CAN YOU HAVE YOUR GROWTH AND EAT IT TOO? : TRADE-OFFS BETWEEN GREEN GROWTH AND PRO-POOR GROWTH IN BRAZIL

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Overview

There is much debate in the academic and public spheres about "green growth" and its relationship with reductions in absolute poverty. In the quest for a sustainable development that takes into account both of these factors (among others), policymakers, administrators, and banks often have had to pay attention to economic and social development impacts of their projects and programmes, as well as their environmental impacts. In this article, we look at energy-related projects of the Brazilian national development bank (BNDES) and analyse their effects on per capita GDP and employment using a difference-in-difference estimator. While doing so, we differentiate between clean energy projects and fossil energy projects and find that fossil energy projects associate with higher increases in per capita GDP as compared to clean energy projects. We posit that differences in skill and labour intensities of clean energy jobs and fossil energy jobs account for these different impacts of projects on per capita GDP. Empirical evidence is presented to suggest that clean energy investments might have comparatively reduced economic and social development outcomes as compared to fossil energy projects.

The theoretical basis of this work is in the sectoral decomposition of growth and the different effects that growth in different sectors can have on socioeconomic factors. While there is a consensus that economic growth in general is beneficial for poverty reduction, it has been recognised in the literature that not all growth is equal, in the sense that growth in certain sectors can be better (or worse) for poverty reduction compared to growth in other sectors. Scholars does not always agree on which sector of the economy contributes more to poverty and inequality reduction (Loayza & Raddatz, 2010; Ravallion & Datt, 1996), and there is a significant heterogeneity among the conclusions obtained in the literature, suggesting that a country-level analysis is appropriate to delve into this question. Loayza & Raddatz (2010) posit that the labour intensity of the sector plays a crucial role in the sector's contribution to poverty reduction, and Consoli, Marin, Marzucchi, & Vona (2016) suggest that "green" jobs are more skill-intensive than "non-green" jobs. These leads are followed in this article to empirically test the impacts of clean energy projects on employment creation and per capita GDP. To our knowledge, there have not been any studies so far in the literature that analyse the impacts of clean energy and fossil energy projects on socio-economic outcomes. In doing so, we present empirical evidence to the green growth vs. pro-poor growth debate, with an aim to inform policymakers and programme administrators.

Methods

Project-level data were obtained from the BNDES for the period 2003 to 2018, with information about the nature of the project, the location of the project (at municipality-level), the funding instrument used, the date of commencement of the project, the contracted value of the project, and the amount disbursed as of 2019. After some data processing to collapse them to municipality-level data, the data were integrated with census data from the UN Development Programme for the years 2000 and 2010 to obtain poverty, inequality, and development data at the municipality level. Census data and national accounts data obtained from the Brazilian Geographic and Statistical Institute were also integrated to the database, as were employment data from the Brazilian Ministry of the Economy, to form a panel at the municipality level with 14 time periods.

An OLS regression model was prepared to analyse the principal research question: to investigate whether investment of the bank's projects (fossil fuel and renewable) results in an increase of per capita GDP (and employment). The regression uses a difference-in-difference estimator for the entire period of 2003-2017 (with 14 periods), allowing for time-invariant fixed effects to explore the effects of project investment (the independent variable) on GDP per capita (the dependent variable). A propensity score was generated based on some pre-treatment characteristics of the municipalities, and this was used to alleviate some endogeneity concerns according to the method suggested by Ravallion & Chen (2005) by retaining only the municipalities in the common support.

Results

On the whole, BNDES projects do have a positive effect per capita GDP. Energy projects seem to have a more positive effect than non-energy projects, however there is a strong distinction between fossil-fuel energy projects and decarbonised energy projects, as can be observed in the magnitude of the coefficients. A one percent increase in fossil energy project investment is associated with a 0.021 percent increase in GDP per capita, whereas this value is only 0.004 percent for renewable energy projects. To verify that the model is robust to different specifications, the model presented in equation 1 was applied to the data with a variable Netjobs (the net employment created in a particular municipality-year) as the dependent variable (with the same independent variable and with the addition of GDP to the vector of covariates). The results show that the bank's projects in the analysis were associated with a net increase in employment in the period 2003-2017.

Conclusions

The results narrate a cautionary tale about the green growth discourse by providing empirical evidence about the differentiated impacts of energy and non-energy projects, and different types of energy projects, on per capita GDP and employment in Brazilian municipalities. The bank's projects in general have a positive impact on GDP per capita, a result that should be unsurprising, given the large amounts of investment. It is of more interest, however, to look at the difference between different types of projects when considering their impacts. While the contributions of energy projects to GDP per capita increases are more than those for non-energy projects, the contributions of clean energy projects are clearly lower than those of fossil energy projects. These insights aim to inform policymakers and programme administrators of the need to take a nuanced approach to investing in sustainable development, by considering the potential pro-poor outcomes and green growth outcomes separately.

References

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