

# The Impact of Rising Chinese Trade and Development Assistance in West Africa

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## Acronyms and Abbreviations

|          |  |
|----------|--|
| EU       | European Union   |
| FDI      | Foreign Direct Investment  |
| GDP      | Gross Domestic Product   |
| MOFCOM   | Ministry of Commerce (People's Republic of China)  |
| OECD     | Organization for Economic Cooperation and Development                                    |
| OECD-DAC | Organization for Economic Cooperation and Development - Development Assistance Committee |
| ODA      | Official Development Assistance  |
| ODI      | Outward Direct Investment  |
| OOF      | Other Official Flows   |
| RCA      | Revealed Comparative Advantage   |
| SSA      | Sub-Saharan African  |
| SITC     | Standard International Trade Classification  |
| TC       | Trade Complementary  |
| TCI      | Trade Complementary Index  |
| TI       | Trade Intensity  |
| UN       | United Nations   |
| UNCTAD   | United Nations Conference on Trade and Development                                       |
| US       | United States  |
| US\$     | United States Dollar   |
| WITS     | World Integrated Trade Solution  |

## Executive Summary

The rapid economic rise of China over the last twenty years has sustained high global demand and prices for primary commodities such as oil and minerals, greatly benefitting Sub-Saharan (SSA) African countries. China now represents more than 20 percent of SSA's trade, up from just 2.3 percent in 1985. West Africa's share in China's trade is still quite low, 0.6 percent in 2012, but it is rising rapidly. Exports to China - oil, iron, phosphates, gold, cotton, cocoa and cashew nuts - have grown fast. However, they have not grown as rapidly as imports, resulting in a large trade deficit with China (13 percent of West Africa's GDP over 2009-2012). Reasons include a strong consumption demand for inexpensive Chinese products as well as the import-content requirements in development assistance agreements. Looking at the impact of China on West Africa, it appears that West African producers do not compete with China on third markets – by and large their products are complementary. However, West African producers are finding difficult to compete with China in their own domestic as well as in regional markets.

Chinese outward direct investment to West Africa has increased consistently with trade growth and now represents about 5 percent of West Africa's inward FDI stock. Outside energy and extractive industries, China invests mainly in infrastructures but very little in manufacturing. Thus, there hasn't been much contribution to job creation or to the transfer of technology. Moreover, West African countries participate only minimally in Chinese production networks for goods destined to the US or the EU.

The paper's main messages are as follows:

- Chinese demand for primary commodities is likely to continue in the near future, potentially benefitting West Africa. To maximize these benefits, West African countries need to maintain macroeconomic stability and to design appropriate policies to manage the volatility of commodity prices while raising the competitiveness of the economy. The current stagnation of the agricultural and manufacturing sectors in many West African countries is a sign of Dutch disease effects that should not be underestimated and need to be readdressed.
- While the specific reforms needed vary from country to country, they should be comprehensive enough to generate a shift in the policy stance aimed at increasing productivity and encouraging diversification in the tradable sector. Examples of such reforms include the removal of trade restrictions among West African countries, the dismantling of formal and informal trade barriers to regional processing activities and the improvement of trade logistics.
- Engaging with China at all levels is likely to enhance cooperation and win-win partnerships. This could include negotiating reciprocal agreements to lower tariffs on imports of specific products, the promotion of new regional investment opportunities, and the establishment of joint ventures in sectors of mutual interest.

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## 1. Introduction

Over the past two decades China's robust economic growth and rapidly expanding presence in global markets have greatly intensified its trade ties with Sub-Saharan Africa (SSA). Chinese trade with Africa, almost nonexistent until the mid-1950s, began rising in the 1970s as China's economy gradually liberalized. China's remarkable growth rate, which has averaged about 10 percent per year over the past 10 years, in real terms, has fueled a steadily rising demand for oil, minerals and other primary commodities, many of which are abundant both in West Africa and in SSA as a whole.

China has now become a major development partner for countries throughout the continent, and its trade, investment, diplomatic, and political relationships with SSA countries continue to strengthen. Since the mid-1990s the China Export-Import Bank has promoted the growth of Chinese exports and supported investments in African infrastructure, while the China Development Bank has launched the China-Africa Development Fund to boost Chinese foreign direct investment in Africa. During the 2012 Forum on China-Africa cooperation the Chinese government announced the establishment of a US\$20 billion credit line to Africa. More than 2000 Chinese corporations, most of which are private companies, are currently investing in infrastructure, energy and trade with SSA.

Most countries in West Africa<sup>2</sup> established economic relationships with China during the 1960s, in most cases shortly after independence. Guinea was the first country to sign an economic and technical cooperation agreement with China in 1960, and several of its regional neighbors swiftly followed suit. After independence many West African countries adopted state-led economic development policies that negatively impacted their long-term growth, and nearly all have at one time or another been affected by conflict or political instability.<sup>3</sup> While many countries in the region are currently experiencing relatively robust GDP growth, poverty in West Africa remains widespread and severe, affecting around 50 percent of the population in all countries except Cape Verde.

Historically, China has had stronger trade and investment links with East Africa; however, West Africa has received increased attention in recent years as the discovery and exploitation of energy and mineral resources have raised its profile with Chinese importers. West Africa is rich in a number of primary commodities that are in high demand in the Chinese market, including oil (Ghana, Sierra Leone, Mauritania, Chad); uranium (Niger); iron (Guinea, Sierra Leone, Mauritania); phosphates (Togo, Senegal); gold (Burkina Faso, Ghana, Mali); rubber (Ivory Coast, Liberia); cotton (Ivory Coast, Benin, Burkina Faso, Mali); cocoa (Ivory Coast, Liberia, Ghana); and cashew nuts (Guinea-Bissau, Benin, Ivory Coast).

Many empirical studies have analyzed China's impact on SSA economies, and most have concluded that on balance the continent's trade ties with China are a positive force driving economic growth and welfare improvements. For example, Broadman (2007) suggests that trade with China has generated significant economic opportunities for SSA, though results have varied considerably between different countries. Chaponnière (2009) and Ajakaiye et al. (2009) also found that increased trade with China has benefited SSA economies. Drummond and Xue Liu (2013) found that a one percentage point increase in China's domestic investment growth is associated with an average 0.6 percentage point increase in SSA exports, as well as a 0.8 percentage point increase in

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<sup>2</sup> For the purposes of the present analysis "West Africa" is defined as the region encompassing Cape Verde, Mauritania, Guinea-Bissau, Senegal, The Gambia, Burkina Faso, Benin, Togo, Côte d'Ivoire, Guinea, Mali, Chad, Niger, Sierra Leone, Liberia and Ghana.

<sup>3</sup> Of the 16 countries that comprise the West Africa region only two, Senegal and Cape Verde, have never experienced a coup or other violent transfer of power.

exports from resource-rich countries worldwide. When controlling for sample countries' export-price growth, the impact of China's domestic investment is halved, yet its influence remains significant.

However, studies have also shown that exposure to commodity-price fluctuations and direct competition with Chinese imports has resulted in output and employment losses in SSA, and there is evidence that only countries which export oil and minerals have gained from trade with China. Ademola et al. (2009) illustrated how industries in several SSA countries, including South Africa and Ghana, have been negatively affected by Chinese imports, leading to factory closings and the loss of manufacturing jobs.

To date, the literature on China's involvement in West Africa remains surprisingly limited, and it is unclear how Chinese trade and investment are impacting regional development. The following analysis is designed to shed light on the nature and implications of China's increasingly strong economic ties to West Africa. Its objective is to provide a sound quantitative basis for West African policymakers, supporting their efforts to maximize the benefits presented by China's rising economic prominence.

## **2. China Has Become a Key Trading Partner for SSA and West Africa in Particular**

Trade flows between China and SSA have expanded rapidly during the last decade. In 2012 the total value of China-SSA trade reached US\$160 billion, the result of an annual growth rate of 26.2 percent since 1995. China now represents more than 20 percent of SSA's total trade, up dramatically from just 2.3 percent in 1995. Within SSA, the West Africa region has experienced a similar pattern. Trade with China reached US\$22.42 billion in 2012 following a year-on-year growth rate of 23.6 percent from 1995 to 2012. China's share in regional trade rose from 2.6 percent in 1995 to 19.4 percent in 2012. Yet despite China's large and rapidly growing role in West African trade, West Africa's share in Chinese trade remains quite low, having risen only marginally from 0.2 percent in 1995 to 0.6 percent in 2012.

Historically, African exports have been highly concentrated, both in terms of products and markets. For decades Europe has been the key economic partner for both SSA as a whole and for West Africa specifically. While Europe continues to account for the continent's largest share of trade and financial flows, there has been a marked shift towards Asian markets. As illustrated in Table 1, below, total merchandise exports to China accounted for 21 percent and 13 percent of all SSA and West African exports, respectively, in 2012, up from just 5 percent and 1 percent in 2002. Meanwhile, the European Union (EU) share in SSA trade has fallen from 37 percent to 24 percent, and its share in West African trade has dropped from 49 percent to 38 percent. India has also become an important export market for many countries both in SSA and in West Africa, and the United States has increased share of West African exports even as its export profile in SSA as a whole has diminished.

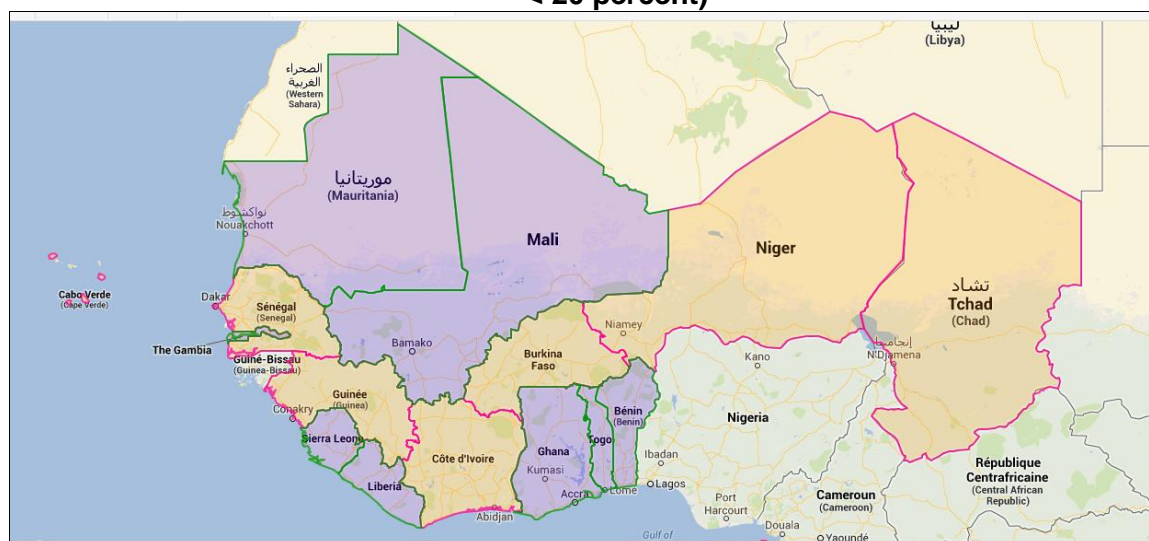
**Table 1: Share of Total Exports by Trading Partner, SSA and West Africa, 2002 and 2012**

|               | SSA  |      | West Africa |      |
|---------------|------|------|-------------|------|
|               | 2002 | 2012 | 2002        | 2012 |
| EU            | 37   | 24   | 49          | 38   |
| US            | 18   | 11   | 8           | 14   |
| Africa        | 15   | 9    | 15          | 13   |
| China         | 5    | 21   | 1           | 13   |
| India         | 3    | 8    | 4           | 6    |
| Rest of Asia  | 4    | 2    | 10          | 3    |
| Rest of world | 18   | 25   | 14          | 13   |

Source: *The World Integrated Solution (WITS)*

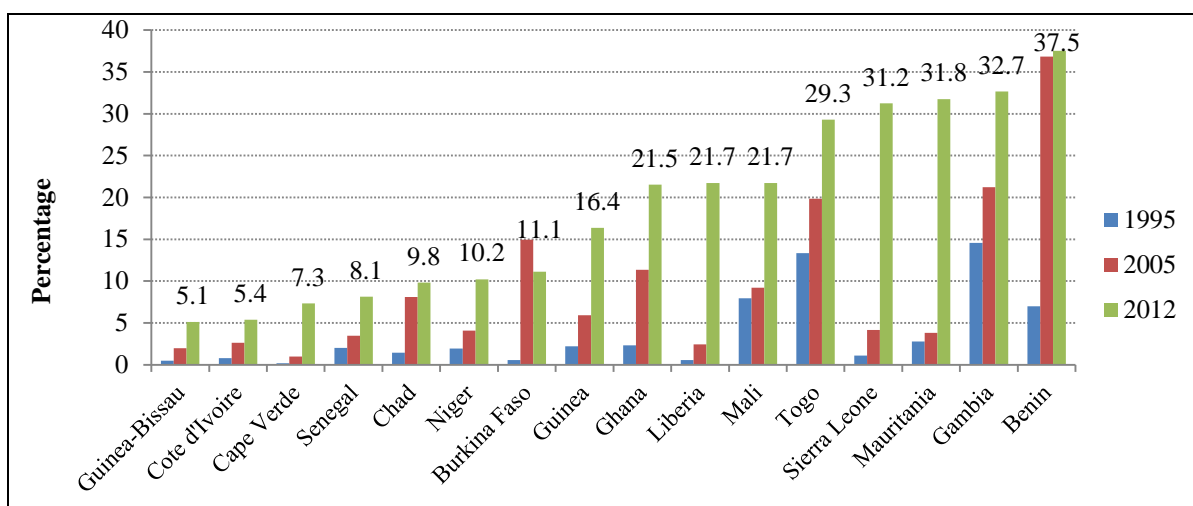
The map of West Africa presented in Figure 1 shows the relative intensity of Chinese trade ties in each country. Countries in which China accounts for 20 percent or more of total trade—Ghana, Liberia, Mali, Togo, Sierra Leone, Mauritania, The Gambia and Benin—appear in purple, while countries in which China’s share of total trade is less than 20 percent—Guinea-Bissau, Cote d’Ivoire, Cape Verde, Senegal, Chad, Niger, Burkina Faso and Guinea—appear in yellow. Figure 2 illustrates the evolution of each country’s trade ties with China from 1995 and 2012. Benin, Mauritania and Sierra Leone experienced the largest percentage increase in their share of trade with China over the period, and in each of those countries, as well as The Gambia, trade with China now accounts for over 30 percent of total trade.

**Figure 1: Trade with China as a Share of Total Trade, 2012 (purple > 20 percent, yellow if < 20 percent)**



Source: *WITS*

**Figure 2: Trade with China as a Share of Total Trade, by Country, 1995, 2005 and 2012**



Source: WITS

### 2.1. West Africa Continues to Strengthen Its Trade Ties with China

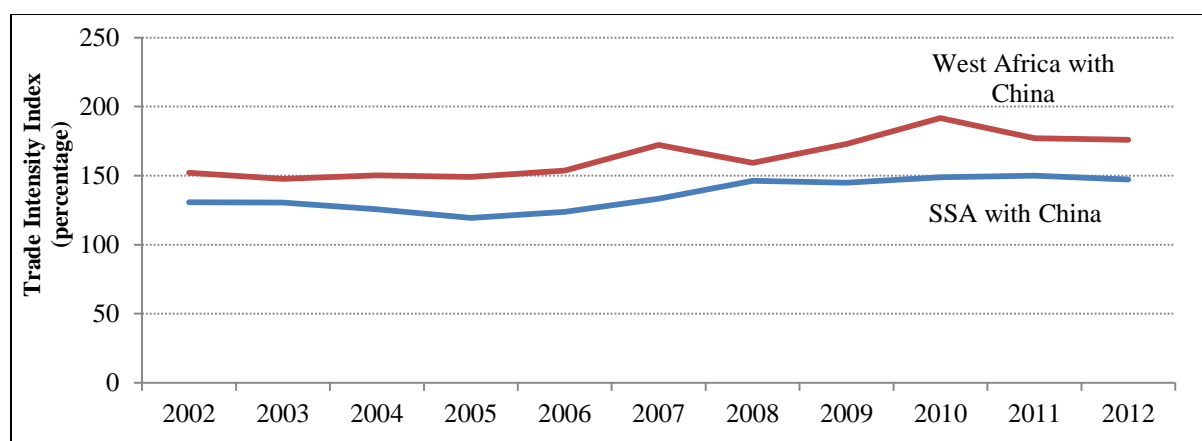
One statistical measure of economic connectivity, the trade intensity (TI) index,<sup>4</sup> provides particularly important insights into China’s evolving relationship with West Africa. The TI index is used to determine whether the value of trade between two countries is larger or smaller than would be expected given their relative importance in world trade. In the present analysis the TI index is based on the ratio between a region’s trade share with China and its share of world trade. A value of 100 means that the region is ‘geographically neutral,’ i.e., that it shows no bias in favor of or against trade with China. A value greater than 100 indicates that trade with China is disproportionately high, while a value of less than 100 indicates that trade with China is disproportionately low.

As shown in Figure 3, SSA’s TI index for trade with China is well above 100, while West Africa’s TI index is even higher. Controlling for the relatively small size of their collective share in world trade, West African countries’ trade intensity with China is over 175—nearly twice what would be expected if all other factors were equal. Moreover, both SSA and West Africa show rising TI scores, with West Africa’s trade intensity growing faster than that of the continent as whole. At its current pace, West Africa’s TI index with China will exceed 200 within the next 10 years.

<sup>4</sup> The trade intensity index is defined as country i’s exports to country j relative to its total exports divided by the world’s exports to country j relative to the world’s total exports:  $T_{ij} = [x_{ij}/X_i] \div [x_{wj}/X_w]$ , where  $x_{ij}$  and  $x_{wj}$  are the values of i’s exports and world exports to j,  $X_i$  is i’s total exports, and  $X_w$  are total world exports. The index reflects the ratio of the share of country i’s exports going to country j, relative to the share of world trade destined for country j (see Frankel 1997, Anderson 1983, or Drysdale and Garnaut 1982 for illustrative applications). An index of more (less) than 100% has been interpreted as indicating that a bilateral trade flow is larger (smaller) than expected given the partner country’s importance in world trade.



**Figure 3: Trade Intensity Index with China, SSA and West Africa, 2002-2012**



Source: WITS

## 2.2. West Africa has a Large and Growing Trade Deficit with China

Despite the rapid expansion of export-oriented extractive industries in countries around the region, West African exports as a whole have failed kept pace with the growth of Chinese imports, generating a large and rising trade imbalance. Over 2009-2012 West Africa's trade deficit with China averaged 13 percent of regional GDP.<sup>5</sup> In 2012 West Africa imported US\$18.1 billion worth of Chinese goods while exporting just US\$4.3 billion worth of goods to China. The trade deficit has widened since 2004, with Chinese imports growing at an average annual rate of 11.9 percent, while the annual growth rate of West African exports to China averaged 8.8 percent. This pattern has not been uniform across the region, as Burkina Faso, Chad and Mauritania have registered trade surpluses, but all other countries show increasing trade deficits with China. By contrast, the overall SSA trade balance with China has been positive since the early 2000s.

West Africa's most important Chinese imports are textiles and railway equipment, which together represented 40 percent of total imports during 2007-2012 (see Table A5 in Annex 1). Other major import categories include electrical equipment, manufactured goods, vehicles and finished garments. The composition of West African imports is partially the product of standard trade incentives, but it also reflects the exogenous impact of bilateral development policies.

One of the main factors driving West Africa's trade deficit with China is the import-content requirements that are frequently attached to Chinese concessional loans. The Chinese government and a mix of public, semi-public and private Chinese firms are engaged in numerous infrastructure projects and other investments throughout the region. The financing agreements for these projects often oblige the recipient to purchase Chinese-made inputs, which partially accounts for the large share of Chinese railway equipment in total regional imports.

In addition, Chinese products are often preferred by West African consumers due to their price advantage over equivalent products imported from other countries. Table A3 in Annex 1 confirms this by comparing unit values for 20 key import products over 2007-2012. It shows that products

<sup>5</sup> It should be noted that West Africa has an overall trade deficit with the world equal to about 40% of total trade in 2012. China represents 28% of the total regional trade deficit, while the EU represents 22%. However, West Africa has a trade surplus with the US.

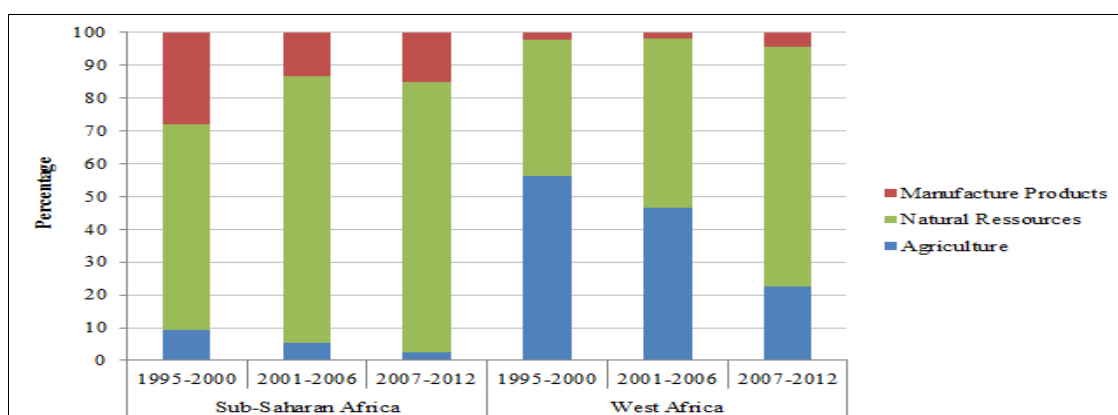
imported from the EU and US are 2-3 times more expensive than similar products imported from China.<sup>6</sup>

### 2.3. Natural Resources Increasingly Dominate West African Exports to China

Natural resources, both renewable and nonrenewable, represent a large and increasing majority of SSA's exports to China, including fish, minerals and fuel products.<sup>7</sup> As shown in Figure 4 resource exports accounted for more than 80 percent of all SSA exports to China between 2007 and 2012, up from about 60 percent between 1995 and 2000. Interestingly, manufactures accounted for about 15 percent of SSA exports to China between 2007 and 2012, a marginal increase from the previous period, while agricultural exports are increasingly insignificant.

The pattern of West African exports, however, is distinct from that of the continent as a whole. Between 2007 and 2012 West Africa's agricultural exports to China continued to represent an important share of total exports at about 22 percent, albeit far below their 1995-2000 level of nearly 60 percent. Resource exports represented about 70 percent of total exports in 2007-2012, while manufactures continue to represent a small fraction of the export mix.

**Figure 4: Exports to China by SSA and West Africa, 1995-2012**



Source: WITS

### 2.4. The Impact of Chinese Trade on SSA and West Africa

China's rapid economic growth is reshaping the global economy, with profound implications for the development of the West Africa region and the future of SSA as a whole. Many studies (e.g. Roache 2012) have suggested that as a net exporter of natural resources SSA has greatly benefited from China's growth, which has boosted global demand for African commodities. In addition, rising consumer demand in China has created opportunities for non-resource exporters in SSA and West Africa, though they face stiff competition from China's domestic producers. Meanwhile, low import prices for finished goods have benefitted African consumers, as well as African producers who rely on imported inputs and capital goods. However, these benefits have not come without a cost, as China may have displaced some SSA and West African exporters in third-country markets as well as outcompeting local producers in their own domestic markets. In order to

<sup>6</sup> This analysis should be taken with caution because the unit value analysis does not control for quality - even at the 6-digit level.

<sup>7</sup> This analysis defines "natural resources" using the World Trade Organization's methodology, as described in the 2010 World Trade Report. Using classification SITC rev3, Natural resources include SITC 03 (Fish), 24 (Cork and Wood), 25 (Wood and Pulp), SITC 3 (Fuel), 27-28 (Ores and Other Minerals) and 68 (Non-Ferrous Metals).

assess the net effects of Chinese trade on West Africa's economic development, it is necessary to evaluate each of these dynamics in turn.

### 3. Chinese Competition in Third-Country Markets

Competition between Chinese, SSA and West African exports in third-country markets can be analyzed using a regression specification.<sup>8</sup> This technique describes changes in SSA and West African exports to third-country markets in terms of China's exports to those same markets. The exercise is essentially a test of whether Chinese competition is affecting SSA and West African exports to a greater extent than competition from other countries by controlling for the overall growth of export supply. If Chinese export growth was not impacting SSA or West African exporters at all, the coefficient on the China variable would be zero. If Chinese exporters were driving SSA or West African goods out of world markets to a greater extent than exporters from other countries, the coefficient would be negative. If Chinese exports complemented SSA or West African exports, and consequently Chinese export growth tended to boost West African export growth, the coefficient on the China variable would be positive.

As shown in Table A1 in Annex 1, the coefficient of Africa's response to world demand (in front of the variable export supply) is less than one, confirming that export growth in Africa has been slower than that of the world. Overall, both SSA and West African exports do not appear to be threatened by competition from Chinese exports in third-country markets, and there is even a modest complementary effect observed in the EU market. However, there is some evidence that Chinese exports are having a negative effect on both SSA and West African exports within their own regional markets.<sup>9</sup> Specifically, Chinese non-durable and semi-durable consumer goods<sup>10</sup> are displacing similar products produced in SSA and West Africa and exported to other SSA and West African countries. However, Chinese competition has not had a significant effect on West Africa's exports to other SSA countries (see Table A4 in Annex 1).

#### 3.1. The Impact of Chinese Imports on Local Producers

As noted above, West African imports from China are high and rising. While the lower prices of these imports (relative to equivalent products from the US or EU), has benefitted consumers, Chinese products may have taken over markets that were previously supplied by local producers. Anecdotal evidence that local producers and traders are being hurt by Chinese imports is becoming common not only in West Africa, but throughout SSA. In the absence of sufficient firm-level and industry-wide data in West Africa, international trade statistics may provide some insight into the impact of China's exports on import-competing sectors. The results should therefore be treated as

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<sup>8</sup> We follow Freund and Ozden (2006) and estimate the following regression equation:

$$dexports_{ijkt} = \alpha_{it} + \beta_0 dimports_{jkt} + \beta_1 dChina_{jkt} + \varepsilon_{ijkt}$$

where  $dChina_{jkt}$  represents the growth of Chinese export in country  $j$  in sector  $k$ . The advantage of this specification is that we are exploiting both cross-section and time series variation to estimate how African countries are affected by China. We estimate this equation using data from 1995 to 2012 with the 4 digit classification.

<sup>9</sup> For example, a coefficient of 0.01, suggests that a 20% growth of China exports will result in a 0.2% growth of African exports. Conversely, a negative coefficient of minus 0.041 means that 20% growth of China exports to SSA will result in a 0.8% drop of African exports. It also appears (Table A2, Annex 1) that there is overall complementarity except for some consumer goods, as one would expect.

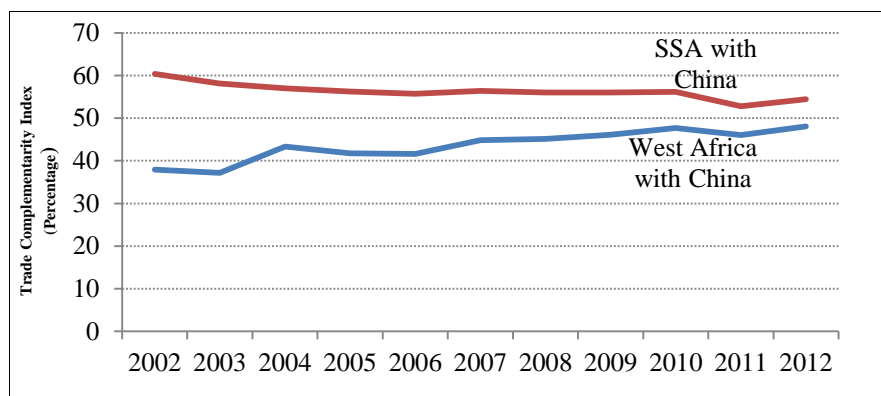
<sup>10</sup> Durable consumer goods have an expected lifetime of more than one year and are of a relatively high value, such as refrigerators and washing machines. Semi-durable consumer goods have an expected lifetime of more than one year, but less than three years, and are of a relatively low value. Non-durable consumer goods have expected lifetime of one year or less

preliminary. Figure A2 in Annex 1 shows the gap between SSA and West African producer prices<sup>11</sup> and the prices of Chinese imports in SSA and West Africa. The comparison reveals a considerable price gap between Chinese and SSA products of about 50 percent. The price gap between Chinese and West African products is somewhat narrower but still substantial at 30-40 percent. This indicates that West African producers may find it difficult to compete with Chinese imports.

### 3.2. Trade Complementarity between China and West Africa

The trade complementary index (TCI) measures the extent to which the export profile of a country or region complements the import profile of a partner country or region. A high TCI value indicates that the two countries or regions would stand to gain from increased trade, which makes the TCI a useful metric for evaluating prospective bilateral or regional trade agreements.<sup>12</sup> Figure 5 shows TCI values for trade between China, SSA and West Africa from 2002 to 2012.<sup>13</sup> The analysis suggests that while SSA's trade complementary with China is decreasing marginally over time, trade between China and West Africa is becoming more complementary. This suggests that both China and West Africa stand to gain from increasing trade.

**Figure 5: TCI for SSA and West Africa with China over 2002-2012**



Source: WITS

## 4. Opportunities for Value-Chain Integration with China

As it continues to develop the Chinese economy is increasingly moving toward more capital intensive, high-tech forms of manufacturing. In the process, Chinese producers are relocating some of their lower-skilled, labor-intensive manufacturing to developing countries. A critical question in African development is whether SSA countries are prepared to take advantage of this shift by positioning themselves within China's value chains and exploiting new opportunities for export diversification.

<sup>11</sup> Using the trade-unit-value database at the HS 6 digit level we compare each African good's fob export price with the CIF import price of a similar good from China. This yields a set of comparable African producer prices and Chinese import prices, for which we then compute an average difference by HS section.

<sup>12</sup> Several caveats should be noted. First, the index presumes that a country can expand its production and exports on a relatively constant cost basis. Second, high values of the index may be misleading if the countries involved are geographically distant or have other natural barriers that make trade unprofitable. Third, relative size differences can be very important. If exporter *i* can only supply a very small share of country *j*'s import needs, this would be a negative factor even if their trade complementarity indices were quite high. Finally, the index assumes that countries assign equal priorities for trade expansion to all goods. If there are different priorities, e.g. for manufactures over raw materials, this complicates the use of the index.

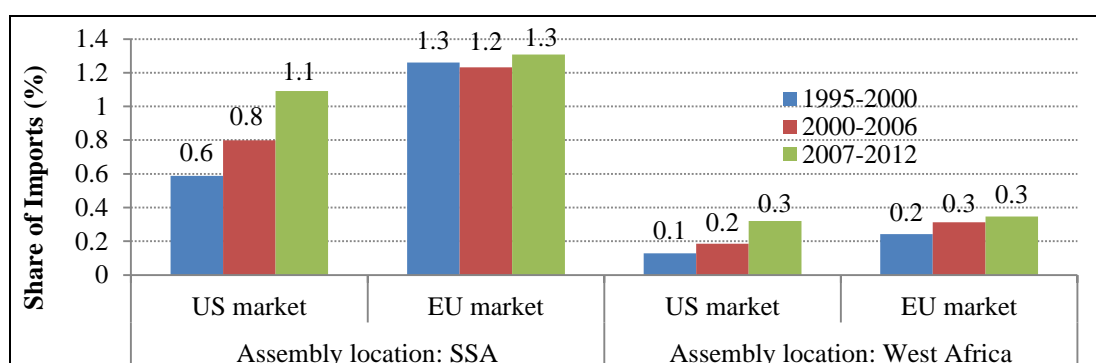
<sup>13</sup> The trade complementary (TC) between countries *k* and *j* is defined as:  $TC_{kj} = 100 - \sum (|m_{ik} - x_{ij}| / 2)$ , where  $x_{ij}$  is the share of good *i* in the global exports of country *j* and  $m_{ik}$  is the share of good *i* in all imports of country *k*. The index is zero when no goods are exported by one country or imported by the other and 100 when the export and import shares match exactly. Higher values on the index indicate more favorable prospects for a successful trade arrangement between the countries.

Chinese producers increasingly outsource portions of their value chains to countries in SSA and elsewhere in the developing world. In the most common model, a Chinese firm exports components and other intermediate inputs to developing countries, where a local subsidiary completes the more labor-intensive stages of assembly process and then exports the finished product to consumers in the US and EU. For many countries this pattern of production and exports, sometimes referred to as the triangular trade,<sup>14</sup> has had highly positive economic impacts by promoting technology transfer and catalyzing the development of dynamic comparative advantage. For China, the outsourcing of certain production processes to countries where unit labor costs are lower, or which are close to the final market, helps to keep retail prices low and maintain the competitiveness of Chinese products.

But to what extent are SSA and West African countries integrating into China’s international value chains? Exports to the US that are produced by China processing and assembling inputs in SSA countries (benefitting from the cheaper labor costs) are relatively small but have risen steadily (see Figure 6). The share of these exports going to the EU is slightly larger, but has remained stable at around 1.3 percent since 1995. West Africa, however, has thus far been unable take advantage of China’s trends toward outsourcing its labor-intensive production processes. The share of China – West Africa triangular trade with the US and EU is negligible—most likely the result of China’s very limited foreign direct investment in West African manufacturing.

The reasons for West Africa’s inability to participate in Chinese value chains are complex, but a combination of geographic and political factors provide a plausible explanation. The small size and relatively low population of many countries in coastal West Africa, combined with a lack of effective regional integration, inhibits the formation of economies of scale and agglomeration in labor-intensive industries. Political instability, inefficient legal systems and infrastructure deficiencies in many countries in the region also tend to discourage investment in productive capital assets. Finally, the considerable physical distance between China and West Africa creates a clear disincentive by raising transaction costs of trade.

**Figure 6: China’s Triangular Trade with SSA and West Africa, 1995-2012**



Source: Author’s calculation using WITS data

#### 4.1. West African Exports to the Chinese Market

1. To fully understand how China’s growth is affecting the development of West African economies it is important to examine how Chinese import demand is influencing the specialization of West African export sectors. In this context, constructing an index of revealed comparative

<sup>14</sup> This is defined as the sum of intermediate exports from country X to country Y plus final exports from country Y to country Z. We calculate the share by dividing the sum by total exports of countries X and Y. We use the BEC classifications for intermediate and final goods

advantage (RCA)<sup>15</sup> can provide a useful analytical tool. If a country has a positive RCA index for a specific product, it not only exports more of that product relative to other countries, but also relative to its own export portfolio. While West Africa clearly possesses a number of increasingly significant comparative advantages, particularly in food products, the RCA index reveals that it is not yet fully capitalizing on these advantages in the Chinese import market.

Table 2 and Table 3 below show the RCA index for China and West Africa in 15 sectors, as well as the compound annual growth rate in exports in these sectors, from 2002 to 2012. The data in Table 3 indicate that West Africa is successfully exploiting its rising comparative advantage in the plastic and rubber industries. Although plastic and rubber exports began at a low level the sector's growth has been very rapid. West Africa has also enjoyed healthy export growth rates in live animals and vegetable products. However, despite the region's swiftly expanding RCA for food products in the Chinese market, which increased from 3.2 to 10.2 over the period, food-product exports to China grew at an annual average of just 19.1 percent.

**Table 2: Patterns in Chinese Exports to West Africa**

| Product Code             | % of Total - 2002 | % of Total - 2012 | Revealed Comparative Advantage – 2012 | Revealed Comparative Advantage - 2002 | Compound Annual Growth Rate |
|--------------------------|-------------------|-------------------|---------------------------------------|---------------------------------------|-----------------------------|
| 01-05_ Live Animals      | 0.03              | 0.35              | 0.14                                  | 0.01                                  | 66.08                       |
| 06-15_Vegetables         | 11.49             | 1.39              | 0.2                                   | 1.64                                  | 5.42                        |
| 16-24_FoodProd           | 0.56              | 1.9               | 0.38                                  | 0.08                                  | 47.15                       |
| 25-26_Minerals           | 0.07              | 0.09              | 0.07                                  | 0.1                                   | 33.27                       |
| 28-38_Chemicals          | 4.8               | 3.62              | 0.62                                  | 0.65                                  | 26.62                       |
| 39-40 Plastic and Rubber | 2.47              | 5.39              | 1.68                                  | 0.83                                  | 40.77                       |
| 41-43 Hides Skin         | 1.24              | 1.62              | 4.06                                  | 4.45                                  | 33.8                        |
| 44-49_Wood               | 0.23              | 1.35              | 1.04                                  | 0.1                                   | 55.18                       |
| 50-63_TextCloth          | 40.13             | 20.26             | 3.08                                  | 5.51                                  | 21.63                       |
| 64-67_Footwear           | 6.84              | 6.03              | 3.88                                  | 7.01                                  | 28.61                       |
| 68-71_StoneGlas          | 0.97              | 4.06              | 2.99                                  | 0.64                                  | 50.29                       |
| 72-83_Metals             | 7.63              | 8.91              | 1.65                                  | 1.68                                  | 32.26                       |
| 84-85_MachElec           | 16.3              | 14.69             | 1.25                                  | 1.12                                  | 28.88                       |
| 86-89_Transport          | 3.3               | 18.24             | 1.05                                  | 0.11                                  | 54.5                        |
| 90-99_Miscellan          | 2.91              | 8.95              | 1                                     | 0.5                                   | 45.72                       |

Source: WITS

<sup>15</sup> Revealed comparative advantages are calculated as the ratio of a country's exports of a good to the world's exports of that good divided by that country's share of exports in total exports. The index for country *i* good *j* is  $RCA_{ij} = 100(X_{ij}/X_w)/(X_i/X_t)$ , where  $X_{ij}$  is exports by country *i* (*w*=world) of good *j* (*t*=total for all goods). A value of the index above (below) one, is interpreted as a revealed comparative advantage (comparative disadvantage) for that good.

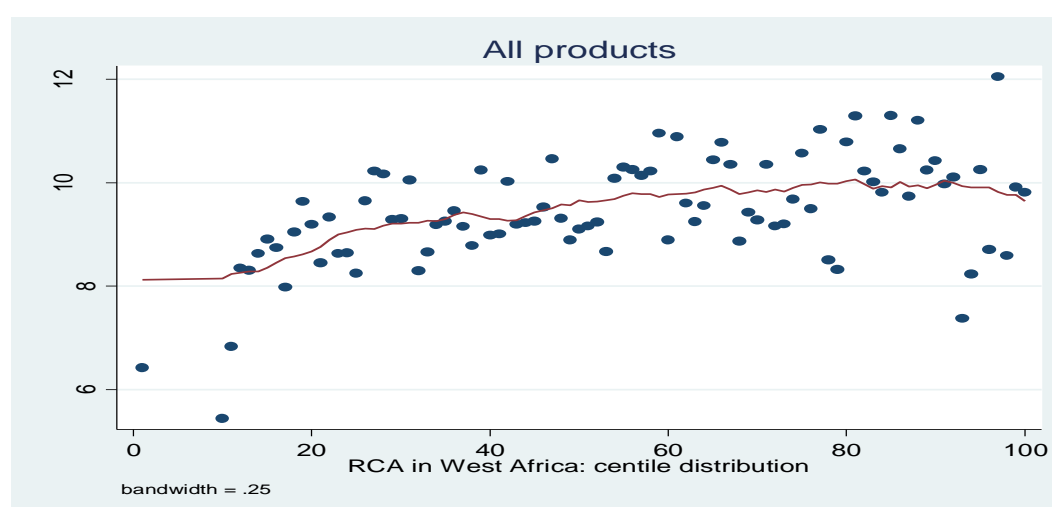
**Table 3: Patterns of West Africa's Exports to China**

| Product Code       | % of Total - 2002 | % of Total - 2012 | Revealed Comparative Advantage - 2012 | Revealed Comparative Advantage - 2002 | Compound Annual Growth Rate |
|--------------------|-------------------|-------------------|---------------------------------------|---------------------------------------|-----------------------------|
| 01-05 Live Animals | 7.08              | 0.52              | 1.33                                  | 1.65                                  | 5.9                         |
| 06-15_Vegetable    | 0.24              | 3.09              | 2.52                                  | 2.89                                  | 77.8                        |
| 16-24_FoodProd     | 7.49              | 1.78              | 10.23                                 | 3.23                                  | 19.1                        |
| 25-26_Minerals     | 16.68             | 60.30             | 5.27                                  | 10.55                                 | 56.4                        |
| 28-38_Chemicals    | 7.17              | 0.86              | 0.56                                  | 0.50                                  | 11.3                        |
| 39-40_PlastiRub    | 0.00              | 0.65              | 1.67                                  | 1.07                                  | 185.4                       |
| 41-43_HidesSkin    | 0.09              | 0.20              | 0.22                                  | 0.60                                  | 49.1                        |
| 44-49_Wood         | 38.69             | 9.99              | 0.77                                  | 1.62                                  | 20.1                        |
| 50-63_TextCloth    | 21.57             | 21.52             | 0.74                                  | 0.75                                  | 37.5                        |
| 64-67_Footwear     | 0.001             | 0.001             | 0.34                                  | 0.51                                  | 0.0                         |
| 68-71_StoneGlas    | 0.96              | 1.07              | 0.79                                  | 0.49                                  | 0.0                         |
| 72-83_Metals       | 0.02              | 0.01              | 0.32                                  | 0.07                                  | 39.0                        |
| 84-85_MachElec     | 0.0001            | 0.0010            | 0.08                                  | 0.04                                  | 27.1                        |
| 86-89_Transport    | 0.0001            | 0.0031            | 0.37                                  | 0.23                                  | 79.1                        |
| 90-99_Miscellan    | 0.96              | 1.07              | 0.08                                  | 0.25                                  | 106.6                       |

Source: WITS

In some cases a country's lack of penetration into foreign markets may be due to high import tariffs or other trade barriers. China has significantly liberalized its import markets over the past decade, and its most-favored-nation duties now average about 9 percent. However, the variation of the distribution of tariffs across products is quite large. For example, oil imports face no tariffs, but agricultural products are subject to substantial duties. Figure 7 plots the average tariff level for West African products (represented by their RCA on a centile distribution) over the period 2010-11. Overall, West African exports appear to face higher than average tariff rates, including particularly high rates for goods in which West Africa has a significant degree of comparative advantage.

**Figure 7: Chinese Tariffs on Goods Produced in West Africa**



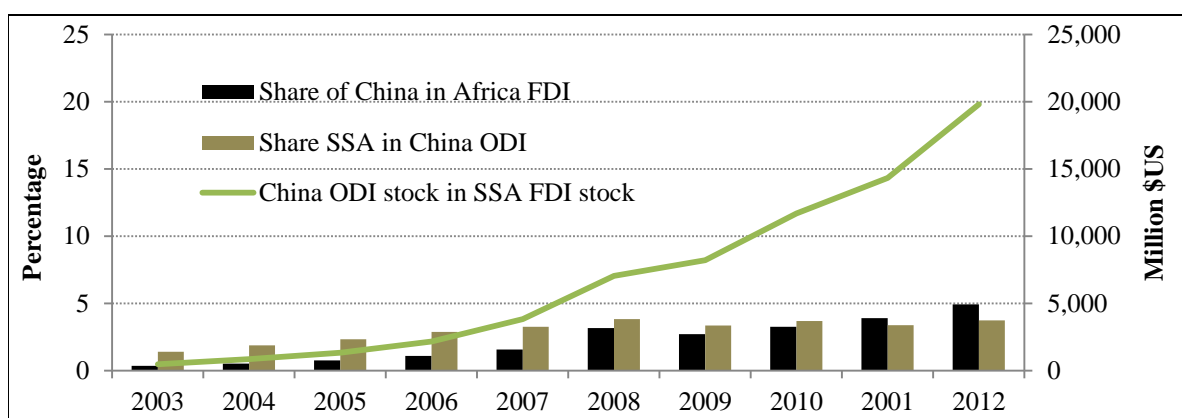
Source: Authors' calculations based on WITS

## 4.2. Chinese Outward Direct Investment in SSA and West Africa

Much of China's outward direct investment (ODI)<sup>16</sup> in SSA is closely linked to trade. Official figures from the Chinese Ministry of Commerce (MOFCOM) suggest that in 2012 ODI to SSA reached US\$2.52 billion, up from 0.39 US\$ billion in 2005 (see Figure 8). In 2012 the total stock of Chinese ODI was US\$20 billion, yet this accounted for just 5 percent of the total inward foreign direct investment stock in Africa. Meanwhile, the importance of SSA in China's total ODI stock remains below 4 percent and has not changed since 2006. In other words, Africa has benefited from China's rising ODI outflows, but no more so than other regions.

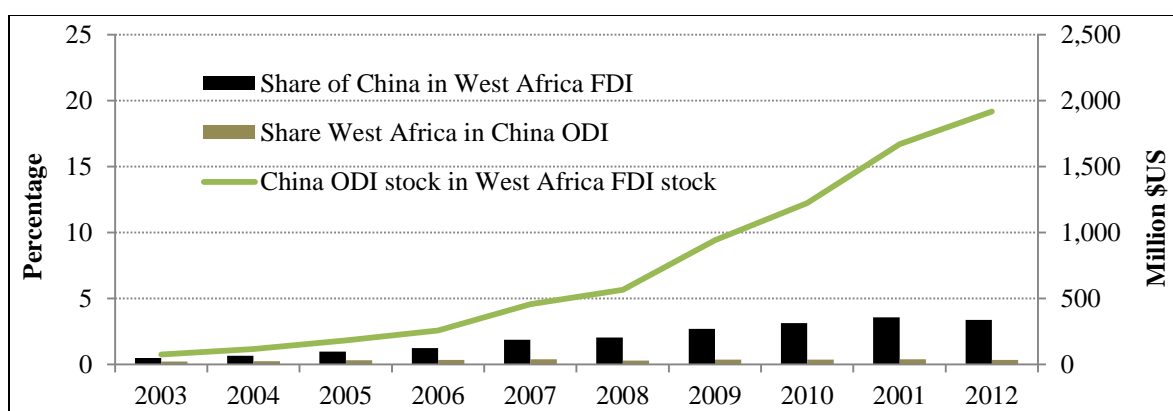
Figure 9 shows Chinese ODI statistics for West Africa. While the pattern is similar of that of SSA as a whole, the values are much lower. China's total ODI stock is nearly US\$2 billion, representing about 5 percent of West Africa's inward FDI stock. These percentages are very close to those observed in the trade data. SSA's shares of total Chinese trade flows and ODI stock were 4.3 percent and 3.7 percent, respectively, in 2012. West Africa's shares were 0.6 percent and 0.4 percent, respectively.

**Figure 8: Chinese Outward Direct Investment to SSA, 2003-2012**



Source: MOFCOM 2010 Statistical Bulletin on China's Outward Direct Investment and UNCTAD

**Figure 9: Chinese Outward Direct Investment to West Africa, 2003-2012**



Source: MOFCOM 2010 Statistical Bulletin on China's Outward Direct Investment and UNCTAD

<sup>16</sup> Outward Direct Investment is very similar, but not identical, to foreign direct investment (FDI). As with FDI, ODI includes private financial flows; however, ODI also includes investments from state-owned companies, which may blur the line between public and private financial flows. However, in the case of Chinese investment, ODI is the most appropriate measure. (See: <http://dalberg.com/blog>). For a discussion of Chinese aid and development Finance see Deborah Brautigam (2011).

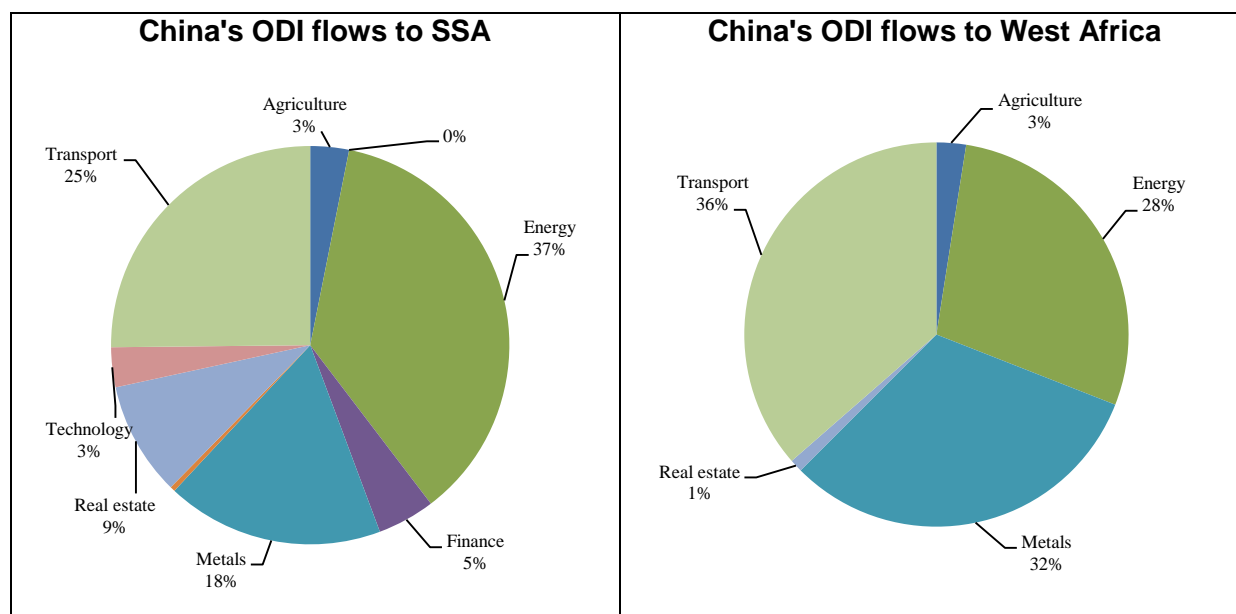


Examining Chinese ODI in each country as a share of total Chinese ODI in Africa reveals that although Ghana (2.6 percent), Guinea (1.2 percent), Mali (1.1 percent) and Chad (1 percent) have highest shares in the West Africa region, they are still far behind continent leaders South Africa (24 percent), Zambia (10 percent) and Nigeria (10 percent). Half of the countries in West Africa have seen their shares of Chinese ODI rise since 2003 (Ghana, Chad, Sierra Leone, Mauritania, The Gambia and Guinea-Bissau) while the other half have a lower share now than they did in 2003 (Guinea, Mali, Niger, Togo, Benin and Côte d'Ivoire).

## 5. Chinese Investment by Sector

Throughout SSA China is investing most heavily in energy and the extractive industries, a pattern similar to its investment strategy in other parts of the world. In West Africa, however, Chinese ODI is unusually concentrated in the transportation sector. From 2005 to 2012 the West African transportation sector received 36 percent of China's total ODI flows to the region, substantially higher than both the 25 percent average for SSA and the 14 percent average worldwide. Transport equipment is overwhelmingly related to minerals extraction, a sector where Chinese firms are highly concentrated. Transportation was followed by the mining and metallurgy sector with 32 percent of total regional investment, also well above the 18 percent average for SSA and the 16 percent average worldwide. Energy attracted the third-largest share of Chinese ODI at 28 percent, lower than both the 37 percent SSA average and the 46 percent worldwide average.

**Figure 10: Sectoral Distribution of China ODI flows in 2005-2012**



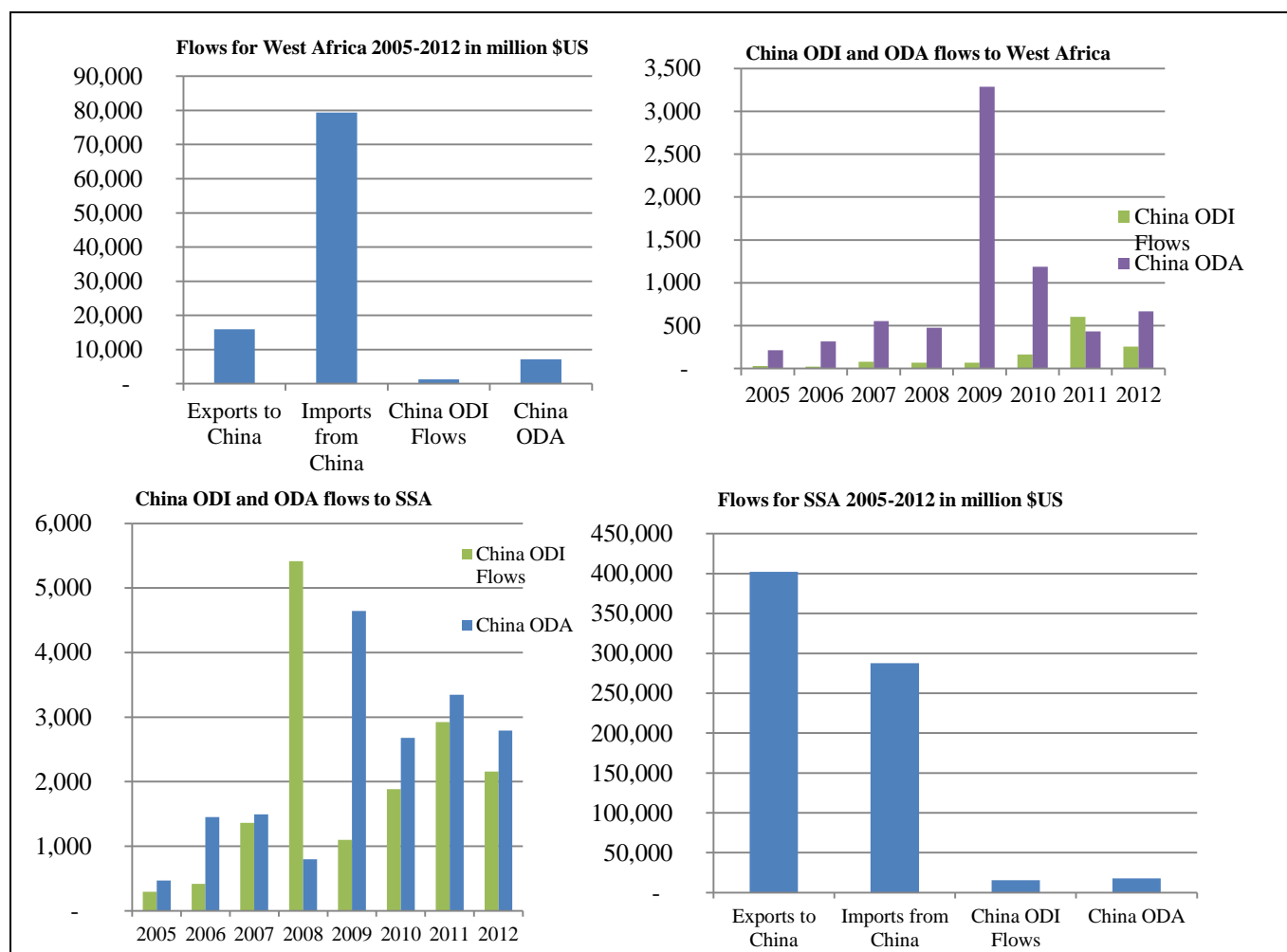
Source: Data compiled by The Heritage Foundation <http://www.heritage.org/research/projects/china-global-investment-tracker-interactive-map>.

## 6. Chinese ODI, Official Development Assistance and “Other Official Flows”

China's economic involvement in Africa has taken many forms, and information about its financial and trade ties to the continent is not always easily comparable to that of other countries. Official development assistance (ODA) is defined by the OECD to include grants, interest-free loans and concessional loans. In addition, Chinese ODA includes the use of financing mechanisms that are outside the OECD's definition, such as export credits, natural-resource-backed credit lines, subsidies for private investment, and so-called “mixed credits,” which are combined concessional

and market-rate loans. These are collectively referred to by the OECD-DAC as Other Official Flows (OOF). Many donors distinguish between OOF and ODA due to concerns about the conditions that are frequently attached to OOF arrangements, such as tying the funds to the use of specific products and services from the donor country. China's export credits and other OOF flows are larger than its total ODA, and China's ODA, in turn, is larger than its ODI.

**Figure 11: The Relative Importance of Chinese ODI and ODA**



Source: Aid Data's Chinese Official Finance to Africa Dataset, MOFCOM 2010 Statistical Bulletin of China's Outward Foreign Direct Investment and WITS.

Figure 11 shows the relative importance of Chinese ODI and ODA in West Africa and SSA as a whole. The 2009 data are outliers because they include a US\$3 billion loan to Ghana, which represents about 75 percent of total ODA for West Africa. And in 2010 Mauritania accounted for 50 percent of China's ODA to West Africa (having received a US\$1.3 million loan from China). Aside from Ghana and Mauritania, however, the other countries in the region receive a relatively small amount of ODA. Chinese assistance is widely distributed among different sectors; includes loans and grants for energy, infrastructure, water supply, sanitation, health, education projects, as well as investments in sports stadiums and cultural centers.

## 7. Conclusions

The continued economic rise of China during the past two decades has represented an enormous opportunity for West Africa, but this opportunity brings with it important new challenges. Chinese demand for natural resources has soared, generating considerable benefits for the region's many resource exporters, and China's rising ODA profile has made it an important nontraditional development partner for countries throughout SSA. West Africa's trade integration with China has accelerated over the last 5 years, and Chinese trade currently accounts for an inordinate share of West African trade flows. Trade with China has yielded higher export revenues as well as lower prices for both consumer and capital goods. West Africa has been registering a wide and expanding trade deficit with China, partly because of consumer demand for relatively inexpensive Chinese products, and partly because of the import-content requirements that are frequently included in Chinese development assistance agreements.

West Africa is primarily an exporter of natural resources and agricultural products. However, the share of agricultural exports in total exports to China has decreased considerably over the last 10 years as productivity growth in the agricultural sector has remained very low throughout the region. West Africa is not competing with China in third markets such as the US or the EU; instead, West African and Chinese exports are actually becoming more complementary in these markets. Nevertheless, there is evidence that China is competing with West Africa in African markets. Anecdotal evidence indicates that Chinese imports are putting pressure on domestic producers, especially in the manufacturing sector, but it is not yet clear whether Chinese competition is in fact driving West African producers out of the domestic market. Finally, exports of jointly produced goods from China and West Africa to US and EU consumer markets remains minimal and constrained by a mix of geographic and political factors. Chinese ODI and ODA flows have grown rapidly and consistently with regional trade flows. The majority of ODI is devoted to the energy and transportation sectors, and most Chinese investment in the region is in some way related to the extractive industries.

One of the most critical questions facing West African policymakers is how to maximize the benefits of their increasingly tight financial and trade integration with China. The expansion of natural resources sectors and the contraction or stagnation of the agricultural and industrial sectors are worrying signs of the Dutch disease effect. Given the potentially damaging long-term consequences of resource exports on macroeconomic growth and competitiveness, West African governments should ensure that an adequate share of resource revenues are invested in productive physical and human capital. Some countries in Africa have also tried to maximize the spillover effects from foreign investment in natural resource sectors through local labor and content requirements, and this experience should be carefully analyzed.

The current policy stance in most West African countries is constraining the ability of local producers to compete locally with Chinese imports and to exploit export opportunities, particularly in agricultural products. The business environment has improved in all West African countries, but only marginally. Lack of skills of the labor force is lamented by many foreign investors. Thus, West African authorities should develop a supportive policy framework and a healthy business climate, aimed at increasing productivity and encouraging diversification in the tradable sector. Priority actions should be in the area of trade facilitation. Transport costs are very high, due to formal or informal queuing systems in the trucking sector, which have led to uncompetitive market structures. The removal of transit restrictions with neighboring countries would ensure that the goods can be

easily trans-shipped to markets outside of the region<sup>17</sup>. West Africa has a strong yet largely unexploited comparative advantage in agricultural products, and strategic investments in agricultural development – including from China - could greatly improve the regional trade balance. For this to happen, the formal and informal trade barriers which currently undermine investments in regional processing activity – would need to be removed. China has invested massively in transport infrastructures from the mines to the coast - and there may be some scope for allowing multi-purpose use of these infrastructures to carry agricultural products from rural areas and to connect farmers to markets. Within this context, a continued commitment to actively engage with China, including reciprocal agreements to lower tariffs on imports of specific products, the promotion of new regional investment opportunities, and the establishment of joint ventures in sectors of mutual interest may further enhance the benefits generated by the increasingly strong economic links between China and West Africa.

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<sup>17</sup> See for example: World Bank (2012); Bromley, Daniel; Cook, Andrew; Sing, Savitri; and Van Dusen, Nathan (2011) and World Bank (2009).

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## Annex

**Table A1: China Impact on third market for Sub-Saharan Africa**

|  | Export SSA           |                     |                       |                     |                     |                     |
|--|----------------------|---------------------|-----------------------|---------------------|---------------------|---------------------|
| <b>Export supply effect (<i>dimports</i>)</b>    | 0.178***<br>[234.95] | 0.152***<br>[55.74] | 0.421***<br>[262.66]  | 0.126***<br>[29.94] | 0.202***<br>[60.43] | 0.215***<br>[34.94] |
| <b>China Export effect (<i>dChina</i>)</b>       | 0.010***<br>[14.88]  |                     |                       |                     |                     |                     |
| <b>China Export effect on EU market</b>          |                      | 0.037***<br>[23.34] |                       |                     |                     |                     |
| <b>China Export effect on SSA market</b>         |                      |                     | -0.041***<br>[-25.63] |                     |                     |                     |
| <b>China Export effect on Durable goods</b>      |                      |                     |                       | 0.002<br>[0.62]     |                     |                     |
| <b>China Export effect on semi Durable Goods</b> |                      |                     |                       |                     | -0.003<br>[-1.03]   |                     |
| <b>China Export effect on non Durable Goods</b>  |                      |                     |                       |                     |                     | -0.009**<br>[-2.00] |
| <b>Observations</b>                              | 2,563,217            | 475,151             | 471,485               | 78,580              | 207,601             | 82,172              |
| <b>R-squared</b>                                 | 0.212                | 0.175               | 0.367                 | 0.297               | 0.335               | 0.435               |

Source: Staff calculations based on UN Comtrade

**Table A2: China Impact on third market for West Africa**

|  | Export West Africa  |                     |                     |                     |                     |                     |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| <b>Export supply effect (<i>dimports</i>)</b>    | 0.042***<br>[90.77] | 0.057***<br>[30.43] | 0.096***<br>[83.26] | 0.126***<br>[29.94] | 0.202***<br>[60.43] | 0.215***<br>[34.94] |
| <b>China Export effect (<i>dChina</i>)</b>       | 0.002***<br>[4.39]  |                     |                     |                     |                     |                     |
| <b>China Export effect on EU market</b>          |                     | 0.009***<br>[7.82]  |                     |                     |                     |                     |
| <b>China Export effect on SSA market</b>         |                     |                     | -0.002**<br>[-2.12] |                     |                     |                     |
| <b>China Export effect on Durable goods</b>      |                     |                     |                     | 0.003<br>[1.43]     |                     |                     |
| <b>China Export effect on semi Durable Goods</b> |                     |                     |                     |                     | -0.004**<br>[-2.23] |                     |
| <b>China Export effect on non Durable Goods</b>  |                     |                     |                     |                     |                     | 0.000<br>[0.14]     |
| <b>Observations</b>                              | 2,563,217           | 475,151             | 471,485             | 78,580              | 207,601             | 82,172              |
| <b>R-squared</b>                                 | 0.144               | 0.118               | 0.169               | 0.245               | 0.232               | 0.334               |

Source: Staff calculations base on UN Comtrade

**Table A3: Average of the unit value gap (in % of the Chinese price) calculated at the HS-6 digit product level**

| Section HS                             | EU-China unit value gap | US-China unit value gap |
|--|-------------------------|-------------------------|
| 1: Live animals                        | 190                     | 150                     |
| 2: Vegetable products                  | 639                     | 255                     |
| 3: Fats and Oil                        | 232                     | 142                     |
| 4: Prepared food                       | 1446                    | 335                     |
| 5: Minerals products                   | 489                     | 332                     |
| 6: Chemical products                   | 457                     | 418                     |
| 7: Rubber and Plastics                 | 525                     | 585                     |
| 8: Raw hide and skins                  | 73                      | 12                      |
| 9: Wood                                | 185                     | 197                     |
| 10: Paper                              | 41                      | 84                      |
| 11: Textile                            | 1746                    | 1201                    |
| 12: Footwear                           | 210                     | 586                     |
| 13: Stone and Cement                   | 33                      | 64                      |
| 15: Base Metals                        | 962                     | 436                     |
| 16: Machinery and Electrical Equipment | 975                     | 606                     |
| 17: Vehicles                           | 306                     | 559                     |
| 18: Optical and Medicals instruments   | 1165                    | 1998                    |
| 20: Miscellaneous goods                | 812                     | 45                      |

Source: Authors' calculation base on Trade Unit Value Database from CEPII. The database provides nit values for each HS 6 digit product by reporter-partner-year. The table show the over value of US and EU products compared to Chinese product for 20 HS sections over 2007-2012.

**Table A4: Impact on West Africa Exports to SSA of a 10 percent increase of China's export to Africa (%)**

|   |       |
|---|-------|
| 0 - Food and live animals                             | 0.18  |
| 1 - Beverages and tobacco                             | 0     |
| 2 - Crude materials                                   | -0.18 |
| 3 - Mineral fuels                                     | 0     |
| 4 - Animal and vegetable oils                         | -0.3  |
| 5 - Chemicals and related products                    | -0.07 |
| 6 - Manufactured goods classified chiefly by material | -0.05 |
| 7 - Machinery and transport equipment                 | 0.05  |
| 8 - Miscellaneous manufactured articles               | 0     |

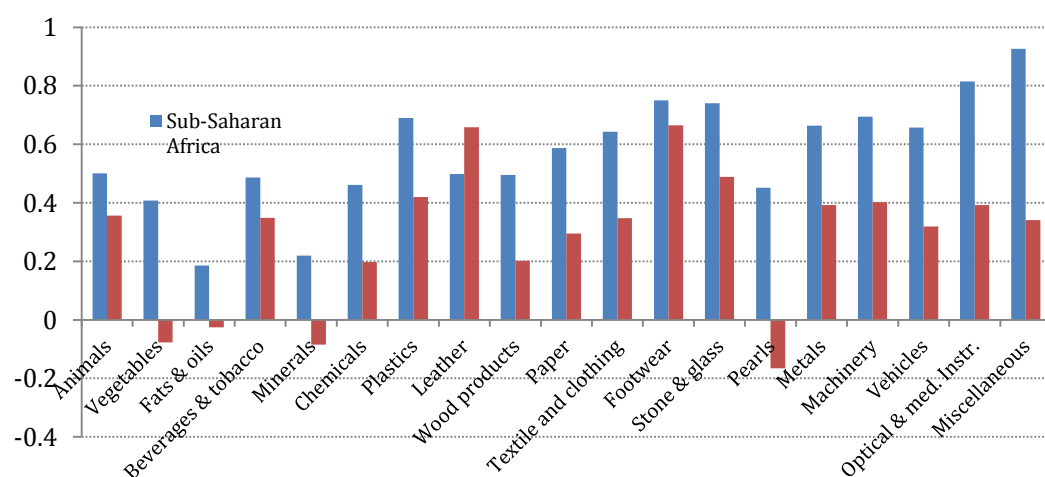
Source: Staff calculations base on UN Comtrade

**Table A5: China Trade with West Africa and SSA: 15 main industry (sitc Rev3 2 digit) in millions US\$**

| code | product                  | prod | Import from West Africa |      | code | product                  | prod | Export to West Africa |      |
|------|--------------------------|------|-------------------------|------|------|--------------------------|------|-----------------------|------|
|      |                          |      | Africa                  | %    |      |                          |      | Africa                | %    |
| 5    | Vegetables and fruit     | AGR  | 7 640                   | 0.1  | 82   | Furniture/furnishings    | MAN  | 1 087 024             | 1.5  |
| 1    | Meat & preparations      | AGR  | 7 788                   | 0.1  | 81   | Building fixtures etc    | MAN  | 1 132 191             | 1.6  |
| 63   | Cork/wood manufactures   | MAN  | 13 963                  | 0.1  | 72   | Industry special machine | MAN  | 1 565 518             | 2.2  |
| 68   | Non-ferrous metals       | NRS  | 16 931                  | 0.1  | 66   | Non-metal mineral manuf. | MAN  | 1 624 281             | 2.3  |
| 61   | Leather manufactures     | MAN  | 19 003                  | 0.1  | 74   | Industrial equipment nes | MAN  | 1 645 147             | 2.3  |
| 52   | Inorganic chemicals      | MAN  | 30 821                  | 0.2  | 67   | Iron and steel           | MAN  | 1 708 762             | 2.4  |
| 29   | Crude anim/veg mater nes | AGR  | 31 062                  | 0.2  | 76   | Telecomms etc equipment  | MAN  | 2 002 568             | 2.8  |
| 3    | Fish/shellfish/etc.      | NRS  | 57 570                  | 0.4  | 33   | Petroleum and products   | NRS  | 2 070 797             | 2.9  |
| 42   | Fixed veg oils/fats      | MAN  | 127 240                 | 0.9  | 85   | Footwear                 | MAN  | 2 097 893             | 2.9  |
| 23   | Crude/synthet/rec rubber | AGR  | 162 574                 | 1.1  | 84   | Apparel/clothing/access  | MAN  | 3 096 823             | 4.3  |
| 22   | Oil seeds/oil fruits     | AGR  | 197 550                 | 1.4  | 89   | Misc manufactures nes    | MAN  | 3 358 394             | 4.7  |
| 7    | Coffee/tea/cocoa/spices  | AGR  | 452 522                 | 3.1  | 78   | Road vehicles            | MAN  | 3 550 243             | 4.9  |
| 24   | Cork and wood            | NRS  | 878 455                 | 6.0  | 77   | Electrical equipment     | MAN  | 3 856 445             | 5.4  |
| 26   | Textile fibres           | AGR  | 2 272 198               | 15.6 | 69   | Metal manufactures nes   | MAN  | 3 916 151             | 5.4  |
| 33   | Petroleum and products   | NRS  | 3 013 136               | 20.6 | 79   | Railway/tramway equipmnt | MAN  | 12 700 000            | 17.7 |
| 28   | Metal ores/metal scrap   | NRS  | 6 623 199               | 45.4 | 65   | Textile yarn/fabric/art. | MAN  | 16 000 000            | 22.3 |
|      |                          |      | 14 600 000              |      |      |                          |      | 71 900 000            |      |

| code | product                  | prod | Import from SSA |      | productdescription | prod                     | Export to SSA |            |      |
|------|--------------------------|------|-----------------|------|--------------------|--------------------------|---------------|------------|------|
|      |                          |      | Africa          | %    |                    |                          | Africa        | %          |      |
| 7    | Coffee/tea/cocoa/spices  | AGR  | 514 086         | 0.1  | 82                 | Furniture/furnishings    | MAN           | 5 107 939  | 2.0  |
| 51   | Organic chemicals        | MAN  | 628 446         | 0.2  | 62                 | Rubber manufactures nes  | MAN           | 6 251 406  | 2.5  |
| 25   | Pulp and waste paper     | NRS  | 675 218         | 0.2  | 71                 | Power generating equipmt | MAN           | 6 662 615  | 2.6  |
| 57   | Plastics in primary form | MAN  | 681 023         | 0.2  | 66                 | Non-metal mineral manuf. | MAN           | 8 356 366  | 3.3  |
| 52   | Inorganic chemicals      | MAN  | 955 570         | 0.3  | 85                 | Footwear                 | MAN           | 8 406 970  | 3.3  |
| 12   | Tobacco/manufactures     | AGR  | 1 366 004       | 0.4  | 72                 | Industry special machine | MAN           | 9 683 844  | 3.8  |
| 34   | Gas natural/manufactured | NRS  | 1 378 471       | 0.4  | 67                 | Iron and steel           | MAN           | 10 700 000 | 4.2  |
| 22   | Oil seeds/oil fruits     | AGR  | 1 940 228       | 0.5  | 89                 | Misc manufactures nes    | MAN           | 11 300 000 | 4.4  |
| 32   | Coal/coke/briquettes     | NRS  | 3 518 849       | 1.0  | 74                 | Industrial equipment nes | MAN           | 11 300 000 | 4.4  |
| 26   | Textile fibres           | AGR  | 4 120 713       | 1.1  | 79                 | Railway/tramway equipmnt | MAN           | 14 500 000 | 5.7  |
| 24   | Cork and wood            | NRS  | 5 922 174       | 1.6  | 69                 | Metal manufactures nes   | MAN           | 14 600 000 | 5.7  |
| 66   | Non-metal mineral manuf. | MAN  | 6 161 244       | 1.7  | 84                 | Apparel/clothing/access  | MAN           | 16 000 000 | 6.3  |
| 67   | Iron and steel           | MAN  | 6 310 519       | 1.7  | 76                 | Telecomms etc equipment  | MAN           | 17 700 000 | 6.9  |
| 68   | Non-ferrous metals       | NRS  | 27 700 000      | 7.7  | 78                 | Road vehicles            | MAN           | 17 800 000 | 7.0  |
| 28   | Metal ores/metal scrap   | NRS  | 50 200 000      | 13.9 | 77                 | Electrical equipment     | MAN           | 18 400 000 | 7.2  |
| 33   | Petroleum and products   | NRS  | 193 000 000     | 53.5 | 65                 | Textile yarn/fabric/art. | MAN           | 30 200 000 | 11.8 |
|      |                          |      | 361 000 000     |      |                    |                          | 255 000 000   |            |      |

**Figure A1: Price gap between Chinese and African (West African) producer prices**





**Table A6: China Trade with West African countries: 6 main industry (sitc Rev3 2 digit) in millions US\$**

| code | product                  | Benin     |      | code | product                  | Burkina      |      | code | product                  | Cote Ivoire |      | code | product                  | Cap Verde     |      |
|------|--------------------------|-----------|------|------|--------------------------|--------------|------|------|--------------------------|-------------|------|------|--------------------------|---------------|------|
| 3    | Fish/shellfish/etc.      | 1 073     | 0.1  | 24   | Cork and wood            | 202          | 0.0  | 68   | Non-ferrous metals       | 6 541       | 1.1  | 77   | Electrical equipment     | 0             | 0.2  |
| 5    | Vegetables and fruit     | 1 204     | 0.1  | 72   | Industry special machine | 228          | 0.0  | 24   | Cork and wood            | 30 738      | 5.1  | 7    | Coffee/tea/cocoa/spices  | 0             | 0.6  |
| 65   | Textile yarn/fabric/art. | 2 776     | 0.3  | 5    | Vegetables and fruit     | 486          | 0.1  | 28   | Metal ores/metal scrap   | 83 685      | 14.0 | 71   | Power generating equipmt | 1             | 3.9  |
| 28   | Metal ores/metal scrap   | 139 423   | 15.8 | 22   | Oil seeds/oil fruits     | 2 649        | 0.3  | 7    | Coffee/tea/cocoa/spices  | 114 894     | 19.2 | 3    | Fish/shellfish/etc.      | 5             | 16.2 |
| 24   | Cork and wood            | 237 630   | 26.9 | 28   | Metal ores/metal scrap   | 13 145       | 1.5  | 23   | Crude/synthet/rec rubber | 135 590     | 22.7 | 75   | Office/dat proc machines | 12            | 39.4 |
| 26   | Textile fibres           | 498 304   | 56.5 | 26   | Textile fibres           | 855 914      | 98.1 | 26   | Textile fibres           | 220 174     | 36.8 | 57   | Plastics in primary form | 12            | 39.7 |
|      | Total                    | 882 116   |      |      | Total                    | 872 825      |      |      | Total                    | 598 266     |      |      | Total                    | 30            |      |
|      |                          |           |      |      |                          |              |      |      |                          |             |      |      |                          |               |      |
| code | product                  | Ghana     |      | code | product                  | Guinea       |      | code | product                  | Gambia      |      | code | product                  | Guinea Bissau |      |
| 63   | Cork/wood manufactures   | 11 778    | 0.9  | 68   | Non-ferrous metals       | 1 009        | 0.5  | 65   | Textile yarn/fabric/art. | 254         | 0.1  | 89   | Misc manufactures nes    | 10            | 0.1  |
| 29   | Crude anim/veg mater nes | 29 225    | 2.1  | 0    | Live animals except fish | 1 792        | 0.9  | 63   | Cork/wood manufactures   | 340         | 0.2  | 0    | Live animals except fish | 12            | 0.1  |
| 24   | Cork and wood            | 106 937   | 7.8  | 23   | Crude/synthet/rec rubber | 1 804        | 0.9  | 22   | Oil seeds/oil fruits     | 717         | 0.4  | 6    | Sugar/sugar prep/honey   | 39            | 0.2  |
| 7    | Coffee/tea/cocoa/spices  | 283 590   | 20.7 | 28   | Metal ores/metal scrap   | 8 232        | 4.0  | 27   | Crude fertilizer/mineral | 1 875       | 1.1  | 5    | Vegetables and fruit     | 135           | 0.8  |
| 28   | Metal ores/metal scrap   | 447 624   | 32.7 | 33   | Petroleum and products   | 88 673       | 42.9 | 28   | Metal ores/metal scrap   | 42 283      | 24.1 | 22   | Oil seeds/oil fruits     | 177           | 1.0  |
| 33   | Petroleum and products   | 455 716   | 33.3 | 24   | Cork and wood            | 103 016      | 49.9 | 24   | Cork and wood            | 128 874     | 73.6 | 24   | Cork and wood            | 17 261        | 97.8 |
|      | Total                    | 1 367 028 |      |      | Total                    | 206 510      |      |      | Total                    | 175 101     |      |      | Total                    | 17 642        |      |
|      |                          |           |      |      |                          |              |      |      |                          |             |      |      |                          |               |      |
| code | product                  | Liberia   |      | code | product                  | Mali         |      | code | product                  | Mauritania  |      | code | product                  | Niger         |      |
| 77   | Electrical equipment     | 50        | 0.0  | 24   | Cork and wood            | 1 517        | 0.2  | 41   | Animal oil/fat           | 340         | 0.0  | 72   | Industry special machine | 3 659         | 2.8  |
| 66   | Non-metal mineral manuf. | 80        | 0.0  | 5    | Vegetables and fruit     | 2 028        | 0.3  | 63   | Cork/wood manufactures   | 342         | 0.0  | 85   | Footwear                 | 4 170         | 3.2  |
| 33   | Petroleum and products   | 359       | 0.1  | 61   | Leather manufactures     | 14 890       | 2.2  | 1    | Meat & preparations      | 386         | 0.0  | 26   | Textile fibres           | 5 561         | 4.2  |
| 23   | Crude/synthet/rec rubber | 22 042    | 7.2  | 28   | Metal ores/metal scrap   | 25 225       | 3.6  | 3    | Fish/shellfish/etc.      | 25 953      | 0.4  | 22   | Oil seeds/oil fruits     | 7 231         | 5.5  |
| 24   | Cork and wood            | 60 630    | 19.8 | 22   | Oil seeds/oil fruits     | 122 796      | 17.7 | 33   | Petroleum and products   | 1 352 605   | 19.1 | 52   | Inorganic chemicals      | 30 137        | 23.0 |
| 28   | Metal ores/metal scrap   | 223 625   | 72.9 | 26   | Textile fibres           | 520 662      | 75.3 | 28   | Metal ores/metal scrap   | 5 040 374   | 71.3 | 28   | Metal ores/metal scrap   | 64 068        | 48.9 |
|      | Total                    | 306 845   |      |      | Total                    | 691 864      |      |      | Total                    | 7 065 928   |      |      | Total                    | 131 053       |      |
|      |                          |           |      |      |                          |              |      |      |                          |             |      |      |                          |               |      |
| code | product                  | Senegal   |      | code | product                  | Sierra Leone |      | code | product                  | Chad        |      | code | product                  | Togo          |      |
| 28   | Metal ores/metal scrap   | 4 368     | 1.8  | 7    | Coffee/tea/cocoa/spices  | 595          | 0.1  | 27   | Crude fertilizer/mineral | 27          | 0.0  | 5    | Vegetables and fruit     | 1 848         | 0.6  |
| 1    | Meat & preparations      | 7 402     | 3.0  | 77   | Electrical equipment     | 628          | 0.1  | 77   | Electrical equipment     | 39          | 0.0  | 28   | Metal ores/metal scrap   | 8 081         | 2.6  |
| 22   | Oil seeds/oil fruits     | 19 168    | 7.9  | 23   | Crude/synthet/rec rubber | 967          | 0.2  | 61   | Leather manufactures     | 54          | 0.0  | 22   | Oil seeds/oil fruits     | 41 850        | 13.2 |
| 3    | Fish/shellfish/etc.      | 27 238    | 11.2 | 66   | Non-metal mineral manuf. | 3 733        | 0.7  | 29   | Crude anim/veg mater nes | 496         | 0.0  | 7    | Coffee/tea/cocoa/spices  | 49 881        | 15.7 |
| 26   | Textile fibres           | 50 081    | 20.6 | 24   | Cork and wood            | 33 304       | 5.9  | 26   | Textile fibres           | 58 149      | 5.0  | 26   | Textile fibres           | 55 282        | 17.4 |
| 42   | Fixed veg oils/fats      | 124 372   | 51.2 | 28   | Metal ores/metal scrap   | 523 066      | 92.9 | 33   | Petroleum and products   | 1 114 061   | 95.0 | 24   | Cork and wood            | 158 189       | 49.9 |
|      | Total                    | 243 013   |      |      | Total                    | 563 245      |      |      | Total                    | 1 172 886   |      |      | Total                    | 316 880       |      |