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Industries without smokestacks in Uganda and Rwanda

In brief

- Consensus among many development economists and policymakers is that development of the manufacturing sector is necessary for wider economic development.

- This policy brief presents a summary of research on possible alternatives to the manufacturing sector as engines of growth for Rwanda and Uganda and finds that a number of non-traditional, non-manufacturing industries have reached the same or higher productivity levels than manufacturing industries in both countries.

- The authors also argue that not only are so-called 'industries without smokestacks' already successful, but policymakers should pay closer attention to nurturing them, particularly through being open to increased trade.

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Overlooked 'industries without smokestacks' are already successful

To compare productivity across the different industries that make up the Rwandan and Ugandan economy, we ranked industries in the two economies by their average output per worker. The full table with the top 30 industries is available in the full working paper; here we highlight eight industries in Table 1.

We find that a number of non-traditional, non-manufacturing industries have reached the same or higher productivity levels than manufacturing industries in both countries.

Table 1: Selection of top 30 industries by output/worker

Uganda					
Rank	Industry	Output	# employees	% exporters	% supply exp
1	Marine aquaculture	1,570,713	103	67	0
6	Post harvest crop act.	130,088	22	60	40
17	Manufacture of pharmaceuticals	558,610	65	60	50
23	Tanning of leather	473,625	39	67	56
	Economy average	34,813	17	4	5
Rwanda					
Rank	Industry (n)	Output	# employees	% exporters	% supply exp
2	Mining of metal ores	206,323	52	16	4
13	Telecommunications	80,457	22	13	23
26	Travel agency	26,651	11	11	10
28	Building completion	44,622	27	15	13
	Economy average	22,396	12	5	5

Seventeen out of the top 30 industries in Uganda, and 21 out of the top 30 in Rwanda are service industries, with a few agri-business and agri-processing industries also joining.

Three important patterns emerge from this table:

1. Industries with high labour productivity feature on average larger firms in terms of output than the sector average. This suggests that scale is not only important in the manufacturing sector, but also ''industries without smokestacks' (IWS) such as agri-business and the service sector.
2. Highly productive firms do not need to be exporters, but they are connected to the external sector as suppliers more often than not. This is consistent with the notion that external sector firms require firms in their supply chain to be productive enough to compete with other regional or global supply chains, and it is true for all sectors that made it into the top 30.
3. All industries with high levels of labour productivity rely on imported inputs. This is particularly noticeable in the manufacturing sector, and it highlights the importance of a liberal trade regime to raise firm productivity, but it also points to windows of opportunities for domestic companies that can aspire to substitute these inputs. It also suggests a

positive impact of industries without smokestacks in improving external sector balance, at least relative to the manufacturing industry.

Openness to trade is vital for economic performance

Having touched on the importance of openness to trade, we now present a selection of the top 30 fastest growing export items in Uganda, in order to show that industries without smokestacks are promising candidates to further diversify the export portfolio, increase value-addition of export goods, and decrease the trade deficit. Two types of goods have grown rapidly over the last five years. First, there are high value-addition products (highlighted yellow in Table 2). Several of these products are produced in industries also identified in Table 1 as the most productive industries such as leather products and post-harvest crop activity. The second type of products are more traditional low value-addition products. These are highlighted white in Table 2. Notice that high value-addition products are associated with longer product and firm survival rates, and larger output and number of employees.

Table 2: Selection of the fastest growing export items in Uganda

5 year-Export Growth Rank	SITC product group	# of firms	Product survival - years	Firm survival - years	Monthly Output in mUSD	# of emp	Out/Worker Rank
1	Leather products	13	2.37	4.15	0.49	38	7
5	Vegetables and fruits	192	0.72	3.19	0.35	38	21
8	Processed Feedstuff for animals	42	1.82	4.88	1.14	67	4
10	Processed Animal and vegetable oils/fats	10	2.2	7.1	1.59	96	5
19	Cereals and cereal preparations	159	0.78	3.18	0.4	52	17
	Economy average	44	1.17	4.3	0.58	70	

IWS can connect the economy and drive output growth

Having established that industries without smokestacks are already high-performers in terms of productivity and exports, and have the potential to grow the economy by growing within-sector, we turn towards their potential effects on the larger economy – a key factor to rival the manufacturing sector as an engine of growth. First we demonstrate that industries without smokestacks are important in knitting together the rest of the economy. In both Uganda and Rwanda, the top ten most interconnected sectors are remarkably similar. Immediately obvious is the presence of six service industries in the top ten in Uganda, and eight in Rwanda. This includes construction services, telecommunication services, accounting services, and cargo handling services. These are essential inputs to all other sectors, without which, other sectors could not function. This supports the notion of service industries serving as essential inputs into

the production process. For instance, we know that employing a cargo handling service is a necessary requirement for exporting. Consequently, we might expect a larger impact from a productivity increase in cargo handling, than from other more specialised industries.
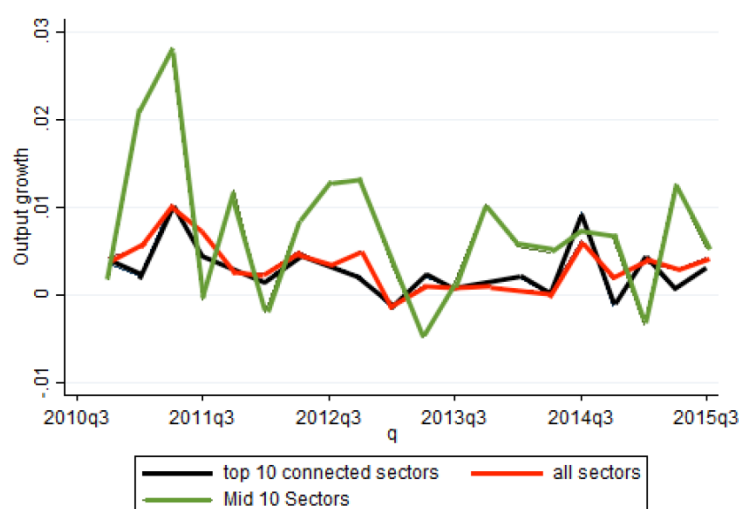
Table 3: Top 10 most interconnected industries in Rwanda and Uganda

Rank	Uganda	Rwanda
1	Construction of buildings	Other service activities
2	Manufacture of plastic products	Retail sale in non-specialized stores
3	Real estate activities with own or leased property	Wholesale of food, beverages and tobacco
4	Wired telecommunications activites	Retail sale of goods in specialised stores
5	Manufacture of other fabricated metal products	Manufacture of other chemical products
6	Cargo Handling	Non-life insurance
7	Manufacture of corrugated paper and paperboard	Construction of buildings
8	Manufacture of basic iron and steel	Wholesale of construction materials
9	Accounting, bookkeeping and auditing activities	Manufacture of beverages
10	Short term accommodation activities	Telecommunications

The remaining most interconnected industries are from the manufacturing sector. This is consistent with manufacturing industries purchasing inputs from numerous other sectors of the economy. Together, this confirms the opening hypothesis that the manufacturing and service sectors are distinct in their interconnectivity to the rest of the economy.

Second, we look at the contribution of these 'hub industries' to output growth in the rest of the economy. If we believe that these hubs have a disproportionate impact on aggregate output, we would expect changes in their output and productivity to explain a large proportion of aggregate output.

Figure 1: Output Growth top 10 and mid 10 most interconnected sectors and all sectors

In Figure 1, we present the quarterly change in output growth in the top ten most interconnected industries alongside the quarterly change in output growth in the whole economy. The graph indicates the strong relationship between the two series indicating that hub industries are disproportionately influential in shaping economic growth. The correlation coefficient between the two series is 0.83. By contrast, the relationship between the ten industries in the middle of the most interconnected industries and economic growth is much weaker – 0.51 correlation coefficient[1].

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1. It is important to note that this is a correlation and so should be considered as an indication of the importance of the effect. It does not necessarily constitute a causal relationship.