CHAPTER 1

Trade and Trade Costs in Africa: An Overview

Until the global financial crisis of 2008, world trade and investment flows had grown faster than world Gross Domestic Product (GDP). An important feature of the ongoing globalization was the rising share of trade in unfinished goods, reflecting the increasing importance of outsourcing in the global supply chain. These trends are likely to continue once the global financial storm is over. During the period 1976–2006, Sub-Saharan Africa's (SSA) share of world exports dropped by nearly two-thirds, from 2.9 percent in 1976 to 0.9 percent in 2006.[1] This implies that if SSA's share of world exports had remained constant since the mid-1970s, its export revenue would be almost 10 times larger than its current value.

[1] Figures for SSA computed from COMTRADE through the World Integrated Trade Solution (WITS) Database. For Africa, statistics from UNCTAD (2009a: 169).

In 2007, Africa's trade volume — including South Africa — stood at US$ 805 billion, which represents 2.9 percent of global trade.

Many of the slowest-growing economies in Africa are either engaged in conflict or have recently emerged from conflict, which seriously affects their ability to integrate into the world trading system. Geography too plays a major role in shaping the economic fortunes of African countries. Fifteen are landlocked countries (LLCs), making them both physically and economically more remote from major world markets, which contributes to their high trade costs. And it is these high trade costs that isolate countries and prevent them from reaping the benefits of globalization, as their exports become less competitive and imports more expensive for essentials such as fuel and spare parts. In a world where outsourcing is increasing rapidly, this is a formidable handicap. For example, in the Central African Republic and Chad, importers pay cost-insurance-freight (cif) prices that are 1.3 to 1.8 times greater than the cost of the products at point of origin. As to exports from these two countries, cif prices on arrival in Europe are 1.7 times the production cost of timber and 2.8 times that for coffee.[2]

Many African nations have reacted to these adverse conditions by reducing the policy-imposed barriers to trade, which contribute significantly to high trade costs. However, a number of additional factors — low volumes of trade, barriers in exporting markets, weak domestic institutions, and especially weak physical infrastructures along the logistics chain — serve to isolate African countries from a successful integration into the world trading system. Indeed, African countries face some of the highest trade costs in the world and several estimates put African freight costs at twice the world average.

Seaborne transshipment is the main mode of transport for international trade, accounting for about 80 percent of the total global volume. The maritime nexus is particularly important for African countries that specialize in low-value goods, which are rarely transported by air.

With the recent growth in African trade accompanying the continent's high GDP growth experienced over the past years, ports, and more generally overall trade logistics, have grown in importance for the region in the worldwide race to increase competitiveness. Africa's real GDP growth remained above 5 percent for the period 2001–2008 (standing at 5.1 percent in 2008 — down by less than 1 percent from 2007). However, as a result of the financial crisis, this is expected to decline to 2.8 percent in real terms in 2009.

This pursuit of lower trade costs has seen the share of inventory expenditures in total trade costs drop sharply. For the United States, this change has reduced the share of inventory expenditures in total logistics expenditures from one-half to one-third over the past 20 years. As a result, transport expenditures have increased from less than half to almost two-thirds of total logistics expenditures. The same trends can be observed around the world; indeed, for many developing countries, international transport costs are now two to three times higher than the tariffs they face in developed countries.

[2] See World Bank (1995).

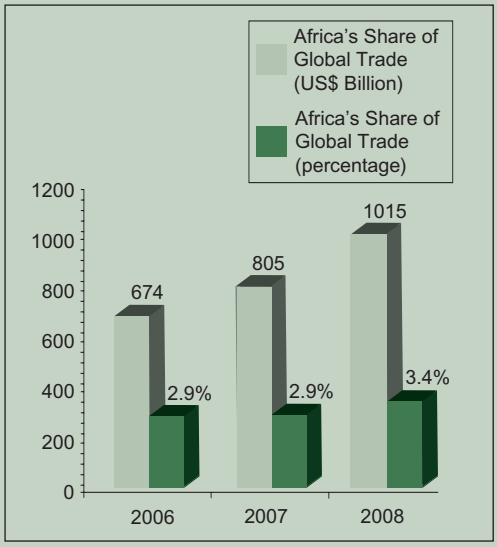
Improving logistics to reduce costs is essential if African countries are to scale up their competitiveness and participate in the prosperity created by the world trading system. Since the bulk of African trade is extra-continental and since it transits through ports, maritime costs are particularly important. This report diagnozes the problems faced by the maritime sector and makes recommendations for improvements. This chapter gives an overview of Africa's trade, its policies, and the policy barriers African exports face in destination markets. It lays the groundwork for the chapters that follow by identifying the components of trade costs, and especially of maritime transport costs, along the logistics chain. The chapter also draws on relevant international experience to situate Africa's trade costs in the broader international context.

African Trade: An Overview

The share of South–South transactions in world trade has doubled since 1990, while the share of manufactured goods in developing countries' merchandise trade has increased from 20 percent to 80 percent over the past two decades. It is these goods that are largely shipped in containers. Figure 1.1 shows the evolution of Africa's share of global trade from 2006–2008, revealing an upward trend from US$ 674 billion in 2006 to US$ 1,015 billion in 2008. This is largely due to increased demand for Africa's raw materials, particularly minerals and ores, from China and India.[3]

[3] According to recent estimates by UNCTAD (2009a, Table 2), while global exports fell from 8.5 percent in 2006 to 2.0 percent in 2008, Africa's export position showed a reverse trend, growing slightly from 1.5 percent in 2006 to 3.0 percent in 2008.

Figure 1.1: Africa's share of global trade, 2006–2008



Source: ADB Statistics Department (2009).

Whereas in 2000, Sino-African trade volume stood at US$ 10 billion, by 2008 it had increased tenfold to US$ 106 billion,[4] itself a 48 percent increase over 2007. Currently, 30 percent of Africa's trade is with Asia, which has become as important as its traditional trading partners, the European Union (EU) and the United States (US). Given that China (and Asia more generally) imports raw materials and exports manufactures — which is the opposite trade pattern of African countries — complementarities between the two regions are great and the scope for an expansion of commerce is strong. However, this trade cannot

[4] http://www.chinadaily.com.cn/china/2009-02/11/content_7463268.htm

sustain growth if the transport logistics, especially the bottlenecks in the maritime nexus of many African countries, are not improved.

Trade performance is not uniform across Africa, with some countries performing markedly better than others. From a subregional perspective, North Africa, East Africa, and Southern Africa enjoy higher trade volumes than West and Central Africa. There are a number of reasons for this disparity; the Central Africa subregion is largely landlocked, which increases transport costs — and therefore overall trade costs — particularly with overseas markets. Moreover, as Chapter 2 demonstrates, ports in West Africa have historically lagged in performance compared to those in the other subregions.

Furthermore, the worldwide surge in South–South trade over the past 20 years has only partially translated into a correspondingly high growth in intra-African trade flows. One reason that is frequently cited is high tariffs. However, not only have African countries lowered their MFN tariffs, but they have also established multiple Free Trade Areas (FTAs) across the continent, resulting in an elimination of tariffs for much African trade. Table 1.1 shows that intra-African trade as a share of total African trade stood at less than 10 percent for the period 2004–2006. This is well below the average for intraregional trade in other regions, both developed and developing, and indicates that trade between Africa and the rest-of-the-world is growing faster than trade within Africa.

There are several explanatory factors underlying these trends. Among them, the lack of complementarities among African countries is well-known, and this contributes to the still relatively low volume of intraregional trade. Trade barriers other than tariffs, such as rules of origin that accompany Free Trade Areas (FTAs) may also represent a barrier. However, it is likely that the high trade costs identified in this report have played a major role in constraining growth in intraregional trade volumes.

Table 1.1: Intraregional imports and exports as a proportion of total trade, 2004–2006 averages (%)

	Imports	Exports
Africa	9.6	8.7
Developing America	20.9	18.5
Developing Asia	48.1	45.5
Developed America	23.3	39.8
Developed Europe	68.1	71.4

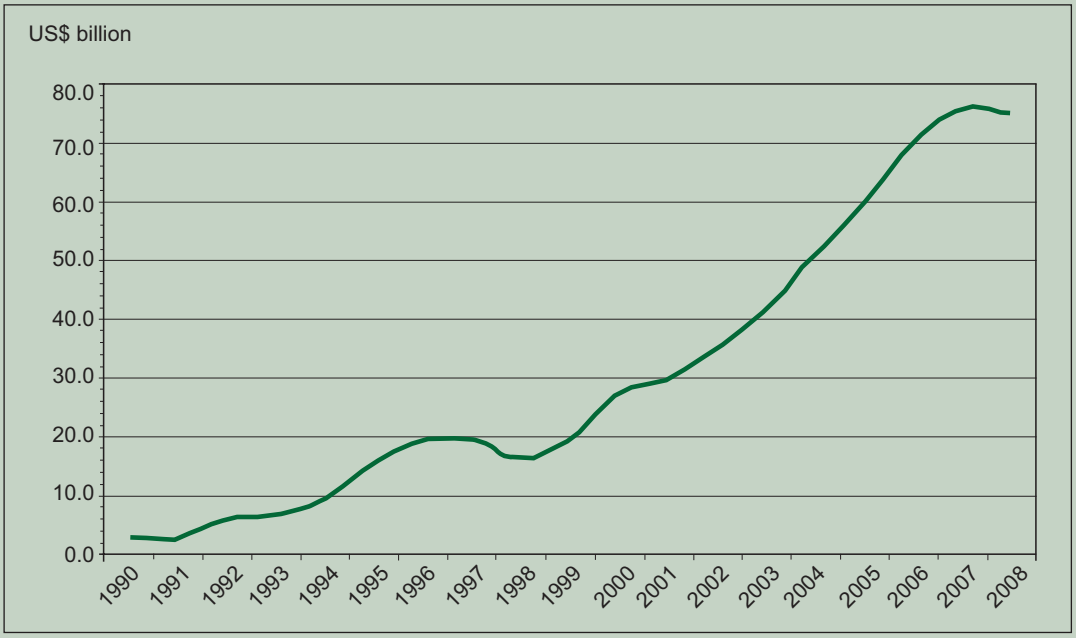
Source: UNCTAD (2009b: 21).

It is worth bearing in mind that although the proportion of Africa's intraregional trade remains low in comparison with other regions, it has increased considerably over the years, albeit from a very low initial level. It was stable through to the early 1970s before falling sharply in 1978, when intra-African exports were worth only 2.9 percent of total African exports (UNCTAD 2009b: 20). Recovery began slowly in the 1980s, but picked up in the 1990s and continued on an upward trend, until it started to level off in 2007 (see Figure 1.2). This secular upward trend can be attributed to three main events. First, the adoption of structural adjustment programs in many countries opened up African economies, creating a more

favorable environment. Second, the ending of apartheid in South Africa opened the way to trading opportunities with its neighbors. Finally, the intensification of Regional Trade Arrangements such as AMU in 1989, SADC in 1992, and COMESA in 1994 has led to increased regional cooperation, integration and trade. Currently, over three-fourths of intra-African trade takes place within regional trading blocs (UNCTAD, 2009b: 24), which suggests that they should be used for deeper intra-African trade.

Overall, considerable potential exists for Africa to scale up its trade flows both within the region and with the rest of the world, especially Asia. However, as this report makes clear, to achieve this goal, a number of obstacles will need to be removed. In particular, the evidence points to supply-side constraints, many relating to a rising gap in trade costs compared to other global regions. This analysis is substantiated by the evidence on other components of trade costs reviewed in this chapter; in particular, the recent progress made by African governments in reducing tariff and non-tariff barriers (NTBs). The fact that such measures have not led to an anticipated high growth in trade volumes points to the criticality of trade costs other than policy-imposed trade barriers.

Figure 1.2: Evolution of intra-African trade, 1990–2008



Source: ADB Statistics Department, 2009.

The Geography of African Trade

The gravity model (see Box 1.1) is the preferred approach for analyzing the volume of trade and is especially suitable for a report that focuses on trade costs and the efficiency of trade ports. In essence, the gravity model predicts that the volume of trade between two countries i and j is proportional to the size of those countries' GDPs[5] and inversely proportional to the trade costs (TC) between the two countries:

$$T_{ij} = \frac{(GDP_i)(GDP_j)}{tc_{ij}} \approx \frac{(GDP_i)(GDP_j)}{\overline{DIST}_{ij}}$$

where trade costs are usually proxied by the bilateral distance (DIST) (relative to the average distance across all trading partners) between the trading partners. The gravity model predicts that a relative fall in border-related costs (as happened under the current wave of globalization that has reduced communication and transport costs, and barriers to trade imposed by governments) should lead countries to increase the volume of international trade relative to internal trade. This prediction is largely borne out by the data: since 1980, world production has increased by 75 percent while international trade has increased by 300 percent (Berthelon and Freund, 2008). The gravity model also predicts that a reduction in all costs related to distance (including better information about distant markets) will lead countries to increase their volume of trade with distant partners. Conversely, if the relative costs associated with distance increase, countries will shift their trade toward closer partners. Moreover, the model predicts that the patterns of bilateral trade will depend on the evolution of trade costs between the partners relative to the evolution of all trade costs. Consequently, an all-round decrease in trade costs will not necessarily lead to an increase in bilateral trade for all countries if the trade costs between a group of countries (for example, African countries) are falling less rapidly than elsewhere.

Figure 1.3 tests this prediction by computing the evolution of the Potential Trade Ratio (PTR), that is, the average distance of trade that would be observed in a frictionless world according to the gravity model divided by the actual average distance of trade. If the gravity model is an approximate description of the determinants of aggregate bilateral trade, an increase in this ratio is then an indirect indicator that the average costs of trade are rising. As expected, Figure 1.3 shows that for the low-income (LI) group of countries (the 40 countries with the lowest per capita income), the bulk of their trade is with more distant partners. This is especially the case for the LI African group, whose average distance of partners was almost twice that of the entire sample of countries in 1970 (7,900 km vs. 4,568 km). Since potential trade, as predicted by the gravity model, has not increased significantly for the LI countries (the effect of the increasing weights of relatively close Asian partners is small), the rising PTR for these countries — especially

[5] For example, South Africa is a more important trading partner to Madagascar than Madagascar is to South Africa. This is predicated on the fact that in 2007, South Africa accounted for 3.6 percent of Madagascar's trade, while Madagascar accounted for only 0.1 percent of South Africa's trade share.

Box 1.1: The gravity model of trade

The gravity model of trade is used to predict the aggregate volume of bilateral trade between countries. It is especially well suited to isolate the role of various forms of trade costs from the more "fundamental" determinants of trade, such as the size of trading partners and geographic characteristics. Estimates from the gravity model are reported in several places in this report. In its most general form, the gravity model of trade stipulates that bilateral trade between two countries is given by:

$$X_{i,j} = \frac{A_i A_j}{tc_{ij}}; tc_{ij} = \left(D_{ij}\right)^{\theta} \prod_{m=1}^{M} \left(z_{ij}^{m}\right)^{\gamma_m}$$

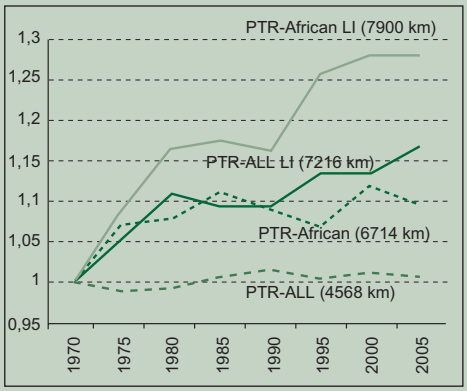
Where A_i, A_j are the characteristics specific to each partner, invariably including the GDPs but occasionally other variables like population and country characteristics, and tc_{ij} are the trade costs between the partners that in turn are assumed to be proxied by a measure of the bilateral distance between the partners, D_{ij} and z_{ij}^{m}. (m = 1,...,M) is a set of binary dummy variables (usually invariant through time, such as sharing a common border, a common language, etc.) capturing barriers to trade other than distance. In some specifications, trade costs are augmented to include composite indices of the state of infrastructure in the trading partners. The model fits the data well, hence its popularity. Typically, the range of estimates for θ — the elasticity of trade to distance — are in the range θ = –1.4 [–0.7] so that doubling the distance reduces trade by 63 percent [42 percent].

Figure 1.4 is an application of the simplest version of the gravity model, where the potential average distance of trade ($ADOT^P$) is predicted by a "frictionless" model of trade, i.e. one where the volume of bilateral trade depends only on the product of the trading partners' GDPs (the other relevant variables in trade costs are omitted). Taking the ratio of this potential measure to the actual average distance of trade (ADOT) gives the Potential Trade Ratio (PTR = $ADOT^P$/ADOT). This ratio is then a measure of changes in the costs of trade after controlling for changes in the partners' GDPs. An increase in the PTR ratio suggests that trade costs which reduce the ADOT are increasing more rapidly than potential trade, as measured by the economic size of the trading partners.

In other results derived from the gravity model reported in this report, the model is augmented to include policy-imposed barriers to trade (tariffs and the tariff-equivalents of NTBs) and indices of the quality of logistics in each trading partner (e.g. the quality of physical infrastructure) among the regressors. Also the estimation procedure exploits the possibility of zero bilateral trade flows (usually estimates of the gravity equation discard information by excluding zero trade flows, thereby biasing the estimates), an important dimension in bilateral trade flows including LI countries. In Box 1.2 below, which reports on the use of statistical analysis to measure the efficiency of ports, the estimation is at the HS-6 product level, which controls for product characteristics like weight, use of containers, and imbalances in bilateral trade.

African LI countries — means that bilateral trade is taking place with geographically closer partners. According to the gravity model, this is an indication of increasing trade costs in relative terms. Since the PTR is constant for the whole sample, this means that it has been decreasing for high-income countries, as one would expect of falling trade costs under globalization. For African countries, the average distance of trade fell approximately 25 percent over the period. This pattern in the raw data holds up when

Figure 1.3: Evolution of Potential Trade Ratio in a frictionless world relative to actual average distance of trade, 1970–2005



Source: Adapted from Carrère *et al.* (2009). Sample of 124 countries. Data points represent five-year averages.
Notes: The Potential Trade Ratio (PTR) is the ratio the potential average distance of trade (ADOT ^{P}) predicted by a "frictionless" model of trade (i.e. one in the volume of bilateral is given by the product of the trade partners GDP) divided by the actual average distance of trade (ADOT). An increase in the PTR ratio implies an increase in the cost of trade (see Box 1.1).
Average distance of trade in 1970 in parenthesis.

a full gravity model with controls (see Box 1.1) is estimated repeatedly for this sample of countries over the period 1970–2005.

Further inspection of the raw data indicates a change in the composition of trading partners, reflecting a change in the number of zero trade flows. For LI African countries, the ratio of zero trade flows, which remained stable until 1990 at around 45 percent (15 percent for the high-income countries), fell sharply by half. These new trade flows (the "extensive" margin of trade), took place with geographically closer partners. The data also show that the regionalization of trade was also generated by trade redistribution within the intensive margin (i.e. products already traded) toward closer partners.

This observed pattern could reflect a combination of changes. One would be if the closer partners were the ones who reduced their trade barriers the most, and when extending trade to new partners, the LI countries selected those countries that were closest. Another variable might be the effects of the regional trade agreements among the LI countries, especially across Africa. Then, the regionalization of trade would also reflect "deep" integration effects, as administrative and technical barriers to trade were removed more rapidly for the LI country group relative to others over the period, generating welfare-increasing new trade flows.

A less optimistic view emerges if one assumes that, over the period, a growing proportion of world trade is generated by vertical specialization and "just-in-time" production. In this case, trade costs could be viewed as a growing impediment in the supply-chain production. Then, if LI countries' trade costs (in particular distance-dependent, such as large markups in international shipping) remain high compared to other developing countries' trade costs, the observed regionalization of trade could be interpreted as a marginalization of these countries.

Landlockedness is a second geographic characteristic of Africa (distance being the first). Compared to other continents, Africa has the highest proportion of landlocked

countries (LLCs). Thus 28 percent of the African population lives in landlocked countries compared to 3 percent of the population in Latin America and 2 percent in Asia. In addition, the continent lacks rivers that are navigable by oceangoing vessels. Further, Africa has a very small coastline relative to its area and there is a shortage of natural ports along the coastline. Consequently, as shown in the average distance-of-trade estimates in Figure 1.3, most African countries (especially SSA countries) are far removed from the major world markets (Europe, the United States, and now Asia).

Landlocked countries are also subject to uncertainty for delivery times at border crossings. As argued in this report, these landlocked countries should aim to become land-linked (one principal method is via transport corridors) so that they develop common infrastructures and cooperate on a regional basis to facilitate trade. Moreover, as shown at greater length in Chapter 3, landlocked LI countries face higher transport costs and this contributes to their lower volumes of trade (in the gravity trade model, bilateral trade between landlocked or island countries is always lower after controlling for other factors).

This unfavorable geography is one reason why the elasticity of distance to trade in gravity models is found to be higher for African and landlocked countries. For example, in a well-documented study based on a well-defined cargo, Limão and Venables (2001: 455) reported that the cost of shipping a 40-ft container to various destinations increases from US$ 4,620 for coastal countries to US$ 8,070 for landlocked countries. Using these "true" transport costs in a gravity model of bilateral trade, they estimated the shipping costs of landlocked countries to be 55 percent higher than those of coastal economies. Using an infrastructure index similar to the one presented in Figure 1.7 below, they also established that higher transport costs are associated with low values for their index of the quality of infrastructure.

A third characteristic of African trade, shown in Table 1.2, is that African countries mostly export primary commodities, all but a few of which (e.g. gold, platinum, diamonds, and other high-value raw materials) are transported by ship. Apparel is the only major manufactured product which is occasionally carried as air freight; most commodities are shipped in dry bulk or in general cargo (bags and pallets). Thus the bulk of African exports rely on maritime transport. At the same time, African trade is mostly inter-industry rather than intra-industry. Exports of commodities are either *dry bulk traffic* (coal, grain, and some chemicals) or *liquid bulk* (mostly oil) while most imports are for manufactures shipped under *general cargo and container* trade, with small import volumes as dry and liquid bulk. As a result, these traffic categories are unbalanced with export volumes (loadings) greatly exceeding import volumes for dry and liquid bulk, while imports exceed exports for general cargo. This imbalance raises trade costs.

A fourth characteristic, which has implications for transport costs, is that African countries receive a large share of GDP in foreign aid, which allows them to run larger trade deficits. This leads to increased

Table 1.2: Main African exports and share of total exports (2008) (mode of transport and type of shipping cargo in parenthesis)

Product	Countries	Share in total exports (%)	Product	Countries	Share in total exports (%)
Metals and Ores	Mauritania (iron ore) (1)	48.3	Crude Petroleum (3)	Angola	96.9
	Mozambique (aluminum) (1)	37.6		Cameroon	41.9
	Guinea (aluminum ore) (1)	59.2		Chad	93.8
	South Africa (platinum) (4)	15.1		Congo	86.4
	Tanzania (gold) (4)	30.4		Equatorial Guinea	76.9
	Niger (radioactive chems) (2)	22.7		Gabon	66.9
	Zambia (copper) (2)	59.3		Nigeria	87.6
	Senegal (inorganic acid) (3)	11.5		Sudan	94.5
	Morocco (inorganic acid) (3)	13.6		Algeria	66.7
				Egypt	14.8
				Tunisia	11.2
Cotton (2)	Benin	24.2	Live Animals (specialized ships)	Djibouti	18.1
	Mali	78.9		Somalia	40.7
Coffee (2)	Burundi	59.8	Cocoa (2)	Ghana	49.3
	Ethiopia	36.0		Sao Tome & Principe	66.4
	Rwanda	30.8		Togo	14.6
	Uganda	29.6			
Fish (2b)	Cape Verde	32.6	Apparel (2 or 4)	Lesotho	55.6
	Seychelles	80.2		Madagascar	49.1
Edible nuts (2)	Gambia	53.4	Tobacco (2)	Malawi	54.2
	Guinea Bissau	92.1		Zimbabwe	14.3
Sugar (1 or 2)	Mauritius	15.4	Diamonds (4)	Botswana	61.5
	Swaziland	20.8		CAR	33.5
				DR Congo	26.1
				Namibia	26.2
				Sierra Leone	49.1
Tea (2)	Kenya	16.1	Resins etc. (2 or 2b)	Eritrea	4.0
Spices (2 or 4)	Comoros	34.0			

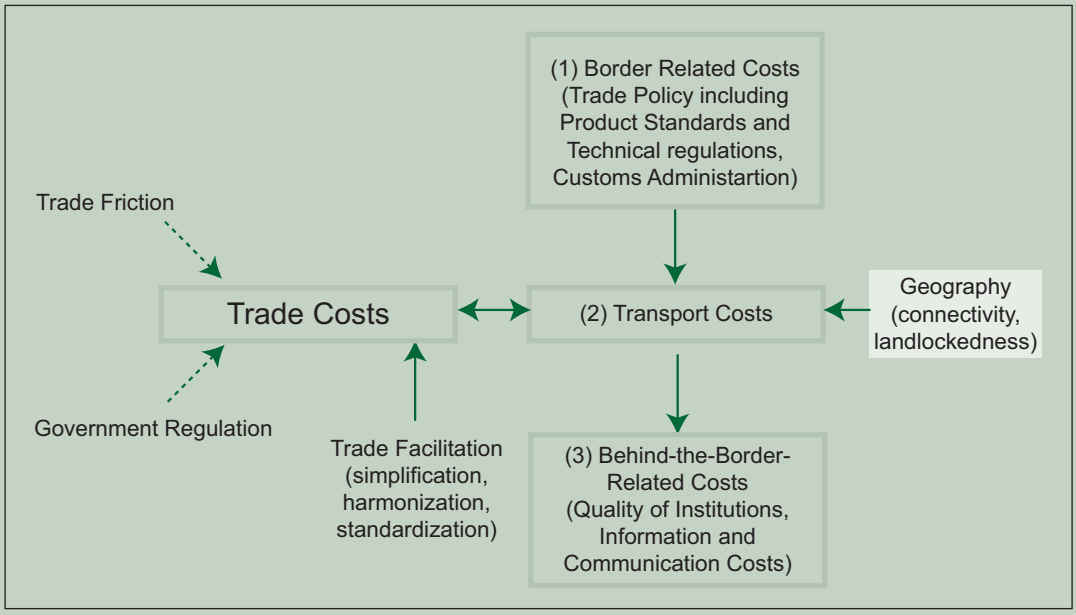
Source: ADB Statistics Department using World Integrated Trade Solution (WITS) Database, 2009.
Notes: Type of shipping cargo (1 to 4):
1: dry bulk 2: container, but also general cargo (bags, pallets). Coffee is increasingly containerized. 2b: reefer (cold) containers 3: liquid bulk 4: air

transport costs for imports, since freight rates must also cover the cost of transporting empty containers or trucks back to their place of origin.

Trade Costs: A Classification

Trade costs — sometimes defined as comprising everything but production costs — constitute the sum of administrative barriers, trade policies (tariffs and non-tariff measures (NTMs), and transaction costs (transport and insurance costs). Trade costs may also be analyzed along other dimensions. For example, Figure 1.4 distinguishes between border-related costs and behind-the-border (BTB) measures to identify those trade costs that are not a direct result of trade policies but that can be reduced through other channels, notably via trade facilitation resulting from cooperation, often in the context of a regional trade agreement.[6] The left-hand side of Figure 1.4 brings in another dimension. There trade costs are broken down between trade frictions that are largely

Figure 1.4: Trade costs and trade facilitation — a classification



[6] The terminology "BTB measure" was first used to distinguish between "deep" and "shallow" integration in Regional Integration Agreements: "deep" integration occurring when integration extends beyond the removal of protection (i.e. integrating factor markets, combining regulatory institutions, harmonizing standards and cooperating intensively on trade facilitation, e.g. reducing "red tape" for crossing borders).

exogenous (distance, geography of trading partners, different languages) and trade costs due to government regulations, which are more directly amenable to changes in policy.

The discussion on trade costs increasingly refers to trade facilitation (simplification of trade procedures, harmonization of trade practices, and rules). These are represented separately in Figure 1.4 to signal that the implementation of trade facilitation requires some cooperation at the regional level or beyond. (The role of trade facilitation is treated below.)

The right-hand side of Figure 1.4 classifies the trade costs that are amenable to reductions via policy actions. Three broad categories are shown: (i) border-related costs; (ii) transport costs; (iii) and behind-the-border-related costs. These costs are not independent of one another. For example, transport costs depend on the efficiency of ports, which in turn depends on the efficiency of administration, the regulatory framework, and the quality of a country's institutions — all these are categorized as behind-the-border costs. Transport costs also relate indirectly to border costs, since higher border costs reduce trade. Because of economies of scale in freight-related costs, lower volumes of trade raise unit transport costs, which are also affected by geography (about which little can be done).

Border-related Costs

Traditionally, trade policy barriers in the importing country (tariffs and quotas) have been considered the most important element of overall trade costs. With the unilateral and multilateral reduction in tariffs and the quasi-elimination of quotas, non-tariff measures (NTMs) such as technical standards and phytosanitary norms imposed by OECD countries, have come to be considered the most important policy barrier to trade. In African countries, tariffs have been sharply reduced over the past decade. As shown in Table 1.3, average tariffs in Africa are no longer the highest among developing regions. Thus one can no longer attribute the low volume of intra-African trade to closed trade regimes.

Barriers to African exports in developed countries are often cited as contributing to the continent's poor trade performance. Two measures of barriers faced by a large sample of 104 countries are reported in Table 1.3, namely the Tariff Trade Restrictiveness Index (TTRI) and the Overall Trade Restrictiveness Index (OTRI). The latter index includes the effects of NTMs (i.e. price control measures, quantitative restrictions, monopolistic measures, and technical regulations) on the volume of trade. Both indices produce the equivalent uniform ad-valorem tariff, which, if applied by a country to all its imports, would result in a level of aggregate imports equivalent to that prevailing under current policy settings. Since measures of NTMs applied at the product level (HS-6 level) are generally found to restrict trade, the OTRI index estimate is always higher than the corresponding TTRI estimate. Taken together, these indices provide summary measures of trade policies affecting a country's imports.

Table 1.3 shows the estimates of the barriers to trade on imports by developing countries across regions, and the barriers to trade imposed by the QUAD (Canada, EU, US, and Japan) on their imports. This table

Table 1.3: Tariff Trade Restrictiveness Index (TTRI) and Overall Trade Restrictiveness Index (OTRI) by region, 2003–2004*

Region	All trade	Agriculture	Manufacturing
Middle East and North Africa	**21.6**	**32.3**	**19.4**
	11.9	*12.1*	*11.8*
South Asia	**19.5**	**46.4**	**18.2**
	14.0	*31.4*	*13.2*
Latin America and the Caribbean	**15.0**	**28.1**	**13.8**
	5.4	*6.6*	*5.3*
Sub-Saharan Africa	**14.4**	**24.9**	**12.9**
	8.4	*13.8*	*7.6*
East Asia and Pacific	**11.3**	**26.6**	**10.4**
	5.0	*8.7*	*4.8*
Europe and Central Asia	**10.1**	**25.9**	**9.0**
	4.5	*10.3*	*4.0*
QUAD	**All trade**	**Agriculture**	**Manufacturing**
United States	**6.4**	**18.4**	**5.7**
	1.6	*3.8*	*1.5*
European Union	**6.6**	**48.7**	**2.9**
	1.4	*5.9*	*1.1*
Japan	**11.4**	**55.8**	**5.7**
	4.5	*31.1*	*1.1*
Canada	**9.9**	**17.1**	**9.5**
	5.1	*8.8*	*4.9*

Notes: Tariff Trade Restrictiveness Index (TTRI) in italics. Overall (i.e. Non-tariff-measure inclusive) Index (OTRI) in bold.
* Most recent dataset available across a large sample of countries.

is based on data for 2003–2004, which represents the most recent information available on NTMs across a large sample of countries. Compared to other global regions, Sub-Saharan Africa is in the middle both for total protection and tariffs (with an average tariff of 8.4 percent, compared to 11.9 percent for the Middle East and North Africa and 14 percent for South Asia). The averages across sectors in the QUAD show that the restrictiveness of NTMs can be important, but especially in agriculture, a sector where African countries enjoy a comparative advantage. In the EU, the tariff equivalent of all tariff measures in agriculture (the TTRI) is only 5.9 percent, but this rises to 48.7 percent when NTMs are added (the OTRI index value). In conclusion, on average, SSA countries do not exhibit particularly restrictive trade regimes.

Table 1.4: Market access (MA) indices by income group, 2006

IMPORTERS	EXPORTERS									
	High income	**Upper middle income**	**Lower middle income**	**Low income**	**East Asia and Pacific**	**Europe & Central Asia**	**Latin America and Caribbean**	**Middle East & N.Africa**	**South Asia**	**SSA**
High income	**6.3**	**5.7**	**7.9**	**9.1**	**8.3**	**5.1**	**7.0**	**4.3**	**10.4**	**4.4**
	2.7	*1.2*	*2.5*	*2.4*	*2.6*	*1.1*	*1.5*	*0.8*	*3.1*	*0.7*
QUAD	**6.3**	**5.2**	**8.6**	**10.6**	**8.9**	**5.2**	**6.9**	**4.4**	**13.6**	**4.5**
	2.1	*0.9*	*2.5*	*2.5*	*2.7*	*0.8*	*1.2*	*0.5*	*3.3*	*0.5*
Upper middle income	**15.6**	**11.8**	**15.8**	**14.7**	**19.2**	**10.2**	**13.6**	**6.0**	**14.3**	**5.9**
	5.6	*3.8*	*5.6*	*5.7*	*7.2*	*4.4*	*2.6*	*2.5*	*6.6*	*3.5*
Lower middle income	**12.4**	**11.1**	**12.9**	**9.4**	**13.6**	**11.2**	**12.6**	**6.7**	**9.9**	**4.0**
	7.1	*4.8*	*6.7*	*5.1*	*6.6*	*6.2*	*5.1*	*2.8*	*6.2*	*2.7*
Low income	**18.2**	**14.3**	**19.5**	**25.4**	**22.2**	**17.7**	**15.9**	**16.3**	**16.2**	**16.3**
	10.9	*8.1*	*12.2*	*12.9*	*13.8*	*6.2*	*9.0*	*0.0*	*10.4*	*12.2*

Notes: MA-TTRI in italics; MA-OTRI in bold face. Importers are along rows, exporters down columns.
Source: Portugal-Perez and Wilson (2009, table 1).

What about barriers faced in export markets? Table 1.4 compares market access in destination markets across groups of countries for the year 2006, classified by per capita income (country groupings in the rows). Exporting countries are grouped either by region, or again by income-per-capita range (country groupings in the columns). Composition effects are particularly important for SSA countries, which face the lowest market access barriers (around 5 percent) in all but other low-income countries. This reflects the patterns of specialization of the SSA grouping, which has an export pattern (partly influenced by the trade policies of their partners) geared toward products that face low entry barriers in destination markets. According to these estimates, even if SSA countries have been induced (by the restrictive policies of their partners) to specialize in the export of products with low market access barriers, it does not appear that their exports face unusually high barriers (except in other low-income countries).

In conclusion, the data do not support the argument that market access is relatively less favorable for the African region in their partners' markets; even if there are some instances where trade restrictiveness in exporting markets have been found to be significant (see Oyejide *et al.*, 2000; Otsuki *et al.*, 2001).

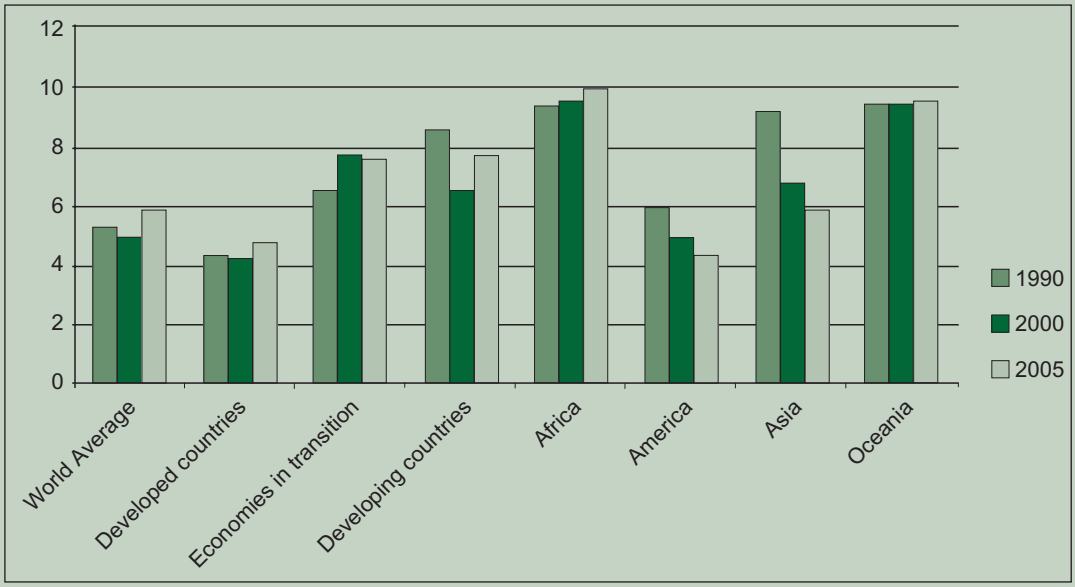
This report argues that for African countries, the most important component of border-related trade costs amenable to policy intervention is likely to be administrative costs. These result from delays at customs, rather than from policy-imposed barriers. Customs services are responsible not only for levying tariff duties, but also for ensuring that imported goods comply with regulatory requirements, and for preventing the importation of prohibited or unsafe imports (e.g., illegal weapons or out-of-date medicines). In the case of SSA countries benefiting from duty-free access to the US market under the Africa Growth and Opportunity Act (AGOA), customs officials may also carry out physical inspections to check the conformity of shipments.

The World Bank (2008) *Doing Business* dataset reports on the procedural requirements for exporting and importing a standardized cargo of goods by ocean transport. This reveals that South Asia has the highest number of export and import procedures, closely followed by SSA (see Chapter 3, Figure 3.6). Lengthy inspections at borders create delays in customs clearance and so raise trade costs; they also increase transport costs, since transporters have to factor in the time lost due to delays. Recent estimates by Djankov *et al.* (2008) for a large sample of countries suggest that each day of delay at customs is equivalent to a country distancing itself from its trading partners by an additional 85 km. Keeping customs procedures as simple and transparent as possible helps to minimize the time needed to clear customs. As indicated in Figure 1.4, trade facilitation measures that reduce these procedures through simplification, harmonization, and standardization contribute to reducing overall trade costs.

Transport Costs

With inventory costs falling rapidly, transport costs are becoming an increasingly important element in total trade costs. Until recently, most estimates of freight rates relied on

Figure 1.5: Freight costs as a percentage of import value by region



Source: UNCTAD (2007). All modes of transport. Estimates based on cif/fob comparisons for bilateral trade data.

matched comparisons of cif (cost-insurance-freight) and fob (free-on-board) trade flows, based on United Nations (UN) and International Monetary Fund (IMF) trade statistics. These estimates are used frequently because of their widespread availability for a large number of countries over time, even though their reliability has been challenged.[7]

Figure 1.5 uses these matched trade statistics to show the evolution of average freight costs across all modes of transport for various global regions and for countries at different stages of development. Several patterns emerge. First, it is clear that distance is only one component of freight costs, since Africa's trade costs are as high as those of Oceania, yet Africa is closer to its trading partners than is Oceania. Second, for both regions, trade volumes are small, suggesting that economies of scale in transport are far from exhausted. Small traffic volumes for both regions contribute to the high freight costs, which are close to double that of

[7] With the exception of a few countries that systematically report individual freight rates for each shipment (New Zealand and the US), freight rates are computed from trade data at the HS-6 level, as reported to the UN and IMF by exporting and importing countries. Hummels and Lugovorskyy (2006) discuss their shortcomings. Raballand *et al.* (2007) discuss the shortcomings of the freight payments, notably for landlocked countries, used in Figure 1.5.

competing regions. Third, Figure 1.5 indicates that for Africa, freight costs are now as important, or more important, than the costs associated with the policy-imposed trade barriers they face in all destinations except other low-income countries. Fourth, in Africa freight costs are rising rather than falling, unlike several other regions. (For developed countries, the small increase in freight costs likely reflects the shift towards air freight for high-value products that are lighter in weight and often time-sensitive, e.g. fashion products.)

To reach a better understanding of the differences across these rough estimates, one must identify the various cost determinants of transport services. These can be grouped into the broad categories outlined in Figure 1.4, including geography (e.g. connectivity) which, though largely exogenous, is a major conributor to high transport costs in Africa. From this perspective, one may conclude that trade flows will be higher for a small Caribbean island than an equally small island in the Pacific, since Caribbean islands are located at the crossroads of the major maritime routes. Likewise, one can expect transport costs to be higher for landlocked countries, if only because freight costs for coastal countries are measured at the harbor of arrival, while for landlocked countries they are measured inland at the country's border.

Beyond the geography of African trade, high border-related costs also increase transport costs directly, as shippers have to charge for waiting time in ports. Behind-the-border costs (e.g. deficient physical infrastructure) also play their part in raising transport costs directly. Finally, Figure 1.4 shows that both border and behind-the-border costs raise transport costs indirectly because high costs reduce the volume of trade and hence reduce the demand for transport services.

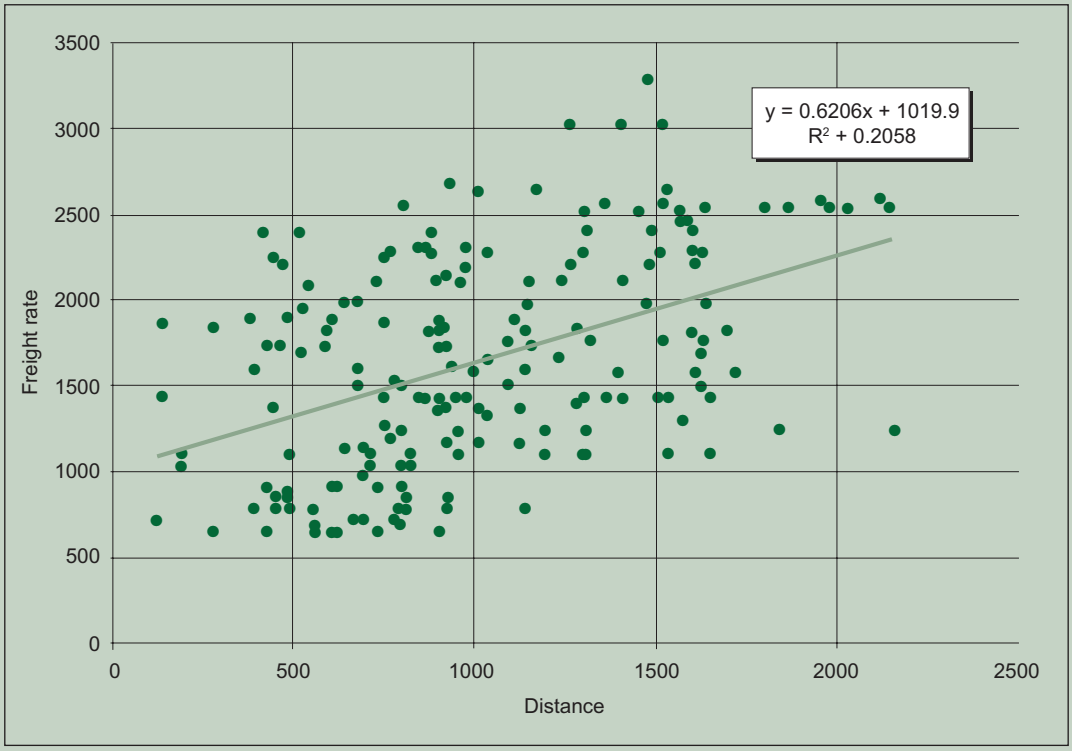
With the growth in containerization, it has become easier to measure freight rates directly. Several recent studies (e.g. Limão and Venables, 2001), use the cost of shipping a standardized container between two destinations (usually the transport cost per tonne of TEU) as a measure of freight costs.[8] These studies show that differences in freight rates depend on a number of factors: distance, type and value of goods, imbalances in trade[9], economies of scale in shipping, competition, and port facilities. Some direct evidence on these costs is available for Africa and is reported in the chapters that follow. Because African countries typically transport small shipments,[10] it is instructive to consider the findings reported by Wilmsmeier and Hoffman (2008) on the cost of shipping 20-ft containers on 189 different routes in the Caribbean. These are provided in Figure 1.6, where each panel shows the correlation between the freight rate for a 20-ft container and the corresponding variable on the

[8] The usual yardstick is the TEU — the 20-ft equivalent unit.

[9] Because of the imbalance in the trade of LI African countries, partly resulting from the flow of foreign aid allowing for trade deficits, many shipping providers are left with empty ships or containers to return to Asia or Europe, so the freight rates for African exports are relatively low.

[10] East Asian ports service vessels in the 8,000–11,000 TEUs range, while most African ports cannot handle efficiently vessels above 2,000 TEUs.

Figure 1.6: Correlates of freight rates in the Caribbean
1.6a: Freight rates and distance



Source: Wilmsmeier and Hoffman (2008, Figures 1, 2, 3).
Notes: Freight rate per TEU on vertical axis in all figures; distance in km on the horizontal axis.

horizontal axis (size of shipment, distance, time at port, and number of shippers).

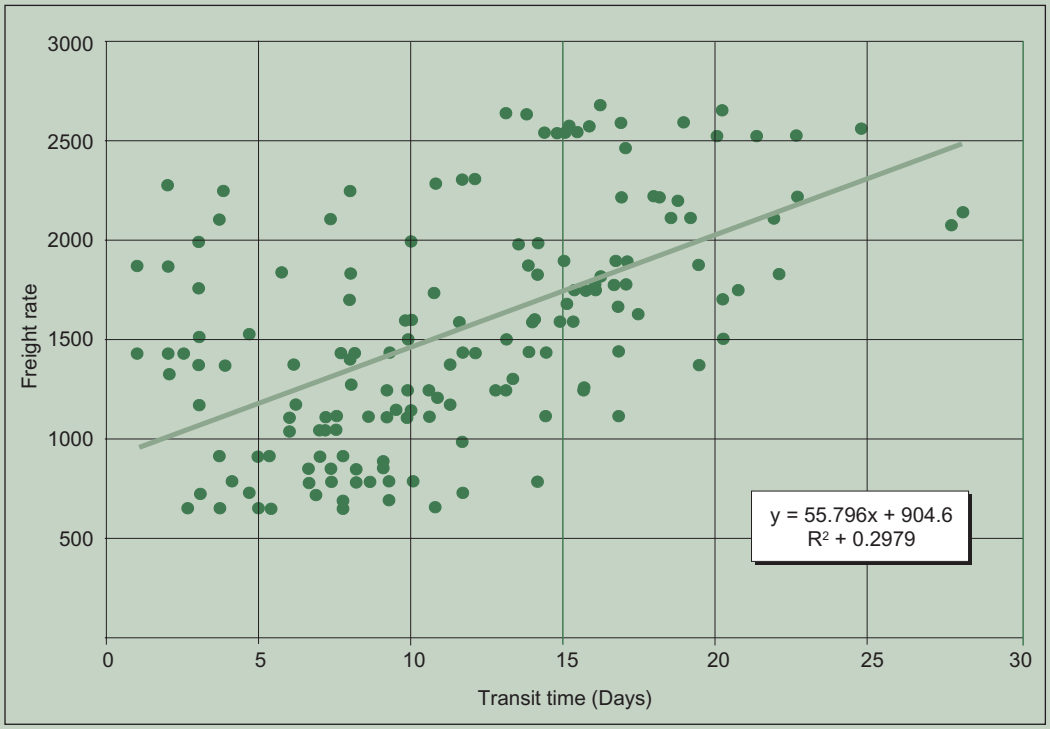
Figure 1.6a confirms that long distance increases freight rates, which explains why countries often choose geographically close partners. Long delays in ports also raise freight costs, as shown by the scatter plot in Figure 1.6b. Using detailed US customs data and controlling for the choice of mode of transport (sea or air), Hummels (2001) estimates that each extra day saved in shipping time reduces costs for manufactured goods equivalent to a 0.8 percent tariff. Applying these estimates to the data in Figure 1.6b suggests that cutting 10 days in transit time in the Caribbean would be equivalent to eliminating an 8 percent ad-valorem tariff. Finally, the significance of competition in freight rates is shown in Figure 1.6c. Each scatter plot reflects one of the contributing factors to freight costs, i.e. it is a partial correlation. The suggestion of market power

in Figure 1.6c is confirmed in estimates by Hummels *et al*. (2009), who isolate the effect of market power after controlling for value of shipment, distance, and import demand elasticities. Their estimates rely on US time-series of shipping data and cross-tabulation of data for six Latin American importers (Argentina, Brazil, Chile, Ecuador, Peru, and Uruguay). They estimate that the elimination of market power would increase trade volumes by 6 percent for the US, and by 15 percent for the Latin American importers.

Behind-the-Border Costs

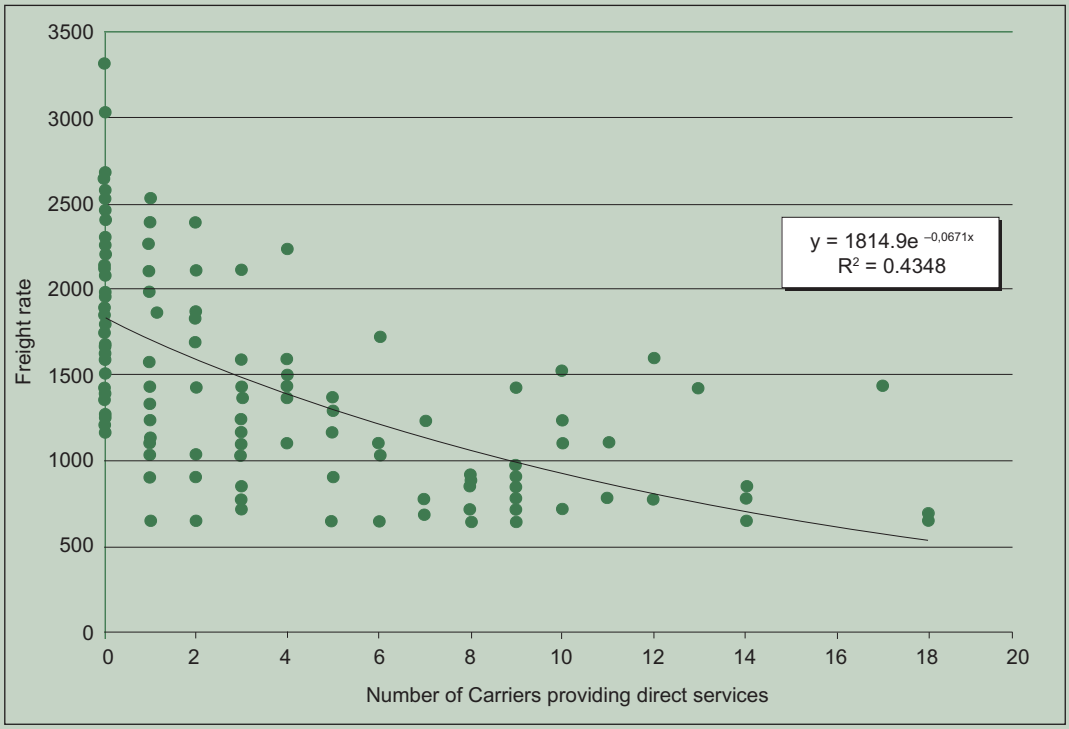
Trade costs are also augmented by a country's behind-the-border (BTB) costs, including its overall social infrastructure, as reflected in the quality of its governance (i.e. transparency, rule-of-law, and the business environment). Weak institutions contribute through several channels to raising trade costs. First, they lead to a lower supply of public goods, including the quality and quantity of "hard" or physical infrastructure.

1.6b: Freight rates and transit time



Source: Wilmsmeier and Hoffman (2008, Figures 1, 2, 3).
Notes: Freight rate per TEU on vertical axis in all figures; number of days to transit on the axis.

1.6c: Freight rates and number of carriers in the Caribbean

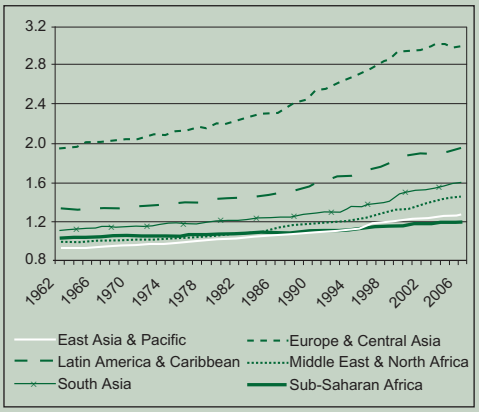


Source: Wilmsmeier and Hoffman (2008, Figures 1, 2, 3).
Notes: Freight rate per TEU on vertical axis in all figures; number of carriers serving the port of embarkation on the horizontal axis.

Figure 1.7 shows the evolution of a composite index of physical infrastructure over the period 1962–2006 across developing country regions. The index is an unweighted average of the density of the road network, the paved road network, the railroad network, and the number of telephones per person constructed. The figure shows that SSA was below average in 1962 and that its relative position in the classification of countries deteriorated over time, since it ended with the lowest index value in the sample and with the lowest growth rate over the period (around a 20 percent increase). This finding justifies one of the stated objectives of this report: to highlight the pressing need for improvement and a scaling up of investment in Africa's physical infrastructure, including ports.

Weak institutions are also reflected in a lack of "soft" infrastructure. The effects of weak institutions in many low-income

Figure 1.7: Evolution of an index of infrastructure across developing country regions, 1962–2006



Source: Carrère *et al.* (2009), table A.2.1.

countries are evident at various points in the supply chain. Because of a lack of alternative sources of revenue from direct taxes, many LI countries apply relatively high border taxes in an effort to raise government revenue. The result is evasion and extortion at the border. Using data on corruption and trade policy, Gatti (2004) shows that higher trade costs — in this case, tariff rates — are indeed associated with a higher level of corruption. Similarly, Fisman and Wei (2004) report that in bilateral trade between Hong Kong and the Chinese mainland, higher tariff rates are associated with larger differences in declared values between export and import values, which points to an important evasion effect. Using a bilateral gravity model over the period 1998–2007, Musila and Sigué (2009) estimate that if a country with Africa's average corruption perception index of 2.8 were to improve its corruption level to Botswana's 5.9 index value, its exports would increase by about 15 percent and its imports by about 27 percent.

Trade Costs and Trade Facilitation: "Soft" and "Hard" Infrastructure

The evidence above suggests that trade costs are the most important element of overall transaction costs, and that trade costs depend largely on transport costs. Transport costs, though, are determined by many factors along the supply chain. Efficiency along the supply chain is closely linked both to the "hard" infrastructure (dock facilities, connections to railroads and trucking lines, harbor characteristics) and to the "soft" infrastructure, as reflected in the border and behind-the-border measures identified in Figure 1.4. Improvements in both types of infrastructure are required for African countries; indeed, it is difficult to estimate which of the two is more important since they are complementary and the situation will vary across countries.

That said, the evolving pattern of global trade suggests that trade facilitation is crucial. With the change in world trade patterns, 80 percent is now in manufactured goods, one-third is in unfinished goods, while about one-third is intra-company trade. With the explosion of preferential trade agreements (PTAs) and transit trade, the competitiveness of a country's export base is increasingly dependent on low transaction costs.

Trade facilitation measures relate to the three phases of the trade chain, namely: the

buying process, the *shipping process* (including ordering and preparation), and the *payment process*. Trade facilitation is a process that includes improvements in the following areas: (i) simplification of trade procedures and documentation (e.g. one-stop border posts [OSBPs]); (ii) harmonization of trade practices and rules (e.g. implementation of the standards in mutual recognition agreements); (iii) improvements in the transparency of information and procedures (e.g. publication of laws and regulations, inspection before shipping); (iv) recourse to new technologies promoting international trade (e.g. electronic single window implementation); and (v) transaction security (e.g. use of risk assessment techniques).

Because of the nature of the goods transported, for low-income African countries, upgrading hard infrastructure is proving to be the major bottleneck. This is substantiated by the data on congestion in many African ports reported in Chapter 2, even though part of the observed delays in ports and along the land infrastructure are due to the deficiencies in the "soft" infrastructure (e.g. road blocks and excessive red tape).

Whereas the gains from PTAs are somewhat ambiguous because of the possibility of welfare-reducing trade diversion (when inefficient partners' imports are subsidized at the expense of non-MFN partners), the trade facilitation measures described above involve only a reduction in costs and so are welfare-improving for the partners involved. This is important because the new wave of "deep" Free Trade Areas (FTAs) in Africa has gone beyond eliminating tariffs and quotas and has engaged in trade facilitation measures.

According to several estimates, trade costs (as captured by the *Doing Business* dataset of the World Bank) are greater than those associated with trade barriers.[11] For example, information deficiencies are a major source of market failure, especially for LI countries. Therefore cooperation at the regional level to provide public support helps to build and strengthen business contacts among neighboring countries. Regionally organized trade support institutions help identify and disseminate relevant information. Several Regional Economic Communities (RECs) and groupings in Africa, including the Central African Economic and Monetary Community (CEMAC), Indian Ocean Commission (IOC), and the West African Economic and Monetary Union (UEMOA), have taken steps in that direction (UNCTAD, 2007: Chapter 6). Many of the trade facilitation measures identified above, such as common standards, licenses, and trade documents, are more easily achieved at the regional than at the global level. The COMESA uniform Customs Document adopted by 15 members is one example of successful trade facilitation at the regional level.

At the same time, effective regional cooperation requires delegation of authority to a supranational body, which may prove difficult to achieve if there is a low level

[11] Wilson *et al.* (2004) estimate large increases in trade for APEC members from improvements in trade facilitation. Using *Doing Business* data on trade costs, Portugal-Perez and Wilson (2009) find that the ad-valorem equivalent of *Doing Business* export costs are usually greater than the ad-valorem equivalent of all trade measures (tariffs and NTMs in export markets).

of trust among trading partners, perhaps because of infrequent exchanges. As discussed in Chapter 4, for the African landlocked developing countries (LLDCs), it is essential to build the necessary trust to develop trade corridors and so boost their connectivity. Equally pressing is a successful conclusion of the World Trade Organization Trade Facilitation negotiations, launched in the July 2004 package.

In conclusion, the benefits of trade facilitation are manifold. First, trade facilitation measures are necessarily welfare-enhancing, as they cut costs rather than transfer rents (as in the case of preferential access). Second, trade facilitation enhances outsourcing and the fragmentation of the production process, which helps low-income countries to participate in the growing trade in unfinished products partly through increased foreign direct investment (FDI) inflows. The benefits of trade facilitation are further examined in Chapter 4 of this report.

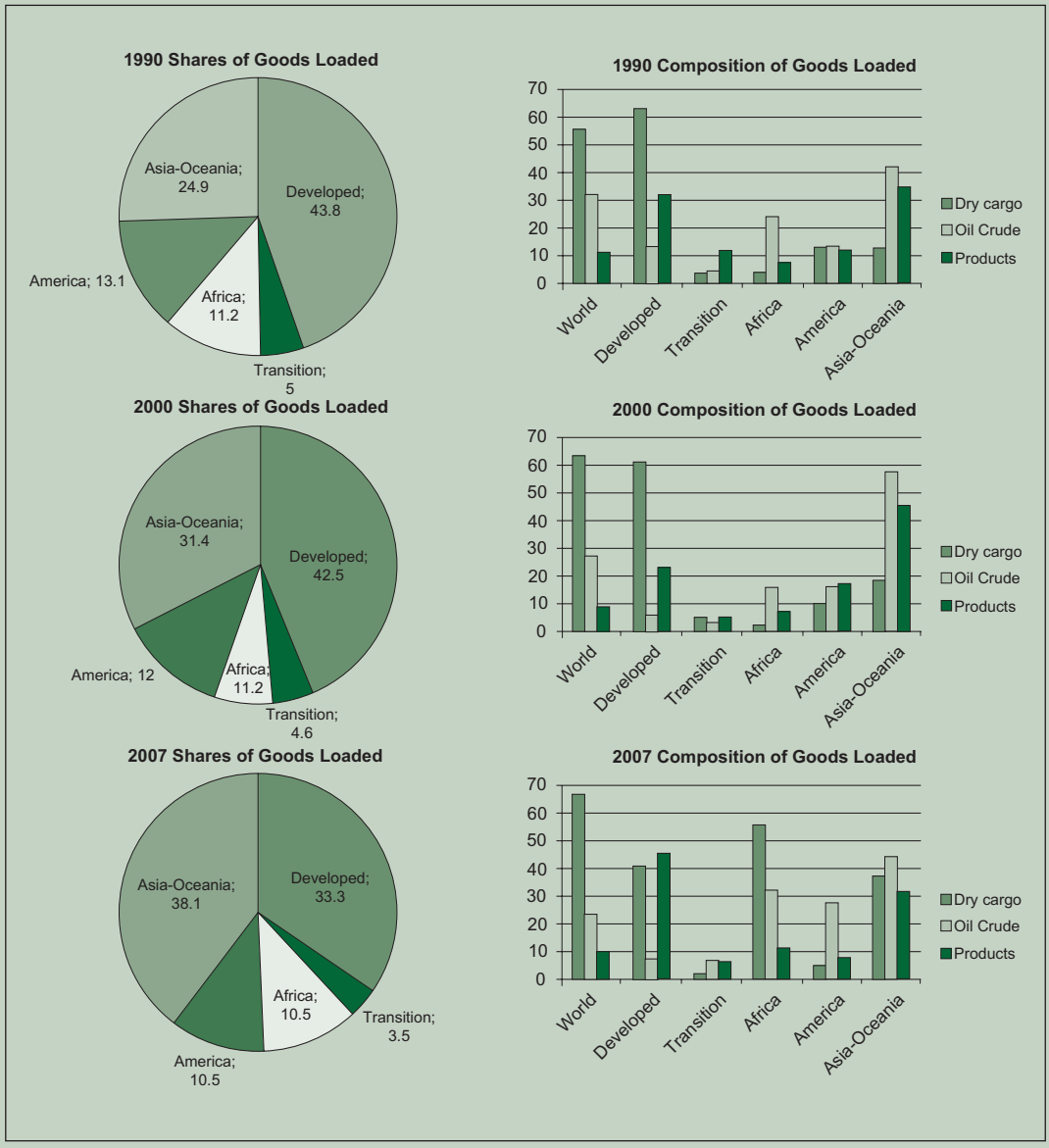
Why Maritime Trade and Port Efficiency are Important

Worldwide seaborne trade has remained roughly constant in volume terms over the past several decades. Figure 1.8 shows the evolution of seaborne trade over the period 1990–2007 across regions and by type of shipments for all goods loaded (the difference between goods loaded and unloaded is small). These trends reflect the growing role of South–South trade in the global market, with the rising share of Asia-Oceania largely at the expense of the developed countries, especially since 2000. Africa's share of global trade fell during the 1990s but has recovered in recent years because of increased trade with Asia. The composition of goods loaded has not changed much at the world level, with dry cargo occupying about 70 percent of goods loaded. A major shift took place in the distribution of goods loaded across regions. Developed countries shifted away from dry cargo toward containerized cargoes, while Africa's share of crude oil shipments rose.

In order to reach a better understanding of the causative link between infrastructure (both soft and hard) and trade, one needs to examine the functioning of the port sector. Given that over 80 percent of world merchandise trade by volume is carried by sea (UNCTAD, 2008), ports and their associated infrastructure serve as critical nodes in the supply chain. The maritime sector offers the most economical and reliable mode of transportation over long distances, especially for African countries that are not yet specialized in high-value products (see Table 1.2). Ships can carry large volumes of merchandise and utilize free highways in the seas, provided that adequate physical infrastructure is available at the seaports and along the inland logistics chain to producers and consumers to avoid congestion. This makes maritime transport the backbone for facilitating international trade.

Poorly performing ports are likely to reduce trade volumes, particularly for small LI countries. As foreshadowed in this chapter and discussed at greater length in the rest of this report, myriad factors contribute to port efficiency, including dock facilities, connections to railroads and trucking lines, harbor characteristics, customs clearance

Figure 1.8: World seaborne trade, 1990–2007



Source: UNCTAD (2008).
Notes: Shares across types of cargo add up to 100% for world. In the breakdown on the composition of goods loaded, shares of each category shipment add up to 100% over the five regions.

times, and labor relations. The sheer variety of factors that influence a port's efficiency makes it difficult to attain an overview of this variable across regions. Box 1.2 summarizes results from a recent study of bilateral trade flows between 50 US ports and up to 100 ports in 40 other countries over the period 1991–2003. The study seeks to isolate port efficiency in overall maritime costs. The estimates show great disparity in port efficiency both in the US and internationally. Controlling for a host of factors that contribute to maritime freight costs, the study suggests that a 10 percent rise in port efficiency increases country-pair trade by 3 percent. Over the distribution of efficiency estimates, a change in port efficiency from the 25th percentile to the 75th percentile leads to a 5 percent increase in trade. Since all African ports are in the 25th percentile of the distribution of container shipping costs (see Chapter 4, Figure 4.9), cost reductions from improved port efficiency would increase African trade substantially.

Outline of the Report

After this introductory chapter, Chapter 2 analyzes the port situation in Africa, comparing its characteristics and performance with those in other regions. It establishes that ports lie at the heart of the logistics supply chain and compares the main characteristics of African ports: differences across subregions, capacity problems, efficiency related to small scale, etc. The chapter shows that African ports are relatively inefficient compared with those in other low-income countries and that they rank low in the Liner Shipping Connectivity Index (LSCI), which measures the geographical location of ports as well as shipment volumes and other indicators of efficiency. The findings suggest that, in many instances, large productivity improvements could be achieved by improving the infrastructure at existing ports. At the same time, improvements in the regulatory environment would be necessary. Improvement of port management, often implying reform leading to the introduction of public–private partnerships (PPPs), is needed to procure the funding to carry out the capacity increases and upgrading of infrastructure identified in the chapter.

Chapter 3 deals with constraints in the "soft" infrastructure of ports: namely behind-the-border bottlenecks that increase trade costs and hamper the efficiency of ports. A review of port management structures and their recent evolution around the world shows a shift toward the landlord port model, where all but the hard infrastructure is in private hands. Albeit with a lag, Africa is joining the trend with an increased adoption of the concessioning process across ports. At the same time, the extent of private investment in physical port infrastructures has been low, reflecting a variety of factors, ranging from the size of the market to weak institutional support.

Typically, African ports are visited by small ships, implying transshipments from the port of origin before reaching destination. This contributes to the higher freight costs incurred in Africa. Evidence suggests that reform packages that include regulatory reform, and that provide for independence of the regulator from government interference, are likely to yield the best results in terms of port efficiency. Once these

Box 1.2: Estimating port efficiency by statistical analysis

Quality data on import charges and on types/volumes of cargo are needed to effectively measure port efficiency. Together, these statistical data allow the analyst to control for the composition of products, the volume of trade, and other factors affecting freight costs, so that an estimate of port efficiency can be extracted residually. Data Envelopment Analysis (DEA) uses production frontier techniques to measure port efficiency relative to a frontier. Besides requiring that data be comparable across ports, the estimates assume constant returns to scale, and do not allow for measurement error. This is why DEA estimates are viewed as limited in scope and consequently most analysts rely on applications of the gravity model.

Typically, gravity-based studies have relied on a single point in time (e.g. Clark *et al*., 2004). However, this does not allow the analyst to control for heterogeneity across ports and time-invariant omitted variables that influence a port's overall efficiency. Several studies have also drawn on the subjective, survey-based efficiency measures of the *Global Competitiveness Report* for countries rather than ports (firms rank a country's port efficiency on a scale from 1 to 7) (World Economic Forum, 2000).

Drawing on data over the period 1991–2003 provided by the US National Data Center of the Army Corps of Engineers, Blonigen and Wilson (2008) use reliable data on import charges on bilateral trade at the commodity HS-6 level along with distance measures and port-to-port distances. For each time period and product, they regress import charges on weight, value, distance, percentage of shipments in containers, a measure of trade imbalance and fixed-effects that control for all time-invariant factors (observed and unobserved) connected with each country-pair. These high-quality data coupled with controls produce precise estimates, even though they do not control for changes in product composition at the port level over time.

In their study, Blonigen and Wilson show that: (i) a 10 percent increase in distance raises freight costs by 1.3 to 2.1 percent and (ii) weight and product value lead to an increase in import charges. These results are in accordance with those of previous studies. Containerization reduces import charges, more so for high-value products. The study also finds that imbalanced trade raises costs, but not by much.

Fixed effects for the US and foreign ports give estimates for the average efficiency of a port relative to the excluded port (Oakland for the United States and Rotterdam for foreign ports), after controlling for all the other factors affecting import charges mentioned above. For US ports, only 13 out of 50 are within 5 percent of the efficiency of Oakland. For foreign ports, they estimate an average improvement of 1.4 percent per year relative to Rotterdam. The only African port in the sample, Durban, is estimated to have port charges 15 percent above those at Rotterdam.

Overall, Blonigen and Wilson's estimates suggest that a 10 percent rise in port efficiency increases trade between a country-pair by 3.2 percent. Over the distribution of estimates, they find that a change in port efficiency from the 25th percentile to the 75th percentile leads to a 5 percent increase in trade. However, these estimates do not take account of the fact that increased port efficiency is likely to lead to increased trade in new products as well as in existing products. Taking that into account, new products would raise the value of the estimates.

measures have been put in place, private shipping companies will be more likely to visit these ports. Moreover the more conducive environment for private investment will induce the participation of key development actors to help finance the hard physical infrastructure essential to relieve the congestion bottlenecks identified in Chapter

2. Overall, the change to a more privatized environment still has a long way to go in Africa compared to the rest of the world, but many African nations have begun to commit in earnest to this process.

Chapter 3 also suggests several precautionary steps that need to be taken in port reforms. First, the privatization process should not take place without a clear vision of the objectives that the public sector is trying to achieve. Second, close coordination between the different institutions involved (port institutions, customs, transport ministries, labor unions, etc.) is needed to define how their respective roles and responsibilities will evolve to result in an overall gain for all parties. Third, other efficiency-enhancing factors such as procompetitive policies and arrangements, better coordination of the various agencies operating at ports, and a simplification of documentation requirements and single-window processing should be encouraged.

Chapter 4 deals with the hinterland infrastructure (roads, railroads, and inland waterways) that connects ports to markets and which impacts the overall costs of trade. The chapter also deals with the transit corridors that are essential to link the landlocked developing countries (LLDCs) to the other African countries, to ports, and to global export markets. For all African countries, but especially those in SSA, the efficiency of ports is hampered by poor connectivity with the hinterland because of the substandard physical condition of roads, railroads, and waterways, which deliver poor quality service. As a result, and especially because there is little competition across modes of transport, ports can be "held hostage" to deficient infrastructure. An estimated financing gap of 5 percent of GDP in SSA needs to be closed in order to overhaul the infrastructure sector. The chapter also points out that the improvement in corridors can only be made effective by "deep" regional integration.

The chapter establishes that trade facilitation measures are the single most important policy action to reduce transport costs. However, without international coordination and recognition of the need for an appropriate regulatory environment, their effectiveness will not achieve full potential. This is particularly the case for the trade facilitation negotiations currently underway through the auspices of the World Trade Organization (WTO). If successful, these negotiations, which aim at implementing the Freedom of Transit obligation of Article V of GATT 2004, will go some way toward improving the situation of the 15 landlocked countries in SSA.

Chapter 5 looks at the African Development Bank Group's support to projects and programs aimed at enhancing the capacity and efficiency of ports in Africa (including hinterland connectivity). The initial finding is that the Bank considers the lack of adequate infrastructure, and in particular the lack of transport infrastructure, to be a key constraint to the growth momentum in Africa. In the area of ports specifically, the Bank Group has made significant public investments over the last decades. More recently, the Private Sector Department has been instrumental in supporting the port concession process in several African countries. This is in line with some of the key findings in this report, in

particular the need to increase private participation in the port sector to improve efficiency. Going forward, given the enormous challenges presented in this report in terms of hard infrastructure requirements in African ports and other modes of transport into the hinterland (such as rail, road, and waterways), a large injection of public and private investment is required. The scaling up of support to this vital sector is in line with the Bank's Medium-Term Strategy 2008–2012, with its strong emphasis on infrastructure. The Bank continues to play a major role in this area, not only by allocating it a large proportion of funding from its own resources, but also by catalyzing investments from other major investment partners and development agencies.

Furthermore, investments in soft infrastructure, such as robust regulatory frameworks and institutions (i.e. customs), are crucial to facilitate the movement of goods between ports and the hinterland. To support these operations, a revised policy framework in maritime transport and related areas is needed to guide the prioritization process and to improve the quality at entry of investments.

Finally, Chapter 6 examines the issues surrounding the development of regional port hubs in Africa. Many African countries are aiming to modernize their ports and develop them into regional hubs. However, the continent can support only a few regional hubs and the key issues of *how* African ports can transform themselves into regional hubs, and *where* such hub ports should be located, is of critical importance and are considered in the chapter. The chapter examines both the physical and policy considerations that governments must take into account in developing regional hub ports. It also examines the contributions IFIs can make towards the development of the port hubs. Governments have put in place large-scale investment programs, which provide avenues for private sector participation in the development of the ports. At the same time, for the ports to become regional hubs, the governments need to pay attention to the location, water depth, and the facilities and performance of the port to ensure low handling costs. As complementary measures, policies must be put in place to foster and finance integrated port and transport facilities and associated land use. Moreover, in order to develop state-of-the-art ports and to equip them with appropriate technologies and management skills, the involvement of the international private sector is essential and this could be enhanced through the landlord port model. Also, the dredging of African ports, many of which are characterized as too shallow for the latest generation of container ships, could be a frontline area of intervention for the private sector and development partners alike.

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