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The economic impact of the pandemic in Rwanda: An analysis of firm-level VAT data

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There are substantial differences in the spread of the pandemic and the policy response to it between high- and low-income countries (LICs). In terms of case numbers, the pandemic has affected high and middle-income countries (HICs and MICs) much more severely than LICs: deaths per million people have remained typically well below 1 in the latter group, compared to a typical range of 5 to 10 (with peaks above that) for many HICs.¹ Despite this, the stringency of policy responses in LICs have often been similar to those adopted in HICs. However, these measures have typically been introduced much earlier than in HICs: when median cases per million people were 0.57, versus 97.3 in HICs.²

Is this severe policy response appropriate, given the differences in the spread of the virus? On the one hand, households in these contexts do not have the basic means to cope with restrictions, and governments typically lack the required fiscal space to implement adequate relief measures alongside lockdowns. On the other, LICs' health systems are weaker, so they can be overwhelmed more easily and more quickly than in HICs. In this context, governments might need to act more forcefully to interrupt transmission early on, rather than simply slowing it down.³ However, these restrictions have a potentially large economic cost, amongst others (for instance, social costs and wellbeing). Indeed in 2020, the African continent recorded its worst economic performance on record, a 3 per cent contraction, and it is projected to grow more slowly than the global economy in 2021.⁴

While our analysis cannot directly address the question of whether severe lockdowns are appropriate in LICs, we contribute to this debate by quantifying the economic impact of the pandemic in a low-income context: Rwanda. Producing evidence that is context-specific is particularly

important since results and recommendations available for higher-income countries might not be applicable to lower-income contexts. While the literature on the economic effects of lockdowns is growing fast, there is still limited evidence from LICs, compared to HICs. Our results contribute to closing this gap.

The VAT Returns Data

We can evaluate the actual impact of the crisis, as opposed to producing forecasts or projections, thanks to high-frequency data on all formal firms in the economy, obtained from their Value Added Tax (VAT) returns. Our dataset includes all VAT declarations for 2017, 2018, 2019 and the first three quarters of 2020. It covers a total of over 21,000 firms in 2020 – the full population of firms that pay VAT. VAT declarations in Rwanda are filed either monthly or quarterly, depending on business size. Monthly taxpayers are larger firms and account for over 90% of total VAT revenue. In low-income countries, administrative data are particularly suitable to analyse the economy in real time, as other sources of information are either not available or do not have a large enough coverage.

Decline in Economic Activity

Our results show a sharp drop (32 per cent) in economic activity in April 2020, which corresponds to the month most affected by the national lockdown. Economic activity then swiftly rebounded to pre-crisis levels soon after restrictions were lifted (see figure below). This result confirms that economic losses are more particularly related to lockdown restrictions than to citizens' health concerns, in countries like Rwanda where case numbers have remained low. Across the first three quarters of 2020, total sales are nearly 10 per cent less than in the same period of 2019, amounting to a loss equivalent to

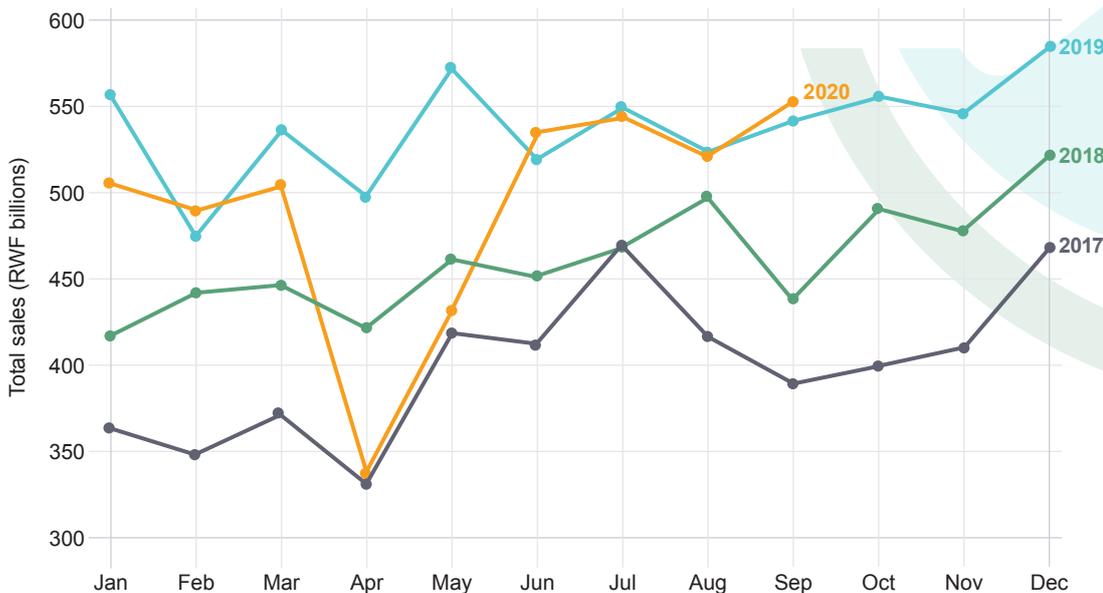
¹ Our World in Data (2021). Statistics and research: Coronavirus pandemic (COVID-19). URL: <https://ourworldindata.org/coronavirus>

² Walker *et al.* (2020). The impact of COVID-19 and strategies for mitigation and suppression in low- and middle-income countries. *Science* 369, 413-422.

³ Ibid.

⁴ IMF (2020). Sub-Saharan Africa: A difficult road to recovery. *Regional Economic Outlook, October 2020*. International Monetary Fund.

Figure 1 Total sales by month



5.2 per cent of GDP. This loss becomes 16 per cent, or 9.4 per cent of GDP, when we deflate the nominal sales data to take inflation into account.

Distributional and Sectoral Effects

Although most of the economic losses are generated by the largest firms in absolute terms, smaller firms were most affected in proportional terms. Firms in the first decile (that is, the smallest 10%) saw a decline in sales of over 62 per cent for the first three quarters of 2020, while the same figures for firms in the top decile is ‘only’ 13 per cent. While some firms were able to grow their business, small firms are less likely to do so: the share of firms with a negative growth in sales is larger for the bottom decile (82 per cent) than for the top decile (62 per cent).

Moreover, we disaggregate our results by sector and geographical location. We show that accommodation and food services, transport and storage, and mining and quarrying have been particularly affected by the crisis, as one might expect. However, there is substantial heterogeneity both across sectors and within sectors, as some firms were able to weather the crisis better than others. We also find that firms registered in Kigali have been particularly hard hit on aggregate, possibly indicating larger declines in consumption in the capital compared

to other areas. However, impacts at the firm-level have been severe throughout the country, especially for the lockdown period.

Revenue Impact

The economic losses from the crisis translate in a reduction in VAT revenue for the government. Overall, VAT revenue declined by 5.1 per cent compared to 2019, with the greatest losses seen in the month corresponding to the lockdown. Although at least part of this decline is due to tax relief, it is nevertheless worrying given that these resources are needed more than ever, to fund the crisis response and recovery.

Overall, our results contribute to filling the gap in evidence from LICs, compared to HICs. We show that lockdowns can have severe effects on the economy, although they are effective tools in containing infection. Policymakers should ensure they are implemented in tandem with support measures, particularly for small firms, which are more severely affected than larger ones. Still, more research is needed on other countries that might have adopted different policy responses than Rwanda, to allow for more informed recommendations on appropriate policy responses. More research is also needed on the impact of the crisis on households and the informal sector, which are highly relevant dimensions that we cannot capture with our data.

Further reading

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Credits

Giulia Mascagni’s main area of work is taxation, but she also has research interest in public finance, evaluation of public policy, and aid effectiveness. She is an economist by training, holding a PhD in Economics from the University of Sussex. Her main geographical interest lies in African countries, with a particular focus on Ethiopia and Rwanda.

Adrienne Lees is a consultant Research Associate working primarily on projects relating to tax administration and investment, tax attitudes, and on the DIGITAX programme. Her research interests relate to taxation, public finance, and economic development, particularly for Sub-Saharan Africa. She has recently completed an Overseas Development Institute Fellowship in the Tax Policy Department at the Ministry of Finance, Planning and Economic Development in Uganda. Adrienne holds an MSc in Economics for Development from the University of Oxford and is set to begin her PhD in Economics at the University of Sussex.

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