques to establish causality.

<sup>7</sup> The index is calculated as:  $ESI = \sum_i MIN(X_{i1}, X_{i2})$ , where X is the share of a commodity in exports, is the 3 digit industry, and 1 and 2 are the countries for which the index is calculated.

**Table 10. ESI between Exports of Select African Countries and China and Proportion of Exports Facing Competition**

	Year	ESI with China (%)	% of Exports Facing Competition
Botswana	2001	5.8	6.0
Cameroon	2003	6.6	23.8
Ethiopia	2003	4.3	17.8
Ghana	2000	10.6	32.3
Kenya	2003	19.3	33.8
Lesotho	2002	17.8	89.1
Malawi	2003	10.6	64.0
Mozambique	2002	6.4	73.4
Namibia	2003	18.7	55.4
Nigeria	2003	1.7	2.0
Rwanda	2003	8.8	7.8
Senegal	2003	14.5	44.1
Sierra Leone	2002	4.5	5.4
South Africa	2003	27.7	54.4
Sudan	2003	2.6	2.2
Tanzania	2003	11.0	26.3
Uganda	2003	8.0	35.5
Zambia	2002	11.0	82.4

\*\*Highlighted rows indicate % of exports facing competition > 50%

Source: Jenkins & Edward (2006)

To correct for a potential scale effect<sup>8</sup>, Jenkins & Edwards then adjust the index to reflect what proportion of exports of each African country face competition from China. To do this, the authors identify sectors in which China’s market share increased by 1% or more from 1990-2002, and then analyze the degree of overlap (Table 10). As shown, the level of competition may be artificially inflated given that SITC codes are not sufficiently disaggregated, with Chinese exports concentrated at a different level in the value chain. A sectoral disaggregation for countries facing a high degree of overlap provides further insight (Table 11).

**Table 11. Competition Disaggregation by Sector<sup>9</sup>**

	Lesotho	Malawi	Mozambique	Namibia	South Africa	Zambia
% of total exports	89.1%	64.0%	73.4%	55.4%	54.4%	82.4%
of which						
LA	0.1%	1.5%	0.1%	1.6%	1.3%	1.3%
OA	2.1%	51.2%	1.5%	24.4%	2.1%	2.9%
Forestry	0.0%	0.1%	0.5%	0.3%	0.9%	0.2%
M & P	0.0%	0.0%	68.9%	4.5%	20.7%	62.6%
LM	78.9%	9.7%	1.0%	15.7%	5.6%	3.9%
OM	8.0%	1.6%	1.4%	8.9%	23.8%	11.6%

Source: Jenkins & Edward (2006)

<sup>8</sup> The problem with the ESI is that it does not capture the difference between the scale of exports from China and Africa. For example, a small-open economy may face heavy competition from China in world markets, but this is not reflected in the ESI since that particular product accounts for a relatively small share of China’s total diversified exports.

<sup>9</sup> LA = Labor Intensive Agriculture; OA = Other Agriculture; M&P = Mineral and Petroleum; LM = Labor Intensive Manufacture; OM = Other Manufacturing

Lesotho's specialization in labor-intensive manufactures, particularly garments, suggests greatest vulnerability to Chinese competition, especially since textiles account for 50% of GDP and 99% of merchandise exports (Wild and Mephram, 2006). A study of 96 micro and textile SMEs found that as a consequence of Chinese competition, 28% were forced into bankruptcy and 32% downsized their activity (Kaplinsky, 2006). The high percentage of competition in Mozambique and Zambia correspond to exports of aluminum and copper, respectively. Understanding the development impact requires further analysis of the shares of total employment attributable to each of these sectors, as well as their longer-term contribution to productivity growth.

## Conclusions:

The astounding growth of trade between China and Africa has fundamentally shifted Africa's development trajectory – a complex issue in light of the great heterogeneity of resource endowments and policy environments. Given the recency of this phenomenon, the economic literature is currently thin, but growing. Although this paper does not delve into country-level studies nor address linkages with investment, the following conclusions generalize the major themes of increasing China-Africa trade:

- **Commodities Boom:** Chinese demand for oil and metals have generally resulted in a favorable terms of trade shock for African countries, boosting output growth and government revenues. The development impact, however, depends on evasion of Dutch Disease effects through investment in human capital and productivity-enhancing infrastructure and the management of reserves to buffer future price volatility, known to be detrimental to growth. Furthermore, harnessing natural resources wealth for development depends on government prudence and transparency.
- **African Exports to China:** Chinese-African trade is consistent with theories of comparative advantage and the Heckscher-Ohlin model. As trade in primary commodities has limited poverty-reducing effects given its capital intensity and limited skill spillovers, Africa faces a challenge in increasing the value-added of its exports and spurring economic diversification.
- **Chinese Imports to Africa:** African consumers have benefitted from the influx of Chinese goods, resulting in a real wage increase for the poorest of some countries. In local markets, World Bank survey data suggests a positive correlation between domestic competition and labor/capital productivity, and between export-intensity of local producers and competition with China. In third-country markets, import competition with China remains low, with the textile industry a notable exception, resulting in employment losses for unskilled workers. The net effect is ambiguous, but policies to enhance the competitive climate and to facilitate inter-sectoral labor movement minimize the costs to competition.

Ultimately, China's increasing presence in Africa has facilitated greater integration into the international trade system, substantially increasing market access. Product diversification, however, remains elusive, with a potential "natural resources" trap. Thus, although China's "Silk Road" to Africa presents vast opportunity, development impacts are high contingent on a government's ability to improve the overall business environment, manage endowments effectively, and adopt trade & investment policies conducive to growth.

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