The Covid-19 fiscal package: A chance to seize the moment for environmental policy in South Africa?

The Coronavirus 2019 disease (Covid-19) has created an unprecedented experiment of global proportion whereby all countries experienced significant reduction of economic activities and the associated decrease in income and environmental impacts as economies went into lockdown. The general response to the pandemic has consisted of measures of stricter hygiene, social distancing, partial or total ban of travel as well as some school closures, economic lockdown and commitments to cushioning the vulnerable as well as various economic stimulus packages. Using South Africa as an example, this study uses a dynamic computable general equilibrium model to quantify how the COVID-19 pandemic and counteracting fiscal policies affects the economy and the environment.

South Africa, which is an emerging economy, presents an interesting case to analyse as the country is vulnerable to economic shocks while the degree of environmental pollution is relatively high. The country has one of the highest income inequalities measured by the Gini coefficient and implemented amongst the most stringent economic lockdowns in response to the COVID-19 pandemic. Worldwide, South Africa is amongst the 20 largest carbon dioxide (CO2) emitting countries in the word and has one of the highest per capita emissions in the developing world. This is a result of a domestic economy that is heavily reliant on coal fired energy and liquid fuels.

Furthermore, South Africa suffers from chronic water shortages, with an annual supply of about 15 billion cubic meters (about 50 percent of the world average). The main water supply constrains are low levels of seasonal rainfall, insufficient aquifers, and a dependency on water transfers between basins and from other countries. Water demand is high, with an average consumption of about 235 litres of water per capita per day compared to a world average of 185 litres (Department of Water Affairs, 2017).

A dynamic CGE model is used to evaluate the impacts of the COVID-19 induced lockdown and government's fiscal package to support the economy. The model used builds from the PEP 1-t

model developed by Decaluwé et al. (2013) and modifies several assumptions in order to represent the realities of South Africa. For measuring the development of environmental impacts, indicators for greenhouse gas emissions and usage of water by industries and households are computed. A greenhouse gas balance for the base year 2015 is constructed with emission levels for the simulated years extrapolated by the relative change of the model variable of production volume to capture greenhouse gas emissions. Intermediate water demand and water consumption by households in the model are used as indicators for water usage.

To mitigate the negative impacts of the pandemic on the economy, the South African government implements a fiscal package to prevent collapse of the economy. We are interested to know whether the implemented policies will be able to sufficiently help the South African economy, and whether the measures will impact the CO2 emissions and water usage.

The study assesses the impacts of two scenarios, one mild and the other severe. The severity of the scenario comes from the time it will take for the economy to return to situation without COVID-19: until 2023 in the mild scenario and 2025 in the severe scenario. As COVID-19 induced shocks via international transmission channel we simulate a decrease in demand for its exports, a drop in oil and mineral prices on the international markets a decrease of remittances from the rest of the world. As COVID-19 induced shocks via domestic transmission channel, we simulate sector specific impacts in the productivity caused by lockdown and teleworking and an increase in transport costs for commodities. As counteracting policies, we simulate a fiscal package the South African government puts in place a set of policies to support the different sectors/ economic institutions.

In the short term, the impacts of the COVID-19 pandemic are quite harsh on the economy. Indeed, the economy is simultaneously affected by a supply and a demand shock. On the supply side, the lockdown leads to a decrease in production as machines are largely unused and workers are at home while on the demand side there is a decrease in demand as both consumers and the rest of the world are reducing their consumption. The combined effect is a reduction by 10.02% in GDP in the mild scenario and 10.5% in the severe scenario. After the implementation of the government's fiscal package, and given the fact that some effects of the pandemic are still being felt (lower productivity

due to social distances, reduced demand for imports from trading partners that are themselves in recession), real GDP is still decreasing by -3.16%.

In 2020, greenhouse gas emissions decrease significantly by 14% but pick up in the next year, when the industries pick up their economic activities. However, the emissions remain slightly below the level of the situation without COVID-19 impact until 2030. For the water usage by industry and households the reduction accounts for 10% and like the emission, the demand increases close back to normal after 2021.

Thus, the main findings are that counteracting economic policies help the economy to recover in the long run and even to improve the situation of inequality. The short term positive environmental impacts on reduced greenhouse gas emissions and industrial water demand get reversed in the long run. The fiscal policy package could create an opportunity to give renewed impetus and urgency to implement environmental policies.

Literature

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