

Causal Linkages between Public Capital, Private Capital and Economic Growth

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The relationship between public capital, private capital and economic growth has been a topic of great interest and public discussion for over four decades. This paper examines the effect of public and private capital stock on economic development, measured as the change in Gross State Product (GSP). Using panel data for the 48 contiguous states of the U.S.A. for the time period between 1969 and 1988, we study this relationship at the state-level, in order to specify the impact of capital on GSP. We estimate public capital and private capital elasticities, using Cobb-Douglas stochastic frontier production functions. Our model takes into consideration the components of public capital (highway capital, water and sewage capital, and other public capital), while accounting for panel data through the use of fixed effects model. The estimation results indicate high output elasticity for both highway capital and private capital, suggesting a high impact of highway capital and private capital on economic development. Moreover, our analysis explicitly discusses and tests for potential causalities between capital and economic growth, a topic largely ignored in previous research. We carried out the Granger causality test, taking into account time lags varying from 1 to 5 years, in order to determine the direction of causation among public capital, private capital and GSP. We found that public capital Granger-causes GSP with a time lag that increases respectively to the state's population increase.