

## Roads and Agriculture: Impacts of Connectivity in Peru

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**Abstract :** A well-developed transportation network is a necessary condition for a country to derive full benefits from good trade and macroeconomic policies. Road infrastructure plays a key role in the economic development of rural areas of developing countries; where agriculture is the main economic activity. The ability to move agricultural production from the place of production to the market, and then to the place of consumption, greatly influence the economic value of farming activities, and of the resources involved in the production process, i.e., labor and land. Consequently, investment in transportation networks contributes to enhance or overcome the natural advantages or disadvantages that topography and location have imposed over the agricultural sector. This is of particular importance when dealing with countries, like Peru, with a great topographic diversity. The objective of this research is to estimate the impacts of road infrastructure on the performance of the agricultural sector. Specific variables of interest are changes in travel time, shifts of production for self-consumption to production for the market, changes in farmers income, and impacts on the diversification of the agricultural sector. In the study, a cross-section model with instrumental variables is the central methodological instrument. The data is obtained from agricultural and transport geo-referenced databases, and the instrumental variable specification utilized is based on the Kruskal algorithm. The results show that the expansion of road connectivity reduced farmers' travel time by an average of 3.1 hours and the proportion of output sold in the market increases by up to 40 percentage points. The increase in connectivity has an unexpected increase in the districts index of diversification of agricultural production. The results are robust to the inclusion of year and region fixed-effects, and to control for geography (i.e., slope and altitude), population variables, and mining activity. Other results are also very eloquent. For example, a clear positive impact can be seen in access to local markets, but this does not necessarily correlate with an increase in the production of the sector. This can be explained by the fact that agricultural development not only requires provision of roads but additional complementary infrastructure and investments intended to provide the necessary conditions so that producers can offer quality products (improved management practices, timely maintenance of irrigation infrastructure, transparent management of water rights, among other factors). Therefore, complementary public goods are needed to enhance the effects of roads on the welfare of the population, beyond enabling them to increase their access to markets.

**Keywords :** agriculture development, market access, road connectivity, regional development

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