

EVIDENCE-INSIGHTS-POLICY

WIDER ECONOMIC BENEFIT ASSESSMENT OF RAILWAY REHABILITATION IN EAST AFRICA

CONTEXT

While Africa has railway assets these are more than 100 years old and require substantial rehabilitation.

In Ethiopia, the service quality of the Ethio-Djibouti line, which connects Ethiopia's capital city of Addis Ababa to the regional hub port of Djibouti, deteriorated dramatically in the 2000s due to poor maintenance. By 2009 the railway operations had completely shut down. In Tanzania, as railway operations significantly deteriorated, firms have switched from freight rail to truck transportation, even though freight rail has a price advantage. As a result, freight volume by Tanzania Railways Limited has dropped to 13 percent of its peak demand in the early 2000s.

To revive African railways and to improve its service quality, many African governments have initiated railway rehabilitation projects in recent years. Ethiopian Railways Corporation began construction of a 5,000 km railway to connect key cities and neighboring countries; this was launched in 2016. Tanzania is implementing a Central

Corridor project connecting inland cities and neighboring countries to the regional hub port of Dar es Salaam.

The series of this research estimate **the impact of railway rehabilitation projects in Ethiopia and Tanzania on agricultural production, firm productivity, and a firm's modal choices**. These findings provide evidences to help policymakers to facilitate cost-effective investment decisions. The results of Tanzanian railways can in particular serve as a baseline survey of the ongoing railway rehabilitation project supported by the World Bank.

Port rail connectivity and agricultural production in Ethiopia

Using large household data comprising more than 190,000 households for the past eight years in Ethiopia, limi et al. (2017) estimated the impacts of rail transport on agricultural production. The authors found that the shutdown of the Ethio-Djibouti line increased transportation costs to the port of Djibouti and significantly reduced agriculture production in Ethiopia. The

agriculture output elasticity with respect to transportation costs to the port (port connectivity) was estimated at -0.28 ; if the transportation costs to the port are increased by 10 percent, the agricultural production will decrease by 2.8 percent. The authors also found that fertilizer input was a major channel impacting agricultural production by port connectivity. Rising transport costs reduces fertilizer imports, which results in the reduction of agricultural production.

Rail transport and firm productivity in Tanzania

limi, Humphreys, and Mchomvu (2017a) recasts light on the impact of rail transportation on firm productivity, using micro data collected by the authors in Tanzania. The dataset covers about 500 firms in the major urban areas of 18 regions in Tanzania. The authors found that the use of freight rail significantly reduced firms' operational costs. Transportation costs were significantly lower for rail users than for truck users. However, rail users hold more inventories, which caused a negative impact on firm productivity. They also found a relatively higher price elasticity of firms' demand for rail freight, estimated at -1.01 . This implies severe competition between railways and trucks; firms would switch

to truck transportation due to a slight increase of rail tariffs.

Tanzania's rail transport faces intense competition against truck transportation. Rail transport generally has the advantage for large-volume long-haul freight operations. However, there is little evidence of this in Africa. Using the same firm-level data, limi, Humphreys, and Mchomvu (2017b) examined shippers' modal choice in Tanzania. The authors found that prices, shipping distance, and freight volumes were important determinants of firms' modal choices. When rail prices are higher, firms are less likely to choose rail transportation. In contrast, firms are more likely to use rail transport as the shipping distance gets longer and the volume of freight gets larger. Therefore, rail freight has a cost advantage for long-haul shipments. The authors also found that rail transportation was often used for international trading purposes, whereas truck transportation was used for domestic transaction. This is plausible because the majority of railways concentrate on connecting inland cities and the port of Dar es Salaam. In contrast, truck transportation has access to areas all over the country, and thus, has an advantage for domestic transactions.



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