

Build it and they will come

It has long been recognized that infrastructure investment plays a key role in growth. It promotes rapid industrialization through cheaper and more efficient movement of goods, people, and ideas across places. Despite the increasing importance of infrastructure, the literature on the economic impact of infrastructure on growth is still small relative to its policy importance. Tight fiscal space and broader issues of governance, doing business, climate change and competition policy have made it more challenging for infrastructure investments to get the increased attention they deserve from policymakers. India is a good testing ground to examine how the twists and turns in infrastructure investments have affected growth.

In 1999, then prime minister Atal Bihari Vajpayee laid the foundation stone for the Golden Quadrilateral Highway project. The Golden Quadrilateral is the longest road project in India and the fifth-longest highway in the world, connecting four major cities: Delhi, Mumbai, Chennai and Kolkata.

We examined the impact of Golden Quadrilateral roads investment in a recent paper (*Highway To Success* by Ejaz Ghani, Arti Grover Goswami and William R. Kerr, *The Economic Journal*). This is one of the first explorations of how proximity to a major new road network affects the organization of manufacturing activity, especially the location of new plants, through industry-level sorting and the efficiency of resource allocation.

The Golden Quadrilateral project provided a huge boost to manufacturing activity and productivity in districts located within 10km of the network. What's more, the new road infrastructure facilitated the movement of growing young firms out of the congested big cities in search of cheaper land and buildings.

Districts located within 10km of the Golden Quadrilateral network experienced substantial increases in entry levels of new enterprises, and higher productivity in the manufacturing sector. The Golden Quadrilateral project resulted in a 49% overall output increase from initial levels for the average district located on the Golden Quadrilateral network. There was greater formal sector manufacturing growth and entrepreneurship in districts located within the Golden Quadrilateral network.

These estimates suggest about 43% of the observed increase in Indian manufacturing activity to the Golden Quadrilateral upgrades, with the rest due to general expansion of Indian manufacturing or other district traits. By contrast, districts near to the north-south and east-west (NS-EW) highway did not experience any change in activity. Upgrades were scheduled for the NS-EW highway at the same time, but were postponed, making it a great placebo case.

Spatial and territorial development

Understanding how infrastructure projects affect economic activity is important for policymakers and regional analysis because these impacts identify how infrastructure investments shape spatial development, growth of regions and the distribution of industrialization and income. Spatial development, where some industries move from urban to rural areas or from core to peripheries of cities, is evident in many countries, and is associated with the efficient placement of industries.

The Golden Quadrilateral project has encouraged efficient decentralization by making intermediate cities more attractive to manufacturing entrants. For instance, moderate-density districts—like Surat in Gujarat or Srikakulam in Andhra Pradesh—that border the Golden Quadrilateral highway registered a more than 100% increase in new output and new establishment counts after the

Golden Quadrilateral upgrades.

These results suggest that the improved transport connectivity enabled manufacturing establishments to efficiently locate in intermediate cities. More importantly, the upgrades were associated with better allocative efficiency as measured by the extent to which the employment of an industry is contained in the industry's most productive plants. Industries that were initially positioned along the Golden Quadrilateral showed improved allocative efficiency compared to industries initially positioned on the NS-EW highway that was never built.

Transport has particular importance in India because of government control over land and building rights, leading some observers to state that India has transitioned from its "licence raj" to a "rents raj". Given India's distorted land markets, the heightened connectivity brought about by the Golden Quadrilateral upgrades was particularly important for efficient sorting of industry across spatial locations.

Infrastructure and financial development

Business dynamics, entrepreneurship and firm growth also require a deeper interaction of banking/finance conditions and infrastructure access than is understood in the growth literature so far. Rapid urbanization and demographic changes call for an acceleration of investment in infrastructure, yet, it is difficult to ascertain the efficiency of such investments without pre-existing financial development. Specifically, when contemplating a large-scale infrastructure investment into local areas, it is important to identify whether a strong finance market needs to be in place first or whether financial development appropriately mirrors and develops alongside major investment efforts.

So, the question remains: if you build it, will they come? If yes, this is an important insight for policymakers and nation builders as they can proceed with projects in confidence that the complements of financial markets will work themselves out. If the answer is no, the information is perhaps even more important as it suggests that large-scale investment can only proceed after local conditions have been vetted for sufficient development.

Adequate transportation infrastructure is an essential ingredient for economic development and growth. Business leaders, policymakers, and academics describe infrastructure as a critical hurdle for sustained growth that must be met with public funding, but to date there is a limited understanding of the economic impact of those projects and their financial forms.

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