

5 Millennium Challenge Account support and port reforms in Benin: A trade facilitation effects analysis

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Abstract

Since 2006, Benin has benefited from the United States Government initiative, the Millennium Challenge Account (MCA) programme. In Benin, the main component of this programme is the Access to Markets Project, through which 61 per cent of MCA subsidies are directed towards improving port operations and infrastructures. The aim of this chapter is to assess the potential effects of these trade facilitation reforms over the project period. Based on performance indicators, this chapter shows an increase in goods traffic via the Cotonou Port Authority (CPA) by an average 13.65 per cent annually. The Granger causality test is applied to establish a relationship between aid and the time taken to process import containers, as well as the quantity of imports. The study shows that Aid for Trade (AfT) induces a significant decrease in the time taken for import container processing at CPA, by an average 6.9 per cent annually. An econometric model of importing enables support for these correlations. We estimate the model with and without an MCA grant. Findings highlight an important increase in volume of imports when MCA aid is included in the model. These results show that an MCA grant contributed to improvement in the CPA's performance and we suggest intensification of trade facilitation reforms at the CPA.

* The contents of this chapter are the sole responsibility of the authors and are not meant to represent the position or opinions of the WTO or its members.

5.1 Introduction

Economic growth plays a central role in poverty reduction and it is recognized that countries that have made the development of trade a determining factor in their strategies experience higher growth rates (Higgins and Prowse, 2010). How to take advantage of trade thus remains the biggest challenge in developing countries: constraints exist not only on participation in world trade (OECD, 2009), but also for access to business opportunities and the sharing of trade gains between countries. Most least-developed countries (LDCs) are more or less open economies whose products and growth remain dependent on international and regional trade (Rippel, 2011). Despite its marginal contribution to regional and global trade, Benin is no exception: the narrowness of the domestic market and limited productive industry mean that the country remains a net importer of goods. Hence, tax on imports and export promotion are important factors in the growth of national income and development. The country's only seaport, the Cotonou Port Authority (CPA), is one of the main ports in the sub-region, because of its role in providing transit for landlocked countries. It also occupies a central place in Benin's economy, accounting for 90 per cent of foreign trade, 45–50 per cent of tax revenues and 80–85 per cent of customs revenues, the largest component of domestic budgetary resources (MCA-Benin, 2012).

Ensuring the economic competitiveness of the port involves reforms to guarantee service quality, reduce operating costs and processing times, and improve port security. It is in this context that trade facilitation is defined. As pointed out in *World Trade Report 2015* (WTO, 2015), "trade facilitation" is a polysemous word that broadly refers to reducing trade costs to make it easier for traders to move goods across borders by making cumbersome cross-border trade procedures more efficient (Persson, 2013). According to Portugal-Perez and Wilson (2012), trade facilitation can be measured along two dimensions: a "hard" dimension related to tangible infrastructure, such as roads, ports, highways and telecommunications, and a "soft" dimension related to transparency, customs management, the business environment and other institutional aspects that are intangible.

Trade facilitation policies initiated in Benin in recent years concern the onshore operations in particular, and they are accompanied by modern and adequate infrastructure policies. In general, the importance of investments and equipment needed in this area, combined with tight budget constraints in LDCs, show the usefulness of official development assistance in facilitating reforms. It is in this context that the Aid for Trade (AfT) approach was initiated, to develop supply capacities and trade infrastructure in developing countries to enable these countries to take advantage of trade agreements. In this context, Benin has

benefited since 2006 from the United States Government initiative, the Millennium Challenge Account (MCA) programme.¹

The MCA is a series of strategic investments meant to improve physical and institutional infrastructure and increase investment and private sector activity. With a value of about US\$ 307,298,000 in Benin, the main component of the programme is the Access to Markets Project, which accounts for 61 per cent of the MCA grants (MCA-Benin, 2012). Basically, this component of the MCA-Benin programme aims to promote market access through improved port operations and infrastructure. It also seeks to improve competitiveness, performance and port security through infrastructure modernization, management and institutional and systems reforms in order to increase capacity and reduce transaction costs. With this US bilateral support, research on the effectiveness of the CPA is intended to contribute to more added value to both importers and exporters, through reduced costs and processing duration, but also to improve the quality of port operations. Theoretically, investments in port infrastructure should help energize and substantially increase not only the volume of trade but also the business climate.

This research aims to assess the different effects of the reforms on the CPA and cross-border trade within the MCA programme in Benin. The study is organized in six sections. Following this Introduction, Section 2 provides an overview of the problems arising from stylized facts based on the different axes of reforms as part of the MCA financial support. Section 3 is a review of theoretical and empirical literature on the effects of the aid on trade and growth. In Section 4, the methodology is presented. Section 5 presents the main results with their analyses and implications. Section 6 concludes the study.

5.2 Stylized facts and problems

With the CPA, Benin is a corridor serving the hinterland countries (Burkina Faso, Chad and Niger) and Nigeria, in particular by providing transit. Even though the importance of the CPA in Benin's economy has been rising continuously over several years, the port's competitiveness has been questioned because of the strong regional competition, but also because it is under-equipped with modern infrastructure (MCA-Benin, 2012). Congestion, a multiplicity of procedures involving significant costs of formal or informal transactions, and process complexity with time losses, are characteristic of port operations. The competitive environment in the sub-region, with neighbouring ports, also remains a strong constraint to which Benin must respond with trade facilitation reforms, among others.

Red tape in the CPA significantly weighs on the performance of the handling companies, with procedures taking an average of four times longer than in competitor ports, including Téma and Lomé (N'Guessan N'Guessan, 2003). In terms of transit times for commercial goods destined for landlocked countries, consolidated data produced by Delmas in 2009 indicate a longer transportation corridor in Benin: from Cotonou to Niamey (Niger), total transit time could extend to 23 days, as opposed to 22 days from Tema (Ghana) to Niamey, in spite of the comparative advantage of 280 km less distance in Benin (Hartmann, 2011). The same disadvantages in terms of total transit time are observed whether the Lomé or Ouagadougou ports are used.

Consequently, the decline in traffic and the volume of goods through CPA has led to a dwindling of government revenues in an important sub-sector of the economy of Benin (MCA-Benin, 2012). Therefore, in addition to the obsolescence of road transportation, these differentials sufficiently justified reforms and investments to simplify procedures and processes to reduce overall formal and informal transaction costs. In the five years since 2006, Benin has chosen to focus the MCA grant mainly on the Access to Markets component of the programme, initiating various investments and reforms in the port area. Basically, the programme has helped to overcome the main obstacles to good performance by the CPA through the improvement of physical and institutional infrastructure, including arrest spike extension, the construction of two new berths, reinforcement of the former docks, and the acquisition of trailers. On 3 February 2012, the distribution of funds was as follows (Table 5.1).

Table 5.1 Distribution and execution of resources by project activities

Activity	Budget (US\$)	Commitments		Payments	
		Budget (US\$)	Share (%)	Budget (US\$)	Share (%)
Education	9,881,009	9,848,674	99.67	9,848,674	99.67
Institutional reform	11,033,882	10,967,813	99.40	10,967,813	99.40
Security and access roads	58,432,216	58,390,316	99.93	58,390,316	99.93
Infrastructure expansion	108,739,211	108,697,185	99.96	108,697,185	99.96
Total	188,086,318	187,903,987	99.90	187,903,987	99.90

Source: MCA-Benin, February 2012.

Overall, resources provided under the project were initiated and fully executed. In terms of indicators of activity, 160 port agents have benefited from strengthening technical capacity, two docks were built, 53 items of surveillance equipment were acquired for security purposes, a set of scanners was installed, and a car park and three access roads for large aircraft were built (MCA-Benin, 2012). In addition, the preliminary results of the project estimate the number of beneficiaries to be 5,818,528, including corporate agents (operators and port users) and members of their households, and consumers and companies that participated in the implementation of activities planned under the project and members of their households (MCA-Benin, 2012).

The facilitation of investment also accounts for part of the acquisition and installation of an integrated security system, electronic gates, dry bulk processing equipment, an oceanographic station and pollution control equipment. Modernization of the CPA continued with the reform of the single window, which became operational in 2011 with the automation of procedures for greater efficiency of the port logistics chain, which is a major facilitation measure as part of agreements (World Customs Organization, 2011). Justified by transit time reduction, transparency in the clearance process and secure customs revenue, the single window should allow optimizing, managing and automating port and logistics processes through an integrated database. Moreover, some investments in infrastructure, undertaken with private partners, Bolloré and Maersk Groups in particular, have strengthened the work undertaken and acquisitions made under the MCA programme. The fruit of the partnership between the public and private sectors, the new logistics system “docking window” installed in 2009, has reduced the waiting time at the port by 60 per cent.

Through these extra investments in the CPA, various reforms have been undertaken in the direction of improving the business climate in Benin, within the scope of facilitating border trade. Among those reforms that have strengthened trade facilitation measures at the CPA are the introduction of new technology for managing procedures, including single-charge fees and the control of shipments by electronic monitoring of bordereau² information. In the context of transit, traffic was controlled with the establishment of joint checkpoints on the Benin corridor. Finally, the CPA trade facilitation measures also concerned the simplification of export and import procedures (documentation and processes) and the reduction of the time and costs related to foreign trade. According to the Presidential Investment Council (CPI), which administers these reforms, the implementation of single-charge fees has reduced payment processing time from five days to about seven minutes.

Since 2009, following investments and reforms in the port and logistics chain, performance has been recorded (Alix, 2009). Theoretically, investments in port infrastructure are designed to stimulate and substantially increase the volume of trade through the CPA. Given the sector's contribution to public revenues, and especially its diffuse training effects on other sectors, employment and output growth should be affected. It is expected that these reforms, for which the Customs Administration, the National Shippers' Council of Benin (CNCB), La Société d'Exploitation du Guichet Unique de Bénin (SEGUB) – the company operating the single window – and La Société Solutions Technologiques des Transports du Bénin (STTB-SA) are key actors, will have direct and indirect effects on reduced waiting times and operational costs, which will increase the volume of both imports and exports. As indicated by Rippel (2011), trade facilitation policies can reduce trade costs, increase competitiveness and improve the export and import capacity of countries, to create more jobs, generate economic growth and thereby reduce poverty.

Table 5.2 highlights the evolution of the volumes of Benin's imports and exports. On average, they have almost doubled between the two periods considered, that is to say before and after the implementation of the relevant reforms.

There is reason to question whether these dynamics are attributable to the various port reforms since 2006, and to what extent. At the same time, it is necessary to indicate Benin's performance as recorded in Doing Business 2015 (World Bank, 2014), the country having risen from rank 167 in 2014 to 151 in 2015. Is there a causal relationship between various reforms undertaken since 2006 with particular MCA financial support, analysed in terms of AfT in Benin? Besides, the effects on trade remain to be tested – have these reforms, financed by US aid, induced a real and significant impact on Benin's economy in terms of jobs, productivity gains and increased national income? Beyond these reforms and performances recorded in

Table 5.2 Evolution of goods traffic through the CPA, 2002–2012

Component	2002–2006			2007–2012		
	Total volume (metric tons)	Average volume (metric tons)	Rate variation (%)	Total volume (metric tons)	Average volume (metric tons)	Rate variation (%)
Import	19,748,762	3,949,752.40	61.41	35,901,605	7,180,321.00	13.50
Export	2,490,259	498,051.80	11.28	5,150,862	1,030,172.40	86.56
Total	22,240,021	4,448,004.20	54.73	41,052,467	8,210,493.40	20.92

Source: Authors' calculations based on econometric research.

trade and resulting from trade facilitation policies, have they induced real effects in terms of reducing transaction costs and processing time for port operations?

If economic growth remains sluggish in Benin, at an average 4 per cent over the past decade (MCA-Benin, 2012), it is necessary to appreciate its link with trade facilitation policies in order to identify the real potential of reforms. According to Higgins and Prowse (2010), AfT issues, which have emerged since 2005, must be part of general development policies; this has become more important in developing countries, having particular implications in terms of improvement of comparative and competitive advantages. Therefore, beyond the direct effects of reduced time and costs, there may be a link between trade, growth and poverty reduction, and trade openness is crucial in this process. Therefore, with a view to poverty reduction and capacity-building through exchange, this study should allow for extension of the scope of trade-facilitating reforms in Benin in terms not only of productivity but also inclusive growth. Specifically, given the US subsidies considered as AfT, what direct and indirect links are established between the induced reforms on the one hand, and growth and poverty reduction on the other? These results should be a powerful asset that can justify the investment required in the second MCA compact being negotiated.

5.3 Literature review

Inefficient border procedures, due to a lack of staff or unnecessarily burdensome paperwork, is costly for administrations and businesses and it is ultimately the taxpayer or client who supports these costs. For enterprises, there may be direct costs at the border related to the transmission of information and documents as well as indirect costs related to bureaucratic delays, lost business opportunities and unpredictable regulations. Surveys to determine these costs indicate that they can represent between 2 per cent and 15 per cent of the value of traded goods (Sanchez et al., 2003). Similarly, inefficient border procedures have a cost to governments: loss of revenue, smuggling and difficulties in trade policy implementation. Finally, inefficient border procedures hamper competitiveness, making a country less attractive for investment. In developing countries especially, trade costs are particularly high. It is therefore expected that full implementation of trade facilitation will reduce global trade costs by an average of 14.3 per cent, and African countries and LDCs are expected to see the biggest average reduction in trade costs (WTO, 2015).

Therefore, it is recognized that improving the efficiency of border procedures through facilitation policies is beneficial: countries that have carried out reforms in this field have seen significant increases in their customs revenue despite the

reduction of customs tariffs on subsequent trade liberalization (Berritella and Zhang, 2012; Cadot et al., 2011; OECD, 2009).

Trade facilitation and cost reduction

Trade facilitation is one of the topics that has been discussed since the First WTO Ministerial Conference in Singapore in 1996.³ With a view to successfully completing the Doha Round, negotiations aimed to clarify and improve relevant aspects of GATT Articles on freedom of transit, fees and formalities related to imports and exports, and the publication and administration of trade regulations. The Ninth WTO Ministerial Conference in Bali in 2013 resulted in an agreement on trade facilitation. This agreement includes measures and obligations on trade facilitation on the one hand and flexibility provisions for developing countries in terms of special and differential treatment on the other.

Regarding facilitation, Portugal-Perez and Wilson (2012) distinguish between the “hard” dimension related to tangible infrastructure such as roads, ports and telecommunications, and the “soft” dimension related to intangible infrastructure, including transparency, customs, the business environment and institutional framework. It is these elements that are followed internationally to facilitate trade and that are reflected in the WTO definition of facilitation, namely, simplification and harmonization of procedures.

Trade facilitation is of particular importance for developing countries: they derive the most advantage from more efficient trade procedures, as even a modest reduction in the cost of trade would have a positive impact on trade for both developed and developing countries (Hoekman and Nicita, 2011; Iwanow, 2009, OECD, 2009). If a country improves its trade procedures so that trade costs are reduced, importers benefit from lower prices, while exporters receive higher prices for the traded goods. Thus, trade facilitation benefits both exporting and importing countries (WTO, 2015). If the welfare of other countries is improved, developing countries will see their trade increase further, current systems being comparatively inefficient and affected sectors (food products, small and medium enterprises) being crucial to their economies.

Given that trade facilitation measures designed to reduce transaction costs affect different sectors of the economy and the different operators of international trade, OECD research (2005) shows that developing countries should collect two-thirds of the benefits of trade facilitation on well-being throughout the world. Among other effects of the training requirements that are generated by trade facilitation, trade-competitive countries more easily attract foreign direct investment, and cover duties and taxes more efficiently and more reliably. The prospect of increasing

revenues is, in fact, one of the main incentives for reform in trade facilitation: the loss of revenue due to inefficient border procedures is estimated at more than 5 per cent of GDP (OECD, 2005).

Starting from a broad definition of trade facilitation, Wilson et al. (2005) consider four indicators to measure its impact: port efficiency, customs procedures, regulations and use of information and communications technology (ICT). Berkowitz et al. (2006) indicate two induced effects of trade facilitation: a transaction effect resulting from reduced costs for exporting and a production effect resulting from the transformation of production systems. Iwanow and Kirkpatrick (2009) show, for a sample of 124 developing countries, that trade facilitation reforms contribute to improving Africa's export performance, in particular for manufactured goods, the rate outstripping the rest of the world. However, in terms of reforms, the quality of regulation, and transport and communications infrastructure, are also needed. Hoekman and Nicita (2011) reach the same conclusion, that facilitation policies affecting non-tariff measures are favourable to the expansion of trade, including exports. Portugal-Perez and Wilson (2009) show that substantial gains can be made with trade facilitation policies in African countries: reduced transaction costs have a greater impact on trade flows than addressing tariff barriers. Moreover, Portugal-Perez and Wilson (2012) indicate that the hard trade facilitation dimension, including physical and ICT infrastructure, induces increasingly important effects as economies develop.

Moisé and Sorescu (2013) study the possible effects of trade facilitation in developing countries. The areas that seem to have greater effect on trade volumes and trade costs, for both imports and exports, are the availability of information, simplification and harmonization of documents, streamlining of procedures and use of automated processes. They show that the combined effect of improvements in these areas is dominant, with a reduction of 14.5 per cent in the total cost of trade for low-income countries, 15.5 per cent for lower-middle-income countries and 13.2 per cent for upper-middle-income countries. This suggests a comprehensive approach to trade facilitation reforms rather than other policies. Spence and Karingi (2011) appreciate the impact of trade facilitation in the African economies: applying the four indicators of trade facilitation offered by Portugal-Perez and Wilson (2012), they show that facilitation policies reinforce both the competitiveness of exports (transaction effect) and total factor productivity (production effect). From this point of view, trade facilitation reforms, including physical infrastructure, are a component of a holistic approach to trade policy in African countries; they contribute not only to the diversification of exports but also to long-term external competitiveness (Bearce et al., 2012; Brenton and von Uexkull, 2009).

Cost of facilitation reforms and the role of aid

If trade facilitation policies are beneficial in reducing the costs of inefficient procedures, their implementation also involves costs related to new regulations, institutional changes, training, equipment and infrastructure. Regulatory costs arise from new laws or amendments concerned with the facilitation of trade; institutional costs arise from the creation of new services, such as the single window. Training is probably the most important element of trade facilitation, given the new administrative practices. Finally, equipment and infrastructure are often the biggest issue; however, equipment and infrastructure are tools to be combined with reforms relating to regulations, the institutional framework and human resources. In particular, ICT can improve efficiency, but it implies the simplification of formalities upstream to optimize adoption of the automated system. However, these costs are more than offset by lower effective border controls and revenue improvement. Most developing countries that have carried out these reforms have reaped greater benefits than their costs, and often these are very much higher. In the case of a five-year programme of customs modernization that enabled Angola to increase revenues by 150 per cent, the duration of customs procedures was reduced to 24 hours (OECD, 2005).

As indicated by Stiglitz and Charlton (2006), many developing countries have not been able to achieve their Uruguay Round obligations⁴ because of the associated costs. Therefore, given the benefits of trade facilitation programmes on the one hand and the necessary resource requirements for their implementation on the other, the orientation of AfT has become a crucial issue in developing countries (Helble et al., 2009; Higgins and Prowse, 2010). As such, support for these countries to overcome barriers to the expansion of trade and to benefit from trade is the principal purpose of AfT (OECD, 2009). Overall, improving access to the market for LDCs' products plays a central role in the trade negotiations of the Doha Round, complemented by the strengthening of supply capacity, tariff policies and substantial investment. These beliefs have guided the involvement of developed countries in aid programmes to support trade development and trade facilitation policies: this is the approach of AfT. Overall, AfT includes: (i) technical assistance related to business strategies and negotiating practices; (ii) infrastructure, including roads, ports and telecommunications; (iii) investment in production capacity with favourable export diversification and exploitation of comparative advantages; and (iv) adjustment assistance, which compensates for tariff losses and deteriorating terms of trade (Higgins and Prowse, 2010; OECD, 2009).

According to Higgins and Prowse (2010), the AfT initiative has become effective in recent years, including by increasing support to LDCs that has resulted in the reduction of constraints that limit their capacity to integrate into the multilateral

trading system. Since 2005, donors have increased their support for the expansion of trade in developing countries. Aid increased by about 10 per cent in real terms between 2006 and 2007, with both bilateral and multilateral commitments reaching US\$ 25.4 billion in 2007, along with US\$ 27.3 billion worth of commercially driven non-concessional financing (OECD and WTO, 2009). The MCA Access to Markets Project in Benin could be seen as a response to the African Growth and Opportunity Act programme (Zackaria-Touré, 2009), as well as a response to the appeal made at the Sixth WTO Ministerial Conference in December 2005, inviting donors to increase AfT resources.⁵

There is considerable literature on the relationship between trade, growth and poverty. Evidence suggests that more open trade is essential for economic growth (OECD, 2009), but the interactions between these factors are not precise (Basnett et al., 2012; Hallaert, 2010). First, trade openness induces growth and is necessary to reduce poverty. On the other hand, it is possible that economic integration through trade is the result of economic growth. The direction of causality between variables is not, therefore, determined a priori. Thus, an inclusive growth momentum favours open trade but economic integration can also facilitate access to markets.

Furthermore, at the aggregate level, the link between trade openness and growth, and trade liberalization, involves winners and losers, limiting the impact of trade policies in terms of reducing poverty and inequality. There are, however, some certainties about how changes in trade directly or indirectly affect growth and poverty, with some differences depending on the context, incentive policies and reforms (Higgins and Prowse, 2010). More specifically, the challenge for the AfT initiative is that, beyond the direct effects in terms of increased trade volumes, the indirect effects can address long-term issues of inclusive growth and poverty reduction. To this end, both the context and institutional factors are central.

Aid for Trade: Theoretical arguments and real effects

Addressing the negative impact of the financial and economic crisis on the AfT programme, the OECD and WTO (2009) stress the need to maintain commitments: AfT should further support growth policies and reduce poverty in developing countries by removing constraints to trade and diversifying the sources of economic growth. Inspired by McCulloch, Winters and Cirera (2001), Higgins and Prowse (2010) distinguish three transmission channels. The distribution channel derives from the impact of trade facilitation policies on prices of goods and services, given the cost reduction; depending on other factors (world prices, terms of trade, taxes and factor costs), well-being will be affected. The companies channel reflects the reaction of producers through wages, profits and employment;

for example, import facilities may make it less competitive domestic products with negative effects on demand, employment and wages. Finally, the government channel results in changes to taxes and transfer costs: as a consequence of pricing policy, public resources may increase or decrease, with expanding or depressive effects on public spending on infrastructure, education, health and social protection.

Vijil and Wagner (2010) consider two channels: institutions and infrastructure. They show that, whereas infrastructure is a significant factor of export performance, the quality of institutions is found to have a fairly limited impact on the exports of developing countries. Also, AfT-oriented infrastructure has a positive impact on the level and capacity of infrastructure in developing countries: a 10 per cent increase in aid to infrastructure per capita induces an average 2.34 per cent increase in exports relative to GDP. This is also equivalent to a 2.71 per cent reduction in tariff and non-tariff barriers, evidencing a significant economic impact of AfT through the channel infrastructure.

Basnett et al. (2012) come to the same conclusions about the impact of AfT on trade facilitation and of infrastructure on exports. A 10 per cent increase in AfT for infrastructure contributes to an increase in exports relative to GDP of around 2.3 per cent. Furthermore, for developing countries, the significant impact of reforms in reducing trade costs improves economic performance in terms of exports, domestic products or the investment environment. However, these effects can vary widely, depending on the type of intervention, country and sector beneficiaries. Helble, Mann and Wilson (2009) estimated the rate of return from US\$ 1 of aid to be in the order of US\$ 697 induced by trade in the LDCs. In a sample of 184 countries for the period 1990–2005, Johansson and Pettersson (2009) reach the same results for both the donor and the recipient; the aid being considered was holistically oriented technical assistance and export capacities. The specific effect of the AfT-related exchange infrastructure is less significant.

Having identified the constraints to trade development in developing countries, the OECD (2009) shows that the four objectives of the AfT initiative have great potential to boost economic growth and reduce poverty in countries in development. However, this trade potential will only be realised if the countries concerned transform opportunities for trade and growth in trade. The challenges in this regard include supply capacity constraints and lack of trade-related infrastructure on the one hand, and endogenous constraints that limit the growth effect of trade on the other hand. In terms of the latter, constraints are numerous and it is useful to identify the greatest for each country. For this purpose, the diagnostic analysis of constraints to growth approach proposed by Hausmann, Rodrik and Velasco (2008) is a rather valuable tool. Cali and te Velde (2011)

analyse the effects of AfT on export performance through the reduction of exchange costs and the level of exports. For a sample of developing countries, they conclude that AfT has a reducing effect on exchange costs. Furthermore, economic infrastructure and productivity enhancing assistance significantly improve export volumes.

The empirical literature suggests a strong link between trade expansion and economic growth, and the effect on growth varies by country (Chang, Kaltani and Loayza, 2005; Dufrénot, Mignon and Tsangarides, 2009). For Rodrik (1998), although trade policies in sub-Saharan Africa produced significant effects on export and trade performance, better than elsewhere in the world over the period 1964–1994, the effects of these policies on economic growth remained very modest and indirect. In explaining this, Dufrénot, Mignon and Tsangarides (2009) show that the effect of trade openness on growth is higher in low-growth developing countries than in developing countries with high growth rates; this is explained by the high concentration on exports and relatively small share of manufacturing in the former. However, the sectoral analysis of the effects of AfT made by Cali and te Velde (2011) shows that support for infrastructure is particularly beneficial for the mining and manufacturing sectors, the food sector being less affected. In this area, employing the substitution effect between aid and preference for trade with externalities of learning by doing on exports among partner countries, Adam and O'Connell (2004) show that greater preference for trade at the expense of aid would enhance the welfare of the recipient country.

The effects of AfT on welfare are not as obvious, as highlighted by Mayer and Milberg (2013). In a context of widespread value chains co-existing among small and large companies with different levels of market power, workers and small producers are not able to capture the economic gains to be had. Accordingly, for Mayer and Milberg, the benefit of AfT is captured only by the market players who have strong market power in the value chain, which skews the potential effects of aid on growth, poverty reduction and well-being. Beyond aid flows, Lensink and Morrissey (1999) consider the stability of the aid to explain actual effects. Estimating a growth model including the level of aid, they show that it is not the level of aid that has the most significant effect; however, taking instability into account, the impact of aid flows on economic growth becomes significant. The stability test also indicates the significant effect that results from the investment channel. Therefore, more stable aid flows would induce significant effects on growth, which means that, for the countries of sub-Saharan Africa, aid has less impact, given the fact that it is characterized by uncertainty.

Differences between countries indicate the existence of constraints limiting the effects of trade on economic growth. It is also recognised that these effects are not

direct but pass through various transmission channels, the most important of which are investment and productivity (OECD, 2009). Among the factors that may affect the transmission mechanism are macroeconomic instability, financial constraints, financial development, the quality of the workforce, and policies targeting the business environment and the allocation of resources. Addressing lessons learned from reforms in the 1990s, the World Bank (2005) evokes the problematic impact of trade on growth in these terms: "Trade is an opportunity, not a guarantee; if it can help speed up integration in international trade and enhance growth strategies, it can ensure the success of other necessary factors including macroeconomic management, infrastructure and institutions favourable to trade". Because the AfT initiative does not include these factors, they should be addressed through complementary policies and reforms (OECD, 2009). This view is consistent with that of Collier and Dollar (2002) in addressing the problem of the inefficiency of overall aid in bringing about poverty reduction: the sources of inefficiency result from poverty levels and especially the quality of policies implemented.

It is also possible that AfT allows for solutions to climate change. This is the case of loans granted in the agricultural sector; the sector will grow, taking into account the problems of adaptation to and mitigation of climate change, in order to gain comparative advantage and improve export potential. Indeed, variations in temperature and precipitation, and extreme weather events, will affect yields and agricultural productivity in developing countries. From this point of view, the new challenges facing AfT include ensuring substantial investment in climate change mitigation and adaptation projects that add value to a country's agricultural and export potential. Finally, the AfT programme will need to invest in activities that enhance adjustment capacity, to reduce the impact of the decline in overall demand on growth and poverty in developing countries.

5.4 Methodology

The methodology for this study includes the literature review, encompassing all reforms aimed at facilitating trade in Benin (as well as the CPA in the field of border trade), and the collection of useful primary and secondary data. The analytical approaches and tools to be mobilized to achieve the objectives of the study are also discussed in this section.

The concept of AfT is broad and difficult to assess, which does not facilitate the assessment of its effects (Basnett et al., 2012). Overall, the literature identifies six categories of variables proposed by the WTO to measure AfT (WTO, 2005): (i) trade-oriented policies and regulations; (ii) development-oriented trade; (iii) aid to the exchange infrastructure; (iv) productive capacity-building, (v) trade-oriented

adjustment measures; and (vi) AfT requirements. It is conventional to consider one or another of these variables in accounting for data availability, but also to include them in research objectives, as have Basnett et al. (2012), Cali and te Velde (2011) and Vijil and Wagner (2010). Given the purpose of this study, the preferred dimensions of AfT will be infrastructure on the one hand and strengthening the productive capacities of the Access to Market component of MCA-Benin grants on the other. For Adhikari (2011), these two categories are used to specifically address the supply constraints of developing countries in general and LDCs in particular, accounting for about 95 per cent of total aid in the context of trade facilitation.

Adhikari (2011) proposes a specific methodology for assessing the effect of AfT in recipient countries, according to data availability. It includes in particular the path of aid flows, leadership, alignment, coordination among donors, South–South cooperation and the limitations of countries' absorptive capacities, consistent with environmental sustainability and macroeconomic and microeconomic impacts through case study. The methodology employed here is based largely on the matrix elements, indicators and sources proposed by Adhikari (2011) to assess the effects of AfT.

Nature and sources of the variables

Specific data on the variables of interest are based on the methodological approach proposed by Adhikari (2011); they are derived from different sources. Aid flows with the support of the MCA in the various sections indicated in Table 5.1 are of great importance in the context of the analysis. The statistics relating to them are provided by MCA-Benin. Data on PCA performance indicators and the cross-border trade are collected from the institutions involved in the design, implementation and monitoring of the reforms: the CPI, SEGUB, Customs Administration and CPA. These data are the volume of goods passing through the port, the length of stay of container ships in the harbour, the length of stay of container ships dockside, the number of flights in the port area as a proxy security operation, the waiting time for trailer trucks at the port, and customs transit time. The related data are from MCA-Benin. Moreover, as for most of the previous studies, the secondary aid data derive from the OECD.⁶

Method, model and analysis tools

The methodology includes two analysis approaches mobilized to address the issue of the effects of US aid on the performance of the CPA. Firstly, for the hard dimension, the dynamics of the development of port performance variables will be demonstrated over time. More specifically, this first analysis approach allows the

assessment of the appropriateness of investment in terms of time savings and reduction of transaction costs in port operations. The data summarized in Table 5.3 provide the basis for this analysis.

Finally, an empirical model that can capture the impact of aid on variables of interest, especially the advent of the first MCA compact and subsequent investment, is considered in order to assess the impact of reforms on the volume of trade in particular. The specification inspired by Cali and te Velde (2011) and Collier and Dollar (2002) takes the form:

$$\ln M = f(\ln Pib, \ln Cost, \ln Aid, Mca, \ln Time)$$

where, given the natural logarithm operator, variables denote, respectively: value of imports as dependent variable; GDP; import cost per container; Aft; a dummy variable indicating the occurrence of MCA assistance, with the value 0 before 2006 and 1 thereafter; and processing time per container. This simple model is used to assess the impact of reductions in both time and cost on imports, but it also allows for measuring the effect of time reduction due to investment. Also, assistance will be considered both without and with the grant from the MCA to highlight its direct effect. The Granger causality test will introduce this second approach of analysis.

Table 5.3 Port of Cotonou performance, 2006–2011

Year	Volume (metric tons)	Duration of ships in harbour (hours)	Duration of ships at dock (days)	Flights (no.)	Waiting time for trucks at port (hours)	Customs transit time (days)
2006	4.1	16.00	2.00	40	24.00	3.80
2007	6.04	49.00	1.53	57	na	na
2008	6.91	67.60	1.98	25	104.00	na
2009	6.36	39.12	1.60	48	na	na
2010	7.104	34.72	1.10	24	38.26	3.38
2011	6.9	34.60	1.31	32	27.55	2.93

Source: MCA-Benin (2012).

Note: na = data not available.

5.5 Empirical results

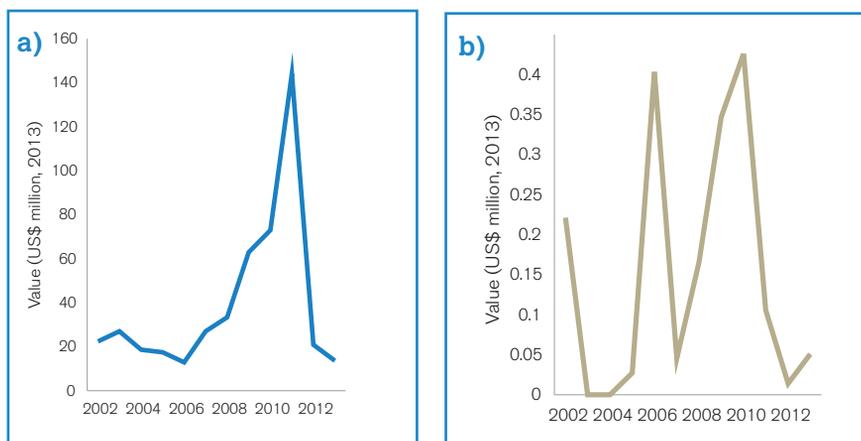
In the period 2006–2011, MCA-Benin funding to the CPA under the Access to Markets component amounted to US\$ 187,903,987. Referring to the methodology for analysing the effects of AfT proposed by Adhikari (2011), it is important to appreciate the first criterion, the principle of additionality. Indeed, funding under AfT should supplement aid flows to LDCs. Figures 5.1(a) and 5.1(b) provide an illustration of this principle in the context of US aid to Benin.

Figures 5.1(a) and 5.1(b) show the dynamics of AfT within, respectively, economic infrastructure and services (I) and trade policies and regulations (II). After a decline in AfT from 2002 to 2006 in the field of economic infrastructure, there is a steady increase in the variable, peaking precisely in 2011, the year the MCA project ended. The Market Access component helped to substantially raise the level of AfT in the country throughout the period of project implementation, hence the principle of additionality, which allows analysis of this support in terms of AfT. The same dynamic can be seen in aid flows in relation to trade policies and regulations, the peaks being during the implementation period of the CPA project. This is the first evidence-based research of actual impacts of financing commitments on the port's performance by considering several relevant indicators.

Dynamic analysis of performance indicators

As indicated in the methodology, key performance indicators relate to the volume of goods passing through the CPA, the length of stay of container ships in the

Figure 5.1 Evolution of AfT flows



Source: Authors; OECD CRS database, <https://stats.oecd.org/Index.aspx?DataSetCode=CRS1>.

harbour, the length of stay of container ships dockside, the number of flights in the port area as a proxy for the safety of operations, the waiting time for trailer trucks at the port and customs transit time. Their evolution over time gives an illustration of the effects of various facilitation reforms undertaken at the CPA.

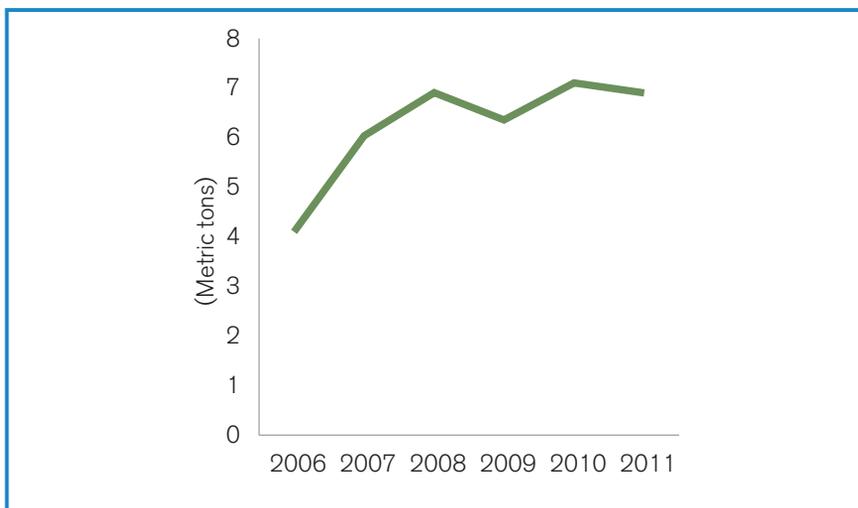
To appreciate freight traffic at the CPA over the recent period, recourse is made to the volume of goods (Figure 5.2(a)) and the value of traded goods as a percentage of GDP (Figure 5.2(b)).

Figure 5.2(a) shows that the traffic of goods through the CPA rose by 2.8 metric tons over the five years of the programme, from 4.1 to 6.9 metric tons, representing an annual average growth rate of 13.65 per cent. In year 5 of the programme, cargo traffic reached 6.9 million metric tons against a final target of 6.3 million metric tons. According to the compact completion report (MCA-Benin, 2012), the upward trend is expected to continue, starting with the exploitation of investments undertaken. This can be observed elsewhere: Figure 5.2(b) shows the change in the value of goods traded through the CPA, with peaks in 2007 and 2008.

The length of stay of container ships in the harbour and dockside (Figure 5.3(a)) is an element of investment-related performance and reforms undertaken as part of AfT. By the same logic, it is customary to study this in relation to both import and export activity (Figure 5.3(b)).

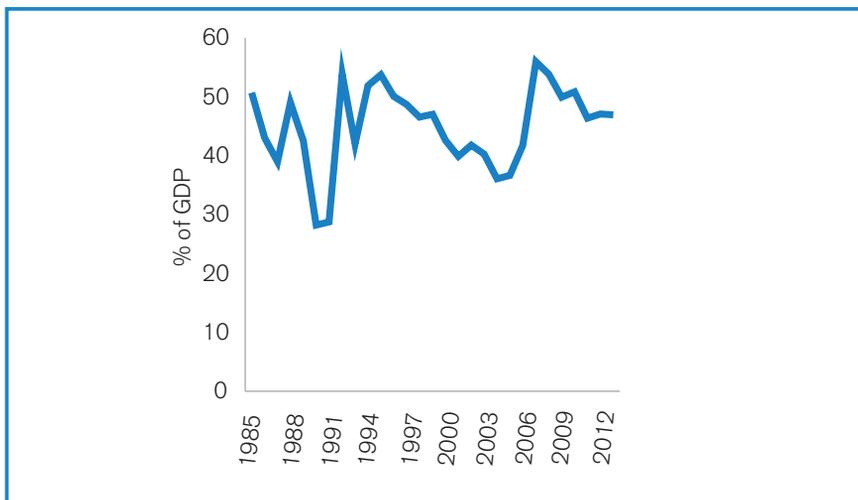
The average waiting time of container ships in the harbour was not significantly reduced during the period of implementation. This would have resulted in congestion due to the massive imports of materials and equipment needed for work in the framework of the 2008 summit of the Community of Sahel-Saharan States (CEN-SAD) in Benin. However, the establishment of the logistical measure "Travel to Fixed Window" in October 2009 helped significantly reduce the average waiting time in the harbour until the end of the programme and beyond (MCA-Benin, 2012). This is apparent in Figure 5.3(b), which shows a dramatic drop in the number of days required for export as well as import, in particular since the realization of investments in 2007. In contrast, the average length of stay of container ships at the dock has decreased over time by 6.9 per cent on average, from two days in 2006 to 1.31 days in 2011.⁷ This trend is compatible with the lower average time needed to import (down by an average 3.42 per cent annually) and export (down by an average 2.64 per cent annually (Figure 5.3(b))). This is a particularly important gain in terms of time in trade, which results from corporate policies and reforms.

Figure 5.2(a) Volume of goods at the CPA



Source: Authors; MCA-Benin (2012).

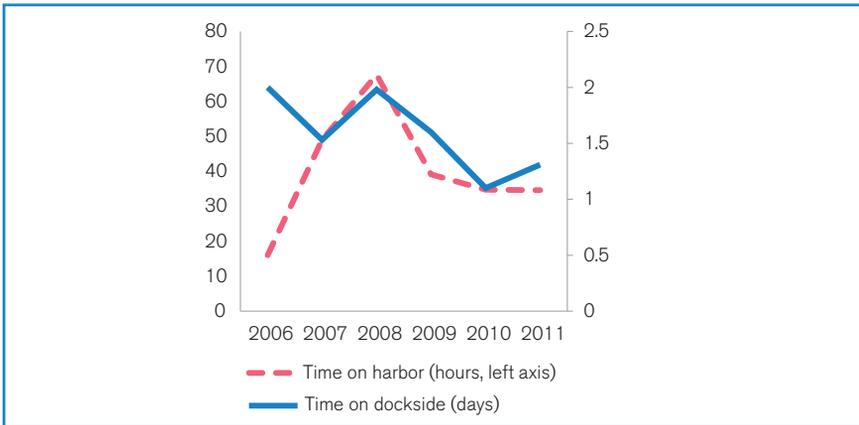
Figure 5.2(b) Evolution of value of good traded



Source: Authors; World Bank (2015).

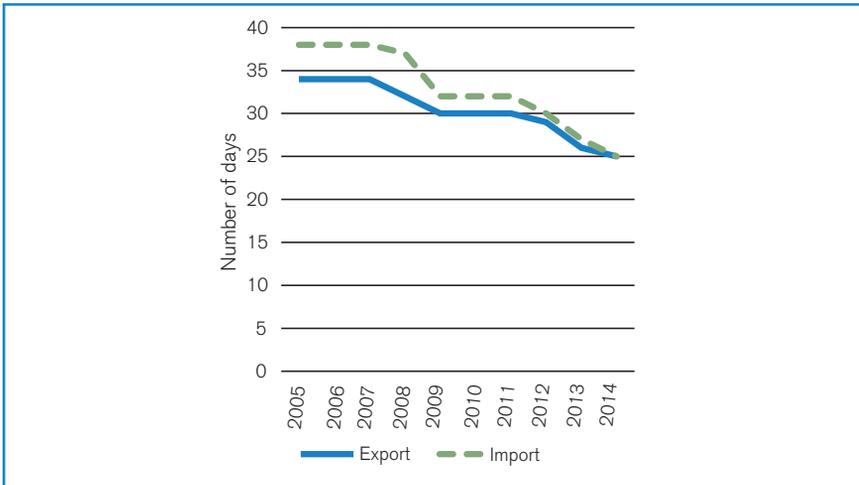
The compact completion report of the MCA-Benin programme also presents results on other indicators, such as waiting time for trailer trucks, transit time and cases of theft in the port area. While results on the first of these indicators are somewhat erratic, they follow a downward trend that must be credited to the Plan of Actions established to ensure better monitoring and more rational management of living in trailer trucks in the port area⁸ (MCA-Benin, 2012).

Figure 5.3(a) Time of ships in the harbour and dockside



Source: Authors; World Bank (2015).

Figure 5.3(b) Time for import and export



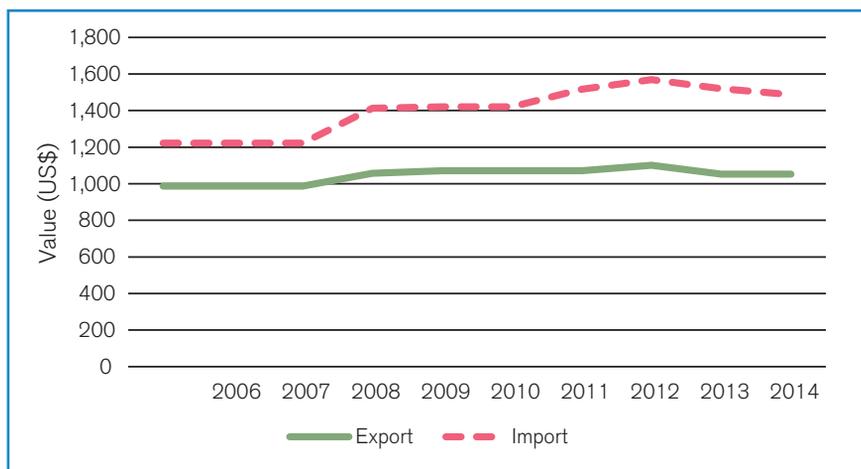
Source: Authors; World Bank (2015).

Customs transit time, which was 3.8 days in 2006, recorded a continuous decline to 2.93 days in 2011.⁹ Finally, the number of flights in the port area is considered under the indicator of safety of port operations. The number of recorded flights by the special brigade of the port is erratic.

The intervention logic of the Access to Market component of the MCA programme does not explicitly include reduced processing costs of port operations (MCA-Benin, 2012). Therefore, the cost analysis should be interpreted in terms of the reduction of transaction cost potentially induced by time savings as well by time spent in the harbour, docked in the processing of cases at the level of the single desk. Figure 5.4 indicates the rising cost of processing container-based imports and exports.

Without question, costs related to processing imports appear higher than those related to processing exports. There is a marked upward trend in the costs of processing imports, particularly from 2008. As a result, the implementation of investment reforms and facilitation at the CPA under the MCA programme could be accompanied by an increase in the cost of port operations in the order of 0.66 per cent for imports and 2.17 per cent for exports, on average. Thus, in clear terms, the reductions in waiting time and processing time are set against an increase in processing costs. This could be explained by a new services billing structure based on the principle of quality-price, given the new investment. Therefore, the

Figure 5.4 Cost of container processing



Source: Authors; World Bank (2015).

reduction in transaction costs related to time savings becomes important for overall assessment of the impact of reforms and political facilitation on costs at the CPA.

Before estimating the explanatory model of imports, the causality between the key variables is assessed to support graphics analysis and interpretation. The results of the Granger causality test (1969) are shown in Table 5.4 for relevant variables considered for analysis.

Table 5.4 Results of Granger causality test

Null hypothesis:	Obs	F-Statistic	Probability
Cost_to_M Does not Granger Cause AfT_MCA	27	7.58615	0.00312
AfT_MCA Does not Granger Cause Cost_to_M		2.90376	0.04601
Time_to_M Does not Granger Cause AfT_MCA	27	36.4079	1.0E-07
AfT_MCA Does not Granger Cause Time_to_M		3.21118	0.05976
M Does not Granger Cause AfT_MCA	27	0.72432	0.49586
AfT_MCA Does not Granger Cause M		19.5787	1.3E-05
Time_to_M Does not Granger Cause Cost_to_M	27	3.98236	0.03341
Cost_to_M Does not Granger Cause Time_to_M		170091	4.2E-14
M Does not Granger Cause Cost_to_M	27	1.05044	0.36668
Cost_to_M Does not Granger Cause M		4.77996	0.01889
M Does not Granger Cause Time_to_M	27	1.15470	0.33353
Time_to_M Does not Granger Cause M		3.63819	0.04315

Source: Authors.

The variables relate to AfT, including the MCA grant in the five-year period 2006–2011 (*AfT_MCA*), the cost of processing an import container (*Cost_to_M*), the processing time for an import container (*Time_to_M*) and imports (*M*) by value. On the threshold of 5 per cent, it is found that the AfT not only Granger-causes the time and cost of import processing containers to the PAC, but it also causes imports.¹⁰ In the same dynamic and indirectly, it is noteworthy that both time and cost to import Granger-cause imports; this amplifies the causal effect of AfT in Benin on imports during this period. Finally, there is indeed a two-way causal relationship between cost and time, which could justify the hypothesis of a reduction in transaction costs due to the reduction in the average time taken by port operations. On the basis of the causality test, it is concluded that changes in AfT would have directly affected the costs and processing times of

container-based import and, indirectly, the quantity of goods imported into Benin during the period. Referring to Cali and te Velde (2011) and Collier and Dollar (2002), a regression of the variable M on these exogenous factors will support this intuition.

To explain the value of imports, the following are considered: gross domestic product ($\ln Pib$); AfT without the MCA grant¹¹ ($\ln AfT_NMCA$) and its square¹² ($\ln AfT_NMCA^2$); the dummy variable indicating the occurrence of MCA assistance, with the value 0 before 2006 and 1 thereafter (MCA); AfT with the MCA grant ($\ln AfT_MCA$) and its square ($\ln AfT_MCA^2$); the time taken to import ($Time_to_M$); and the cost to import ($Cost_to_M$). Two scenarios are distinguished: estimating without the grant, and estimating with the grant over the period 1985–2013. The results are shown in Table 5.5.

Overall, the results confirm the predictions of the trend analysis and causality test: the positive effect of AfT (with or without the MCA grant) on imports in Benin on the one hand, and the negative effect of the time and cost of container import-processing on the other. The coefficient associated with the dummy variable significance testing attests to the importance of the MCA grant in the explanation of the dynamics of imports in Benin since the grant's inception in 2006. More specifically, the elasticity of imports relative to AfT_NMCA and AfT_MCA is estimated to be 0.039 and 1.092 respectively, confirming a greater increase in imports when the MCA grant is considered in the estimation. It is the same square of variables of AfT for which the coefficient is not significant in the first scenario but is significant in the second, with 0.216 as elasticity.

Negative elasticity of imports with respect to time and cost allows corroboration of the early results of the analysis of dynamics: these variables reduced by 1 per cent lead to increased imports of the order of 0.092 per cent and 1.305 per cent respectively in the first scenario, while the elasticity is in the range of 0.216 and 0.463 respectively in the second scenario. These results further justify the finding that, beyond the rising costs of processing containers observed in the trend of the variable, its reducing effect on imports and tested significance could be explained by lower transaction costs due to improved processing time performance, with fewer hours on the roads for trucks and fewer days in dock for container vessels.

Despite methodological limitations to the data (i.e. various sources, the number of observations) and reference to the MCA grants implemented in 2006 alone, these different analytical approaches are used to confirm the positive effect of MCA support analysed under AfT on Beninese imports. This effect comes from the

Table 5.5: Results of the model estimation

Variables	Estimation without MCA grant	Estimation with MCA grant
$\ln Pib_t$	0.928*** (10.63)	1.002*** (11.40)
$\ln AfT_NMCA_{t-1}$	0.039**	
$\ln AfT_NMCA^2_{t-1}$	(2.06)	
MCA	0.015 (0.09)	0.123*** (5.03)
$\ln AfT_NMCA_{t-1}$		1.092*** (4.04)
$\ln AfT_NMCA^2_{t-1}$		0.216* (1.75)
$\ln Time_to_M_t$	-0.092 (-1.50)	-0.216** (-2.20)
$\ln Cost_to_M_t$	-1.305* (-1.67)	-0.463** (-2.27)
Constant	13.011* (1.66)	-3.246*** (-5.20)
R^2	0.88	0.93
Observations	28	28
Fisher	F(5,22)=43.11	F(5,22)=31.77

Source: Authors.

Note: Values in parentheses represent the t-Student. ***, ** and * indicate the significance of the coefficients at 1 per cent, 5 per cent and 10 per cent, respectively.

reduction in container processing times, but also in the time ships are in the harbour and dockside; it also comes from lower transaction costs associated with these various reforms undertaken on the port onshore. Considering both scenarios – with and without grants – the goal is to isolate the specific effect of this US aid in explaining imports. There are other, more specific analysis approaches that would address this issue carefully and could be implemented to validate the robustness of the results highlighted here.

These results confirm the positive effect of MCA support analysed under AfT on Beninese imports. They call for further reforms in trade facilitation at CPA to ensure its competitiveness over time. At the same time, increased investments are required to optimize the use of structures built at this particular port and also the corridor serving the hinterland countries. These reforms are complementary to those that primarily focus on the business environment in the area of cross-border trade. The results support the second MCA compact programme for which Benin is eligible and any investments will impact on other sectors of the economy.

5.6 Conclusion

Being eligible for the MCA programme, Benin chose, in the five years from 2006, to focus mainly on the Access to Markets component of the MCA grant, instituting various investments and reforms. The MCA is a series of strategic investments to improve the physical and institutional infrastructure base and increase investment and private sector activity. The total programme value is around US\$ 307,298,000. The main component of the programme is the Access to Markets Project, which received 61 per cent of the grants (MCA-Benin, 2012). Basically, this component aims to promote access to markets through improved port operations and infrastructure. It also seeks to improve the competitiveness and performance of the port and port security, through infrastructure modernization, management and institutional and systems reforms in order to increase capacity and reduce transaction costs. Given this focus, the US support fits perfectly in the AfT context. The objective of this study is to identify the potential effects of reforms in the CPA and the volume of imports through the port under the MCA programme.

To achieve this, the methodology is largely based on the matrix elements, indicators and sources proposed by Adhikari (2011) to assess the effects of AfT. The methodology includes two approaches: (i) the dynamics of port performance variables are assessed over time in terms of time savings and reduction of transaction costs; and (ii) after a Granger causality test, the effect of reforms on the volume of trade is analysed by an empirical model inspired by Cali and te Velde (2011) and Collier and Dollar (2002). The analysis of the aid dynamics

demonstrates the principle of additionality, according to which, the Access to Markets Project has substantially raised the level of AfT in Benin over the entire period of execution, which justifies the great appreciation of this support in terms of AfT.

Performance indicators were analysed to highlight the potential impact of aid, including goods traffic, and average waiting time of ships in the harbour and dockside. Freight traffic passing through the CPA increased by 2.8 metric tons over the five years of the programme, from 4.1 to 6.9 metric tons, representing an average annual growth rate of 13.65 per cent. This upward trend in traffic will be confirmed in analysing the implications of investments for trade creation and facilitation. If the average waiting time of container ships in the harbour has not been significantly reduced during the implementation period, the average length of stay of container ships dockside has decreased over time by an average 6.9 per cent, from two days in 2006 to 1.31 days in 2011. This trend is consistent with the decrease in the average time required to import. Furthermore, the results show that the implementation of investment reforms and trade facilitation under the MCA programme could be accompanied by an increase in the annual cost of processing port operations, by an average 0.66 per cent for exports and 2.17 per cent for imports. This is based on the supposition that the reduction of import processing time results from an increase in operations processing costs; therefore, the reduction of transaction costs related to time savings becomes important for an overall assessment of the impact of reforms and facilitation policies on costs at the CPA.

The causality test helped consolidate these first results: the AfT not only caused the time and cost of processing of import containers to fall, but also increased the volume of imports. On this basis, it is concluded that variations in AfT would directly affect both costs and time for processing import containers and, indirectly, the quantities of goods imported into Benin during the period under study. Referring to Cali and te Velde (2011) and Collier and Dollar (2002), in regressing import on its exogenous variables, we are able to corroborate this insight, the estimation being done both with and without the grant from the MCA. Overall, the importance of the grant in explaining the dynamics of imports in Benin since 2006 is highlighted. The results confirm the predictions of trend analysis and the Granger causality test, namely, the positive effect of AfT (with or without the MCA grant) on imports in Benin on the one hand, and the negative effect of time and container processing cost on the other hand. These results call for further reforms in trade facilitation at CPA, to ensure its competitiveness over time. This will be a part of the second compact of the MCA programme, which was concluded in September 2015.

Endnotes

1. On 22 February 2006, the Government of the United States, through the Millennium Challenge Corporation (MCC), and the Government of Benin signed a cooperation agreement (the Compact) to provide a solution to economic constraints and provide incentives to the private sector in Benin.
2. An insurance form, similar to a declaration, which provides for insurance coverage of multiple shipments within a prescribed reporting period.
3. Other new topics discussed during the Singapore Ministerial Conference, 9–13 December 1996, concerned: (i) trade and competition, (ii) investment and competition and (iii) investment and transparency. Along with trade facilitation, these are regarded as “the Singapore issues”.
4. The Uruguay Round was the eight round of multilateral trade negotiation under the GATT from 1986 to 1994.
5. The Sixth WTO Ministerial Conference, held in Hong Kong 13–18 December 2005, called on donors to increase AfT resources to help countries, especially LDCs, to build supply capacities and infrastructure exchange. They were expected to implement the WTO Agreements but also to reap the benefits they offer and lead to the expansion of trade (WTO, 2005).
6. OECD Creditor Reporting System (CRS) database (<https://stats.oecd.org/Index.aspx?DataSetCode=CRS1>).
7. The performance recorded in this mode of the operating platform in favour of container shipping led the main owner of the CPA to delete port surcharges related to waiting ships as of March 2010 (MCA-Benin, 2012).
8. Among the actions recommended in this plan is the development of software (Système Intégré de Gestion du Port Autonome de Cotonou, SIGPAC) which, since it was commissioned in March 2011, has resulted in a net decrease in the “residence” time of trucks at the port.
9. Further reforms in the manual customs clearance procedures and finalizing the removal of goods held at the CPA should help to further improve this situation.
10. Rejection of the null hypothesis.
11. AfT without the MCA grant is obtained by deducting the latter from the total AfT, given the amounts disbursed in each project year.
12. The square of aid flows allows variables to take into account the effect of size or performance assistance on imports.

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