

# Is that a Dragon or Elephant on your Ladder: The Potential Impact of China and India on Export Led Growth in African Countries?

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## **Introduction**

The genesis of the ideas in this paper came from two separate observations as I was studying issues of employment creation in Kenya. The first was a newspaper article on China's attempt to become the biggest exporter of flowers in ten to fifteen years (Bradsher 2006). The second observation was the attempts by India to learn how to successfully create a small scale tea industry (Mugambi 2006).

Both of these initiatives were a threat to two of Kenya's leading exports industries. In both instances the governments of China and India were willing to spend large amounts of resources (US \$200 billion in the Chinese case) to develop the physical infrastructure such as roads, airports, etc as well as for cheap credit to enable farmers to purchase inputs and capital. These initiatives were aimed at poor rural areas of their respective countries.

Why did these two actions cause concern vis-à-vis Kenyan employment and growth? Kenya over the last forty years had become relatively successful at exporting a variety of agricultural products. Two sectors that stood out were the small scale tea sector and the flower sector. The small scale tea sector stands out because over the last forty years Kenya is one of the few countries that have successfully created a tea industry that is based on the production of small holders. Because tea requires rapid processing after harvesting, in most places it is done on plantations which set up their own processing plants. Via the creation of the Kenya Tea Development Authority, which was initially set up as a government parastatal and is now

owned by the farmers through the tea factories, the country has become the largest exporters of Black tea in the world.

The flower sector on the other hand is a more recent success story. It developed in the 1990s when most other sectors were stagnating. While there is government parastatal charged with supporting the horticulture industry broadly, the Horticultural Crop Development Authority, in reality it has taken a hands off policy leaving actual development of the sector to private companies. Although having a very concentrated ownership structure the sector has become a significant employer and exporter. Today Kenya is the largest exporter of fresh flowers to Europe, with over 35 per cent of the market.

These two sectors are examples of how an African country could develop an export industry that included some value added processing or was in a non-traditional export. Both had additional relevance for Africa in that either other African countries were in the process of emulating Kenya (e.g. Malawian. Tea, Ethiopia in flowers) or Kenya had itself benefited from other African pioneers such as Zimbabwe in flowers. Thus the sectors embodied an attempt to increase growth by a focus on exports-which has now becoming fairly wide spread in Africa.

The threat constituted by China and India was that with large amounts of capital available and larger amounts of labor these two countries could easily produce the same goods at lower cost and thus out-compete the African countries. The entry of China and India into export markets had been mostly seen as a threat to other Asian countries who exported labor intensive low

technology manufactures(Jenkins and Edwards 2006; Razmi 2007; Razmi and Blecker 2008) and were above these two countries on the technology ladder. In most of these studies the conclusion has been that the entry of China particularly has resulted in price drops for the exports of other East Asian Countries.

African countries producing agricultural exports were not seen as competition for these countries as it was assumed that these two giants had their sights on manufacturing and not primary agricultural commodity production. Given their huge population in the rural areas these two countries represent a challenge to African countries that are attempting to grow via an export led Strategy. In this paper we will examine this question by evaluating the similarity of Chinese and Indian exports, to those from African countries. We will also examine the imports of China, India and the African countries and discuss the potential impact of the competition in imports on an export led strategy of development.

### **Metaphors of Export Led Growth**

Let us begin by briefly examining the ideas behind export led growth and the relationship between developing countries engaged in this Strategy. Two metaphors have often been invoked in describing the success of East Asian countries in their export-led Strategies. The first is that of the flying geese (Razmi 2007). This metaphor portrays the East Asian countries flying as a wing with the lead countries acting as the driver economy exporting the most technologically sophisticated products. Other countries at wider parts of the formation export less technologically sophisticated products, often those that the lead country no longer produces. Just as in an actual formation of geese where flying together as a wing makes it

easier for individual birds, in an export led growth strategy, the creation of markets, and transfer of capital and technology by the lead country would make it easier for those countries following. The other metaphor often invoked is that of a technological ladder (Chang 2003). In this scenario as countries develop they climb up a technological ladder. As they advance they leave the rungs below them on the ladder open for occupation by other countries.

Both of these metaphors are in reality a story about the cost of labour and how it changes with development from an agrarian rural society with so to say 'unlimited supplies of labour' (or a very large reserve army of labour) to a more industrial based society (Lewis 1954; Marx 1990). As East Asian countries have developed starting with Japan the absorption of the agrarian population into industry has gradually reduced the surplus labour and eventually caused an increase in wages generally. The increase in wages in turn has led to the movement into more capital intensive production with higher labour productivity. As each country developed along with the shift to more capital intensive production there was a shift in output as well from simple electronics to more heavy industrial output as well as more sophisticated electronics. This continual graduation in production processes and output left niches open which were taken up by succeeding nations in the region that had lower labour costs, this was often assisted by the relocation of industry from the high labour cost country to the lower labour cost countries. In a sense what you had happening was the Lewis story of development with unlimited supplies of labour at a regional level. The region in a sense being confined to those countries that chose an export led strategy. As the populations were relatively small

compared to the world market for the goods, and the growth was fairly rapid wages in countries rose relatively rapidly in response to the movement of labour into the industrial sector. In Figure 1 and 2 we graph for South Korea and Malaysia the relationship between the proportion of GDP that is produced in industry against a proxy for the rural per capita income, which we have calculated by dividing the total agriculture value added by the rural population.

These two countries went through their development at different times with South Korea being first. We have picked them for this reason, their data availability and their significant (though not total) resemblance<sup>1</sup> at the beginning of their industrialization process to many African countries. Note the strong relationship between increases in the proportion of GDP produced in the industrial sector and the rural wages per capita. In both cases this process of industrialization resulted in a fall of the agricultural population from just above 70 in both cases to 19 per cent and 31 per cent in South Korea and Malaysia respectively in the year 2006. In the South Korean case where the process has been going on for a longer time one can clearly see where the lack of a reserve army of labour has created a constraint and increased rural wages significantly at the right hand end of the distribution. In the Malaysian case this constraints seems not to have been hit yet.

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<sup>1</sup> Thandika Mkandwire and C. Soludo make a convincing argument in Our Continent, Our Future that the oft repeated comparison about the degree of similarity between the East Asian Tigers and African countries in the 1960s are misleading (Mkandawire, P. T. and C. C. Soludo (1999). Our continent, Our future : African Perspectives on Structural Adjustment. Trenton, NJ, Africa World Press.

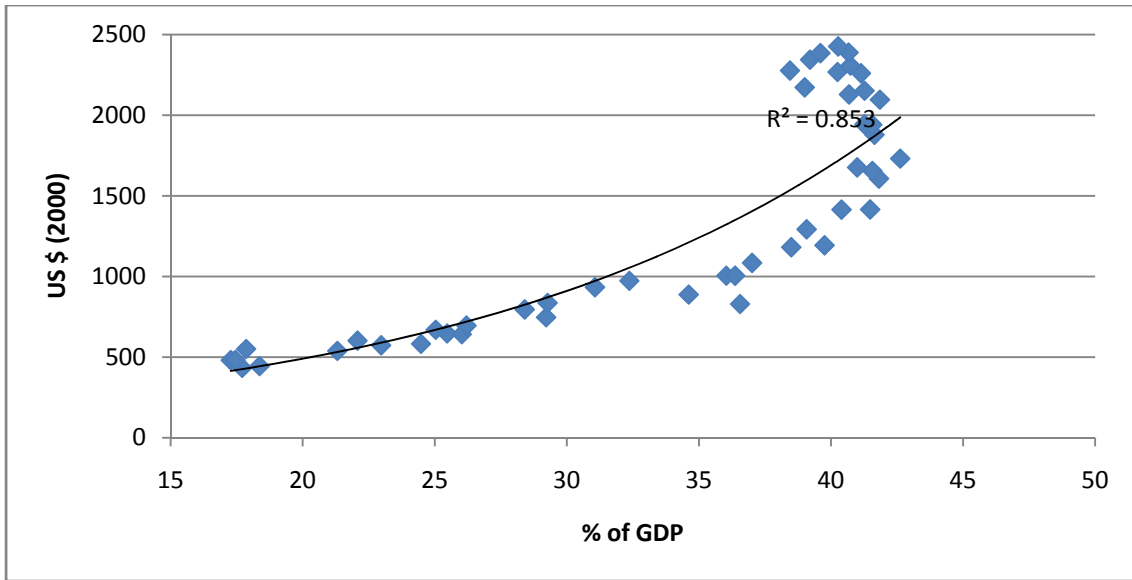


Figure 1: Rural Income per Capita (US\$ 2000) by Industry as % of GDP for South Korea 1960-2006  
Source:(IBRD 2007)

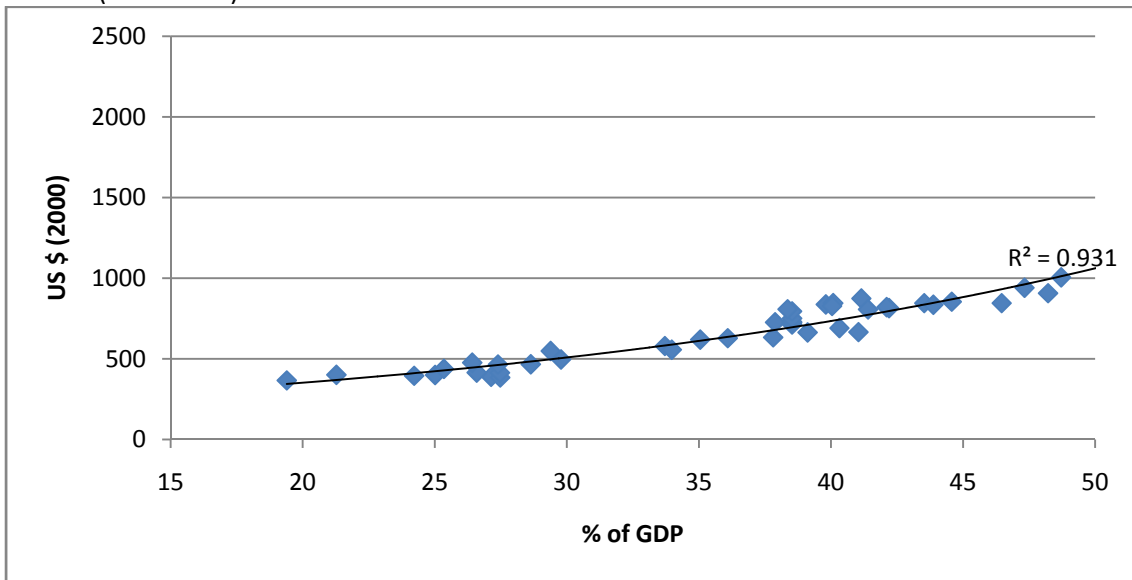


Figure 2: Rural Income per Capita (US\$ 2000) by Industry as % of GDP for Malaysia 1960-2006  
Source:(IBRD 2007)

Contrast these two figures with same data for China and India in Figures 3 and 4 below.

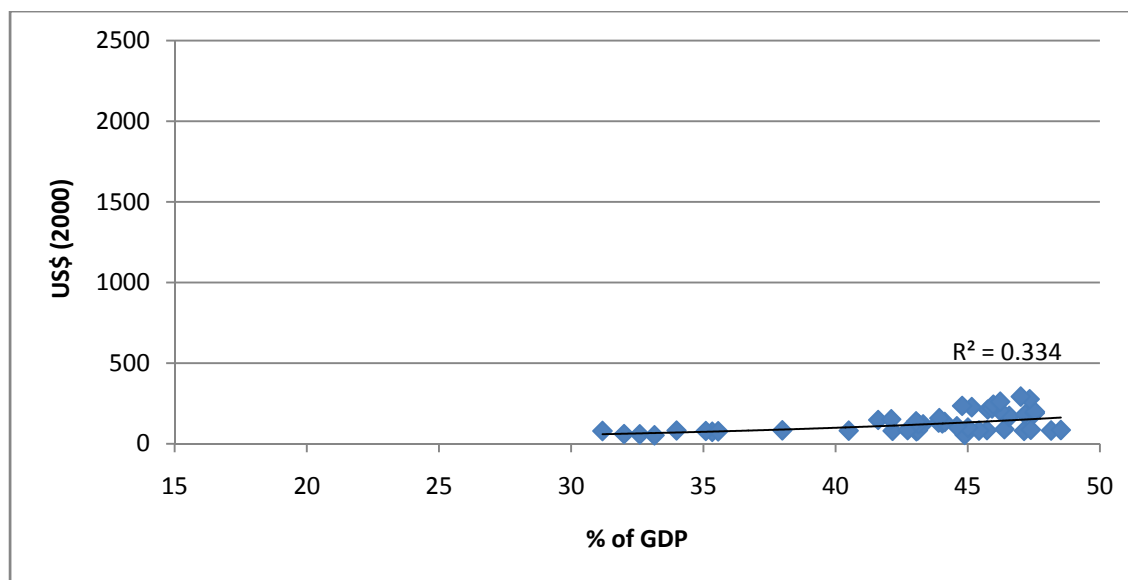


Figure 3: **Rural Income per Capita (US\$ 2000) by Industry as % of GDP for China 1960-2006**  
 Source:(IBRD 2007)

In the case of China the relationship is not as strong nor is the slope as steep. During the period 1960 to 2006 the growth in industrial production in China has resulted in a fall in the rural population from 84 per cent to approximately 58 per cent. One may argue that the process in China really begins in the 1980s. Even if one examines only that period the relationship is not as strong as that of South Korea or Malaysia although there is a slight pick up. Part of this maybe due to the fact that China starts off with a higher degree of the economy already devoted to industry. A significant amount of the growth may therefore have been due to the conversion of industrial plants from less efficient forms of production. This kind of growth would not have as large an effect on rural wages and the proportion of the population in the rural areas. Over the entire period rural per capita income has increased from US \$56 in 1960 to US \$ 293 in 2006 in constant terms. At US\$ 293 China's effective reservation wage is below the per capita income of all but the 17 countries with the lowest per capita income on the



continent. If you combine this with the better infrastructure and higher productivity China can easily outcompete practically all African countries in the production of labour intensive exports

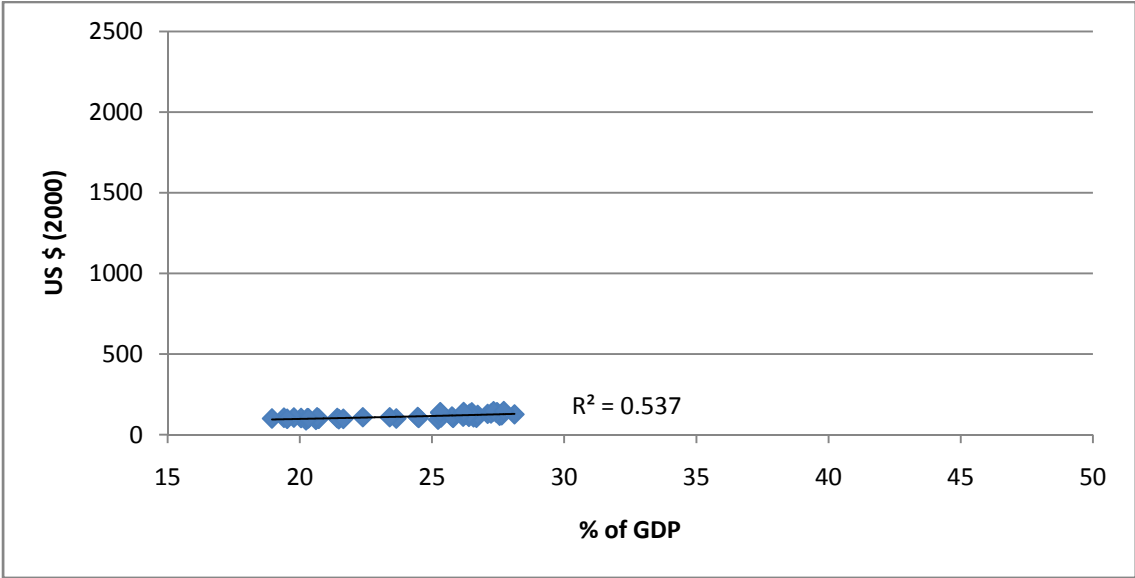


Figure 4: **Rural Income per Capita (US\$ 2000) by Industry as % of GDP for India 1960-2006**  
Source:(IBRD 2007)

While in India the relationship is stronger it again is neither as steep nor as strong as that of South Korea or Malaysia. This may be in part due to the fact that although India has been growing rapidly its growth rates historically have not been as high as those of the East Asian countries. In India over the period the process of industrialization and the attendant urbanization has reduced rural populations from 82 per cent to 71 per cent a rather unimpressive change even compared to China. In this time the rural per capita income has gone from \$105 in 1960 to US \$ 148 in 2006, a figure that is below the GDP per capita of all but the four lowest income countries in Africa a group that has only one country (DRC) with a large population.

What does the weak relationship between increases in industrial production as a proportion of GDP and rural incomes in India and China mean for export led growth in Africa? To answer this let us first start by reconsidering what is the relevant supply of labour or reserve army of labour for countries today. The Lewis model as it is commonly portrayed assumes a closed national economy without the impact of competition of other countries with low costs of labour. In today's world as countries opt into an export led growth pattern the relevant reservation wage/labour cost becomes not the local labour cost but those of the country with the lowest labour costs that is also engaged in exporting similar products. In this sense despite the fact that China and India produce sophisticated high technology exports the 770 million rural Chinese and the 788 million rural Indians are in competition with Africa's population for the production of labour intensive exports. Our findings coincide with those of de Carvalho Chamon and Kremer (2006) who find in a calibrated model that Africa's non-traditional export opportunities will remain poor while labour is cheap in China or India. If we invoke the metaphor of the technology ladder, China and India are not climbing up the ladder and leaving the lower rungs empty for occupation by other countries, but rather are stretching up the ladder occupying the upper reaches while still firmly resting on the lower rungs.

### **Potential Impacts on African Exports**

Before we compare Chinese and Indian Exports to African ones let us first detail in what ways these may affect African exports. There are two main channels through which Chinese and Indian trade may impact on export-led development. The first is the obvious one. Where

African countries export the same goods as China or India, these goods face competition. Given the fact that China and India are large economies their exports in many instances maybe large enough to have a price effect (Razmi 2007; Razmi and Blecker 2008)). With vast amounts of labour available and capital available for infrastructural improvements these two large economies are likely to out-compete African producers. The case of African textile exports to the USA is a good example of the kind of competition provided by China. African countries in the recent past had enjoyed the benefits of the African Growth and Opportunity Act (AGOA) with respect to their exports to the USA. The lowering of tariffs had allowed a number of African countries to increase their textile exports to the USA between 2000 and 2004. In 2004 the Multi Fibre agreement ended and among other things restrictions on exports of-Chinese textiles to the USA came to a close. The results for a number of African countries were substantial losses in employment in the textile industry. On the lowest end countries like Kenya lost 9.3 per cent of the jobs in this sector, while on the high end countries like Swaziland and Lesotho which are heavily dependent on the sector lost 30 to 50 per cent of the jobs in this industry. In Nigeria 80 per cent of employment in the industry was lost as local manufacturers were undercut by Chinese imports (Alden 2007).

The second channel is not as obvious. Any export-led strategy requires the initial importation of capital for processing goods and in most instances of energy. In the past the increased demand due to export led strategies has probably been insufficient to cause any change in global prices. Today China's demand for raw materials is a cause of higher prices of commodities such as oil and copper. Since most African countries are actually importers of many of these goods; the result is likely to be higher costs in the establishment of any export industries that require

them. we have already seen some of this impact via for example demands, by African companies recycling scrap metals, to have export restrictions imposed on the exports of scrap metal to China, as the high prices due to the demand from China have made it unprofitable for them to continue producing their products.

To explore the potential impacts in the next section we will compare imports and exports for these regions using a similarity index. Before we do that let us briefly examine the patterns of growth and trade in the last decade.

<b>GDP per Capita Growth Rates</b>			
<b>Region/Country</b>	<b>1976-85</b>	<b>1986-1995</b>	<b>1996-2005</b>
Sub-Saharan Africa	-0.8	-0.9	1.4
Middle East & North Africa	1.1	0.0	2.2
China	7.2	8.6	8.2
India	2.0	3.7	4.7
<b>Exports of Goods and Services</b>			
	<b>1976-85</b>	<b>1986-1995</b>	<b>1996-2005</b>
Sub-Saharan Africa	2.3	3.6	4.5
Middle East & North Africa	-1.5	6.5	4.7
China	9.2	9.4	19.4
India	4.2	12.1	13.8
<b>Imports of Goods and Services</b>			
	<b>1976-85</b>	<b>1986-1995</b>	<b>1996-2005</b>
Sub-Saharan Africa	0.2	2.4	5.9
Middle East & North Africa	-0.1	0.1	5.0
China	17.5	10.5	15.9
India	9.3	12.1	11.3

Table 1: **Growth Rates of GDP per Capita, Exports and Imports**

Source: IBRD (2007)

Over the last ten years China and India as well as most African countries have seen relatively high growth rates. While in the case of African countries this has been a recovery from the stagnant eighties and nineties, for China it has been an extension of the explosive growth rates

that began in the late seventies with the Chinese economic reforms. In the Indian case it has been a doubling of the rate of growth from the lower 2 per cent per year to 4.7 in the last decade. (see Table 1)

A fair amount of the growth in the African countries has been increasingly attributed to the rise in the prices of primary commodities due to the increased demand from particularly China and India (Mayer and Fajarnes 2005; Jenkins and Edwards 2006; Alden 2007; Broadman 2007; Broadman 2007; Zafar 2007), Both exports and imports for are these countries have increased as is evident in Table 1. These increases are however not only due to price increases. In the case of all three areas the actual quantity of goods traded has also gone up with the value. (See Figures AI-A3 in the Appendix) Although it is clear that for Africa both value and quantity has gone up, post 2003 there has been an increased divergence with values going up faster than quantity for both imports and exports.

While it is the case that both imports and exports have gone up we want to make sure that this is not interpreted as a huge change in Africa's perspectives toward trade. Contrary to most popular economic reportage and to some extent non specialist economist views, Africa while having a low per cent of world trade is a large trader in relation to its GDP and has been one through periods of fast and slow growth. On average countries in Sub Saharan Africa, North Africa and the Middle east have had measurements of trade accounting for over 45 per Cent of GDP in most years since 1970. One maybe tempted to think that the imports partially of fuels and machinery account for much of the trade but as is clear from figure A1 in the appendix, imports and exports have been fairly balanced. African countries as a proportion of GDP are

amongst the biggest traders in the world (see Figure 5) only recently being surpassed by East Asia. In 2005 imports plus exports accounted for an unweighted average of 85 per cent of GDP for the 44 African countries that data was available for. For the least trade dependant this stood as 40 per cent of GDP (IBRD 2007).

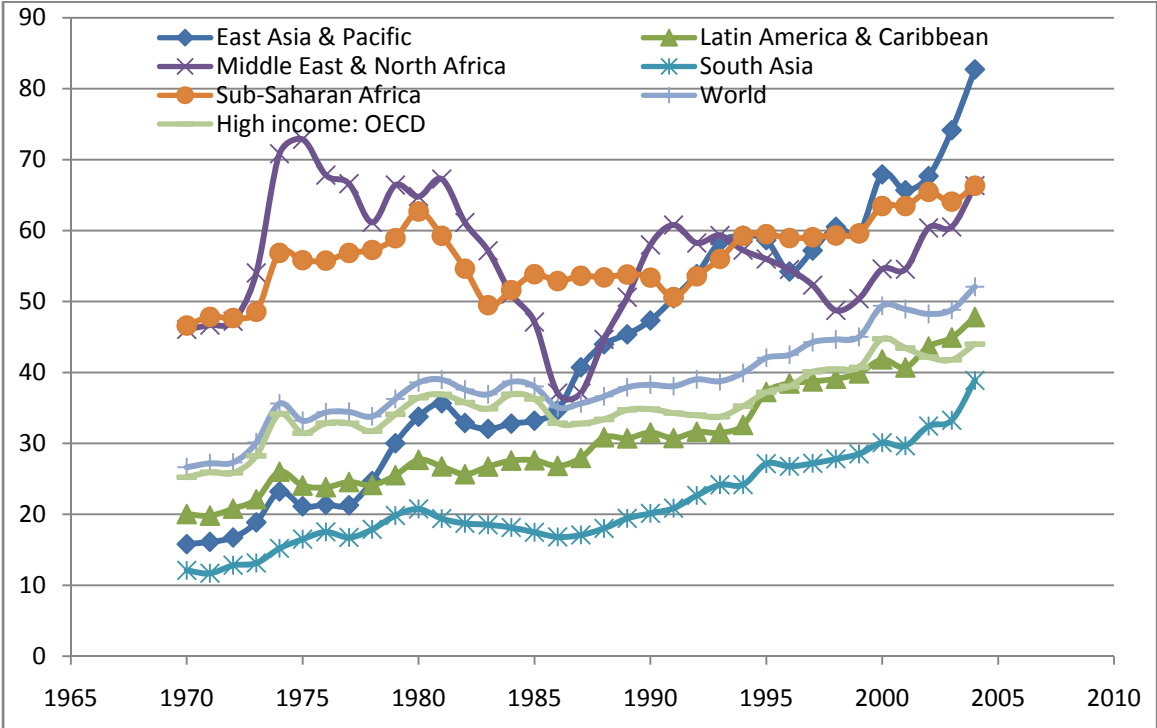


Figure 5: Imports plus Exports as Proportion of GDP 1970-2004  
 Source: IBRD (2007)

**A Modified Export Similarity Index**

Let us now turn our attention to the comparison of exports and imports. To do this we use a modified form of the Export Similarity Index. The Export Similarity Index is a common measure used to compare the degree of similarity between exports from two different countries (Jenkins and Edwards 2006). In its standard form it is the sum of the minimum shares of exports for each commodity exported by both countries or :

$$\sum_i \text{MIN}(X_{i1}, X_{i2})$$

where  $x$  is the share of commodity export  $i$  and 1 and 2 are the countries (Jenkins and Edwards 2006). While this measure is useful as a comparison of export structures in cases where one country is much larger than the other it is less useful as a comparison of actual competition, because while a specific commodity may be a small proportion of a large country's exports the amount may be large compared to the exports of a smaller country. That is to say when countries are different in size a comparison of the similarity of export structures tells you very little about how much competition the goods from the smaller country face. (See example below)

In order to account for this we adjust the export similarity index so it now measures the similarity of goods as a proportion of the exports of the Country we are interested in (normally the smaller one). The new measure we dub the modified Export similarity Index (MESI) and can be calculated as follows:

$$\text{MESI}_1 = \frac{\sum_i (\text{MIN}(V_{i1}, V_{i2}))}{\sum_i V_{i1}} * 100$$

where  $V$  is now the value of the commodity rather than the share. In this instance even where a country is bigger because we use the value of its exports divided by the total exports of the country we are interested in we more accurately calculate the degree of competition that the country faces. We should note here that unlike the ESI where you get one measure,  $\text{MESI}_1 \neq \text{MESI}_2$  which would be the perspective from the second country in our example the large country. Below we work through an example with three goods to show the ramifications of the different measures.

Export	Country 1		Country 2	
	Value in Millions of US \$	As share of Exports	Value in Millions of US \$	As share of Exports
A	10	10	9	1
B	90	90	45	5
C	0	0	846	94

Table 2: **Calculating Similarity Indices**

Say you two countries as detailed above. A cursory inspection tells us that they have fairly different export structures. Country 1 is dependent on Good B for most of its exports while Country 2 is dependent on Good C. As is obvious from a comparison of the values Country 2 is 9 times larger than Country 1. The standard measure of the Export Similarity index would be the sum of the minimum shares of each good as follows Good A 1%, Good B 5%, Good C 0%:

$$ESI = 6$$

Despite this reflecting correctly that these two countries are not very similar in terms of exports this measure does not capture the degrees of competition faced by country 1 exports from Country 2. To measure this we calculate  $MESI_1$ . The calculation would be as follows :

$$\begin{aligned} \text{Good A's contribution} &= (9/100) * 100 = 9 \\ \text{Good B's contribution} &= (45/100) * 100 = 45 \\ \text{MESI}_1 &= \text{Sum of above} = 54 \end{aligned}$$

This means that 54 per cent of country 1's exports face competition from country 2.

Alternatively if we were interested in the perspective from country 2 we could calculate  $MESI_2$  :

$$\begin{aligned} \text{Good A's contribution} &= (9/900) * 100 = 1 \\ \text{Good B's contribution} &= (45/900) * 100 = 5 \\ \text{MESI}_2 &= \text{Sum of above} = 6 \end{aligned}$$

This would correctly indicate that only 6 per cent of Country 2's exports face competition from country 1.



## Results and Discussion

In the following sections we present our results for 25 African countries for which we could obtain information for 1995/96 and 2003<sup>2</sup>. This work builds on that of (Jenkins and Edwards 2006) whose work also examines the Similarity in exports between China, and India and 18 Sub Saharan African countries. Since our work is in the context of NEPAD and the African Union we also include North African and island countries. Apart from 1995 where we provide a comparison to the ESI all our measurements are of the  $MESI_1$  where the 1 represents the African country.

We use our results to address three questions in addition to the comparison to the standard ESI. The first is what degree of competition do Chinese and Indian exports give African exports to the world. The second is what has been the direction of change. i.e. are exports of the selected countries becoming more dissimilar or similar to those of China and India. Lastly do the markets for exports matter when comparing degree of competition.

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<sup>2</sup> All the data used in the similarity indices are obtained from UNCTAD (2007). COMTRADE, UNCTAD. For four countries Gabon, Ghana, Nigeria and Senegal there is no 1995 data so we use 1996.

Export Similarity Indices – Exports to World compared to China

Country	1995	Modified 1995	2003	$\Delta$ 1995-2003
Algeria	5.94	37.98	20.45	-17.53
Burkina Faso	7.48	63.14	55.07	-8.07
Burundi	2.32	14.57	50.99	36.42
Cameroon	9.38	69.62	87.67	18.05
Central African Rep	5.16	93.38	77.01	-16.37
Cote d'Ivoire	12.44	49.08	47.69	-1.39
Egypt	30.21	95.55	91.66	-3.88
Ethiopia	3.88	36.56	71.49	34.93
Gabon	2.84	87.73	64.12	-23.61
Gambia	18.53	99.89	99.83	-0.06
Ghana	2.98	33.57	29.08	-4.49
Kenya	22.05	78.25	92.55	14.30
Madagascar	15.12	79.21	95.59	16.38
Malawi	12.11	53.50	96.50	42.99
Mauritius	29.05	94.36	92.52	-1.85
Morocco	30.57	87.27	95.81	8.54
Mozambique	11.95	98.81	99.22	0.41
Niger	9.97	44.53	49.25	4.71
Nigeria	1.97	27.40	9.71	-17.69
Senegal	6.73	98.25	99.55	1.31
Seychelles	6.98	99.98	100.00	0.01
Sudan	3.28	83.49	97.30	13.82
Togo	14.22	69.39	100.00	30.61
Uganda	7.27	28.89	94.64	65.75
Zambia	7.46	55.13	98.63	43.51
<b>Unweighted Average</b>	<b>11.20</b>	<b>67.18</b>	<b>76.65</b>	<b>9.47</b>

Table 3: Export Similarity Indices – Exports to World compared to China

Source: (UNCTAD 2007)

In Table 3 we present our first set of results for the similarity indices for exports to the world from the selected African countries and China for 1995 and 2003. These are calculated at the 3 digit level for SITC 3. The first thing we should note is that as expected the  $MESI_1$  is much larger than the standard ESI. On average the ESI is 11.2 while the MESI average is six times the size. While the ESI correctly shows that there is little similarity in the export structure of China and the African nations, the  $MESI_1$  shows that Chinese exports to the world provide significant amounts of competition to the African exports. As measured by the  $MESI_1$  17 countries out of 25 have an index of over 50. The unweighted average for 1995 is 67.18 and this goes up to 76.65 by 2003

Our second major finding is on direction of the similarity. Since China is growing so much more rapidly than the African countries we would expect the similarity index to become at least slightly less similar as China produces more manufactured goods. In fact the case is quite the opposite. Between 1995 and 2003 most African countries faced more competition for their exports from China. The only exceptions are the oil exporting countries which all show a drop in the degree of competition. A result we expect is explained by the rise in prices of oil over the period.

Export Similarity Indices – Exports to World compared to India

Country	1995	Modified 1995	2003	$\Delta$ 1995-2003
Algeria	5.15	9.52	12.67	3.15
Burkina Faso	9.64	55.15	93.82	38.67
Burundi	5.19	64.14	49.67	-14.47
Cameroon	10.00	37.61	43.26	5.66
Central African Rep	21.26	79.76	83.93	4.17
Cote d'Ivoire	14.61	43.60	44.68	1.07
Egypt	34.47	69.50	85.96	16.47
Ethiopia	7.13	96.84	99.57	2.73
Gabon	0.60	5.52	50.26	44.74
Gambia	19.47	99.83	99.70	-0.12
Ghana	3.30	16.18	21.52	5.34
Kenya	25.23	93.94	91.44	-2.50
Madagascar	22.62	97.20	88.31	-8.89
Malawi	15.39	58.02	85.20	27.18
Mauritius	23.80	76.96	98.27	21.32
Morocco	29.38	64.42	72.94	8.52
Mozambique	16.68	93.60	63.59	-30.01
Niger	10.93	33.73	32.76	-0.96
Nigeria	0.26	2.27	1.27	-1.00
Senegal	5.93	76.93	90.19	13.26
Seychelles	8.49	69.40	60.46	-8.95
Sudan	5.47	59.76	93.01	33.25
Togo	17.41	63.48	89.77	26.29
Uganda	9.78	89.92	93.11	3.18
Zambia	8.53	13.55	83.72	70.17
<b>Unweighted Average</b>	<b>13.23</b>	<b>58.83</b>	<b>69.16</b>	<b>10.33</b>

Table 4: Export Similarity Indices – Exports to World compared to India

Source: (UNCTAD 2007)

For India our results are similar with respect to the amount of competition faced by African countries from India and the fact that over the eight years from 1995 to 2003 the degree of

competition has increased. The surprising result is with regards to a comparison of the competition offered by China versus that from India, Jenkins and Edwards (2006) find that India has a more similar export structure to African countries than does China. This is a result we would expect given that the per capita income numbers for India are much closer to the African average than are those for China. While we find the same result when using the ESI (average 11.2 for China, 13.2 for India for 1995) when using the MESI, we find that actually China despite on average being more advanced has a higher degree of competition. The increase in competition over this period is also fairly substantial for India. On average the MESI with respect to India jumps over 10 points from an average of 59 to 69.

Our last set of calculations is a calculation of the MESI for different markets. For this paper we have focused on OECD countries that are large importers from Africa, namely France, USA, UK, Japan and Germany. As you would expect for these narrower markets the degree of competition decreased (See Figure A4 in the Appendix) relative to the world. For China the MESI ranges from 44 to 76 on average for 1995 and 38.5 to 76.6 for 2003. For every market but Germany the degree of competition, as measured by the MESI from 1995 to 2003, decreased. For India the results broadly have the same characteristics with the one exception that competition between African exports and Indian exports increases in all markets except Germany.

In examining on results we also find one other interesting fact. If you consider the history of trading countries that have a longer trade relationship with specific OECD countries tend to face less competition from both China and India, The first piece of evidence is that competition is much lower on average for the former colonial powers of France and Britain especially Vis-a-vis China. If you examine the results more closely in each market you find that the colonies (force) also face less competition. For example in 2003 the average MESI for the French market for former French colonies is 32 as compared to 38 for all African countries. A similar story can be told of former British colonies as compared to other African countries

To examine imports we use the same index with import figures. As we have noted because China and India are large economies sharing the same imports may result in higher prices for imports. Where these imports are for use in Export-led growth such as energy or machinery the impact may be to slow down the development of the Export led strategy.

We find that for imports regardless of whether they are from the world in general (see Table below) or from specific OECD countries, the degree of similarity is high often in most instances over 70 per cent, while there is some drop off between imports from the world and those from the five OECD nations, it is not as large as the change in exports. Over the period imports from the world have become less -similar to those of China but more similar to those of India.

Import Similarity Indices Imports from the World compared to China and Indian Imports

	1995	2003	Δ	1995	2003	Δ
Country	China			India		
Algeria	85.91	88.73	2.82	55.55	63.25	7.70
Burkina Faso	100.00	99.86	-0.14	84.89	82.89	-2.00
Burundi	100.00	94.56	-5.44	90.08	91.5	1.42
Cameroon	97.95	98.72	0.77	81.14	84.4	3.26
Central African Rep	99.43	100.00	0.57	82.81	89.21	6.40
Cote d'Ivoire	99.62	87.37	-12.25	71.96	70.72	-1.23
Egypt	88.96	85.35	-3.61	63.35	62.68	-0.66
Ethiopia	99.76	87.81	-11.95	75.72	77.33	1.61
Gabon	98.87	99.83	0.96	82.17	93.38	11.21
Gambia	100.00	100.00	0.00	79.32	90.2	10.88
Ghana	96.32	98.06	1.74	71.56	79.39	7.83
Kenya	99.14	98.12	-1.01	84.57	90.77	6.20
Madagascar	100.00	99.37	-0.63	87.51	91.41	3.90
Malawi	99.98	97.49	-2.50	83.72	87.6	3.88
Mauritius	97.88	99.30	1.42	75.12	90.31	15.18
Morocco	94.82	95.58	0.76	76.22	76.53	0.32
Mozambique	99.87	99.02	-0.85	75.42	85.51	10.09
Niger	99.93	96.18	-3.76	85.44	85.65	0.20
Nigeria	99.01	89.47	-9.54	73.09	67.96	-5.12
Senegal	98.77	94.24	-4.53	79.74	78.49	-1.25
Seychelles	99.96	99.56	-0.39	91.84	82.28	-9.56
Sudan	90.64	93.87	3.24	72.35	76.25	3.90
Tanzania	92.98	98.25	5.27	77.66	89.72	-1.41
Togo	100.00	100.00	0.00	85.30	90.79	4.42
Uganda	96.35	96.47	0.12	78.00	89.86	12.79
Zambia	99.67	97.11	-2.56	87.46	91.53	2.40
<b>Unweighted Average</b>	97.53	95.93	-1.60	78.92	82.72	3.55

Table 5: Import Similarity Indices Imports from the World compared to China and Indian Imports

Source: UNCTAD (2007)

## **Lessons.**

Because of the fairly aggregate level of analysis most of our conclusions must be fairly general. we present these in two parts.

It is clear from our results that China and India despite growing rapidly have increasingly become ever bigger competitors to African exporters.

However the degree of competitiveness differs with different markets with some evidence suggesting that where African countries have had a longer relationship with a country the degree of competition is lower.

This second results suggests that African nations may want to explore. markets where they have networks and long relationships and consider whether these give them sufficient advantage to be competitive with China and/or India.

Lastly both African researchers and Policymakers need to consider examining move. Closely at country and more disaggregated commodity level the degree of competition provided by China and India.

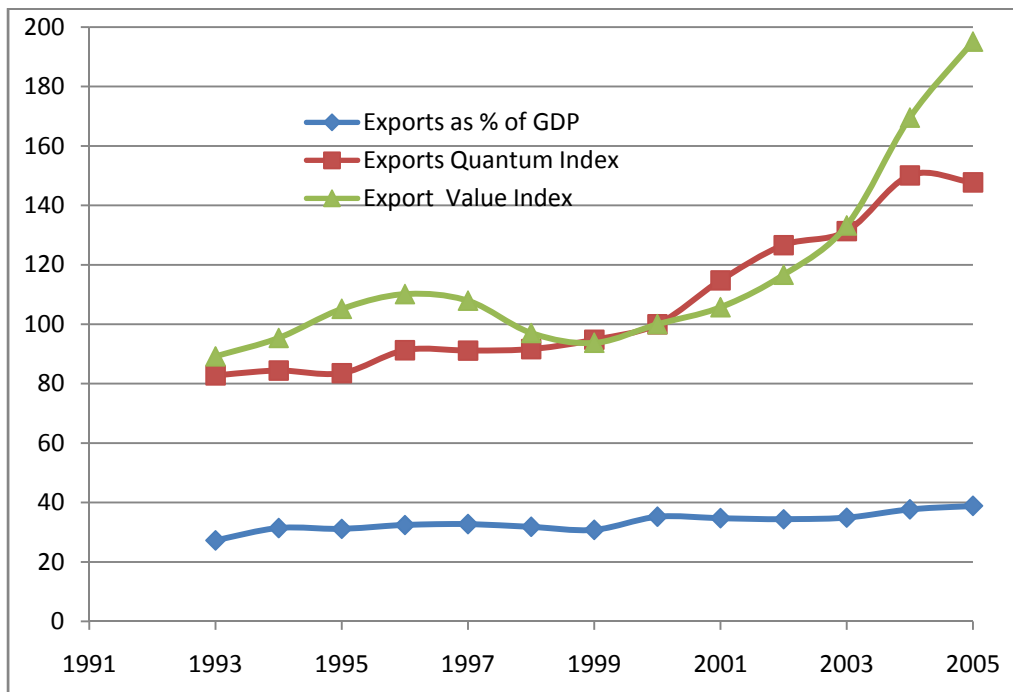
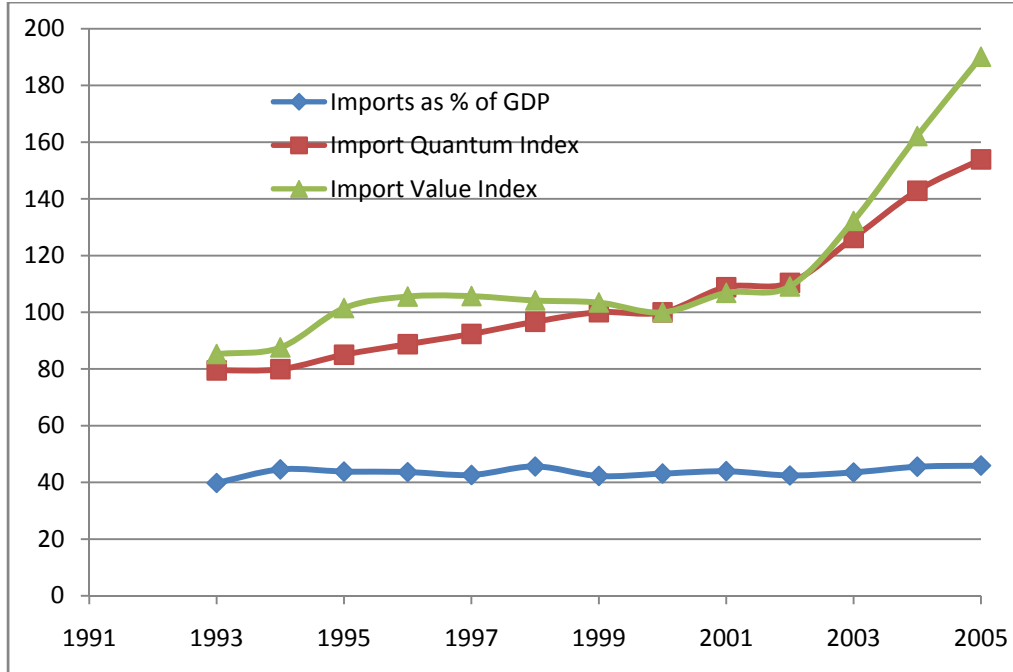


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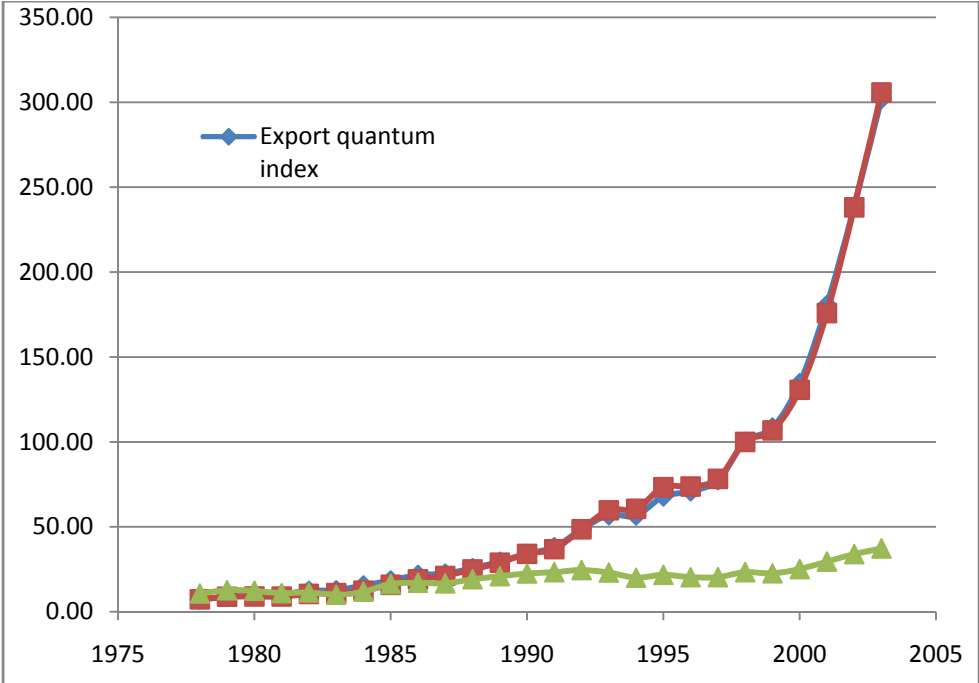
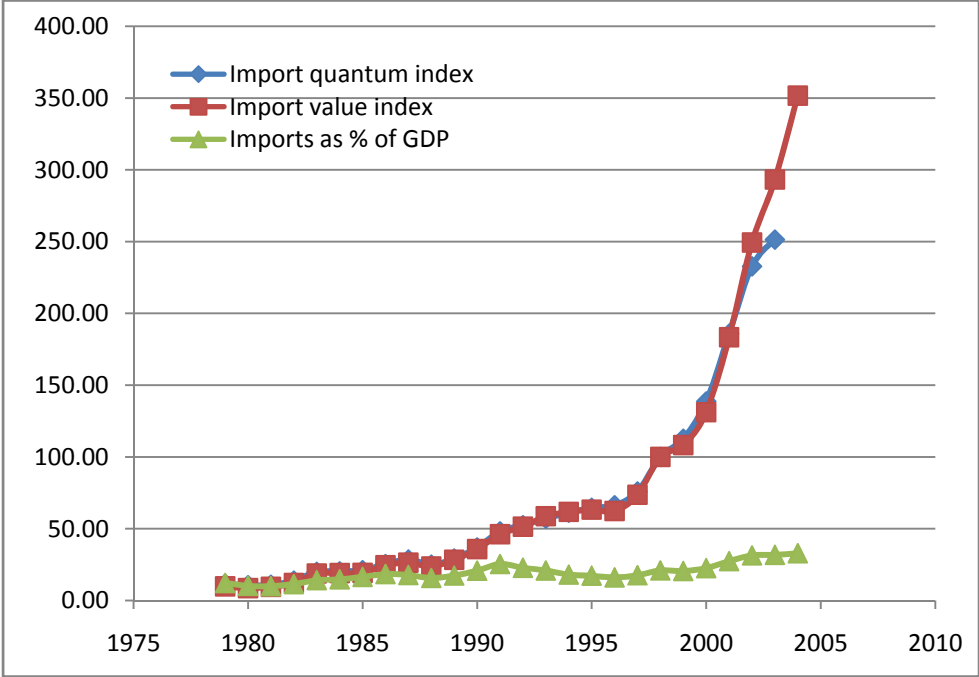
APPENDIX

Figures A1 – African Imports and Export Indices



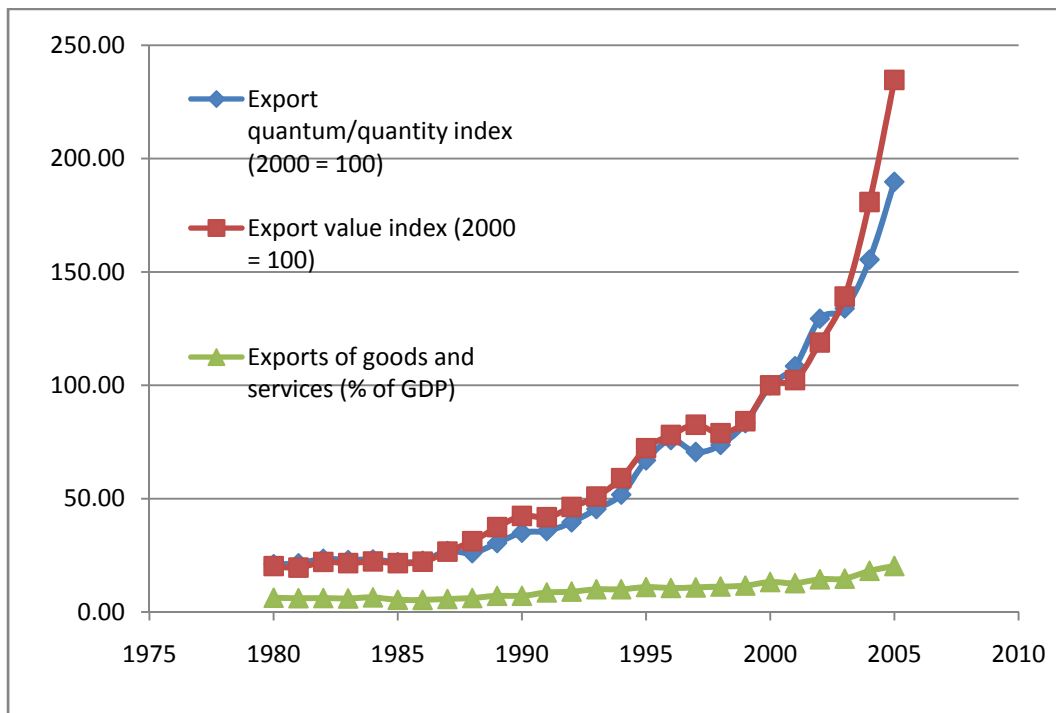
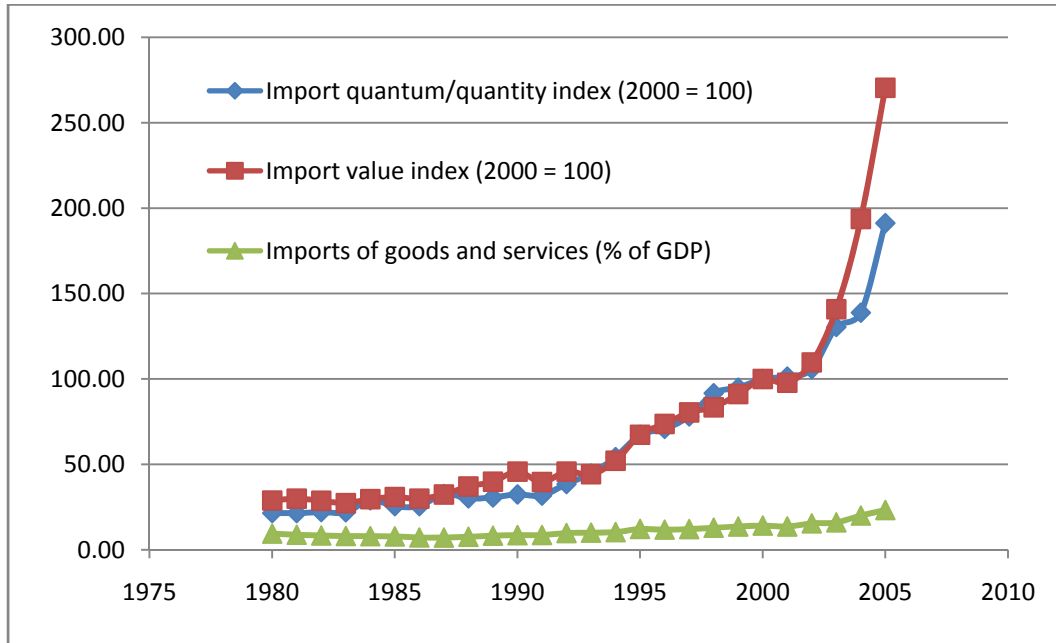
Source: IBRD (2007)

Figures A2 Chinese Import and Export Indices



Source: IBRD (2007)

Figures A3 Indian Import and Export Indices



Source: IBRD (2007)

Figure A4: Export Similarity Indices - Exports to Industrialized Countries compared to China

Country	1995	2003	Δ	1995	2003	Δ	1995	2003	Δ	1995	2003	Δ	1995	2003	Δ
	France			Germany			Japan			UK			USA		
Algeria	2.9	2.1	-0.7	6.1	0.5	-5.7	54.4	9.2	-45.2	4.7	3.2	-1.5	19.5	7.0	-12.5
Burundi	6.8	51.3	44.5	3.4	85.6	82.2	100.0	99.4	-0.6	6.9	2.8	-4.0	43.0	66.1	23.2
Cameroon	3.4	9.0	5.6	3.0	33.1	30.1	98.5	100.0	1.5	41.3	49.7	8.4	69.1	91.4	22.3
Central African Rep	20.9	9.3	-11.6	36.0	9.8	-26.2	32.9	99.6	66.6	1.7	42.5	40.9	99.5	100.0	0.5
Ethiopia	3.5	9.5	6.0	8.4	17.9	9.6	6.0	18.1	12.1	15.2	47.0	31.8	16.5	25.3	8.8
Gabon	74.9	17.8	-57.1	100.0	70.8	-29.2	66.5	100.0	33.5	100.0	93.2	-6.8	100.0	60.1	-39.9
Gambia	98.3	98.2	-0.1	99.6	84.5	-15.1	100.0	82.9	-17.1	99.4	91.3	-8.1	86.0	96.7	10.7
Ghana	100.0	9.7	-90.3	57.3	27.5	-29.8	62.9	7.4	-55.6	34.7	8.4	-26.3	98.3	73.7	-24.6
Cote d'Ivoire	8.0	12.2	4.1	3.3	7.8	4.5	49.3	4.7	-44.6	14.8	18.2	3.3	28.5	20.4	-8.1
Kenya	82.5	100.0	17.5	21.8	59.0	37.2	73.1	100.0	26.9	20.7	32.6	11.9	74.9	71.1	-3.8
Madagascar	48.9	21.0	-27.9	39.5	43.3	3.8	99.9	100.0	0.1	69.9	74.8	4.9	81.6	22.5	-59.2
Malawi	4.7	23.3	18.6	17.0	23.4	6.4	17.4	28.8	11.5	91.7	34.5	-57.2	32.4	52.1	19.8
Mauritius	59.2	95.2	36.0	98.1	85.6	-12.5	100.0	100.0	0.0	28.5	44.6	16.1	99.6	99.7	0.2
Morocco	27.8	42.2	14.4	60.8	92.5	31.7	99.8	99.9	0.1	54.4	87.3	33.0	66.0	68.1	2.1
Mozambique	49.4	65.7	16.4	57.5	49.0	-8.5	100.0	99.9	-0.1	90.7	26.4	-64.3	92.4	98.6	6.2
Niger	83.2	1.1	-82.1	97.4	13.6	-83.8	97.1	0.5	-96.6	98.8	96.6	-2.2	100.0	48.9	-51.1
Nigeria	100.0	1.1	-98.9	100.0	0.1	-99.9	100.0	75.8	-24.2	88.3	70.2	-18.1	66.8	2.5	-64.4
Senegal	99.9	47.4	-52.5	100.0	55.7	-44.3	99.9	100.0	0.1	99.9	78.0	-22.0	99.9	99.9	0.0
Seychelles	99.9	4.8	-95.1	30.8	48.6	17.8	100.0	100.0	0.0	12.6	7.5	-5.1	99.9	99.9	0.0
Sudan	15.4	46.8	31.4	32.2	79.0	46.8	61.8	100.0	38.2	42.3	10.9	-31.4	63.3	100.0	36.7
Togo	41.7	92.1	50.4	11.7	84.4	72.6	100.0	100.0	0.0	72.6	98.0	25.4	99.3	99.0	-0.3
Uganda	2.9	100.0	97.1	12.6	94.6	82.0	100.0	100.0	0.0	8.7	16.7	8.0	100.0	100.0	0.0
Egypt	53.7	57.4	3.8	71.0	84.3	13.3	100.0	89.9	-10.1	62.5	57.9	-4.6	98.1	94.0	-4.1
Burkina Faso	10.6	35.2	24.7	98.5	99.5	1.0	100.0	99.8	-0.2	99.7	92.3	-7.4	93.4	99.6	6.2
Zambia	1.1	10.8	9.7	99.4	99.4	0.0	21.4	100.0	78.6	93.8	20.7	-73.1	22.3	99.5	77.3
<b>Unweighted Average</b>	<b>44.0</b>	<b>38.5</b>	<b>-5.4</b>	<b>50.6</b>	<b>54.0</b>	<b>3.4</b>	<b>77.6</b>	<b>76.6</b>	<b>-1.0</b>	<b>54.2</b>	<b>48.2</b>	<b>-5.9</b>	<b>74.0</b>	<b>71.9</b>	<b>-2.2</b>

Figure A5: **Export Similarity Indices -Exports to Industrialized Countries compared to India**

	1995	2003	Δ	1995	2003	Δ	1995	2003	Δ	1995	2003	Δ	1995	2003	Δ
	France			Germany			Japan			UK			USA		
Algeria	1.32	2.96	1.64	0.04	0.67	0.63	1.02	8.62	7.59	2.24	9.75	7.51	0.08	3.92	3.83
Burkina Faso	10.13	96.94	86.81	100.00	99.00	-1.00	93.57	97.06	3.49	91.86	29.40	-62.46	93.38	99.99	6.61
Burundi	16.67	35.42	18.75	100.00	99.46	-0.54	99.21	99.81	0.60	15.74	99.59	83.86	38.96	99.59	60.63
Cameroon	4.37	99.91	95.54	3.27	90.67	87.39	57.69	99.37	41.67	57.66	39.25	-18.41	3.41	99.86	96.46
Central African Rep	24.58	15.26	-9.32	29.00	67.71	38.71	37.93	99.38	61.45	1.33	78.83	77.49	99.48	6.26	-93.22
Cote d'Ivoire	7.29	13.48	6.19	52.66	51.87	-0.79	11.37	54.02	42.65	19.46	87.00	67.54	12.71	69.83	57.11
Egypt	41.41	93.74	52.33	41.09	74.29	33.20	69.60	99.70	30.09	60.69	98.02	37.33	46.45	100.00	53.54
Ethiopia	25.72	37.43	11.70	51.95	1.39	-50.55	40.39	99.57	59.17	99.70	10.76	-88.94	99.99	100.00	0.01
Gabon	20.98	9.25	-11.73	5.22	5.71	0.50	88.53	4.48	-84.06	99.98	13.92	-86.05	1.04	4.86	3.81
Gambia	100.00	51.76	-48.24	100.00	66.17	-33.83	99.29	72.10	-27.19	98.41	68.18	-30.22	100.00	86.94	-13.07
Ghana	30.27	81.23	50.95	12.19	50.99	38.80	14.15	28.08	13.93	19.93	70.92	50.99	49.62	65.78	16.16
Kenya	34.65	96.40	61.75	89.43	94.47	5.04	46.92	82.86	35.94	37.33	99.90	62.57	98.26	96.69	-1.57
Madagascar	47.22	6.44	-40.78	96.57	14.14	-82.43	58.24	6.04	-52.20	75.80	7.51	-68.29	86.23	26.08	-60.15
Malawi	8.54	100.00	91.46	0.27	84.29	84.02	24.93	97.57	72.64	96.92	32.93	-63.99	13.97	79.10	65.12
Mauritius	43.25	26.92	-16.33	98.00	46.59	-51.42	91.48	98.68	7.20	21.51	88.10	66.60	96.27	32.88	-63.39
Morocco	22.37	36.32	13.95	95.39	73.42	-21.97	55.49	7.74	-47.75	38.46	71.30	32.85	41.93	49.71	7.78
Mozambique	99.72	64.84	-34.88	99.30	98.02	-1.29	57.54	99.93	42.39	94.76	39.23	-55.54	99.19	98.33	-0.86
Niger	64.38	23.89	-40.49	100.00	78.32	-21.68	97.41	92.78	-4.64	98.84	80.51	-18.34	100.00	54.51	-45.49
Nigeria	0.56	76.30	75.74	0.83	62.25	61.42	16.53	99.68	83.16	30.46	92.30	61.84	1.07	99.46	98.39
Senegal	92.55	1.12	-91.43	99.87	36.13	-63.75	100.00	0.53	-99.47	99.95	99.99	0.04	97.20	63.29	-33.90
Seychelles	55.59	0.04	-55.55	99.19	0.10	-99.10	5.57	0.00	-5.57	11.19	11.67	0.48	91.77	0.40	-91.37
Sudan	17.75	37.66	19.90	46.41	50.58	4.17	80.93	99.80	18.88	42.69	99.98	57.29	74.03	99.90	25.87
Togo	53.57	13.91	-39.65	95.43	20.50	-74.93	99.22	100.00	0.78	100.00	11.26	-88.74	13.29	97.70	84.41
Uganda	31.78	89.77	57.99	30.99	46.08	15.09	98.64	29.87	-68.77	14.80	14.74	-0.06	100.00	100.00	0.00
Zambia	0.58	27.51	26.93	0.19	99.71	99.52	98.73	21.92	-76.81	89.53	15.84	-73.69	7.06	69.13	62.07
<b>Unweighted Average</b>	<b>34.21</b>	<b>45.54</b>	<b>11.33</b>	<b>57.89</b>	<b>56.50</b>	<b>-1.39</b>	<b>61.77</b>	<b>63.98</b>	<b>2.21</b>	<b>56.77</b>	<b>54.84</b>	<b>-1.93</b>	<b>58.62</b>	<b>68.17</b>	<b>9.55</b>

Figure A6: Import Similarity Index - Imports from Industrialised Countries compared to China

	1995	2003	Δ	1995	2003	Δ	1995	2003	Δ	1995	2003	Δ	1995	2003	Δ
	France			Germany			Japan			UK			USA		
Algeria	37.47	55.23	17.76	89.34	94.02	4.68	94.20	100.00	5.80	78.75	82.72	3.97	76.95	77.66	0.72
Burkina Faso	78.43	87.64	9.21	93.49	93.09	-0.40	99.98	99.34	-0.64	97.66	96.39	-1.27	93.40	90.92	-2.48
Burundi	80.02	91.69	11.66	94.84	-	-	99.99	99.99	0.00	68.45	92.76	24.31	93.53	99.88	6.35
Cameroon	64.09	76.63	12.54	87.24	96.35	9.11	99.99	99.99	0.00	86.82	91.50	4.68	98.29	98.37	0.08
Central African Rep	77.23	64.55	-12.68	99.30	74.47	-24.83	99.99	99.88	-0.11	99.34	99.01	-0.33	93.73	87.37	-6.36
Cote d'Ivoire	58.84	43.99	-14.85	78.56	92.50	13.94	99.99	98.97	-1.02	82.89	25.93	-56.97	71.62	83.46	11.84
Egypt	63.89	63.91	0.02	88.24	97.56	9.31	97.69	99.98	2.29	79.09	84.40	5.30	87.21	53.67	-33.54
Ethiopia	86.28	48.13	-38.14	95.21	95.38	0.17	87.82	99.67	11.85	93.01	50.64	-42.37	82.51	37.33	-45.18
Gabon	99.07	85.47	-13.60	99.99	98.45	-1.54	99.99	99.08	-0.91	99.99	97.79	-2.19	100.00	99.72	-0.28
Gambia	69.16	76.76	7.60	96.93	59.45	-37.48	99.96	90.20	-9.75	89.32	88.33	-1.00	99.93	89.14	-10.79
Ghana	100.00	77.06	-22.94	98.39	95.80	-2.59	100.00	100.00	0.00	100.00	84.83	-15.17	98.87	76.71	-22.16
Kenya	89.60	99.59	9.99	97.04	95.84	-1.21	99.53	99.79	0.26	71.83	85.96	14.13	98.56	97.43	-1.12
Madagascar	79.98	82.76	2.78	95.78	99.33	3.56	99.99	98.94	-1.05	91.20	96.86	5.66	97.38	91.19	-6.19
Malawi	83.16	70.97	-12.19	96.32	98.85	2.54	99.98	99.98	0.00	43.94	92.78	48.84	85.93	84.92	-1.02
Mauritius	62.73	83.48	20.74	83.55	99.95	16.40	100.00	99.77	-0.22	73.71	91.98	18.26	99.49	99.99	0.50
Morocco	52.07	58.01	5.94	86.33	88.73	2.40	100.00	100.00	0.00	60.63	52.81	-7.83	88.58	87.04	-1.54
Mozambique	94.24	97.85	3.61	85.97	74.86	-11.11	92.32	98.78	6.45	84.21	92.88	8.67	77.07	87.49	10.42
Niger	66.98	82.28	15.29	91.45	95.84	4.39	99.99	99.68	-0.30	91.15	85.00	-6.15	98.08	60.24	-37.84
Nigeria	100.00	83.15	-16.85	98.94	81.70	-17.23	99.99	95.71	-4.28	99.99	61.14	-38.85	99.78	60.17	-39.62
Senegal	99.33	75.02	-24.31	100.00	90.14	-9.85	100.00	99.99	-0.01	99.99	45.95	-54.04	99.99	84.11	-15.88
Seychelles	99.21	69.28	-29.93	98.41	99.89	1.48	99.96	99.88	-0.07	90.26	83.63	-6.63	98.98	99.83	0.84
Sudan	28.57	99.55	70.98	76.38	99.44	23.06	100.00	99.84	-0.16	80.23	89.65	9.42	99.15	96.65	-2.51
Tanzania	79.83	93.32	13.49	90.26	96.59	6.33	96.48	97.78	1.30	39.06	87.96	48.90	95.16	74.16	-21.00
Togo	74.76	74.64	-0.12	95.11	92.72	-2.38	99.98	99.99	0.01	87.87	70.25	-17.61	91.35	99.86	8.51
Uganda	65.25	85.78	20.53	89.03	94.89	5.87	100.00	99.99	-0.01	78.25	84.56	6.31	81.82	53.97	-27.85
Zambia	97.55	85.74	-11.81	94.66	91.32	-3.34	99.98	99.71	-0.28	89.68	68.85	-20.83	93.30	88.69	-4.61
Unweighted average	76.45	77.40	0.95	92.34	91.89	-0.35	98.76	99.11	0.35	82.97	80.17	-2.80	92.33	83.08	-9.26

Figure A7: Import Similarity Index - Imports from Industrialised Countries compared to India

	1995	2003	Δ	1995	2003	Δ	1995	2003	Δ	1995	2003	Δ	1995	2003	Δ
Country	France			Germany			Japan			UK			USA		
Algeria	15.0	22.0	6.9	74.5	77.1	2.6	65.1	56.5	-8.6	75.1	66.6	-8.5	36.1	58.2	22.1
Burkina Faso	52.0	69.0	17.0	89.7	72.8	-16.9	85.0	97.0	12.0	91.3	93.4	2.0	64.2	79.8	15.6
Burundi	52.6	92.6	39.9	72.7	-	-	71.9	67.9	-4.1	67.5	97.8	30.3	70.3	99.9	29.6
Cameroon	52.5	54.0	1.6	73.3	61.7	-11.6	51.7	58.1	6.5	90.1	95.4	5.4	79.7	94.5	14.8
Central African Rep	58.6	56.5	-2.1	66.5	80.8	14.3	57.6	60.0	2.4	99.8	99.0	-0.8	98.6	72.8	-25.8
Cote d'Ivoire	36.3	24.6	-11.7	76.1	74.6	-1.5	50.7	79.1	28.5	85.2	44.1	-41.0	61.8	76.2	14.3
Egypt	38.0	63.3	25.3	80.3	85.8	5.5	92.4	71.3	-21.1	79.4	79.1	-0.4	31.8	38.5	6.7
Ethiopia	44.1	42.7	-1.4	79.2	85.3	6.1	65.6	56.3	-9.3	77.0	45.9	-31.1	49.4	25.2	-24.2
Gabon	89.6	62.0	-27.6	90.0	87.0	-3.1	77.3	87.7	10.4	97.9	96.0	-1.9	98.7	94.7	-4.0
Gambia	45.2	73.4	28.2	96.9	43.3	-53.7	99.1	90.1	-9.0	88.2	98.3	10.1	99.4	75.0	-24.3
Ghana	97.5	61.1	-36.3	71.8	51.1	-20.7	55.2	71.2	16.0	91.9	75.9	-16.0	80.1	53.6	-26.6
Kenya	69.2	77.8	8.6	86.1	91.1	5.0	57.2	49.4	-7.8	70.8	81.3	10.4	83.6	89.0	5.4
Madagascar	57.5	68.3	10.8	71.6	86.6	15.1	61.2	48.1	-13.1	95.1	96.9	1.8	91.7	88.0	-3.7
Malawi	55.4	59.0	3.6	53.1	97.5	44.4	48.5	54.3	5.8	58.9	85.6	26.7	74.1	81.8	7.7
Mauritius	34.4	64.0	29.7	79.9	96.1	16.2	68.5	79.3	10.8	70.9	86.9	16.0	94.0	95.4	1.4
Morocco	22.3	27.1	4.8	74.8	68.7	-6.1	67.8	70.3	2.5	59.7	44.7	-15.0	49.8	66.6	16.8
Mozambique	73.2	94.8	21.6	85.2	72.4	-12.8	34.3	52.8	18.4	50.5	91.1	40.6	47.5	48.9	1.4
Niger	46.3	71.3	25.0	95.9	67.3	-28.6	83.3	88.7	5.4	29.1	44.0	14.8	75.1	78.0	2.9
Nigeria	95.5	56.5	-39.0	94.8	39.1	-55.7	84.2	42.8	-41.4	95.2	43.2	-52.0	81.6	39.4	-42.2
Senegal	89.2	47.3	-41.8	99.2	67.0	-32.2	79.7	82.7	3.1	91.9	37.1	-54.8	83.0	64.7	-18.3
Seychelles	68.9	39.4	-29.5	98.5	99.7	1.2	84.9	92.8	7.9	80.8	82.7	1.9	99.0	98.7	-0.2
Sudan	26.4	75.3	48.9	71.3	84.4	13.0	27.5	52.3	24.7	74.9	83.3	8.4	51.7	53.1	1.4
Tanzania	94.2	88.0	-6.2	83.3	93.6	10.3	46.6	48.2	1.7	39.4	82.4	43.0	74.7	84.2	9.5
Togo	54.7	53.2	-1.4	93.0	88.8	-4.2	81.1	80.4	-0.7	84.2	85.7	1.5	82.9	86.2	3.3
Uganda	50.6	84.9	34.3	80.4	96.0	15.6	45.0	56.6	11.6	76.7	82.3	5.7	90.1	47.5	-42.6
Zambia	87.1	85.6	-1.5	94.0	90.7	-3.3	70.7	65.3	-5.4	91.1	82.6	-8.5	92.1	70.8	-21.3
Unweighted Average	57.9	62.1	4.1	82.0	78.3	-4.0	65.9	67.7	1.8	77.4	77.0	-0.4	74.7	71.6	-3.1



