

The Impact of Railway Infrastructure on Firm Performance

Evidence from Southern Africa



In brief

- Rebuilding Africa's railways has been seen as a major way to reduce transport costs, increase the safety and reliability of transport services, and therefore, stimulate regional trade and economic growth.
- However, these projects are on the whole costly, and the evidence to justify the investments is lacking. This study seeks to address whether improved access to railways led to higher rail usage by firms and whether rail usage affected firm performance in the case of the rebuilding of a railway in Southern Africa.
- The major result of this study is that, in the case of Southern Africa, there is evidence of negligible impact of investments in railroads on firm performance.
- **Key findings:**
 - Rebuilding the railroad connecting South Africa to the port of Maputo had limited impact on firms' transportation costs. However, the impact of railways on economic activity is likely to be country and region specific.
 - Having access to a rebuilt railway is not associated with any detectable changes in firm sales or firm-level total factor productivity.
 - Poor performance of the soft side of rail infrastructure appears to play an important role in constraining the impact of rail on firm performance.
- Railway projects should incorporate data collection, monitoring and evaluation to continue to build our knowledge base of the role of railways on growth.
- One possible reason for the limited impact of railroads is poor management of rail services. Improving transparency and competitive pricing may improve performance.

Policy Motivation

“The historical literature on the economic impact of colonial railway networks on trade, urbanization and economic growth has found mixed results”

In recent decades, some of the most costly and challenging transport projects undertaken in the African sub-continent have attempted to rebuild the region’s vast railway network. As the most cost-effective means of transport over long distances, rail was expected to bring a significant reduction in transport costs, increase the safety and reliability of transport services, and consequently, stimulate regional trade and economic growth. And yet, the evidence to justify these investments is still lacking. This research project was designed to obtain original evidence on the impact of railways on firm performance, looking at the specific case of investments in rebuilding a railway in Southern Africa. The study was designed to answer two related questions:

- Whether improved access to the railways led to higher rail usage by firms
- Whether rail usage affected firm performance.

The historical literature on the economic impact of colonial railway networks on trade, urbanization and economic growth has found mixed results. Moreover, there is still limited evidence on the micro-level mechanisms through which investments in railways can affect economic activity today. In fact, a recent World Bank internal (qualitative) policy review of two decades of investments in rehabilitating railways in Sub-Saharan Africa revealed that out of 15 railways supported by the organization, none appeared to have led to a sustained impact on economic activity. As a result, governments and donors continue to struggle not only with how to prioritize investments across transport modes but also with how to best forecast demand for railway services so as to design optimal financial models that can ensure sustained improvements in rail.

“We observe limited take up of rail services among firms in both transport intensive and non-transport intensive industries, following the rehabilitation of the railway line in 2008.”

Policy Impact

This study provides evidence on the negligible impact of investments in railroads on firm performance. These findings can inform future decisions on the advantages of railway investments relative to alternative forms of transport, but also emphasizes the importance of securing adequate governance and management of rail services to maximize the impact of rail infrastructure on economic activity.

Audience

Ministries of Transport, Public Works and Planning in Mozambique, Southern African Development Community (SADC), World Bank and Dfid. All four stakeholders have already been informed of these findings. These results are also likely to be of interest to a broader set of stakeholders engaged in transport policy design and implementation, in both private and public sectors, across the developing world.

Policy Implications

Rebuilding the railroad connecting South Africa to the port of Maputo had limited impact on firms' transportation costs

We observe limited take up of rail services among firms in both transport intensive and non-transport intensive industries, following the rehabilitation of the railway line in 2008. These results are stable across firms located close and far to the railway. We further find no significant spillovers between rail and road transport following the rehabilitation of the railway.

Having access to a rebuilt railway is not associated with any detectable changes in firm sales or firm-level total factor productivity

These effects hold for firms of different sizes, transport intensity and industry groupings.

Poor performance of the soft side of rail infrastructure appears to play an important role in constraining the impact of rail on firm performance

The price of rail services exceeds by almost 50% the price of rail transport and firms report difficulty in accessing rail slots due to monopolistic practices of rail parastatals. Taken together, these results suggest that in this particular setting, investments in railways are yet to translate into significant economic benefits for firms, and consequently for the economy as a whole.

“Firms report difficulty in accessing rail slots due to monopolistic practices of rail parastatals”

Implementation

The results from this paper suggest that recent investments in railway networks in Southern Africa are having a negligible impact on firm development and consequently, on sustainable economic growth. The impact of railways on economic activity is however likely to be country and region specific. Existing and future railway projects should incorporate an important dimension of data collection, monitoring and evaluation to continue to build our knowledge base of the potential role played by railways on economic growth. At present, most evaluation methods are based on ex ante forecasts of demand and financial viability, which are seldom revisited and adjusted ex post to better calibrate future forecasting models.

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The limited impact of rail on firm performance today suggests a rethinking of the portfolio of transport investments for countries in Sub-Saharan Africa, relative to alternative investments in roads, ports, cabotage and air transport. At present, access to railroads appears to be highly concentrated in a handful of sectors, mostly mining and agribusiness.

A possible reason for the limited impact of railroads is the poor management of rail services. This is often characterized by distortionary and opaque pricing strategies stemming from monopoly power exerted by transport parastatals, and discrimination in access to rail slots. Any future investments in railroads in Sub-Saharan Africa should therefore simultaneously address constraints in the hard and

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soft infrastructure of railway transport. The poor governance of rail management can significantly dampen any returns to investments in the hard infrastructure of rail.

Improving the soft side of rail transport may require, among others, increased oversight by a competition authority, increased transparency of access to rail slots and publicly available price schedules for rail services. Increased transparency and competitive pricing could be achieved through more sophisticated (and automated) IT systems that can manage and coordinate the consolidation of rail cargo across firms.

Dissemination

These findings have already been presented at Dfid (x3), at the World Bank (x2) and at an IGC-sponsored conference organized by the Ministry of Public Works in Mozambique. I will be sending a copy of the final paper to the Ministry of Transport in Mozambique, to colleagues engaged in research on transport economics at the Universities of Stellenbosch and Cape Town and to the Council for Scientific and Industrial Research (CSIR) in South Africa. Some of these findings were also incorporated into a book published by the World Bank, with a foreword from the Presidency of SADC.

Further Readings

Sequeira, Sandra (2013). “Transport Infrastructure and Firm Performance: Evidence from Southern Africa”, mimeo, London School of Economics

About the authors

Sandra Sequeira is Lead Academic for the IGC's Mozambique programme. She is also a Lecturer in Development Economics at the London School of Economics and a research affiliate at STICERD. Her research applies a combination of experimental and quasi-experimental methods to three broad themes in development economics: infrastructure and growth, private sector development in developing countries and the economic costs of bureaucratic corruption. She has conducted fieldwork in Zambia, South Africa, Mozambique, Peru, India and Ghana, and has consulted for the United Nations, the World Bank, the International Finance Corporation and the Government of Mozambique. Her research interests include fair trade and development, corporate social responsibility, infrastructure and growth, private sector development, corruption, experimental methods and programme evaluation. She holds a PhD from Harvard University, an MA from the Fletcher School and a BA from Universidade Nova in Lisbon, Portugal.

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