

Exports and promoting backward linkages

Ideas and lessons for the Made in Rwanda policy



In brief

- This policy brief reviews recent research on the Rwandan export sector and its connections to the supply chain and how this has important lessons for the ‘Made in Rwanda’ (MiR) policy.
- The author argues that Rwandan export and domestic trade performances have been impressive and driven by government policy. Rwandan exporters have also driven output and productivity growth directly and indirectly through their supply chains.
- The author also suggests that the key to the success of MiR is to deepen domestic supply chains in order to increase export competitiveness. To achieve this, the policy can consider lessons from international best practice.
- This policy brief considers in detail three interventions as part of the MiR policy. First, establish a Local Content Unit with the explicit aim of targeting information gaps between large firms and smaller supplier firms. Second, utilise innovations from big data to establish a supplier database linked with the Rwanda Revenue Authority (RRA) tax database with the goal of utilising firm tax information to verify their previous transaction history. Third, the government should target export support sectors as a key area to support local supply chain development.

*This project is funded by
IGC Rwanda*

Exporting and export supply chains

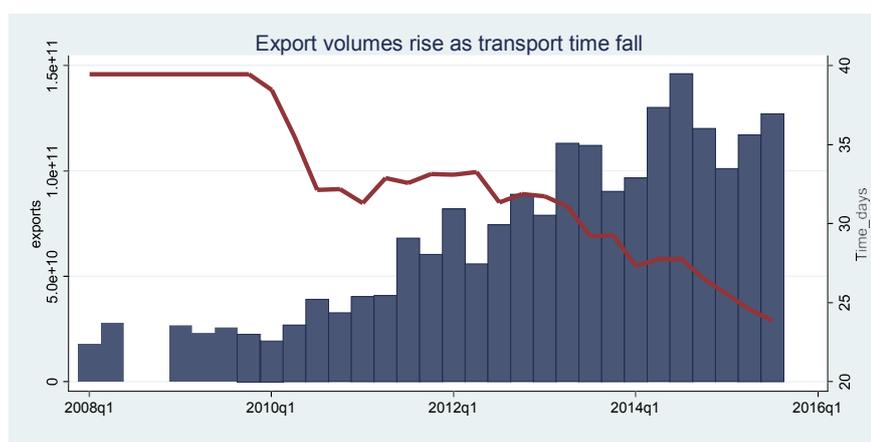
It is first worth considering the context in which the MiR policy is being implemented. As a landlocked country in central Africa, Rwanda has some of the most expensive transportation costs in the world. In 2017, Rwanda ranked 87 out of 190 countries on World Bank's Trading Across Borders Index (World Bank, 2016).

Over the last five years, the government and its regional partners have focused on reducing trade costs. These include one-stop border posts, removal of roll-in-motion weighbridges, removal of police check points, port upgrading, improved road surfaces, East African Community (EAC) Single Customs Territory including a regional bond, and interfacing of regional customs systems.

Both the costs and time to export goods has seen a rapid decline since 2009. In 2009 US dollar terms, the cost to export has declined by one third from \$3,321 in 2009 to \$2,270 in 2014. At the same time, the time to export has fallen from 39 days in 2009 to 26 days in 2014.

It is important to consider the consequences of this rapid decline in trade costs on key export performance. Figure (1) shows the export volume from Rwanda mapped against the change in time to export. There is very clearly a strong negative correlation between the two data series. While not necessarily causal, it is consistent with a story of trade cost reductions spurring export growth. The same effect is evident if we look at the number of exporters and the number of products exported from Rwanda.

Figure 1: Transport cost and export volumes



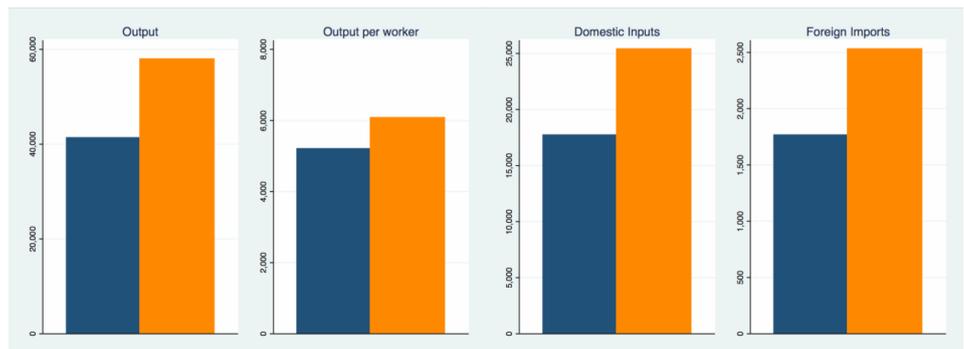
Export volumes in 2011 Rwandan franc (RWF) against the time to export on the northern corridor. Time to export is a weighted average of data from the Northern Corridor Transport Observatory and the World Bank Trading Across Borders index.

I next consider why it is so important to have export growth to the Rwandan economy. In the academic paper which accompanies this policy paper, I explain in detail how I calculated the causal impact of exporting on a series of firm outcomes. For this paper, I take the regression results

and apply them to a ‘typical firm’ operating in the manufacture of beverage products sector who begins the period as a non-exporter. As shown in Figure 2, a typical firm begins with an output of \$40,000 and an output per worker of \$5,000. The firm uses \$12,000 worth of domestic inputs and \$4,000 worth of foreign imports. We then imagine this firm receives a shock that makes it become an exporter. Once it is an exporter, this firm is exposed to international competitive pressures, higher quality requirements, and a larger consumer base. These factors combine to change how this firm will operate. My results show the firm will grow by increasing output by 41%, and increase output per worker by 17%. This is important as it gives a first indication of why exporting is so important.

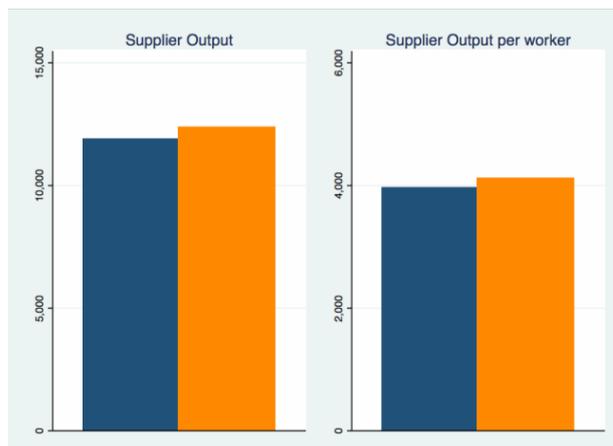
As a result of this growth, the firm also will require more inputs. I find the firm will use 43% more domestic inputs and 44% more foreign imports. The key to this result is to notice that when firms become exporters, they need access to both domestic and foreign imports. It is clearly not sufficient to have one or the other – instead they are complementary.

Figure 2: Results from regression coefficients applied to “typical” Rwandan firm in the manufacture of beverage sector



In Figure 3, I look at how suppliers of exporters are impacted by one of their buyers becoming an exporter. This is an indirect effect of the export transition. I find that suppliers of exporters increase their output and output per worker by 4% simply by being connected to a new exporter.

Figure 3: Results from regression coefficients applied to “typical” Rwandan firm in the manufacture of beverage sector



Improving linkages

Having shown that exporting drives output and productivity growth both directly and indirectly, I now look in more detail at the export supply chain.

Figure 4 focuses just on exporting agriculture and manufacturing firms highlighted in red and their suppliers highlighted in blue. I have scaled each node by their 'out-degree', the number of firms they supply to. The purpose of this figure is to highlight that there are a handful of firms that act as a supplier to almost all exporters. These can be seen as the large blue dots on the periphery of the graph. This could be an indication of an under-supply of vital export services to exporters because there are just a few providers. This might be a concern if we believe that these suppliers have some market power over exporters and extract rent. Table 1 shows the industry of the top 15 most interconnected suppliers. What we observe is a mixture of transport and storage services, communication services, and financial services. This suggests a policy focus on inputs in these areas could have substantial benefits on export performance.

The final thing to observe from Figure 4 is the importance of imports to the manufacturing sector. This can be seen in the graph by the scale of the large green dot. Indeed, over 76% of Rwandan exporting firms are direct importers. My main takeaway from this is that if you want to have an export sector in Rwanda, you need access to high quality imported inputs.

Figure 4: All exporting manufacturing firms in Rwanda (red) and their suppliers (blue) and imports (green). Size indicates the firm's out-degree

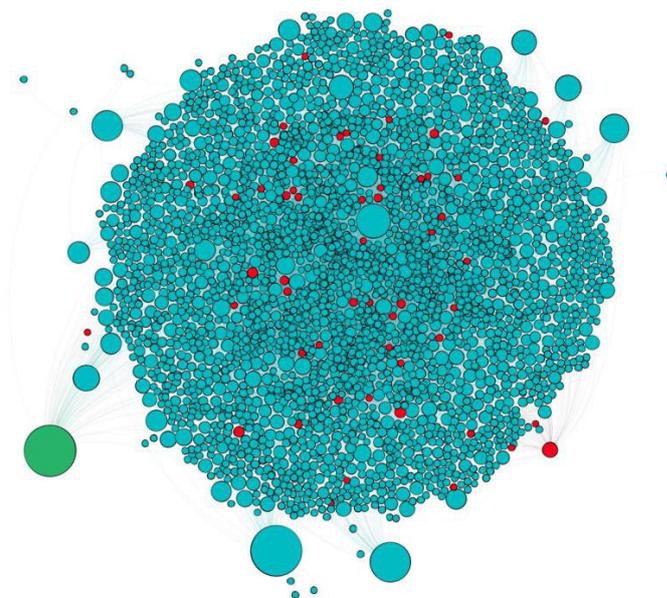


Table 1: Top 15 interconnected suppliers

n	Supplier Business Activity	# suppliers
1	cargo handling	240
2	wholesale of others products	131
3	production, transmission and distribution of electricity	128
4	telecommunications	128
5	production, transmission and distribution of electricity	125
6	other service activities	115
7	wholesale of construction materials, hardware, plumbing and supplies	113
8	manufacture of other chemical products	110
9	non-life insurance	86
10	retail sale of food, beverages and tobacco in specialized stores	84
11	sale of motor vehicle parts and accessories	83
12	retail sale of hardware, paints and glass	79
13	computer and related activities	77
14	wholesale of food, beverages and tobacco	76
15	freight transport by road	73

MiR Implementation

In this last section, I consider how my results and international best practice shed light on the implementation of the MiR policy. My results highlight that the recent growth in the Rwandan economy has been driven by the export sector such that it would be a mistake to ignore this crucial element in any development strategy. It also highlights the complementarity between domestic inputs and imported inputs, suggesting the success of the MiR policy rests on it deepening local supply chains with the explicit aim of increasing export competitiveness. There are numerous examples from around the world of success and failure in similar policies so it is worthwhile considering these in detail.

What hasn't worked elsewhere?

One common idea in local content policies are to impose strict local purchase requirements on firms. For example “x% of certain goods must be purchased from domestic firms” or “x% value added must be within the country”. These have generally been unsuccessful for two reasons. First, it is often easy to circumvent these types of policies either by providing deceptive statistics or by appealing to the lack of local capacity in a given sector. As a consequence, these rules often have zero effect (Sutton, 2014). If they are implemented strictly, there is another problem. These types of rules can lead to distortions in domestic markets such that inefficient sectors are protected at the expense of high productivity sectors. This type of policy was adopted by many Latin American countries under the rationale of Import Substitution Industrialisation (ISI). Sadly, there is little evidence that firms which received protection become internationally competitive. Instead,

consumers had to pay higher prices for low-quality products and firms could not access high quality inputs which in turn hurt their productivity (Baer, 1972).

Another common idea is to implement export restrictions on certain goods typically with the aim of encouraging value-added higher up the value chain. For example, Pakistan imposed an export tax on raw cotton, with the objective of encouraging the development of the yarn cotton industry. Despite seeing some increase in processed cotton exports, the policy is largely considered to have had a detrimental effect on the cotton sector. This is due to the slowdown in growth in the raw fibre sector, leading to a transfer in income from cotton growers to yarn producers (Piermartini, 2004).

A third lesson MiR can learn from other countries' experiences is the risk of regional 'tit-for-tat' policy competition. This is where other countries impose increasingly strong protectionist policies in response to Rwanda's own support of its local firms. An example of this can be seen in the EAC, where in 2013 Tanzania tried to support its local trucking industry by taxing trucks from other countries in the EAC. In response, Rwanda imposed a similar tax on trucks from Tanzania. The end result of these types of policies is that everyone loses as eventually the goals of EAC integration to open a larger market for East African firms are lost to protectionist policies. Rwanda should avoid this problem with MiR by instead engaging its EAC partners to discuss ways in which deepening local supply chains can be expanded without leading to loss for other EAC exporters.

What has worked elsewhere?

Having shown that exporting can drive growth in the Rwandan economy through connections to the supply chain, this section considers ways in which the government can target greater linkages between exporters and the supply chain. I argue that as part of the MiR policy, the following three interventions are the most important to increase supplier-to-exporter linkages and their implementation can be informed by international best practice.

Local Content Unit

The first policy suggestion to improve supplier linkages is to establish of a highly efficient Local Content Unit (LCU). My research suggests that local suppliers can directly learn from exporters and foreign businesses to grow and improve their productivity. Indeed, in most cases foreign businesses actively seek domestic suppliers, an example of this is given in Box 1.

To maximise the gains from exporting firms, it is vital the Rwandan economy maximises the number of firms with linkages to large exporters and foreign firms. One way to do this is by establishing a LCU.

Professor John Sutton has written extensively on this area. He argues, "[w]hat is needed is a small, highly professional team that can liaise with Multinational Firms in a co-operative manner, and with a deep

understanding of both (a) local capabilities, and (b) the feasible modes of engagement of local firms in supply chains” (Sutton, 2014). To achieve this, he suggests the following four steps:

- Understanding local companies. In order to provide useful advice, it is first vital that a LCU has detailed information on businesses in Rwanda. The LCU should visit a cross-section of firms in each industry and discuss their strengths, weaknesses, and needs.
- An Enterprise Development Centre (EDC). The role of an EDC is to provide training and capability building for Rwandan businesses to enable them to obtain contracts from exporters and foreign direct investment (FDI).
- Partners in the process. To be successful, it is vital that the LCU partner with local businesses. In general, businesses in Rwanda would prefer to source goods locally but are constrained by local availability of high quality inputs. Given the chance, they would happily partner with a government scheme to promote linkages.
- Shadowing schemes. Shadowing schemes allow local graduates to enter foreign businesses to shadow more senior members of staff. Shadowing graduates often then go on to set up successful sub-contractors which benefit the original company and the original institution.

Tullow Oil local content

Tullow Oil is an independent oil and gas exploration and production company working in Africa with operations in Ghana and Uganda. As part of Tullow Oil’s business model, they seek to maximise participation of local businesses within their supply chain. In 2015, they spent \$309 million on local suppliers in areas such as medical equipment, civil and mechanical engineering services, transport services, security, and freight forwarding.

In order to bridge the information gap between the company and local suppliers, Tullow has held contract awareness events, enterprise development centres, training development mentoring and coaching, and vocational training schemes. This is only really possible because of the size of Tullow Oil’s investment. What an LCU can offer is these types of training schemes for a much wider range of businesses.

Supplier database

The second recommendation is to consider establishing a supplier database of all firms operating in Rwanda. One complaint often made by foreign businesses is that they cannot find domestically produced goods available locally. However, often this is simply because the firms are not

well known to these business people. One way to reduce this ‘information constraint’ is to establish a business registry of all of the firms operating in Rwanda and to make this information publicly available and searchable by business people. Another problem raised by firms is that they cannot always rely on their suppliers to deliver because they cannot observe whether they have a track record.

This has been tried in other countries and has sometimes failed due to the following reasons: (1) the database quickly goes out of date and the details of firms are not reliable or (2) the database is not easily searchable.

As suggested in the MiR policy, the best way to avoid these problems is to link the RRA domestic tax data to the firm registry. Using this detailed firm information, business people could get detailed information about firm transaction history, firm sales, and firm performance. This could then be used to verify firm reliability and allow foreign businesses to quickly identify high quality domestic suppliers.

In addition to encouraging domestic linkages, it is likely that banks could also use this system to verify the reliability of firms wishing to obtain credit, increasing firm access to finance. The final benefit is that it may encourage more firms to formalise due to the benefits of being on this registry.

A potential new research project could help establish this system and evaluate its effectiveness. I suggest a staged roll-out as part of a pilot scheme so that we can evaluate the effectiveness of the system.

Export supplier sector review

The final policy recommendation is to conduct a thorough review of export support sectors including cargo handling, transportation firms, warehousing, and storage. This research paper suggests that there are a very small number of firms which service a large number of exporters. If these sectors are improved, Rwanda might see substantial improvements in exporter efficiency.

References

Baer, Werner, “Import substitution and industrialization in Latin America: experiences and interpretations,” *Latin American Research Review*, 1972, 7 (1), 95–122.

Piermartini, Roberta, “The Role of Export Taxes in the Field of Primary Commodities,” *World Trade Organization*, 2004.

Sutton, John, “Gains from the Natural Gas: Local Content and Tanzania’s Industrial Development,” *The Seventh Gilman Rutihinda Memorial Lecture*, 2014.

World Bank, “Doing Business 2016 : Trading Across borders,” *World Bank Group*, 2016.