PEP Policy Brief

Number 96
August 2012

Growth and Distributive Effects of Public Infrastructure Investments in China

By Yumei Zhang, Xinxin Wang and Kevin Chen

China and public infrastructure investments (PII)

In recent years, China has allocated more than 10 percent of total annual government expenditure to public infrastructure - with public infrastructure investments (PII) growing even most rapidly after the global financial crisis.

Most of the existing studies on PII focus on the impacts of PII on economic growth, and only a handful of academic/reliable studies consider their effects on distribution and equity. The latter, however, are particularly salient and relevant, considering the continued widening of the income gap between China's rich and poor, which is a key policy challenge and priority for the Chinese government.

In 2010, with support from the Australian Agency for International Development (AusAID) and the Partnership for Economic Policy (PEP), a team of Chinese researchers set out to assess both (simultaneously) the growth and distributive effects of PII in China, using a combination of macro-micro modeling and simulation techniques.

Key findings

Conclusions from simulations' results (see table on the right):

- An increase in PII drives economic growth. In the long run, real GDP would be accelerated, by approximately 4 percentage points, through improvements in productivity.
- Different sectors are impacted differently, due to distinct sectoral characteristics. For example, the construction and nonmetallic mineral products' sectors gain significantly from the increased PII, while the labor-intensive textile industry loses in terms of competitiveness.
- There are positive effects of the increased PII on poverty in both the short- and long-run. The national poverty headcount ratio is decreased by more than 2 percentage points (using the international poverty line, i.e. $1.25 per day) in the long-run. While it seems that this reduction result mainly from the raise in wage rate, the researchers also find that it is the rural poor who benefit the most, as more of them exit poverty than urban and migrant households.
- Equality also improves following increases in PII, not only within the groups (of rural and/or urban households), but also between them (rural vs urban households).

Finally, the results show that, overall, such an increase in public investments would not crowd out private investment spending. On the contrary, the latter is even expected to increase and, combined, enhance the stimulating effect on China's economic development.

Cutting-edge methodologies for a widened perspective

First, an inter-temporal dynamic CGE model of China's national economy was developed to trace the impact channels of PII on general economic development. The identified "macro effects" were then transferred into a micro-simulation model, based on existing household survey data, in order to assess whether and how such effects impact both/either poverty and/or inequality in the country.

Two scenarios to simulate the effects of an increase in PII

Simulations of two distinct scenarios were conducted. While both induced a **20 percent increase in the ratio of PII to GDP**, the scenarios differed in terms of mechanisms used to finance the increased investments in each simulation: one supposing that such an increase is financed through **foreign borrowing**, and the other, through revenues from increasing **production tax**.

		Foreign loans		Production tax	
	Base (%)	Short	Long	Short	Long
Real GDP		**0.57**	**3.86**	**0.03**	**4.32**
Poverty	**24.70**	**-0.46**	**-2.23**	**-0.04**	**-2.65**
a) Rural	28.51	-0.51	-2.58	-0.05	-3.06
b) Migrant	2.36	-0.26	-0.43	0.00	-0.53
c) Urban	6.60	-0.20	-0.58	-0.01	-0.65

Policy implications and recommendations

Although the country's infrastructures have significantly improved over the past 30 years, China's economic development would still greatly benefit from further investments in PI; especially in rural areas, where the poor state of infrastructure creates bottlenecks and impediments to economic growth.

The results from this research initiative clearly demonstrate that increasing public infrastructure investments would contribute to both stimulate growth and lower income inequality in China, and that such investments may thus be considered by the government as a key "inclusive growth strategy". In particular, the researchers recommend that China's decision-makers consider investing relatively more in rural infrastructure, to further reduce inequality between rural and urban households by promoting equal access to basic public services.

This Policy Brief is based on the results of the PEP project MPIA-12303, as described in the PEP Working Paper 2012-07