

CHAPTER 1

Introduction and Overview

Infrastructure gaps as well as high transport costs are critical factors hindering growth and poverty reduction in Sub-Saharan Africa. Although an efficient and low-cost transport system will not guarantee export success, it is a prerequisite for African countries to become competitive in the global market. As such, there has been renewed interest in understanding the nature of constraints that freight costs impose on trade, investment, and growth, especially in landlocked countries. Hummels and Schaur (2012) demonstrate empirically that longer transport time dramatically reduces trade. Without rapid import processes, trade based on assembling factories for exports is impossible, because delays and unpredictability increase inventories and prevent integration in global supply networks. Among 12 major impediments, the automotive industry in South Africa considers reducing inventories as the most important (Barloworld Logistics 2010). Without reducing the cost and improving the predictability of cargo dwell time (the time that cargo spends within the port or its extension), the objective of reducing inventories is not likely to be met.

In this regard, cargo dwell time in ports is critical. Arvis, Raballand, and Marteau (2010) demonstrate that more than half of the time needed to transport cargo from port to hinterland cities in landlocked countries in Sub-Saharan Africa is spent in ports.¹

Over the past decade, the international donor community has been investing in projects that facilitate trade and improve trade logistics in the developing world. These projects have assumed incorrectly that customs, terminal operators, and other controlling agencies are solely responsible for the long delays in ports, with infrastructure coming in second.

In reality, customs responsibility (especially for months-long delays) may not be as important as usually perceived, and in-depth data collection and objective analysis are required to determine the actual drivers of long cargo delays. Such analysis has been lacking so far.

Study Objectives and Methodology

This study is timely because several investments are planned for container terminals in Sub-Saharan Africa. From a public policy perspective, disentangling the reasons behind cargo delays in ports is crucial to understanding (a) whether projects by the World Bank and other donors have addressed the most salient problems and (b) whether institutional port reform and infrastructure, sometimes complemented by customs reform, are the most appropriate approaches or should be adapted. Without such identification and quantification, projects may ultimately result in a limited impact, and structural problems of long delays will remain.

Port dwell time refers to the time that cargo (containers) spends within the port (or its extension).² This study disentangles cargo delays in ports using comprehensive analysis of original data sets. It uses three types of data:

1. Data collected in six ports in Sub-Saharan Africa: Tema (Ghana), Lomé (Togo), Douala (Cameroon), Mombasa (Kenya), Dar es Salaam (Tanzania), and Durban (South Africa)³
2. Firm surveys (manufacturers and retailers) conducted in Kenya, Nigeria,⁴ South Africa, Uganda, and Zambia, to assess the extent of logistics constraints on importers and exporters, large- and small-scale companies, and traders and their demand for efficiency in ports
3. Information collected in discussions of results with stakeholders in the selected countries.

Ports were selected so as to have a representative sample of ports with regard to size, volume of traffic, and dwell time performance. Abidjan, Lagos, Tema, and Dakar ports account for more than two-thirds of total container traffic in West and Central Africa. Lomé handles smaller volumes

of containers, but is perceived to have the shortest dwell time in West Africa, and it provides useful insights on the peculiarities of gateway ports with significant transit traffic. Douala, a medium-size port, is the largest port in Central Africa, handling about 150,000 TEUs (20-foot equivalent units) every year for both domestic and hinterland markets. Mombasa and Dar es Salaam are the largest ports in East Africa, with a capacity of about 400,000 TEUs, while Durban is the largest port in Sub-Saharan Africa.

Except for Durban and Mombasa, all of the ports studied are run by private container terminal operators, such as A. P. Møller (Maersk Group) and Bolloré for Douala and Tema, Bolloré for Lomé, and Hutchison Port Holdings, a subsidiary of the multinational conglomerate Hutchison Whampoa Limited, for Dar es Salaam.

Main Findings

Dwell time figures are a major commercial instrument used to attract cargo and generate revenues. Therefore, the incentives for a port authority and a container terminal operator are increasingly strong to lower the real figure to attract more cargo. At the same time, ports are more and more in competition, so the question of how to obtain independently verifiable dwell time data is increasingly critical to provide assurance that interventions are indeed having the intended effect.

In terms of indicators or targets for each port, average or mean dwell time has usually been the main indicator in Sub-Saharan Africa. It has the advantage of being both easy to compute and easy to understand. However, because a quarter of problematic shipments experience extremely long dwell time, average or mean dwell time can hardly decrease in the short and medium term. This has been the experience of Douala, for instance, which, at the end of the 1990s, sought to achieve an average dwell time of seven days, but still experiences an average dwell time of more than 18 days, despite improvements for some shippers.

Cargo dwell time in ports in Sub-Saharan Africa is abnormally long: more than two weeks on average compared to less than a week in the large ports in Asia, Europe, and Latin America (table 1.1). For benchmarking purposes, if we exclude Durban and, to a lesser extent, Mombasa, average dwell time in most ports in Sub-Saharan Africa is close to 20 days (compared to three to four days in most large international ports).

Another peculiarity in African ports is the frequent occurrence of very long dwell times, which adversely affect the efficiency of port operations and increase congestion in container terminals at a high cost to the

Table 1.1 Average Dwell Time in Sub-Saharan African Ports

<i>Port</i>	<i>Average dwell time (number of days)</i>
Durban	14
Douala	19
Lomé	18
Tema	20
Mombasa	11
Dar el Salaam	14
Average (excluding Durban)	16

Source: Kgare, Raballand, and Ittman 2011; firm surveys.

economy. Cargo dwell times in Sub-Saharan Africa also show an abnormal dispersion, with evidence that discretionary behaviors increase system inefficiencies and raise total logistics costs.

The private sector (terminal operator, customs broker, owner of container depots, and even shippers) does not seem to have an interest in reducing dwell time. In most ports in Sub-Saharan Africa, the interests of controlling agencies, port authorities, private terminal operators, logistics operators (freight forwarders), and large shippers collude at the expense of consumers. In many ports, there are strong incentives to use the port as a storage area. For example, storage in Douala port is the cheapest option for the first 22 days, which is 11 days more than the container terminal's free time. Firm surveys demonstrate that low logistics skills and cash constraints explain why most importers have no incentive to reduce cargo dwell time: in most cases, doing so would increase their input costs. Moreover, some terminal operators generate large revenues from storage, and customs brokers do not necessarily fight to reduce dwell time because time inefficiency is charged to the importer and eventually to the consumer.

Handling and operational dwell time add only two days (except in cases of severe congestion) to the average dwell time of 15 days and more. The bulk of the time pertains to transaction time and storage time, which result from the performance of controlling agencies and, even more important, from the strategies and behavior of importers and customs brokers. The strategies of importers can lead to use of the port as a cheap storage area, while collusion of interests among shippers, intermediaries, and controlling agencies may reinforce rent-seeking behaviors, to the detriment of cargo dwell time.

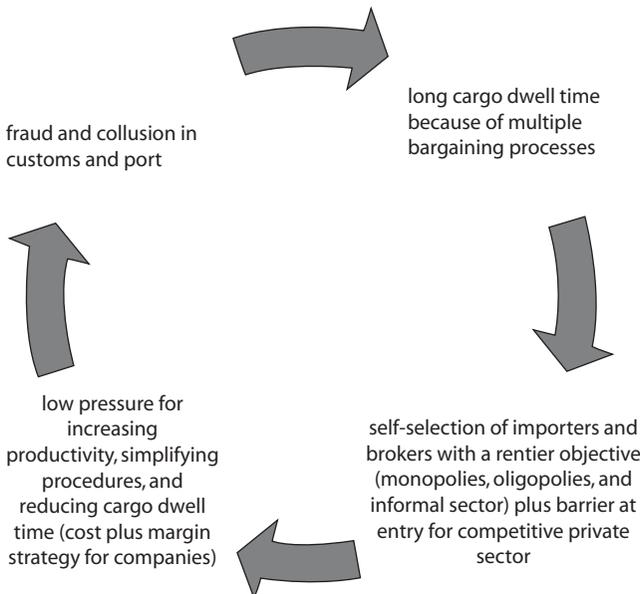
Market structure of the private sector explains the hysteresis of cargo dwell time. The structure of the African economies, which have few

export-oriented producers and a preponderance of traditional import-export traders, reinforces the status quo, because they are rarely organized to be competitive worldwide. Based on firm surveys, it appears that companies may use long dwell times to prevent competition, like a predatory pricing mechanism, as well as to generate considerable rents.

In most ports in Sub-Saharan Africa, a vicious circle, in which long cargo dwell time (two to three weeks) benefits incumbent traders and importers as well as customs agents, terminal operators, or owners of warehouses, constitutes a strong barrier to entry for international traders and manufacturers (figure 1.1). This also explains why cargo dwell time has not decreased substantially for years: the market incentives are not strong enough in most cases, and importers can secure revenues by avoiding competition. This circle has been broken in Durban by the presence of a strong domestic private sector interested in global trade and public authorities willing to support them.

Weeks-long cargo dwell times in ports have become a serious obstacle to the successful integration of Sub-Saharan African economies into global trade networks, because they make lean, demand-driven manufacturing and trading activities virtually impossible.

Figure 1.1 The Vicious Circle of Cargo Dwell Time



Source: Authors.

As a result, the widespread assumption that the provision of additional port infrastructure will necessarily translate into shorter dwell time does not hold in the medium to long term, especially when it comes to expanding existing ports. Using the example of Durban and simulations of container movements in a port terminal, we demonstrate that reducing dwell time from a week to four days more than doubles the capacity of the container terminal without any investments in physical extensions. Making investments in larger port storage areas is a suboptimal measure when efficiency gains can be obtained by speeding up clearance operations.

Implications for Donors in Sub-Saharan Africa

These findings could explain why many trade facilitation measures, such as community-based systems in ports, have been difficult to implement in Sub-Saharan Africa. Market incentives are too low for supply-side measures alone to bring about a radical improvement in trade logistics efficiency. Transparency is not welcomed because it is synonymous with the suppression of rents and promotion of competitive environments. The potential number of actors who may be drivers of change in the trading, industrial, and logistics sectors is much lower than generally anticipated because of risk-averse behaviors.

Significant change is needed, including intervention of donors and development partners. Given the current level of dwell time in Sub-Saharan Africa, one of the worst options, which nevertheless is preferred in many instances, is to invest in additional storage and off-dock container yards (additional storage areas), where congestion and long cargo dwell times occur. Indeed, if dwell time is not reduced, after a couple of years, new dock yard extensions costing millions of U.S. dollars will be required, extensions that would be unnecessary if dwell time were reduced. Structural issues that lead to long dwell times, including the characteristics of demand, need to be tackled before undertaking costly physical extensions. If not, local populations will continue to pay twice for long dwell times: as taxpayers, because most physical extensions and infrastructure are expensive public investments, and as consumers, because inefficiencies and rents in the port are fully reflected in the final price of consumer goods and services. The construction of off-dock container yards in the outskirts of port cities, which relieve congestion in the transit port in the short run, also appear to be ill-advised from a system perspective. These additional storage areas tend to become rent-capture instruments in the hands of a few operators that charge high premiums on transit cargo and provide no added value. Such infrastructure was built in

the 1970s and 1980s and abandoned in the 1990s, but is now back in fashion, as congestion has grown in some key ports.

The effective solutions to decrease dwell time in African ports will rely for the most part on the challenging task of breaking the private sector's collusive short-term strategies and providing adequate incentives for public authorities, intermediaries, and shippers to achieve optimal system equilibrium. Some possible dos and don'ts are presented in table 1.2.

Table 1.2 Possible Policy Recommendations

<i>Dos</i>	<i>Don'ts</i>
To deal with ports' capacity shortage, envisage a more optimal use of the existing capacity by targeting long-stay containers or cargo and encouraging fast clearance through price incentives	To deal with a ports' capacity shortage, immediately consider building additional capacity
Undertake a careful assessment of the way the private sector operates before investing in port infrastructure; understand demand before changing supply	Necessarily privatize or concession a container terminal to reduce dwell time
Inform public decision makers at very high level (prime minister, ministries of economy and finance) on the need to undertake public governance–related actions to build a broad coalition for change; thoroughly analyze the economic cost of poor system performance to the national economy	Support measures that create new rents and reduce system transparency such as the proliferation of off-dock container yards with no regulatory framework
Sensitize the local population and trading communities to the importance of port clearance performance and the proper calculation of total logistics costs	Consider as a given that everybody is aware that transport and port "costs" are high and address the issue of port delays only from a monetary cost perspective (with no mention of the time cost and reliability cost)
If a coalition can be built, design incentive tools, such as contractual relations between customs brokers and customs or between port operators and shippers; nurture good performance	Focus on poor performance, with no promotion of or reward for good performance
Undertake actions before arrival and after storage that directly and indirectly reduce dwell time, such as reinforcing incentives to clear shipments prior to arrivals and monitor and amend customs auction practices	Design information technology–only investment in a port or customs interface with no targeted actions to improve performance of the full cycle of transactions, including early and late processes in the clearance chain
Identify performance indicators, with a benchmark pegged to the most efficient shippers in the port	Report averages, with no distinct evaluation of good, average, and poor performance

Source: Authors.

Notes

1. Wilmsmeier, Hoffmann, and Sanchez (2006) find that the combined efficiency of the importing and exporting countries' ports has a very strong impact on maritime charges. Increasing the indicator of port efficiency by 1 percent reduces freight charges by 0.38 percent. If the two countries in the sample with the lowest port efficiency would improve their efficiency to the level of the two countries in the sample with the highest port efficiency, freight charges on the route between them would decrease an estimated 25.9 percent.
2. Even in Sub-Saharan Africa, more than half of total imports are containerized, and this traffic is growing. Data are more systematic and reliable for containers than for bulk traffic. We focus on import containers because they are important for import-export models and dwell time is usually low for outbound containers. Most boxes stay in port for one to two days to be marshaled before loading. Bulk or noncontainerized general cargo usually fits a specific pattern of storage and loading or unloading strategies.
3. This study selected the largest or among the largest ports in the four subregions of Africa: Durban in Southern Africa (which is also the largest in Sub-Saharan Africa), the two largest in East Africa (Mombasa and Dar es Salaam), Douala in Central Africa, and Lomé and Tema in West Africa.
4. Nigeria was selected because it undertook a major port reform but has continued to suffer from long dwell time. It is one of the most important African economies.

References

- Arvis, Jean-François, Gaël Raballand, and Jean-François Marteau. 2010. *The Cost of Being Landlocked: Logistics Costs and Supply Chain Reliability*. Washington, DC: World Bank.
- Barloworld Logistics. 2010. *Supply Chain Foresight, Growth in Adversity: Resilience and Recovery through Innovation*. Sandton, South Africa: Barloworld Logistics.
- Hummels, David, and Georg Schaur. 2012. "Time as a Trade Barrier." NBER Working Paper 17758, National Bureau of Economic Research, Cambridge, MA. <http://www.nber.org/papers/w17758>.
- Kgare, Tshepo, Gaël Raballand, and Hans W. Ittman. 2011. "Cargo Dwell Time in Durban." Policy Research Working Paper 5794, World Bank, Washington, DC.
- Wilmsmeier, Gordon, Jan Hoffmann, and Ricardo Sanchez. 2006. "The Impact of Port Characteristics on International Maritime Transport Costs." In *Research in Transportation Economics*, vol. 16, ed. Kevin Cullinane and Wayne Talley. Amsterdam: Elsevier.