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Enabling Trade: Increasing the Potential of Trade Reforms

In collaboration with Bain & Company and the International Trade Centre (ITC)

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World Economic Forum
91-93 route de la Capite
CH-1223 Cologny/Geneva
Switzerland
Tel.: +41 (0) 22 869 1212
Fax: +41 (0) 22 786 2744
contact@weforum.org
www.weforum.org

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Introduction

Several countries have recently enacted trade reforms, spurred by such global initiatives as the Trade Facilitation Agreement (TFA) developed at the World Trade Organization Ministerial Conference in Bali in 2013, and various bilateral and plurilateral agreements. The stakes are high for improving trade among countries. As detailed in previous reports, improving even a restricted set of supply chain barriers halfway to global best practices could expand trade by 15% and increase global gross domestic product (GDP) by nearly 5%. By comparison, completely eliminating tariffs could have a much less significant effect, increasing global GDP by just 0.7% and exports by 10%.¹

Reducing supply chain barriers benefits nations, producers and consumers – the reason so many countries are on board. But World Economic Forum research has determined that the measures to streamline border administration spelled out in the TFA and other trade agreements are not enough. Improvements in infrastructure, the business environment and market access are also needed to create globally competitive industries. *Enabling Trade: Increasing the Potential of Trade Reforms* looks at these elements of trade, examining the gaps and potential improvements that governments can make in collaboration with the private sector.

Countries are trying to create more efficient border administration processes across regions in varying stages of economic development. Developing and least-developed countries have implemented about 39% of the trade facilitation measures laid out in the Bali agreement.² The rate among African countries is somewhat lower, at 35%.³ Developing countries in the Americas, such as Costa Rica and Brazil, are enhancing efficiency with new Single Window projects. Meanwhile, advanced economies, such as South Korea and Singapore, which already have effective trade processes, are looking to improve further to keep their competitive edge;⁴ they are connecting their systems with a broader set of stakeholders and countries.

It has become clear that as governments pursue trade facilitation, those that take a “horizontal” approach achieve the most success. This approach involves identifying industries with the highest potential for competitiveness, and then taking an end-to-end view of each industry’s value chain. It locates the specific trade barriers that should be addressed to allow the industry to reach a “tipping point” where it becomes competitive, thus enabling the flow of goods. Given the heterogeneity in supply chain barriers, governments must understand their existing and potential industries, and highlight the costliest barriers. This tactic will be the most effective to address the supply chain obstacles that were detailed in *Enabling Trade* reports published by the Forum in 2013 and 2014.

This 2015 report uses case examples to illustrate supply chain bottlenecks and the ways that both national governments and the private sector can use ongoing trade reforms to either reduce or eliminate those hindrances. Trade reforms hold vast potential. For example, an estimated annual global cost savings of \$77 billion (Figure 1) can be achieved by removing all barriers halfway to best practices.⁵ This does not include further savings in capital costs that can be generated from streamlining import and export times. This is only the beginning of the story – cost savings will enable many more products to move, thus increasing trade, jobs and GDP levels to the dramatic levels mentioned.

Countries Have Been Performing Actions to Remove Supply Chain Barriers

As observed in another Forum report, *Enabling Trade: Catalysing Trade Facilitation Agreements in Brazil*, also published in 2015, many trade facilitation efforts are in progress, including numerous Single Window projects either fully implemented or being implemented. That report highlights steps taken by Brazil, Costa Rica, Ecuador, Greece, Singapore and South Korea. Some countries have gone beyond addressing border administration issues to make improvements that boost their performance in the World Bank’s trading across borders rankings and other listings. For instance, Benin reduced vessel-waiting times in the port of Cotonou by launching a window-berthing system that optimizes terminal resources based on cargo ship arrivals.⁶ Also, infrastructure upgrades increased the number of exit points and terminals, while designated parking areas, and loading and unloading time limits for trucks, reduced the congestion around the port that had slowed transportation time. The same momentum was observed in Brazil, where two new terminals⁷ were launched in Santos, adding new capacity to the country’s largest port that traditionally has been over-used in peak seasons.⁸ Also, as described in case examples in this report on increasing the potential of trade reforms, several inland transportation projects are under construction to support Brazil’s growing exports.

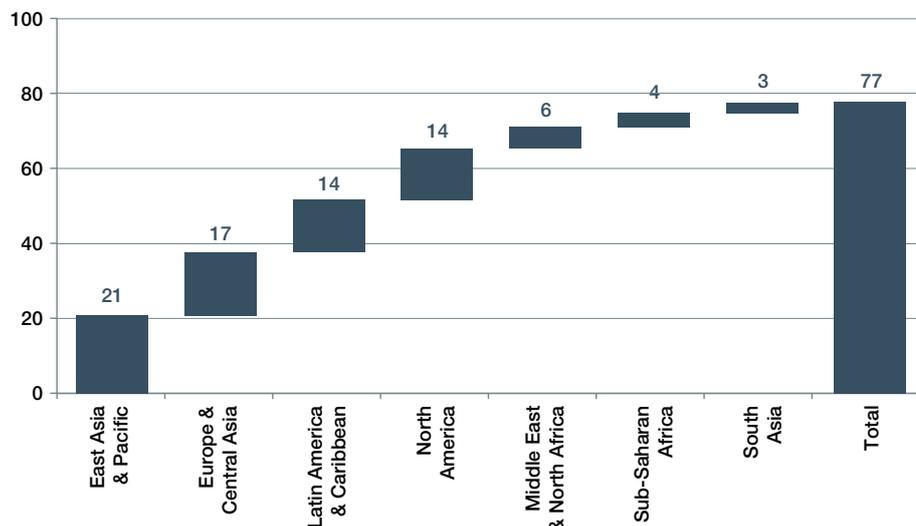
Countries are working to implement TFA recommendations, but their attempts are not always part of a plan with carefully considered priorities. Developing countries, especially, can be overwhelmed by the daunting task of reducing trade barriers. The most successful efforts therefore will involve focusing on improving trade obstacles in a priority industry, until the country can reach the tipping point at which it becomes profitable for companies to boost their trade.

Box - Morocco Example

Morocco has a gross domestic product of \$96 billion and ranks 43rd on the World Economic Forum’s Enabling Trade Index 2014. Market access and infrastructure are its most prominent trade issues.⁹ The government has prioritized investment to improve the infrastructure of its major ports in order to make Morocco a leading trade hub for the African continent. The country has established an agency for logistics development and invested deeply in Tanger-Med, one of Africa’s most important ports. Meanwhile, it is pursuing a policy to develop freight and logistics facilities and services that reach beyond its own economy to North Africa, Southern Europe and West Africa.¹⁰ The efforts helped Morocco to rise on the World Bank’s Logistics Performance Index to 50th position in 2012 from 94th in 2007. Moreover, it was able to reduce time to export to 10 days in 2014 from a previous 17 days.¹¹ Improvements have had an impact on trade figures – since 2007 Morocco has had an annual growth of 6.5% in the export of manufactured products, higher than the global average of 3.7%.¹²

Figure 1: Potential Cost Savings in Maritime Trade

Potential cost savings \$ billion halfway to cost best practices
Imports and exports by container



Source: Bain & Company analysis; World Bank; World Shipping Council

The Need for Additional Measures

The steps that countries are taking are vital to make trade processes more competitive, but may be insufficient to give their products a global edge. Most countries are choosing actions with a “vertical” approach, as mentioned above, addressing issues in virtually all industries in one dimension such as border administration. Single Window projects illustrate this point. However, the real trade enabler is implementation of improvements “horizontally” along value chains, to help priority industries lower their costs to become globally competitive.

As Brazil's automotive, soy and paper industries and Nigeria's overall trade landscape show, products move only when they are priced competitively in the global supply chain. For that to happen, it is necessary to be competitive in costs. For example, a ton of soy exported from central Brazil to Shanghai, China, costs \$573, a part of which reflects the inefficiencies from supply chain trade barriers.¹³ If those barriers were removed or lowered, the impact on costs would be significant enough to increase the global competitiveness of Brazil's soy.

Trade facilitation usually requires substantial resources, as illustrated by South Korea's Single Window platform, which took up to eight years to implement.¹⁴ Countries therefore should consider an investment approach that delivers cost savings to help them to reach that important tipping point for companies.

To foster an industry's global competitiveness, governments typically need to clear bottlenecks across the four dimensions spelled out in the Forum's Enabling Trade Index: market access, border administration, telecommunications and transport infrastructure, and business environment (Figure 2). Global trade facilitation efforts currently under way, as defined in the Bali agreement, will deliver huge advances in market access and border administration, but will have limited impact on infrastructure and business environment challenges.

Infrastructure matters are not part of the TFA, but addressing them could have an equal or greater impact than tackling market access and border administration problems. For example, importers into Nigeria face port congestion that can delay the release of goods for six weeks.¹⁵ Such infrastructure hurdles can be

overwhelming for many developing countries, so the process therefore is to prioritize efforts and invest in infrastructure improvements that will have the largest economic impact. Such an approach requires deep analysis. The business environment also influences competitiveness. Consider the effect on tyre importers into Nigeria of fluctuations in the spot exchange rates – these may vary almost by 10% between the letter of credit rate and cash rate, and tend to change quite often, requiring companies to alter payment terms and thereby cause shipment delays.¹⁶

The extent to which trade facilitation boosts competitiveness will depend on each country's individual plan. The TFA provides flexibility in some areas and a country's results will be determined by the actions it chooses and the resources it invests. For example, in the category of market access, a major barrier for automotive companies is the process of obtaining import licences. In Brazil approval times may vary significantly depending on the product, but despite the unpredictability of timing, companies still need to ensure they have sufficient inventory – a situation that inflates their costs.¹⁷

The need to review such formalities is spelled out in Article 10 of the TFA. But because each country's situation is different, the extent of required revisions also will be different. In some situations, a country's market access processes could be considered as fulfilling Article 10, but could still be undermining industry competitiveness.

The TFA supports such measures as pre-arrival processing to expedite shipments and use of authorized operators. Again, it is unclear how many trade sectors these changes would affect. Analysis of the case examples determines that simply following the TFA measures may not be enough to deliver the anticipated trade improvements.

It is also important to keep in mind that although certain sectors could become more competitive with the easing of specific barriers, others may need to sort out additional issues (Figure 3). An analysis of export and import costs of certain industries in Brazil and Nigeria shows that documentation processes are competitive and do not add major costs to exports of paper and soy,¹⁸ but unplugging bottlenecks in inland infrastructure would enhance their global competitiveness. Improvements to imports of auto parts into Brazil and a range of goods into Nigeria would require

Figure 2: Enabling Trade's Four Dimensions

The lack of infrastructure, institutions, policies and services facilitating the free flow of goods over borders

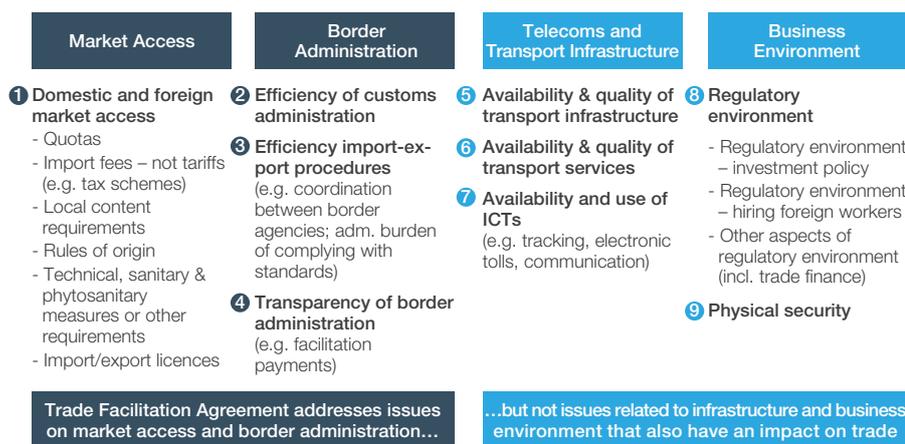
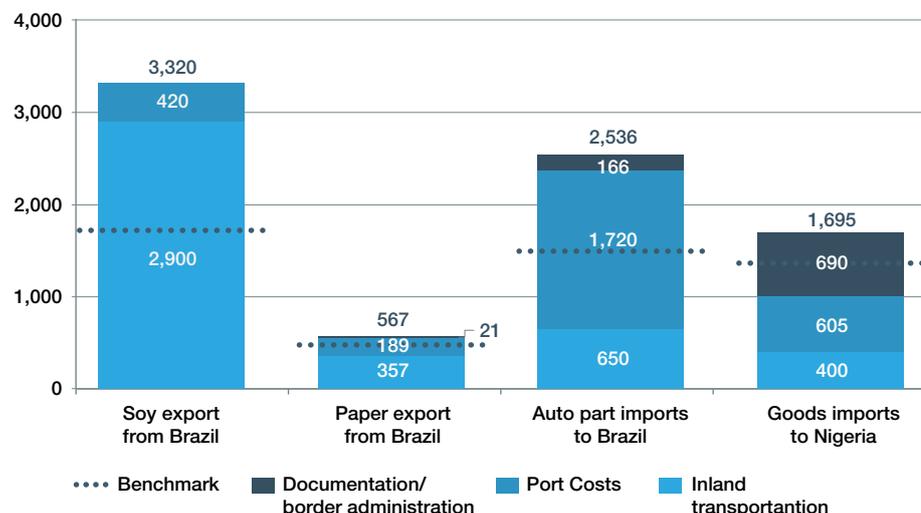


Figure 3: Costs to Export and Import, per Container \$



Note: Documentation costs not exhaustive for auto and soy cases. Benchmarks: US costs for soy and auto cases; Ghana costs for Nigeria and other Brazilian operations for paper case. Costs normalized per Twenty foot equivalent unit containers (TEU)
 Source: Interviews; Bain & Company analysis

a diagnostic assessment and possible actions in more than one dimension. To compete with the United States in import costs of auto parts, Brazil would need to improve inland transportation, cut port costs, and streamline licensing and inspection procedures – covering the four dimensions recommended in the *Enabling Trade* report of 2013.

The challenge is that countries evaluate trade-offs among investments on an individual basis. **Instead, prioritizing of issues must consider all options across a comprehensive development plan.**

Case Highlights

The following highlights from case studies illustrate the importance of assessing an industry's costs and end-to-end value chain in order to enable trade.

Automotive industry in Brazil: Reducing import and exports costs: Brazil's export growth in the automotive industry lags those of other emerging markets. Brazil needs more efficient import procedures to achieve the lower costs that would allow its manufacturers to become more competitive exporters of automobiles. Brazil has taken some important steps in this direction. Improving the efficiency of border processes and lifting some barriers to re-exports have cut import lead times. Today, some auto companies have lead times of three days between receiving cargo at a port and exporting from the port –down from about nine days previously.¹⁹ Brazil's import processes and logistics costs are higher than international benchmarks – to import a container costs nearly \$1,300 more in Brazil than it does in developed countries.²⁰ Inland transportation, port costs, licensing and inspection procedures, and complex rules for drawback procedures contribute to the higher costs.

Besides tackling these costs, Brazil must address such issues as taxes, labour costs and market access. Removing import barriers would bring nearly \$110 million in annual savings for auto companies.²¹ The immediate next step is to reduce the burden from tax regulation. The government has made improvements in this area in recent years, but companies continue to face difficulties in obtaining full drawback processes, and tax-related issues continue to make internal products more expensive and keep the business environment uncompetitive. Trade facilitation measures undoubtedly would take up important challenges related to border administration and market access,

but making Brazil globally competitive requires deeper reforms in infrastructure and the business environment.

Enabling trade in Nigeria: Nigeria (GDP: \$522 billion) is the largest economy in sub-Saharan Africa and an important contributor to the region's exports and imports.²² However, excessive costs and other trade barriers decrease the country's ability to compete in the global supply chain. Nigerian fuel and mining represent more than 90% of total exports;²³ for their part, value-added industries have seen exports declining since 2008 by more than 20% annually.²⁴ It takes an average of 23 days to export a product from Nigeria; the average is six days in Singapore.²⁵ Nigerian companies have to deal with inadequate inland transportation infrastructure. But their most pressing challenge is port congestion, which is caused by the administrative process – the numerous government agencies, the arbitrary fees requested by some government officials and the large number of illegal clearing agents. Administrative process delays can easily extend for 5-15 days, which means higher storage costs, additional personnel needed, and demurrage payments.²⁶ Altogether, a \$100,000 shipment that should cost \$6,000-8,000 to clear could end up costing over \$30,000-35,000 to the company in the case study.²⁷ The unpredictable cost increases affect the entire market. Trade facilitation measures can bring better processes to border administration, but without improvements in the transportation infrastructure connecting exporters to ports, and enhancements to the ports themselves, most Nigerian companies are unlikely to become globally competitive exporters.

Soy exports in Brazil: Creating inland connections and optimizing inspection procedures: Today's farm prices still make Brazilian soy viable, but changes in those prices could leave it unable to compete against exports from the United States, given the logistical challenges.²⁸ The private sector and the government in Brazil recently invested in several alternatives to transport soy more efficiently from the central part of the country. A new train operation has been launched and, in the years ahead, new paved roads and waterways will help to cut transportation costs. Moreover, although Soy is exported mainly through bulk operations, container transportation also has been growing. Streamlining inspection procedures would make container transportation more competitive and bolster its potential as an option to bulk shipments. Enabling alternative

logistics could generate more than \$120 million annually in savings (nearly 10% of total inland transportation costs), but only after investments in infrastructure upgrades.²⁹ Border processes and costs are efficient for bulk shipment of soy exports. The TFA measures would help to streamline inspection procedures and cargo release in ports for container shipments. But the agreement does not address the issue of upgrading inland transportation infrastructure – something that would lead to boosting the export competitiveness of Brazilian soy.

PaperCo exports: Reducing inland transportation costs in Brazil: Logistics in this industry represent a significant part of the final price. In the past few years, a company called PaperCo was able to cut costs mainly by using train transportation, which saved \$84 per container exported.³⁰ Despite this advance, barriers continue to limit the paper trade. For example, costs remain high when truck transportation is used. Processes also could be improved to cut costs by \$7-16 million annually.³¹ The immediate next action would be to streamline logistics by eliminating unnecessary steps in delivering containers to ports. (Negotiating with unions to jettison some transportation stages could reap savings.) In the long term, the move from trucks to trains could generate further savings, but would require expanding train connections to additional terminals in Santos. Finally, increasing the connectivity of the country's ports with other regions would lower the cost of shipping by sea. In the paper industry, existing cross-border processes are efficient and do not inflate export costs. The TFA measures therefore are less likely to have any significant impact.

How to Effectively Transform Value Chains

Overall, the Trade Facilitation Agreement ensures momentum for future improvements in cross-border procedures. Countries are advised to take a systematic approach and follow specific steps in order to implement the TFA's measures successfully. This will lead to improvements in the end-to-end value chain for selected industries, and will help governments to formulate clear plans to make those industries globally competitive.

Prepare

The first phase is to establish the governance structure. Because the processes involve multiple stakeholders, decision-making roles should be clearly assigned. The automotive industry, for example, has participants from various government agencies and the private sector: port managers, automotive companies, insurance firms, logistics providers and others. Stakeholders also should forge a preliminary alignment on shared objectives. For instance, they could agree to increase exports by a certain percentage over a specified time frame. Companies, government institutions and third-party consultants could be part of a team coordinating the multiple stakeholders and conducting required analysis.

Diagnose

The next critical step is diagnostics – a step that countries often fail to perform well. Governments and the private sector need to invest resources in diagnostics, which are extremely important to shape future actions. Governments should start by assessing and prioritizing the industries with the highest potential for global competitiveness. Identifying the industries should take into consideration the potential impact of an industry on the economy if trade barriers were improved across its value chain, and the willingness of the private sector in that industry to change. The current competitiveness of short-listed industries should be benchmarked across the entire value chain. The highest-potential industries should then be prioritized.

It is necessary to clearly understand existing import/export processes. That means assessing the prioritized industries against best practices worldwide, and identifying gaps and potential quick wins. Key performance indicators (KPIs) could include transport time, costs and trade volumes, but may vary by industry. Finally, with a clear view of the issues and the impact of each on the selected KPIs, it is necessary to identify current improvement projects and their impact. In the best scenario, such an approach to improving trade on an industry-by-industry basis should supplement a current plan, or enhance existing measures.

Plan

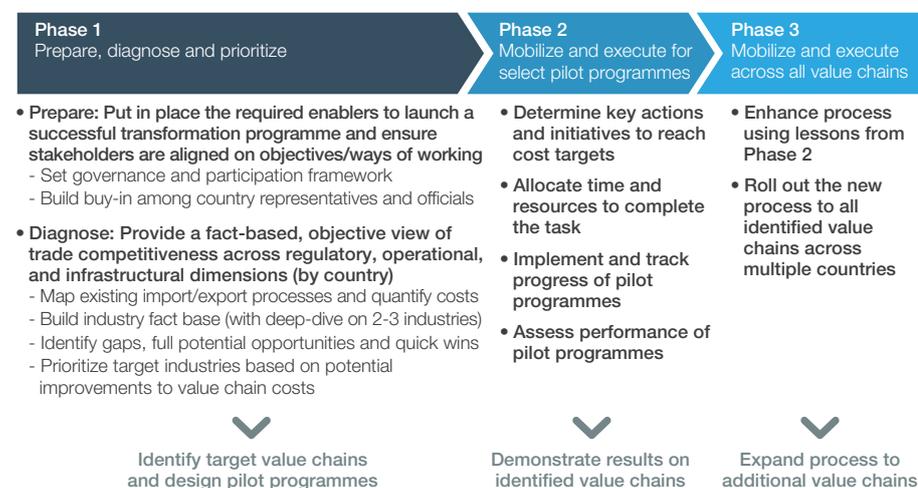
Based on diagnostics, the participants should agree on key actions to reach the established objectives and create a list of initiatives. After defining those actions, the group must align on the KPIs to pursue and on how to control them. A cost-benefit analysis is essential to prioritize initiatives according to potential value and complexity of implementation. Finally, it is necessary to convert a project's visions into an actionable implementation road map. Risks should also be identified at this stage, and mitigation measures incorporated into the plan.

Mobilize

For each initiative, it is necessary to establish the proper governance and responsibilities. Milestones should be defined according to the KPIs previously established. The steering committee of the stakeholder group – through a project management office – must focus on realization while measuring progress. It is essential to create feedback loops and response mechanisms. Through coordinated actions, leaders from communities and industry associations can share their expertise and resources to implement activities to improve supply chains in the selected industries. This practical approach will allow countries to make the most of their efforts to boost trade. As described in *Enabling Trade: Catalysing Trade Facilitation Agreements in Brazil*, many countries are engaged in ways to facilitate trade. But as the research for this report on the potential of trade reform concludes, countries cannot build globally competitive industries by only fulfilling the TFA's minimum requirements. They need to look beyond the TFA measures to improve the end-to-end value chain in industries that will have the greatest impact on their economies. That is the fastest, most effective way to reach the "tipping point" mentioned earlier.

The following case examples from Nigeria and Brazil help to illustrate the trade obstacles facing the two countries and the best approach for them moving forward beyond the TFA recommendations.

Figure 4: Supply Chain Approach to Reduce Trade Barriers



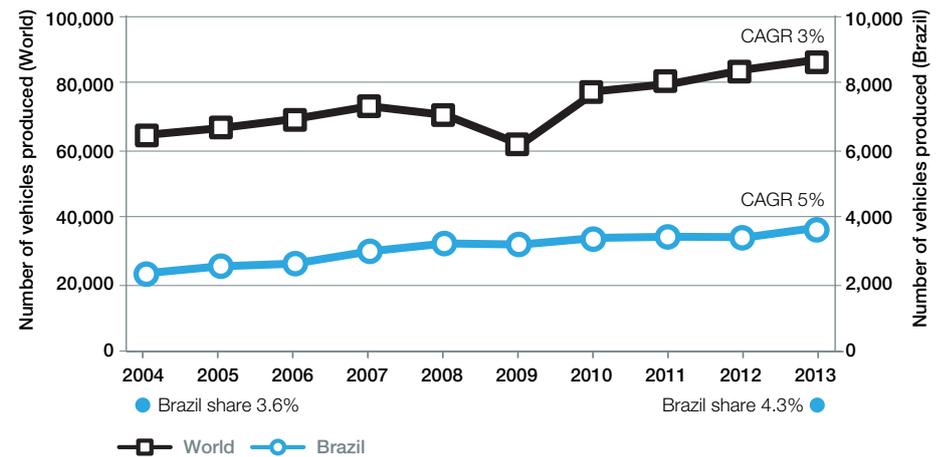
Enabling Trade: Reducing Import and Export Costs in the Automotive Sector

Automotive industry in Brazil

The automobile industry was established in Brazil at the beginning of the 20th century, with major plants being built in the 1950s. The market has grown significantly since the entry of new players and the addition of car imports in the 1990s. The country has 29 car manufacturers and more than 500 auto-parts companies. All told, the automotive industry contributes nearly 1.5 million jobs,³² representing more than 4% of all formal employed jobs in the country.³³ It currently accounts for 21% of industrial GDP and 5% of total GDP, with revenues reaching over \$106 billion.³⁴ Given the automotive industry's importance, the government in the past few years has launched stimulation measures, including tax cuts.³⁵ As a result, auto manufacturers have been investing in Brazil and in the coming years will add 12 plants, including research centres, to the current 61 plants.³⁶ These investments will strengthen Brazil's position as an automotive manufacturer in the global market; Brazil is the seventh-largest producer worldwide and a leading exporter in terms of number of vehicles, behind the three dominant producers: China, the United States and Japan.³⁷

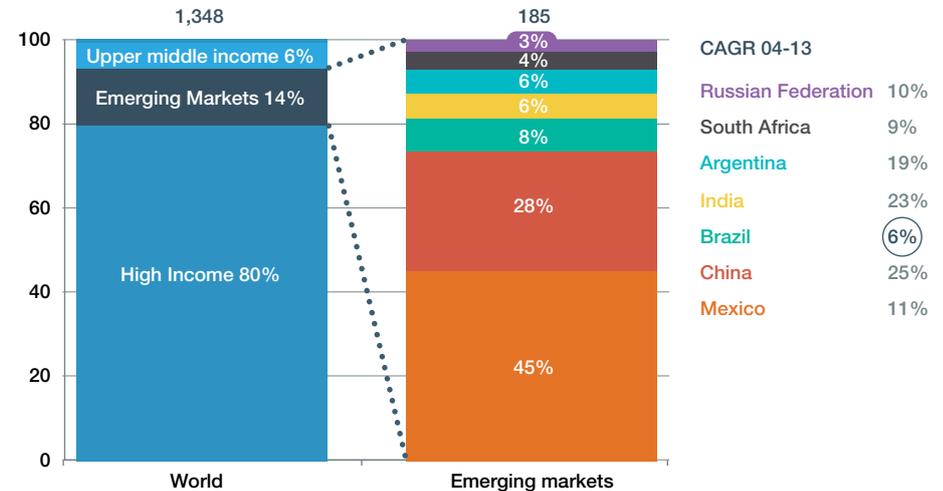
Brazil is increasing its share of the world's auto production. In 2004 the country held a share of 3.6% of global output; by 2013 this had increased to 4.3% (Figure 5).³⁸ The expansion is supported in large part by a domestic market that has seen new vehicle registration grow at a compounded annual rate of 10.2% since 2004.³⁹ Although global automobile production stalled significantly during the economic crisis, the impact in Brazil was much softer than in most other countries. Precise figures are not available, but Brazil's automotive exports have grown about 5.8% annually since 2004, slightly higher than the global export rate of 5.1%.⁴⁰ Despite this increase, Brazil has not matched the pace of other developing

Figure 5: Number of Vehicles Produced, Brazil and World



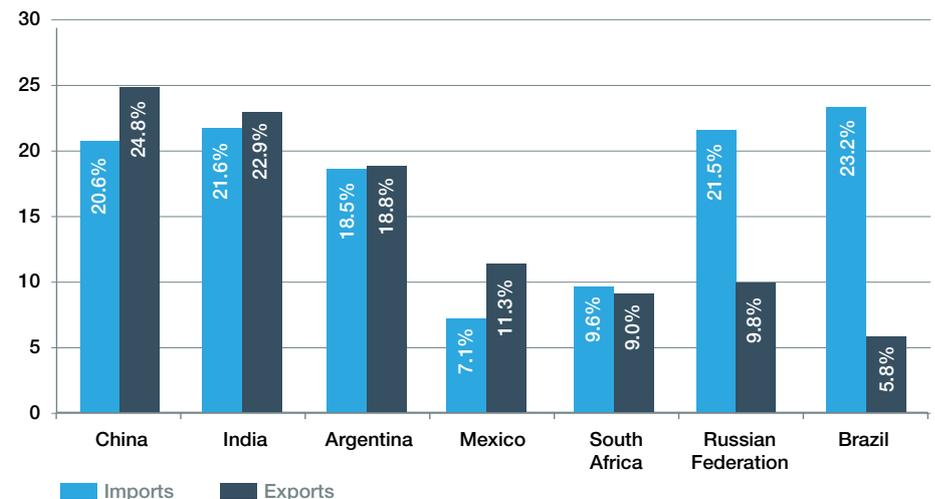
Source: ANFAVEA (auto association) report

Figure 6: World and Emerging Market Auto Exports \$ billion



Source: World Trade Organization statistics database; data from 2013

Figure 7: Emerging Markets – Annual Growth of Auto Imports and Exports



Source: World Trade Organization statistics database

markets, which are competitors. China, India and Argentina have had high annual export growth reaching 25%, 23% and 19%, respectively, during the same period (Figure 6).⁴¹ Argentina's growth has been due mainly to an increase in Brazilian imports;⁴² some car manufacturers have built plants in Argentina and export a large portion of production to Brazil.⁴³ In Asia, China has national automotive brands that export cars, while India has global automotive brands that export from the country. Another automotive exporter is Mexico, which achieved an 11% compounded average growth rate in the same period, mostly due to shipments to Canada and the United States.⁴⁴

The global supply chain is a key success factor for the automotive industry

Car manufacturers depend on global supply chains to assemble their products, so to remain competitive their supply chain operations must remain lean. China, India and Argentina achieved high growth rates in exports and registered similar growth rates in imports, reflecting the emergence of a platform for exports. But in Brazil and Russia, imports rose higher than exports – suggesting that much of the overall growth was due to mounting domestic demand, not exports (Figure 7).

To be competitive in the global supply chain for exports, it is critical to take advantage of fast and inexpensive imports. Re-export of components plays a key role, so countries need efficient border administration procedures. In 2014 the Forum conducted a survey of automotive companies and determined that the

leading near-term priorities should involve streamlining of import procedures and making re-export procedures less bureaucratic and therefore less burdensome. It was exactly in those two areas that Brazil has made its biggest improvements.

Brazil's automotive sector is briefly illustrated as: what has been done (item I), current barriers (items II and III) and next steps (item IV) (Table 1)

Table 1

I	Lead time for import processes for re-export in Brazil has improved in recent years, due to more efficient border administration and clearance procedures
II	Some bottlenecks continue to have an impact on cost-competitiveness in imports, such as port and inland infrastructure, drawback procedures and other border administration processes, such as inspections and licensing
III	Trade barriers for exports are different from barriers for imports: Taxes, regulations and other issues undermine export competitiveness
IV	To enhance competitiveness a list of measures needs to be implemented: In the short term, actions related to taxes and border administration and, in the midterm, actions related to infrastructure and market access

I. Lead time for import processes for re-export in Brazil has improved in recent years

Import processes in Brazil begin with the licence certification that in most cases should be issued prior to shipment.⁴⁵ After this first step, cargo is shipped to the country, handled, scanned, released by customs, inspected by the Ministry of Agriculture and finally loaded for delivery. Previously, extra steps had delayed cargo leaving the port. For example, for cargo imported to re-export, additional duty exemption procedures could add four days to the process (Figure 8).⁴⁶ The

Brazilian government and auto companies worked closely to streamline border administration re-export procedures and garnered good results, cutting lead time to three days for some auto companies.⁴⁷ Specific measures allowed this improvement:

Table 2

a	Exemption of navy taxes (AFRMM - Additional over Freight for the Renewing of the Merchant Marine) – This is a tax intended for the navy that currently is applied to all import procedures, but can be exempted in re-exports. Exemption is important because the tax adds 25% to international freight value. Because the exemption process took four days and could interfere with production, companies sometimes preferred to pay the tax instead of waiting for the exemption process to be completed. The process was streamlined by the government and now occurs without delay. Additionally, exemption criteria have been simplified. IMPACT -> Reduction of 4 days in lead time
b	Exemption of state taxes (ICMS) – This is a state tax applicable for every good that moves across the country. It can be exempted in imports for re-export. Until recently, the exemption process was bureaucratic. Companies needed to pay courier services to take physical documentation to the government office to receive a stamp and ensure exemption of taxes in the re-export processes. Today the process is simple and little time is required to obtain exemption. IMPACT -> Reduction of 1 day in lead time
c	Faster clearance processes through special regime – Blue line is a special regime that provides priority in the clearance process and little intervention in clearance inspections. The initiative has been in existence since 2004, but the government has increased the number of enrolled companies to 49, with 14 of those companies from the automotive sector. Therefore, more auto makers can benefit from the regime and move near 100% of their imports without physical inspection, making the clearance process faster and reliable. IMPACT -> Reduction of 1 day in lead time <i>The problem: the special regime is still limited to relatively few companies, and even some large auto companies are not blue line certified. For example, the 14 certified auto companies are part of a large universe of auto companies in Brazil: 29 assemblers and more than 500 auto-parts companies. Furthermore, the special regime expedites sanitary inspections and licensing procedures.</i>

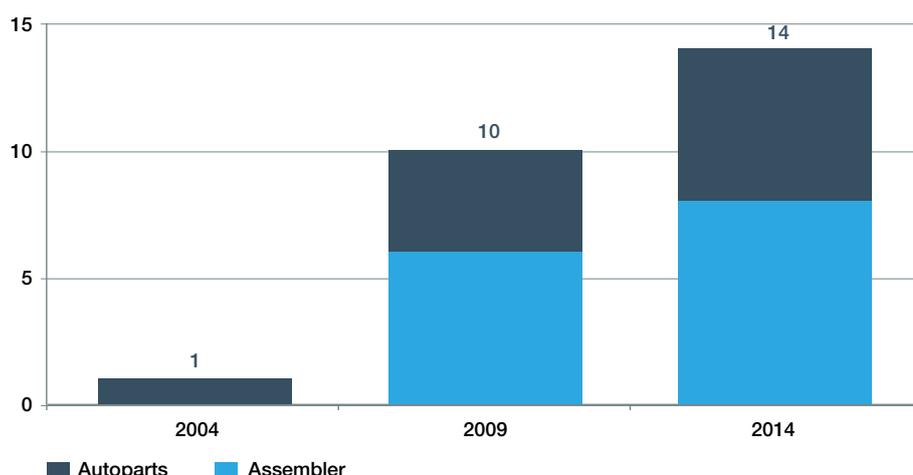
Source: Bain & Company

Figure 8: Past, Current and Target Import Procedures



Figure 9: Auto Companies Enrolled in Special Regime

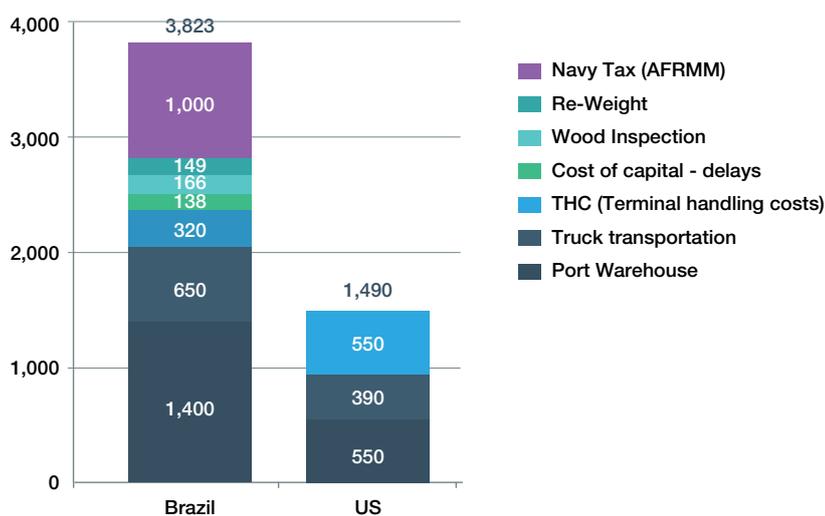
Number of companies enrolled in blue line special regime
Only automotive



Source: Receita Federal website; Bain & Company analysis

Figure 10: Import Costs, per Container

Estimated import costs per container \$



Source: Interviews; Bain & Company analysis

As observed, Brazil has worked to address the two leading short-term priorities identified by companies in the 2014 Forum survey and has taken immediate strides forward. Yet, the processes could be made even better. For instance, import lead times could be reduced to two days through changes in the procedures for agricultural licensing and custom clearance. Those measures could be conducted under TFA articles on, for instance, implementing pre-arrival processing.

II. Some bottlenecks still affect cost-competitiveness in imports

Importing parts to Brazil can be significantly costlier than external benchmarks. Importing a container of auto parts in Brazil can cost more than \$3,800.⁴⁸ Companies importing for

re-export can exempt nearly 25% of this value in navy taxes.⁴⁹ Nevertheless, the remaining \$2,800 is still much higher than import costs in the United States, for example (Figure 10). The difference between Brazil and some other countries lies in additional infrastructure-related costs, such as inland transportation and port warehousing. Costs in Brazil also are higher due to specific procedures and delays – for example, wood inspection, re-weight and scanning of containers, and unpredictable times for licence approval.

a. Additional costs from wood inspection – The inspection of wood is by the Ministry of Agriculture, which certifies that containers do not contain wood pallets or if they do, that the pallets do not contain pests. Today 100% of containers are inspected, regardless of

their content.⁵⁰ This process affects companies, increasing costs and time spent at the port. **IMPACT -> Additional \$166 per container and one day in lead time**

b. Time and criteria for import licence – Lead times for import licence approval vary significantly depending on the product, and in most cases approvals must be submitted prior to shipment. This delays the process and creates unpredictability. For instance, importing specific types of glass requires licence approval from the National Institute of Metrology, Quality and Technology (or Inmetro). The time to obtain this approval has increased from three days to 11 days on average, to a maximum of 21 days.⁵¹ Also, for parts such as air bags, the Brazilian Army requires declarations from origin countries; in-person visits to follow up the approval are not unusual.⁵² Overall, the capital costs associated with a five-day delay in an automotive container could be almost \$140.⁵³ Another interruption to the supply chain, according to companies, are the frequent changes to licensing requirements that are not communicated early enough to give time to adapt to the new rules. “If one shipment with hundreds of items has one single item with an import licence pending, the whole shipment is stuck until this import licence is approved,” says a company’s logistics manager. **IMPACT -> Additional \$140 per container**

c. High inland transportation costs – Inland transportation costs in Brazil are higher than international benchmarks, mainly because of insurance costs that could represent nearly half of total truck freight. The reason for high insurance rates: higher loss rates and risk management costs. It is also mandatory to pay re-insurance fees, adding to costs.⁵⁴ The total cost of transporting a container 250 kilometres from Santos to the countryside of Sao Paulo is \$650. The cost of transporting goods the same distance in the United States is about \$400 (Figure 13).⁵⁵ One option is to transport auto parts by train – usually leading to lower insurance costs, especially over long distances.⁵⁶ For instance, 80% of Mexican automobile production moves by rail to Canada and United States, compared with 2% transported by rail within Brazil.⁵⁷ Plans are in the works to expand container train connections to Santos, which could increase the use of this transportation.⁵⁸ **IMPACT -> Additional \$260 per container**

- d. High port fees and congestion – The cost difference in port fees between the United States and Brazil is a notable disparity in the import process. Port charges in Brazil are based on a percentage of cargo value, and include a minimum cost; by comparison, those in the United States are based on the number of containers, regardless of cargo value.⁵⁹ In Brazil, different rules apply for different terminals but, as an example, the cost is around 0.65% of cargo value and is valid for a period of seven days in the terminal. If, for any reason, delays beyond seven days occur, an additional charge of 0.65% may be applied.⁶⁰ Companies typically are unable to unload all their containers in seven days, so often must pay the extra charge. Finally, the ports usually get crowded during Brazil's grain season (February to April), exacerbating delays. **IMPACT -> Additional \$620 per container**
- e. Additional border administration costs – Some steps in the border process add costs and time. For instance, three hours of lead time, on average, could be eliminated if companies were able to make import declarations prior to arrival.⁶¹ Also, companies sometimes have to re-weigh containers to match the declarations sent prior to shipment; this adds an average cost of \$149 per container.⁶² **IMPACT -> Additional \$149 per container and three hours in lead time**
- f. Drawback procedures – Companies can obtain exemptions from navy and import taxes in the re-export process, but these may not be easily obtainable by all companies in the automotive sector.⁶³ For example, companies that import auto parts and sell them to assemblers in Brazil find it difficult to take advantage of the exemptions, and so pass on their costs to the rest of the value chain.⁶⁴ Moreover, companies have to comply with complex drawback rules in re-export. They must provide detailed accounting traceability in the production, import and export processes, and deal with intricate controls in customs applications. This complexity means that a percentage of companies, especially small and medium-sized companies (SMEs), are unable to fully benefit from tax exemptions.⁶⁵ **IMPACT - > It is difficult to obtain precise figures on the percentage of companies that do not benefit from the exemptions. However, the result of making parts more expensive is that the end product becomes more expensive**

– or even unviable.

Removing these barriers and closing the cost-gap to the United States could save nearly \$110 million annually in import costs, based on current industry figures.⁶⁶ Import volumes also could increase with better processes and greater access to tax exemptions. Meanwhile, more competitive costs for parts could contribute to higher exports, if additional issues are addressed.

III. Trade barriers for exports are different in nature from those for imports

Certain structural and tax-related issues burden the sector, making it impossible to export in some situations. To increase exports, Brazil needs to be more competitive, by not only improving the logistics chain but also addressing structural problems that contribute to higher production costs. Listed below are the main issues raised by the private sector in the Forum's industry interviews.

- a. Burden taxes – Several tax-related issues have an impact on export costs:
 - i. Auto companies encounter hidden taxes along the long supply chain that amount to an estimated 8.8% of export value.⁶⁷ Aware of this current burden, Brazil's government has created a programme to return part of the hidden taxes to companies as a means of spurring exports. The Reintegra programme returns up to 3% of exports value.⁶⁸
 - ii. Companies accumulate value-added tax (VAT) credits in their export operations, but it takes a long time to obtain authorization to use these credits.
 - iii. Strict rules on transfer prices to affiliate companies burden automotive companies – for example, a cap on how much can be exported to affiliates.⁶⁹
 - iv. The tax system's complexity is an overarching issue affecting the ability of automotive companies to compete globally in exports.
- b. Bilateral agreements – Brazil has approximately 11 agreements regarding the auto sector; increasing that number could spur exports. By comparison, Mexico has auto-related agreements with 49 countries.⁷⁰
- c. High labour costs – Companies complain about Brazil's high and unpredictable labour costs, part of

which are due to unclear rules.

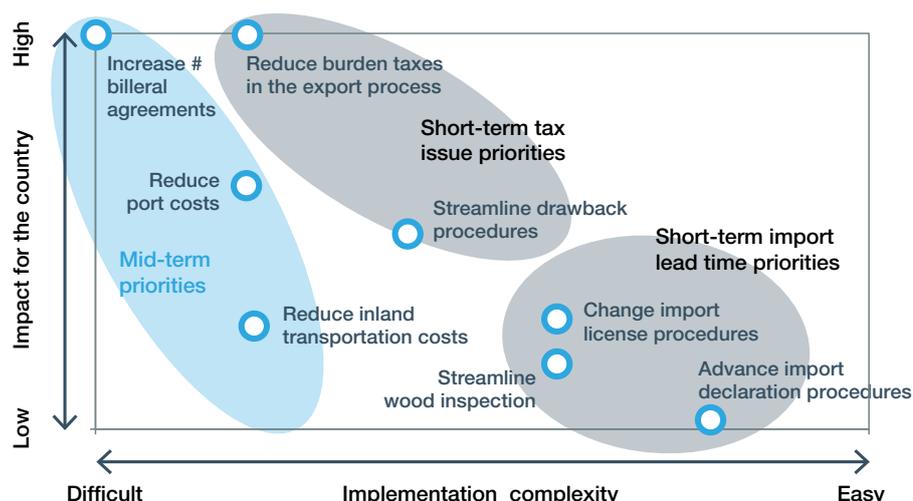
- d. Tax rate – Exchange-rate volatility is another burden, making export-planning processes difficult for companies.⁷¹
- e. Regulation – Imported parts from other countries can be assembled in a kit. But Brazil does not consider kit preparation to be an industrial process, a situation that requires companies to pay additional taxes. Assembly can be performed in bonded warehouses, but the costs are higher due to warehousing fees and added logistics costs.⁷²

The impact of the above-mentioned issues was not calculated, but the automotive companies interviewed considered them to be a high priority. These issues affecting exports will not be addressed by TFA implementation.

IV. A list of measures to be implemented will enhance competitiveness

Recent initiatives in border administration have reduced lead times for the automotive sector in import procedures, followed by re-exports. The time needed to obtain tax exemptions has been shortened and the number increased of automotive companies eligible for special regimes. However, auto companies in Brazil face higher costs across the value chain, and greater improvements are necessary. Reducing some supply chain costs could deliver import-process savings of nearly \$110 million annually. But to capture that value and others not quantified, companies and the government must resolve certain issues of varying complexity. As the chart shows, no measures could be described as low-hanging fruit – solutions that would result in a significant impact with little implementation effort. But implementation of quick wins could deliver potential benefits to the sector (Figure 11).

Figure 11: Impact versus Complexity Prioritization



Source: Interviews; Bain & Company analysis

Short-term

Reduce burdensome taxes and adapt regulation: Taxation is among the main issues affecting the export competitiveness of companies. Some solutions suggested below could give a boost in the short term. The government should study and assess the impact of each proposal before drawing up an action plan for implementation.

- a. **Streamline drawback procedures** to ensure that the entire automotive value chain benefits from exemptions for exported parts. The government has been making this exact improvement recently, with new rules and systems. But companies say that too much detail and too many controls are still required, and they would benefit from further simplification.
- b. **Reduce time for tax-credit refunds in export procedures:** Export companies would benefit if credit for the state VAT (ICMS or the state Tax on Circulation of Goods and Services) had a maximum time available for refund or use in other operations.
- c. **Adapt transfer-pricing regulation:** The current regulation can be improved by adapting a minimum transfer-pricing margin and new operating limits for export products to affiliate companies that are competitive with worldwide practices.
- d. **Adapt regulations for production of parts cross-docking exports** (or CKD, Completely Knocked Down): Adapt taxes in this process to current benchmarks.

Reduce import lead time

- e. **Speed up wood inspection procedures** – Adjusting current scanners for wood identification could speed up wood inspection procedures. An alternative could be to create a sampling process based on a company’s track record, similar to the blue line special regime approach for customs. Such measures could save additional handling and warehousing costs at the terminal, and reduce import lead times.
- f. **Improve licensing procedures and timing** – The time required to obtain licences may vary vastly depending on the product. If companies were able to use shipping time to obtain the licences, they could reduce inventory levels. For this to happen, pre-shipment approval requirements need to be revised. The Single Window project will streamline procedures and help to optimize licensing. But to enhance transparency, the requirements for new licences will need to be communicated in advance (e.g. 90 days) for companies to be able to plan. The licensing process could be further adjusted, based on a company’s profile or quotas for some products.

- g. **Import declaration before arrival of cargo** – Applying for import declaration before a vessel’s arrival could save hours in the port for auto companies. This would help SMEs in particular because they do not benefit from special regimes and therefore spend additional time at a port. Pre-arrival import declarations require both the government and the companies to have the capability to exchange information in advance.

Mid-term

- h. **Reduce port costs** – The investments in new terminals should be coordinated to deliver better competition and lower costs. Port costs are a major issue for auto companies, which ship high-value-added products and pay fees based on cargo value. Port terminals could study pricing options in the world’s best terminals. Investment in port upgrades could help to cut costs further.
- i. **Reduce inland transportation costs** – Lowering inland transportation costs is complex and includes such factors as improvements to roads and security, and cuts in insurance costs. Rail and sea transportation should also be promoted.
- j. **Increase number of bilateral agreements:** Because the automotive industry is important for many countries, forging such agreements is a necessary catalyst for international trade.

Impact of trade facilitation agreement

It is important to reinforce the significance of the TFA, which is particularly relevant for the items listed under “e”, “f” and “g”. However, the agreement does not address all the issues affecting trade across the entire automotive industry value chain. The government therefore needs to look at the end-to-end value chain and tackle concerns not covered. The list of required actions is long, so delivering results will depend on the ability of the government and the private sector to work together on initiatives. Collaborating on goals for pilot projects could lead to a win-win scenario – reduced costs for the private sector and increased exports for the country.

Enabling Trade: Barriers to Imports/Exports in Nigeria

Introduction

Nigeria ranks 147th out of 189 countries on the World Bank's ease of doing business index for 2014.⁷³ The country imposes politically mandated restrictions on imports and exports to support local industries in meat products, spaghetti/noodles, bagged cement, furniture and footwear, among others. It also charges hefty duties on certain goods – for example, imported rice faces a levy of 20%. Additional trade barriers negatively affect the supply chains of exporters to Nigeria, and of local manufacturers either importing inputs or exporting from Nigeria. Import and export costs in Nigeria are almost double those in East Asia & the Pacific region. Moreover, the average time for importing to Nigeria, at 33 days, is 81% higher than it is in Latin America; the average time for exports from Nigeria, at 22 days, is 36% longer (Figure 12).⁷⁴

Despite growth in exports and imports, delays in turnaround time have had an adverse impact on Nigeria's trade volume. Many firms are reluctant to deal with the variability of transportation times. And, as the Forum's research indicates, corruption is a major structural impediment. The *Enabling Trade* report of 2013 estimated that removing trade barriers in sub-Saharan Africa would lead to increases of 12% in GDP and 63% in

exports. For Nigeria, that would translate to nearly \$31 billion in GDP and \$79 billion in exports, with a significant positive impact on trade in perishable, time-sensitive goods such as certain foods and pharmaceuticals.⁷⁵

Trade barriers in Nigeria

The Forum's research shows that a range of companies operating in Nigeria considers the environment not conducive to business. Among four categories of trade barriers, the most commonly mentioned are: lack of transport infrastructure, and inefficiency and opacity in border administration. Other obstacles include: barriers to market access, such as import prohibitions, local content requirements, and import/export licensing regulations that are designed to provide price protection to local manufacturers from lower-quality imports.⁷⁶ The overall business environment also poses challenges. A generally poor security situation (e.g. in terms of police availability and response times, and a willingness and ability to investigate crime) makes it difficult to keep staff, especially expatriates, safe and prevent theft of finished goods and valuable assets.

Delays at Nigeria's ports are caused by inefficient border administration and seem to stem from general mismanagement, undeveloped transport infrastructure and corruption. Business operators consistently complain about dealing with too many government agencies, arbitrary fees requested by some government officials, illegal clearing agents at the ports, and poor infrastructure.

The agencies ask for documentation not always communicated in advance and for fees beyond the statutory rate.⁷⁷

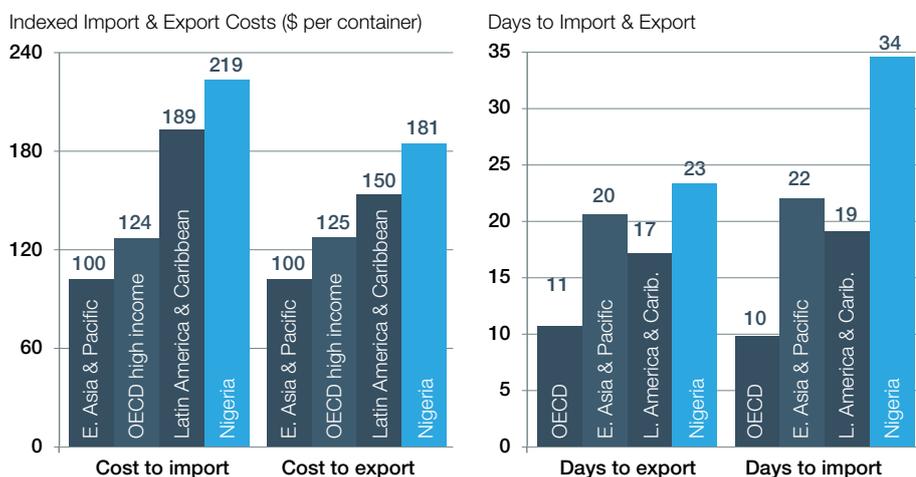
Experienced importers know with which agencies to deal and the standard process, but the inexperienced are assessed randomly by agents, told to bring unnecessary forms and forced to pay bribes. Since most imported shipments can remain at the port only for 21 days before shipping companies start imposing expensive, daily demurrage charges, many customers are compelled to pay fees higher than the statutory rate to clear their goods.⁷⁸

Illegal agents at the port look for unsuspecting customers to overcharge or outright defraud, while taking up the valuable time of government officials. Many agents have no registered place of business or ties to the official self-regulating bodies of clearing agents. The confusion wrought by such activities results in cargo delays at the port.

A high percentage of Nigeria's imports pass through the Lagos port complex at Apapa and the Tin Can island port, both in Lagos, for further transport by road to the rest of the country. But the roads outside the ports are in such poor condition that moving goods out of Apapa can take an entire day instead of 45-60 minutes.⁷⁹ That delay is one contributor to port congestion. It also poses a major challenge for importers of time-sensitive or temperature-controlled products. A tyre manufacturer exporting to Nigeria described the impact of Nigeria's port challenges: "Our Nigerian business partner is unable to plan his off-take and cash flow owing to the fact that clearance from the port can take as few as four days to as much as four to six weeks. Because of this, at different times, our customer is overstocked and understocked, causing sporadic off-take and shipments."

TFA implementation can address some of Nigeria's border administration problems – for example, the lack of information among various agencies can be resolved by a Single Window scheme. But the TFA will have little impact on the challenges of corruption and inadequate port infrastructure.

Figure 12: Nigeria's Trade Costs and Times Compared



Source: World Bank Doing business, Bain analysis

Case from Nigeria – Tropical General Investments Limited

Tropical General Investments Limited (TGI) is a large diversified conglomerate with operations and investments in several West African markets, Morocco, United Arab Emirates and South Africa. The bulk of TGI's operations are in Nigeria. It produces and sells poultry, fish, fruit juices, dairy beverages, frozen foods, cotton, cooking oil, pharmaceuticals and marine vessels; it also provides specialized oil field and dry dock services.

The Forum reviewed two TGI subsidiary companies: Chi Pharmaceuticals (ChiPharma) and ORC Fishing (ORC). ChiPharma is a leading importer and distributor of human and veterinarian pharmaceutical products in Nigeria. It moved into manufacturing in 2008. ORC catches, processes and packages shrimp and prawns for export to France, Portugal, Spain, the Netherlands and other European Union (EU) nations. Like other businesses in Nigeria, ChiPharma and ORC face trade barriers in market access, border administration, telecommunications and transport infrastructure, and business environment.

Market access

ChiPharma requires approval for the import and distribution of each of its imported pharmaceutical items, even though some of them are standard and globally accepted (e.g. paracetamol). This licensing process for each drug can take three to six months.⁸⁰

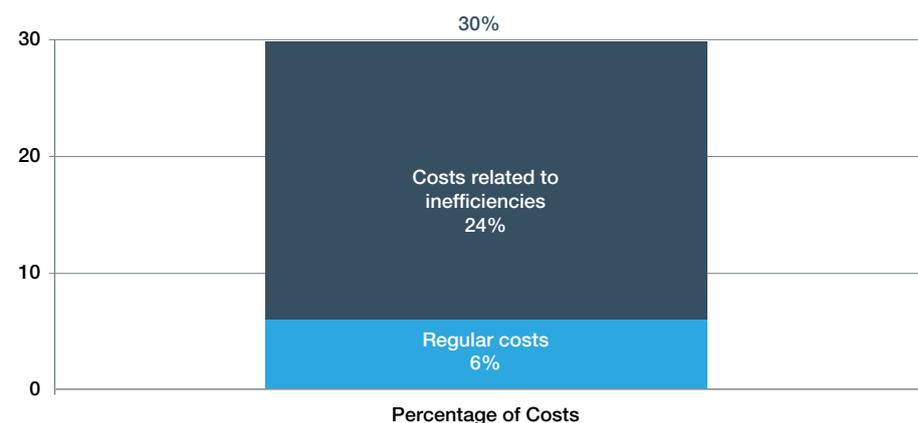
ORC's processing and packaging facility needed approval from the Nigeria Federal Department of Fisheries (FDF) before it could operate and export. The EU also requires the ORC facility to be maintained to certain standards. Export approval can be a bit tough, but the FDF manages ongoing inspections on behalf of the EU.

Port congestion and administrative delays

A major problem for importers is the unclear and unnecessary product classification and tariff assignment process of customs (e.g. reclassification of paracetamol under its other name, acetaminophen). Reclassification to product codes with higher duties, along with arbitrary demands for these higher duties, is a constant reason for delays in clearing, additional storage costs and, ultimately, port congestion. Many

Figure 13: Clearance and Administrative Costs in Nigeria

% of clearance and administrative costs from the goods costs



Source: Interviews with Nigerian companies

importers end up paying 15-20% in clearing process costs, instead of the statutory costs of about 5%. The delays in administrative process can easily be between five and 15 days, which means higher payments for storage, personnel and demurrage. Altogether, a \$100,000 shipment that should cost \$6,000-8,000 to clear could end up costing \$30,000-35,000. Clearly, this unpredictable cost increase deters some firms from entering the industry and can drive up the end-price for products by 20-30%. Some of ChiPharma's shipments are time- and temperature-sensitive (i.e. they must be kept between 2°C and 8°C; others at under 25°C). Process delays and inadequate infrastructure can lead to a loss of 3-4% of shipments.

As ORC is primarily an exporter, it faces fewer delays in getting its products through Nigerian ports. However, with time-sensitive goods that require cold storage, the risk (as high as 20%) is that port delays or power failures will waste shipments. Port clearance normally takes 10-15 days but sometimes can take up to 20 days. Storage fees at the Lagos ports are \$27 per day for a standard container, applicable after five days. In effect, the port-side storage costs per container are generally one to two times greater than they should be. ORC estimates the overall impact on costs, from such delays and wastage, at 2% above normal costs – a meaningful addition when competing globally to export to the EU.⁸¹

Removing supply chain barriers in Nigeria

The volume of international trade with Nigeria, while substantial, could grow significantly with the removal of supply chain barriers. The following projects and changes should help to reduce the operating risks for both foreign and domestic companies, and spur Nigeria's economic growth.

I. Optimization of border administration processes

Nigeria Customs Service launched a web portal in 2013 to provide information relevant to importers and exporters. The next step: facilitation of the actual clearing process, including integration via the portal of other government agencies' procedures and the private sector. This should begin with the product types subject to the longest port delays, followed by other strategic product types.

Second, a clear set of process instructions for each relevant government agency should be developed for each product type, along with a full list of required approvals. The Single Window portal should enable importers to register, submit documents, make payments and track the entire process online. This should help to minimize the number of people working in ports.

Third, the port should be secured, with access limited to registered, licensed clearing agents, or individuals or company representatives with confirmed products in the port.

Fourth, government agencies should quickly transition to keeping digital records to enable faster record retrieval and elimination of duplicate search processes.

II. Infrastructure upgrades⁸²

In the near term, port congestion can be notably eased with faster clearance processes. However, given Nigeria's growth prospects, the country must make a long-term commitment to expanding the capacity of the port infrastructure. The Nigerian government already is investing heavily in infrastructure – for example, in a planned seaport in the developing Lagos free trade zone. Almost \$12 billion in new port infrastructure has been announced and completion is expected by 2020.⁸³ The government is also refurbishing the rail network, with \$16 billion in projects under way. Plans to integrate the rail network with the ports and industrial sectors are yet to be determined, however.⁸⁴ Another \$16 billion in road projects has been announced, but none explicitly remedies the congestion at Apapa.⁸⁵ The roads near the port have not been upgraded.

III. Rationalization of the duty and tariff structures

Nigeria Customs Service should aim to further rationalize its set of import duties and restrictions to avoid the possibility of arbitrary product reclassification and to align with global cost-per-shipment levels. Many of the companies interviewed indicate that the Nigerian government should support local industry and job creation by reducing duties for raw materials and ensuring that the definitions of a raw material or finished product are indisputable.⁸⁶

IV. Improving security and general business environment

Companies such as ORC need adequate security to run their business without fear of piracy or militant attacks. Such security could increase industrial output by 10-20% almost immediately, according to company estimates.⁸⁷ Joint action plans between the government and the private sector could assist in heightening safety, enabling more complex, value-added output, creating manufacturing jobs, and making prices more competitive for the consumer.

Tackling matters beyond the TFA is vital for Nigeria's trade competitiveness. Some good movements have already begun. For example, a trade facilitation committee was established to coordinate implementation of ongoing projects; it should ensure this happens within announced time frames. However, as mentioned earlier, some issues extend beyond the TFA – problems in infrastructure, safety and corruption, for example. These must be resolved and combined with border administration amendments to allow companies in Nigeria to maintain cost-competitiveness in imports and exports.

Enabling Trade – Soy in Brazil: Creating Inland Connections

Introduction

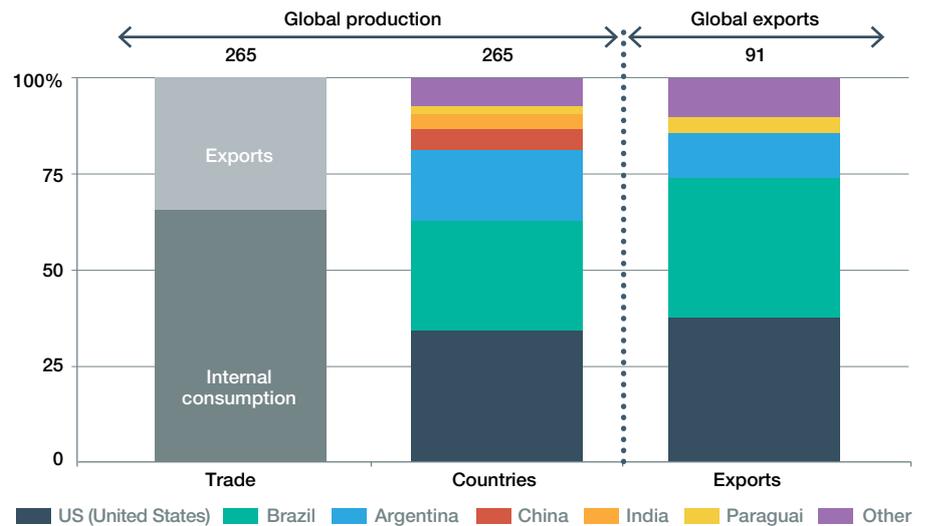
The world soy harvest in 2014 reached nearly 270 million tons, compared with 175 million tons in 2000.⁸⁸ More than 80% of all soy and corn output is used to feed animals – the main ingredient in swine, bovine and poultry feed is derived from grain, especially soy and corn.⁸⁹ As the production of both crops is concentrated in three countries – the United States, Brazil and Argentina – efficient trade is essential for food production balance and availability.⁹⁰ The three countries together account for more than 80% of global soy exports, with Brazil's share being more than 30% of the total (Figure 14).⁹¹ Brazil exports soy in three forms: soybean, soybean meals and soybean oils. Soybean makes up the majority in tons, approximately 70% of soy exports, followed by soymeal with 27% and soybean oil with 3%.⁹² Soybean exports are important for the country's economy, representing 9.5% of total exports and 20% of exports of primary products.⁹³

Soy production in Brazil has grown significantly in the past few years, with a compound annual growth rate of 9%, mostly due to an internal market that has grown 13% since 2009. Brazilian soy exports also have been increasing notably – 6% annually since 2009.⁹⁴ However, the rate is lower than the 11% annual growth rate in demand from China (Figure 15).⁹⁵ The latter is the world's largest importer of soy, consuming nearly two-thirds of global exports.⁹⁶ Chinese demand is expected to continue growing, but at a lower rate in the years ahead.⁹⁷

The potential to boost output in Brazil is vast. Soy is currently grown on only 29% of the land where it can be cultivated.⁹⁸ Most of the available land is in the central part of the country, where the climate is appropriate for soy production. The centre west region accounts for nearly half of output and exports, and registered the highest growth rate among soy-producing regions in the past three years. Brazil's south and centre east account for 38% and 13%, respectively, of soy production (Figure 16).⁹⁹ The plan for the coming years is to maintain growth in the centre west and accelerate activity in the

Figure 14: Global Soy Production and Exports

Production and exports of soybeans in millions of tons (2011)

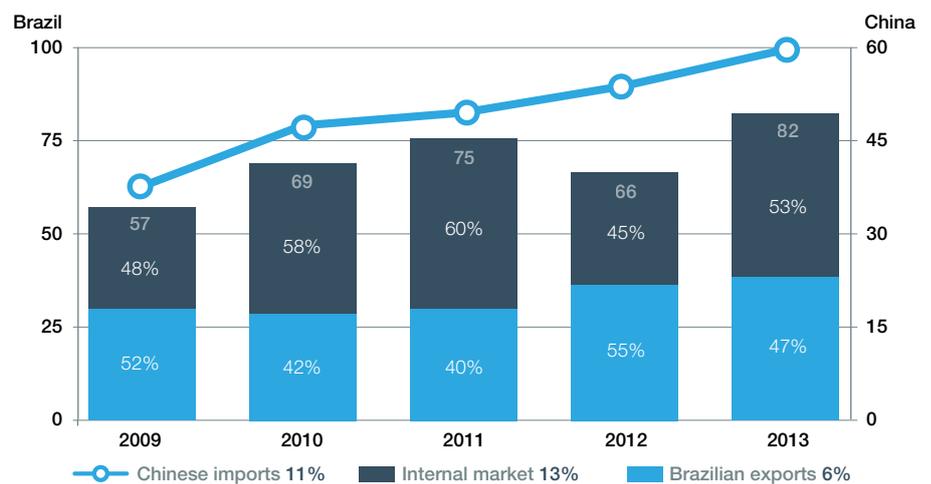


Note: Only soybeans

Source: FAOSTAT data, Food and Agriculture Organization

Figure 15: Brazil's Soy Production and Exports

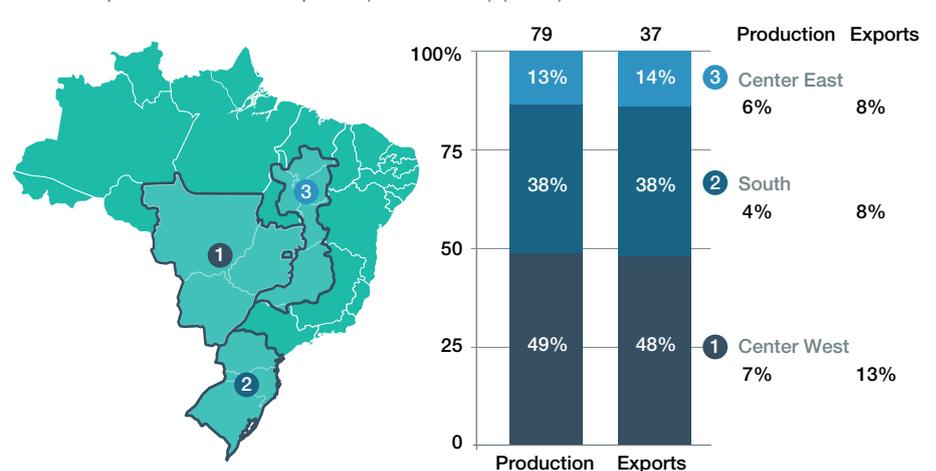
Production, exports and imports of soybeans (million tons)



Source: Food and Agricultural Policy Research Institute (FAPRI); Brazilian Institute of Geography and Statistics (IBGE); Companhia Nacional de Abastecimento (CONAB)

Figure 16: Brazil's Soy Production and Exports by Region

Share of production and exports (million tons) (2013)



Note: Some states were considered on production and exports, about 2.7 million tons

Source: IBGE; CONAB; Bain & Company analysis.

northern part of the centre east region.¹⁰⁰ Exports from the centre west have been expanding impressively and are expected to grow in alignment with production forecasts. Mato Grosso in the centre west is alone responsible for 33% of total exports.¹⁰¹ The state is located in the heart of Brazil, making export logistics more difficult.

Logistics of soy in Brazil

The costs to export soy from Mato Grosso are competitive with exports from the United States, or even better, depending on exchange rates. However, changes in production costs could alter the situation for both countries, given that logistics costs in the United States are less expensive. That is why improving inland transportation from Mato Grosso is critical (Figure 17).¹⁰²

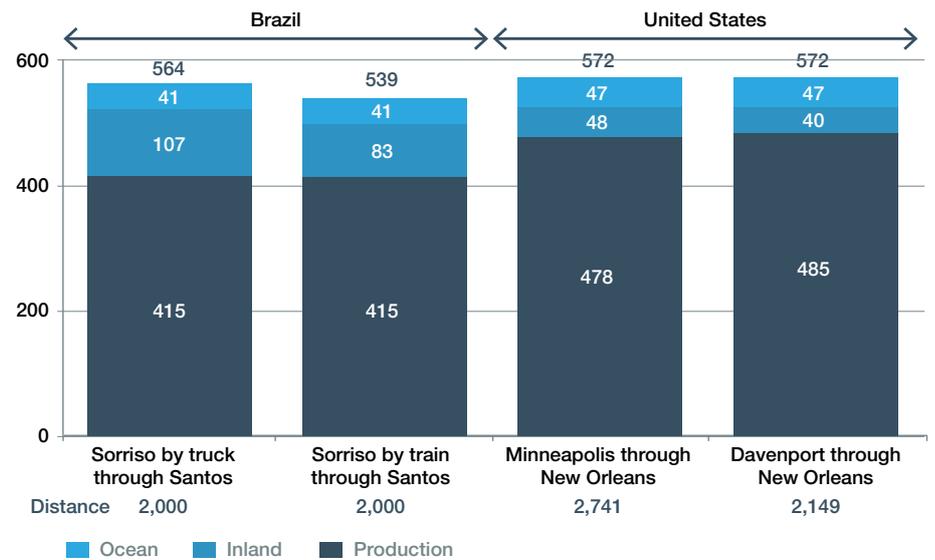
Brazil is currently the second-largest exporter of soy worldwide. Companies have been able to overcome some export bottlenecks, but in doing so may have compromised profitability in the value chain. Logistics costs are reflected in the final price and affect importers' purchase decisions, with the price of these commodities dictated by the market. For example, logistics costs for exporting to China can range from 12% in Rio Grande do Sul (a southern state) to 28% in Mato Grosso (a central state) (Figure 18).¹⁰³ Exporters from Mato Grosso must travel longer distances than those from Rio Grande do Sul. The Chicago Mercantile Exchange sets soy prices, and when rates are high, inland transportation costs are absorbed.¹⁰⁴ But price fluctuations could disable some production areas, making it unprofitable to compete due to higher logistics costs.

Exports from Mato Grosso are shipped through seven main ports in the country, with Santos accounting for approximately 58% of that volume, followed by Paranagua in the south with 10%, and Vitoria in the southeast with 9%.¹⁰⁵ The constant growth calls for new export corridors. Given the lengthy distances for soy to be transported, different models can be used, depending on the port used.

The three main options to transport soy from warehouse to port are truck, railway and waterway. The last two usually require short-distance transportation to a transshipment point from where the product is moved to the port. Since the opening of a new train terminal in the centre west region in 2013, it is estimated that 39% of soy transportation from Mato Grosso is by train.¹⁰⁶ Of the remainder,

Figure 17: Brazil versus United States – Soy Costs

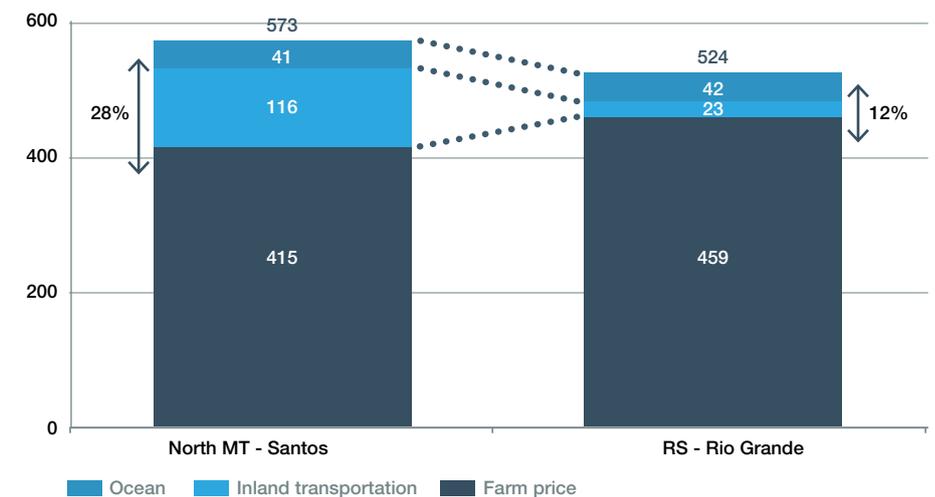
Soy costs \$/ton



Source: Bain & Company analysis; United States Department of Agriculture (USDA)

Figure 18: Soy Logistics Costs in Brazil

Soy costs \$/ ton



Source: USDA; Transportation guide

Figure 19: Distances to Brazil's Main Ports for Exports



Source: Google maps; Soybean transportation costs report; Distance from Sorriso Mato Grosso

27% is transported by waterway and 34% by truck (Figure 20).¹⁰⁷ The change in the means of transport has reduced the need for trucks in the past few years, although some areas in Mato Grosso still require relatively lengthy truck transportation before reaching transshipment to railway or waterway. The percentages of soy exports shipped by train and water are below those of the United States, where soy is exported mostly by rail (44% of the total) and barge (47%).¹⁰⁸ Also, the quality of Brazil's highways varies enormously, with some stretches in poor condition. The quality of road to the southern ports is better than the national average, but of the nine days it takes from Mato Grosso to Santos by truck, three are spent waiting for document stamps when crossing states in Brazil.¹⁰⁹ Mato Grosso currently exports nearly 50% of the soy produced in the region and has available area to expand output for both the domestic and external markets. Easing bottlenecks – and consequently logistics costs – could make soy from Mato Grosso more competitive in the global market.

Enabling trade through a reduction of logistics costs

Inland transportation

The bulk of Mato Grosso's grain output – 84% – is shipped to the southern ports, and it can take advantage of the railways, and better highway and port infrastructure. Recently, companies have invested in new rail terminals in the region, improving transport and transshipment operations and removing an average of 1,000 trucks per day from the highways.¹¹⁰ The impact of better infrastructure is factored into the costs of transporting soy to the ports. Facilities in the north may offer more competitive prices due to shorter distances, and present an alternative in peak season when capacity constraints generate delays and losses in the regular ports. Exporters can shift to different ports to avoid losses, but enhancing the infrastructure and easing other bottlenecks can lower costs and better accommodate the growing demand for Brazilian soy.

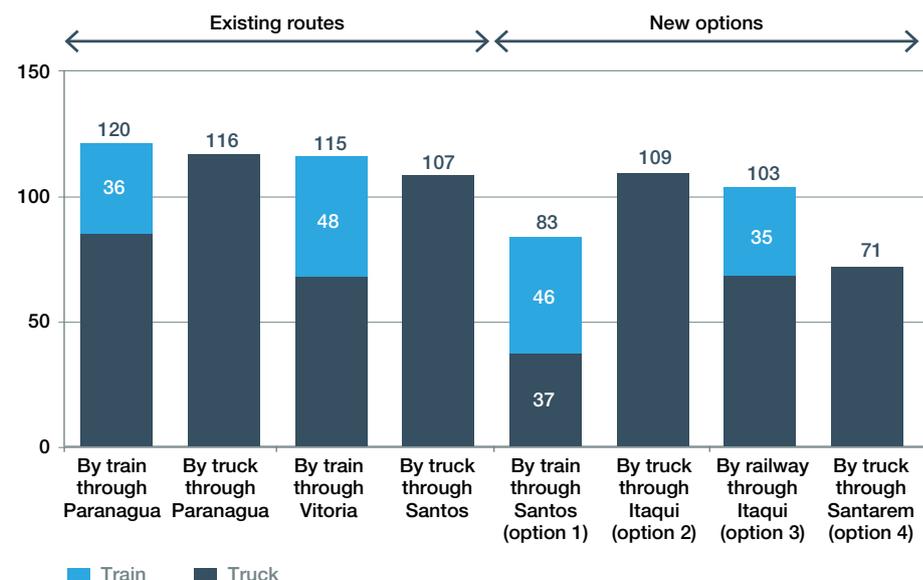
Figure 20: Soy High-Level Logistics Chain



Source: Bain & Company analysis

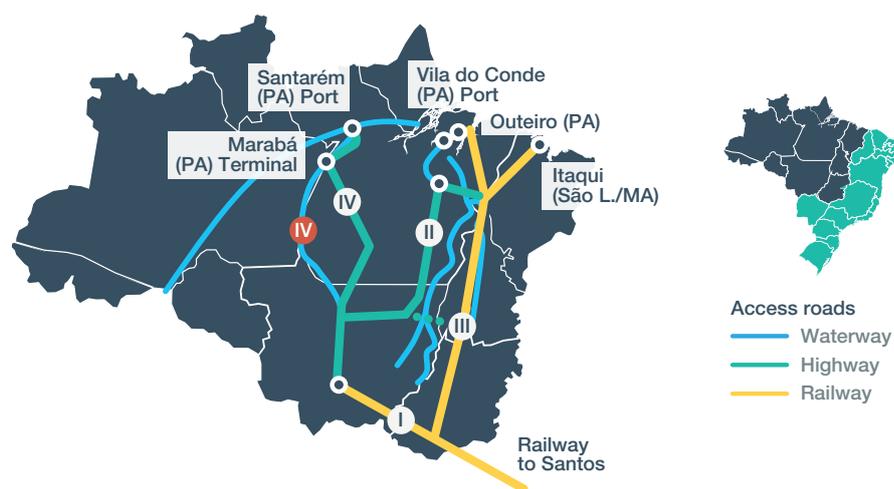
Figure 21: Soy Inland Transportation Costs

Soy inland transportation costs \$/ton from Sorriso MT



Source: Bain & Company analysis, SIFRECA; ANTT

Figure 22: Soy Export Corridors – Alternatives



Source: Bain & Company analysis; interviews

Four options will be illustrated and others in development will be discussed.

Table 3

I	Option 1 – Railway from Rondonopolis to Santos: This railway opened in September 2013. It already moves a large share of soy exported from Mato Grosso (between 25% and 30%). The cost of transporting soy by truck from Sorriso is \$107 per ton and by train is \$83 per ton.
II	Option 2 – Roadway (BR-158): The road is not 100% paved, especially in the very north of the state. Despite such problems, trucks travel through these roads. Ideally they would transship to a river in the north of the country to reach the port, but the waterway has been underutilized because a long stretch is unnavigable during the dry season. Meanwhile, trucks continue to travel to an alternative port.
III	Option 3 - North-South railway: The North-South railway is an old project to connect states in the south with those in the north. After 25 years in construction, a new stretch of the railway was completed in May 2014 but, due to environmental issues, it is still not fully operational.
IV	Option 4 – Roadway (BR163): Two main connections are highway and waterway. The highway is being paved and some stretches will be operated by the private sector. The current situation causes an increase in the number of accidents, travel time and truck maintenance costs. Alternatively, the waterway could help the region's exporters to become more competitive, but rivers contain a large number of waterfalls and rapids, which makes navigation difficult for long continuous sections.

New logistics corridors will certainly cut costs – assuming the alternatives will be available in future years – and will trim the dependence on routes to the southern ports. A 25% reduction in Mato Grosso soy shipments to the south could result in annual cost savings of almost \$120 million (nearly 10% of total inland transportation costs).¹¹¹ Those savings could be even higher if export volumes increase.

As observed earlier, inland transportation costs are the key enabler to move soy. Trade facilitation could expedite some procedures and prune document requirements, but infrastructure has the most impact on inland transportation costs. Therefore TFA measures have minimal effect on the issues described.

Soy conversion to containers – a paradigm shift in the business model

Current model – bulk

A major characteristic of grain trade is centralization, and the soy trade is concentrated among a few players.¹¹² In the current supply chain, grain is transported in bulk. As a result, the capability to trade, transport and market large quantities defines today's business model. While this typically delivers

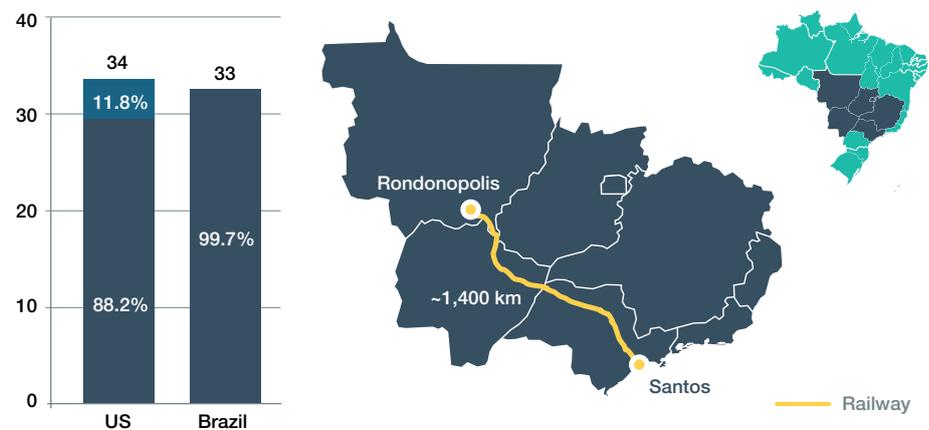
Figure 23: Bulk versus Container Model



Source: Maersk

Figures 24: United States vs Brazil; SoyCo Transports Soy

Soybean exports (million tons)



Source: Interviews; Bain & Company analysis

economies of scale for soybean, it does not apply to niche products such as non-transgenic soy or to exports outside main export routes (such as Brazil to China).¹¹³

Alternative model – container

Containerization is a complementary and alternative way to ship grain. This option comes with the monetary benefits of lower cargo losses and storage costs. It also affords greater flexibility in managing the supply chain. Instead of being mixed in silos with soy originating from different farms, containers can be filled where the grain is harvested, giving buyers the certainty that they will receive exactly what was bought from a chosen farm. Additionally, by reusing containers that deliver imports to the countryside but typically return empty to the ports, costs can be saved.

Exports in containers still represent a small portion of Brazil's soy trade – only 0.3% – but have potential for growth. In the United States, nearly 12% of soy exports are transported in containers (Figure 24).¹¹⁴

SoyCo container case in Brazil

A company, referred to as SoyCo in this report, transports soy for export from Rondonopolis in Mato Grosso to Santos, and has been expanding its container operations. The trip by train to Santos is approximately 1,400 kilometres, and SoyCo has made several investments in the rail terminal in Rondonopolis.

The logistics procedures to export soy through containers are slightly different from the bulk model of shipping from warehouse to port. Currently, empty containers are sent from Santos port through the rail terminal in Rondonopolis. Meanwhile, producers deliver the soybeans to the warehouse. Trucks transport containers to and from the rail terminal (Figure 25). When a filled container arrives at the terminal, it is fumigated and has to wait three days before being ready to be sent to the port for shipping.

Good practices

1. Documentation after cargo shipment – The documentation process to export soy in containers does not need to be completed for cargo shipment. It takes 7-10 days to obtain a sanitary certification, but companies can finish procedures after the cargo is shipped.¹¹⁵ That expedites sanitary certification – an improvement that could be adopted in most border processes.
2. Rail detour at the port – During the peak periods of Brazil's soy exports, February to April, it is common to have a line-up of bulk ships and trucks. During this peak time, soy exports by container in Santos can benefit from a railway detour for containers, ensuring predictability for global importers. Of the five terminals in Santos, one has a detour in place and another is in the process.

Current improvement opportunities on this process

1. Border administration – Container exportation requires an inspection from the Ministry of Agriculture prior to shipment. In theory, companies could request inspection at any place if the port of export is bonded. However, virtually all inspections are conducted in the port. The officers need to open containers to check the cargo; to do that, the containers must be moved to a designated area. That move adds costs – an average of \$166 per container. To streamline procedures, the inspection could be conducted earlier at rail terminals, especially in areas with high volumes of grain exports, such as Rondonópolis.¹¹⁶ IMPACT -> \$166 per container due to handling, and/or \$375-800/container if shipment schedule is lost due to delays

The additional steps in the inspection procedures mentioned under item 1 (border administration) add nearly 5% in logistics costs (Figure 26).

Conclusions

The key enabler for soy exports is inland transportation, which accounts for nearly 70% of all logistics costs for exporters in Mato Grosso, the main soy-producing state.¹¹⁷ Brazil has been improving its internal logistics to support the growth in production and exports. Cutting logistics costs can make Brazilian soy more competitive and accessible, compared with that from the United States and Argentina, the other large exporters.

Mato Grosso has several options to enhance transportation logistics. One is to explore opportunities to increase shipments to the north and decrease shipments to the south, which is overwhelmed during the peak seasons. This solution comes with complexities, so prioritization is essential. The prioritization should be conducted by the government and the private sector in collaboration, and should consider the potential impact of each effort on the country and on industry stakeholders. For example, nearly 60% of Mato Grosso's soy exports currently pass through Santos. Reducing that percentage to 25% could potentially result in \$120 million in annual savings – an estimate that does not factor in future growth in exports, which could make the savings even larger.

Among the possible options, three are highlighted that could cut costs and release capacity at the southern ports. However, they require investment to become fully operational.

Additionally, options such as exporting soy in containers could boost growth. But the inspection procedures for containers need to be reviewed and changes made before container shipments can become a viable cost-saving option.

Table 4

I	Option 1 - Roadway (BR158) and waterway to Vila do Conde port : Use of waterway requires rock excavation. Obtaining a necessary environmental licence is necessary for work to begin; that process usually takes years. Once a licence is obtained, excavation work will require three years to complete. Meanwhile, improvements in the road stretch are under development.
II	Option 2 - North-South railway : The central stretch of the railway has been completed since May 2014 (Porto Nacional – Anápolis) but is still not operational because the company building the stretch requires a licence from the environment agency. As a result, this option has not generated the potential cost savings.
III	Option 3 - Roadway (BR163) and waterway Teles Pires : The central stretch of the railway has been completed since May 2014 (Porto Nacional – Anápolis) but is still not operational because the company building the stretch requires a licence from the environment agency. As a result, this option has not generated the potential cost savings.

Impact of trade facilitation agreement

Under Article 7 of the TFA, countries could take action to expedite the processes for inspection and release of soy in containers. Documentation formalities also could be shortened. However, as observed earlier, the main requirement to make Brazil's soy exports globally competitive is efficient inland transportation, and the alternatives to improving the current infrastructure are complex and require coordination. Brazil's border processes for soy exports are efficient and trade facilitation measures may improve some steps. But for soy exports to become cost-competitive, other parts of the end-to-end value chain need to be upgraded.

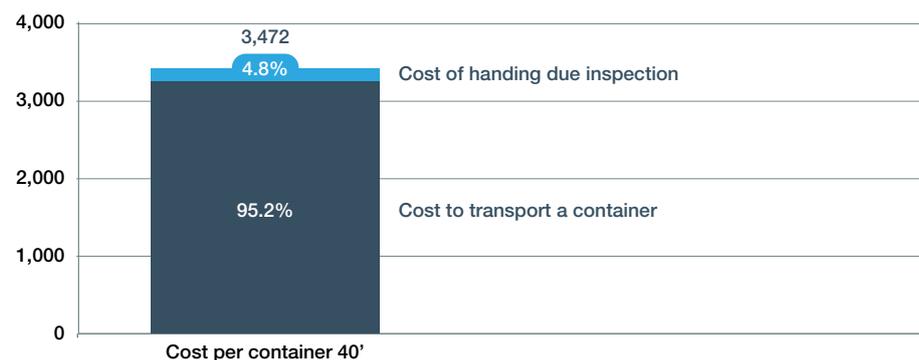
Figure 25: High-Level Logistics Chain



Source: Interviews with SoyCo

Figure 26: Logistics Costs, per Container

Estimates of export logistics costs \$/container 40'



Source: Bain & Company analysis

Enabling Trade – PaperCo Example: Reducing Inland Transportation Costs

Introduction

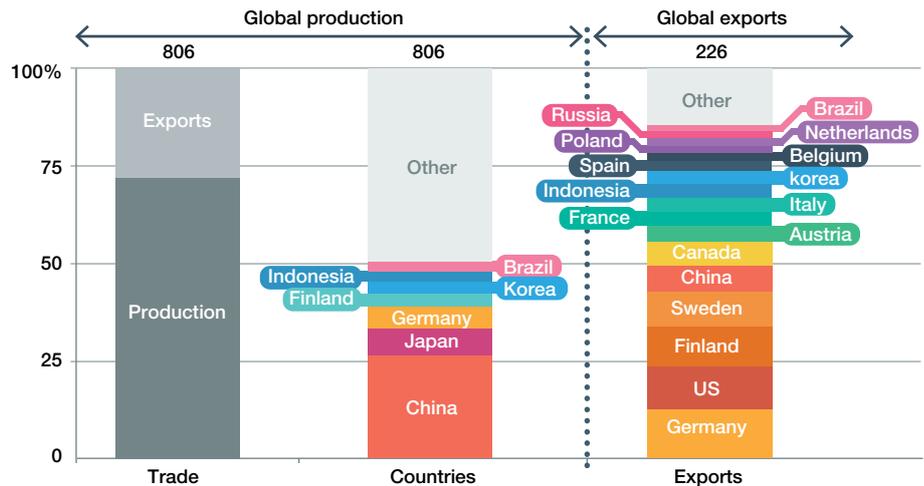
Although many processes are computerized and substantial environmental sustainability efforts are evident, paper remains prevalent for business and personal purposes. Paper is used in packaging everything, from pharmaceuticals to food. It is still widely used for writing and printing in offices and schools, in newspapers, magazines, tissues and other products. Excluding tissues, the global annual output of paper and paperboard totals 806 million tons.¹¹⁸ China is the world's largest producer, accounting for more than 26% of global output, followed by the United States and Japan.¹¹⁹ Fully 28% of global production is exported, so trade issues are critical in the paper market (Figure 27). The world's top exporters are Germany, the United States and Finland.

Brazil is the world's eighth-largest producer, with more than 21 million tons of paper. However as only the 17th-largest exporter, the country is not that relevant in the export market. Brazil's paper production in 2013 rose at an annual rate of 3%, but mostly due to domestic growth. Brazil's paper exports have shrunk 2% annually since 2009, despite a 1% growth in global demand (Figure 28).¹²⁰ Brazil's share of the global export market for paper, too, has declined. However, the country has large paper companies and a competitive supply of raw materials. Opportunities exist therefore for Brazil to expand its share of global paper exports and compete for import markets such as Europe and the United States.

A Brazilian company, PaperCo, will be examined to understand how supply chain barriers undermine the competitiveness of Brazilian paper in the global market.

Figure 27: Global Paper Production and Exports

Production and exports of paper¹ in million tons (2013)

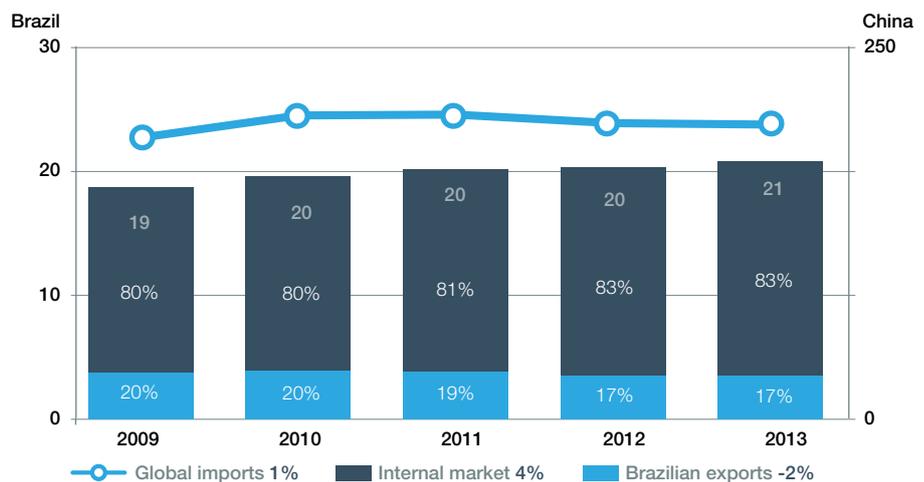


Note: ¹Paper + paperboard

Source: FAOSTAT data

Figure 28: Brazil's Paper Production and Exports

Production, export and import of paper¹ (million tons)



Note: ¹Paper + paperboard

Source: FAOSTAT data

PaperCo export supply chain

Two export corridors are very important for PaperCo: Santos and Vitoria. Production is triggered after a customer's request and the supply chain team tracks output to optimize logistics operations and minimize losses. Given the low margins of the paper business, any delay could mean losses for the company. In both the Santos and Vitoria operations, a container is filled at the plant and transported to the port for shipment. Usually, two or more companies are involved in the logistics by the time the product reaches its destination port.

The main difference between the Santos and Vitoria operations is inland transportation. Exports arrive at Santos by truck or train after an 80-kilometre journey, while exports arrive at Vitoria 100% by truck after a nearly 300-kilometre trip.¹²¹ It takes an average of six days for a shipment from a PaperCo plant to leave the port (Figure 29), much speedier than the average of 13 days experienced by other industries.¹²²

Although paper manufacturers benefit from relatively fast export processes, some steps in the supply chain add costs to the product's final price, weakening its competitiveness in the global market.

Removing supply chain bottlenecks for paper exports

Logistics costs are a major factor in the final price of paper products. Logistics could account for 10% of the total price and make an export operation unprofitable. PaperCo's logistics costs vary from \$1,849 to \$2,626 per container (Figure 30).¹²³ The longer distance to reach Vitoria means higher inland transportation costs. Some existing bottlenecks could be removed to make up the difference, and make it more profitable for PaperCo to export more paper from Brazil. PaperCo has already benefited from enhancements in logistics, especially in Santos, where multistakeholders have collaborated to make the process less expensive.

Investments in the supply chain made operations more competitive

PaperCo's exporting operation through the Santos port has recently become more competitive (Figure 31). Investments in a train terminal have made it possible to move containers by train to Santos, generating savings of \$84 per container compared with truck transportation.¹²⁴ Additionally, train transportation is more reliable and predictable. For example, during the peak season for grains, it is common for trucks to face long queues at the port – a delay that can be avoided by transporting by train. Delays to ship containers could result in heavy fines for exporters – staying beyond the given “free time” means paying an average of an additional \$150 per container.¹²⁵

PaperCo has not yet been able to convert all its exports to train transportation and, as a result, has not achieved its savings potential. Nearly 30% of its exports are shipped through a port terminal that does not have a train connection.¹²⁶ Moreover, due to high traffic in the port, PaperCo contracts companies with concourses in the port, which adds costs. A state-of-the-art operation would involve transporting cargo directly to the ship terminal.

Further improvements require higher coordination

Exporting from Vitoria is more expensive than exporting from Santos, not only because of the longer distance from plant to port, but also because, without a railway option, 100% of the transportation in this region is by truck. The truck transportation process consists of:

Figure 29: PaperCo Logistics Chain



Source: Interviews with PaperCo

Figure 30: PaperCo's Estimated Export Costs

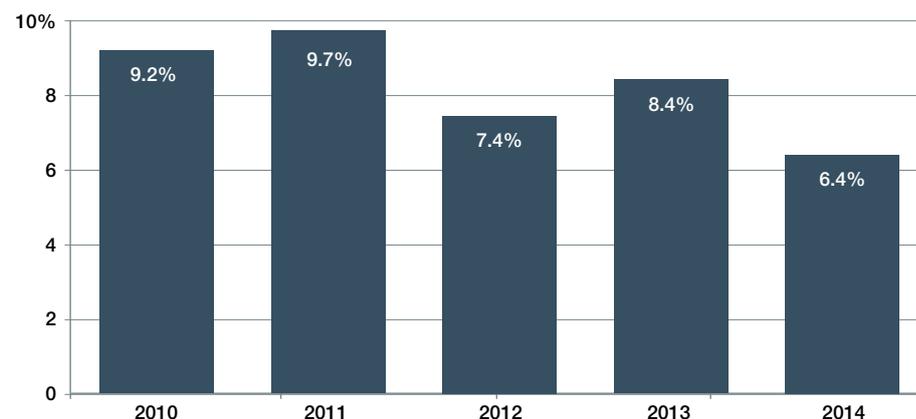
Export costs by container, \$



Source: PaperCo estimates

Figure 31: Percentage of Logistics Costs

% of logistics costs of product's final price
Constant prices



Source: Interviews with PaperCo

1. Picking up the container from the port
2. Filling the container at the plant
3. Returning the container to the port's secondary concourse
4. Transporting the container from the port's secondary concourse to the main terminal area

The total inland transportation costs are \$1,155 per container. The fourth step of transportation requires contracting with other transporters to move containers from the secondary area to the main terminal, an average distance of six kilometres.¹²⁷ This procedure adds \$189 per container, nearly 20% of the inland transportation costs. The intermediate cost could be avoided by transporting the container directly to the main terminal area, an option that would make the process more time-efficient. PaperCo created a solution for direct-to-terminal shipments, but it did not survive challenges by strong unions representing transporters in the last stretch.

The second bottleneck through Vitoria is the higher costs of ocean freight. Vitoria has few freight forwarders that handle long-journey shipments direct from the port. Smaller ships handle most shipments, with transshipment in larger ports in the south. This additional step affects service levels and times, and adds costs. Improving port infrastructure therefore could create a more attractive environment for companies and forwarders to operate in the region, thereby enabling more exports.

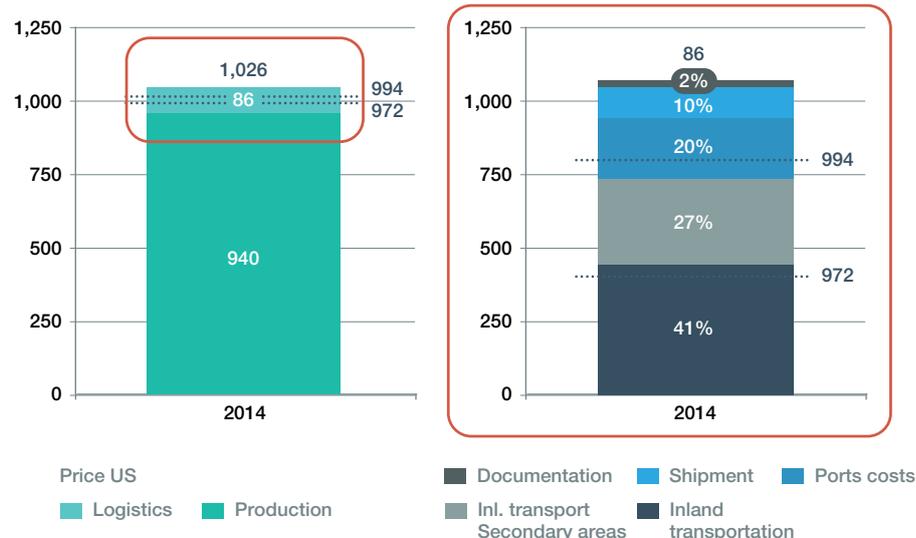
Reducing supply chain barriers can enable more exports

Removing bottlenecks and lowering logistics costs could spur more exports to the United States and Europe. For example, at some times in the year PaperCo's prices, including freight costs, are higher than the market range, making competition impossible. An analysis of performance over a six-month period shows that cutting supply chain costs could lower PaperCo's overall costs to the point that its prices would be within the international range. Eliminating the unnecessary short trip from the port secondary area to the port terminal would help to make PaperCo's products more accessible to the international market. But this step alone would not be enough to make the product competitive. Other steps in the value chain also would need to be improved (Figure 32).

Lowering the supply chain barriers mentioned earlier could save the paper

Figure 32: Price versus Logistics Costs

Brazil price versus US market price (\$/ton)



Source: Public price index RISI; Bain & Company analysis

industry \$7-16 million annually, assuming PaperCo's competitors in Brazil face similar problems.¹²⁸ That would require investments to make the ports outside the south attractive enough to encourage more shipments, and would involve jettisoning unnecessary transportation inside port areas.

Border administration

The border administration procedures to export paper are clear and optimized. Additional inspections are not required at the port – companies obtain certificates that release them from this step. Moreover, the documentation processes can be sorted out after cargo shipment, eliminating delays. Documentation costs for paper exports are relatively low, an average of \$42 per container, which is much less than the Brazilian average of \$725 per container for all industries.¹²⁹

Conclusions

Exporting paper from Brazil takes an average of six days, which is faster than the average of 13 days for all industries. While the speed is beneficial, costs could be reduced to improve export competitiveness. In recent years, PaperCo has been able to reduce its logistics costs and increase the efficiency of its operations due to a series of investments, mostly in rail terminals and warehouses, made in conjunction with other companies. The improvements use rail options in the Santos port, and save an average of \$84 per container. Some upgrade opportunities may have an even greater impact on the competitiveness of Brazilian paper:

1. Quick win - Removing unnecessary steps in transportation
2. Mid-term
 - Decreasing ocean freight costs by using alternative ports in Brazil
 - Increasing train connections in Santos terminal

Removing unnecessary transportation costs would require the government to assess the existing situation and support discussions aimed at finding less expensive options. Because investments in ports and railways are complex and long-term, the government and the private sector should work together to determine the changes that would have the greatest impact on exports. Such a collaborative approach will help the paper industry to move quickly towards that tipping point.

Impact of trade facilitation agreement

The paper value chain in Brazil benefits from efficient border-crossing processes and relatively competitive raw material costs. But exports from Brazil to Europe and the United States are not fully competitive. The TFA could help to improve processes in other paper-exporting countries, but will have little impact in Brazil. Enhancing Brazil's global competitiveness requires improving other steps in the supply chain, such as eradicating transportation bottlenecks in the port areas.

Private sector and government can create a virtuous cycle for trade improvement

Measures to facilitate trade, as described in the examples, are not restricted to government action. Indeed, private sector involvement will be a major success factor. The collaboration could create a virtuous cycle and guarantee continuous improvement of supply chains. The four main steps in this collaboration (not necessarily in this order) are: 1) Private sector assessment; 2) Government assessment; 3) Public and private sector collaboration for implementation; 4) Measurement of performance indicators. As mentioned earlier, issues vary among different industries, so efforts should be conducted on an industry-by-industry basis to identify and implement those reforms that deliver the greatest results.

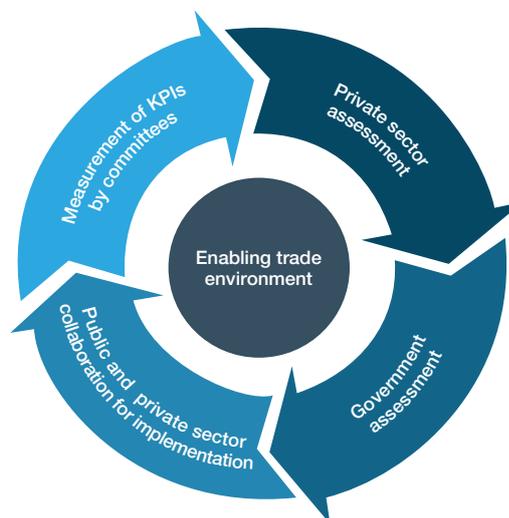
1. Private sector assessment: The private sector should identify the barriers and best practices, making recommendations that would help Brazil to reach the tipping point to improve competitiveness in selected industries.
2. Government assessment: Government should validate diagnoses or collaborate with the private sector in the diagnosis phase. The government's main role is to prioritize the issues that will have the biggest impact on the country's economy. Finally, the government should create plans aligned with the country's long-term strategy, defining and aligning the short- and long-term goals with the private sector.
3. Public and private sector collaboration for implementation: The private sector plays a significant role in implementing prioritized plans. It can provide input and information, or it can enable investments through the creation of public-private partnership for specific objectives.
4. Measurement of KPIs by committees: Ideally a committee should oversee the impact on established KPIs, determining progress towards the tipping point in the selected industries. Also, the committee should measure the achievement of the goals of both the private sector and the government.

Lessons learned and how to inspire action

As shown in the case examples, each industry has different needs to become competitive. While some factors may be common – inland transportation, for example – the requirements for specific industries vary. These examples represent just a fraction of the GDP, but demonstrate the complexity in tailoring plans to make each industry competitive, and the importance of prioritization. While each case is different, each shares the need for government and private sector collaboration to reduce supply chain barriers. Based on the Forum's analysis, efforts already completed or in progress could deliver more than \$240 million in savings for the sectors examined in Brazil.

To garner further benefits individual plans should be created for each industry, with clear KPIs and clear definition of roles for the private sector and the government. Such a systematic approach can generate a virtuous cycle for helping a country to achieve trade reform goals and continually improve its economy. The steps are clear: preparation, deep diagnostics, effective planning and mobilization. By building coalitions to eliminate trade obstacles across the value chain in chosen industries, countries also set the stage for improving other industries in the future.

Figure 33: Collaboration to Create a Virtuous Cycle



Source: Bain & Company analysis

Table 5

Case/issue	Impact cost-savings (\$)	Government role	Private sector role
Private sector role	110 million	<ul style="list-style-type: none"> - Coordinate and streamline procedures inside regulating bodies to expedite licensing requirements, inspections and tax exemptions - Provide regulation to support more efficient and less-expensive logistics services (e.g. rail services, facilitate new investment in ports) 	<ul style="list-style-type: none"> - Direct investments to create export platforms - Provide quality and accessible logistics services for operators
Soy - Creating inland connections and optimizing inspections procedures	121 million	<ul style="list-style-type: none"> - Coordinate construction and implementation of large infrastructure work - Coordinate changes with regulating bodies to optimize inspection procedures 	<ul style="list-style-type: none"> - Organize and make some of the heavy investments required to enable the new corridors - Provide quality and accessible logistics services for operators - Invest in tools and procedures to expedite inspections
Paper - Reducing costs in inland transportation	7-16 million	<ul style="list-style-type: none"> - Provide safe environment for the private sector to choose more efficient options - Provide regulation to support more efficient processes 	<ul style="list-style-type: none"> - Invest and offer competitive logistics services in the country - Drive the necessary changes to optimize costs

Source: Bain & Company analysis

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Project Team

- Marisol Argueta, Senior Director, Head of Latin America, World Economic Forum
- John Moavenzadeh, Senior Director, Head of Mobility Industries, World Economic Forum
- Jieun Chung, Senior Manager, Supply Chain and Transport Industry, World Economic Forum
- Sean Doherty, Director, Head of Supply Chain and Transport Industry, World Economic Forum
- Alex Mitchell, Director, Head of Automotive Industry, World Economic Forum
- Francesca Bianchi, Project Associate, International Trade, World Economic Forum
- Mark Gottfredson, Partner, Bain & Company
- Gerry Mattios, Principal, Bain & Company
- Fernando Martins, Partner, Bain & Company
- Anderson Tracastro, Consultant, Bain & Company
- Chudi Amu, Consultant, Bain & Company
- Nicola Jiang, Associate Consultant, Bain & Company
- Mohammad Saeed, International Trade Centre
- Pierre Bonthonneau, International Trade Centre

Key Contributors and Reviewers

- A.P. Moller-Maersk Group
- Apollo Tyres
- Brightstar Corporation
- Brambles
- Hyundai Motor Company
- Johnson Controls Power Solutions
- Renault-Nissan Alliance
- Toyota Motor Company
- Tropical General Investments
- United Parcel Service

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106. Bain & Company analysis; <http://www.transportabrasil.com.br/2014/06/terminal-ferroviario-de-rondonopolis-transporta-65-toneladas-em-oito-meses/>; interviews; IBGE
107. Bain & Company analysis; <http://www.transportabrasil.com.br/2014/06/terminal-ferroviario-de-rondonopolis-transporta-65-toneladas-em-oito-meses/>; interviews; IBGE
108. Modal transportation, USDA
109. Interview with companies
110. <http://www.transportabrasil.com.br/2014/06/terminal-ferroviario-de-rondonopolis-transporta-65-toneladas-em-oito-meses/>
111. Bain & Company analysis; new share of transport after new logistics alternatives are available
112. Interviews with companies
113. Interviews with SoyCo
114. Interviews with SoyCo; Bain & Company analysis
115. Interviews with companies
116. Interviews with SoyCo
117. *Soybean Transportation Guide: Brazil 2012*, May 2013, USDA; Bain & Company analysis
118. FAOSTAT data
119. FAOSTAT data
120. FAOSTAT data
121. Interview with PaperCo
122. *World Bank Doing Business* data
123. Interview with PaperCo
124. PaperCo estimates
125. Interview with PaperCo
126. Interview with PaperCo
127. Interview with PaperCo
128. Number of containers exported x Potential reduction by container. Number of containers estimated by the total weight exported divided by 27 tons by container. Potential reduction estimated by interviews; Bain & Company analysis
129. *World Bank Doing Business* data



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World Economic Forum
91-93 route de la Capite
CH-1223 Cologny/Geneva
Switzerland

Tel +41 (0) 22 869 1212
Fax +41 (0) 22 786 2744

contact@weforum.org
www.weforum.org