

The Weak Link Theory of Economic Development

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February 2007

Summary

By the end of the 20th century, per capita income in the United States was more than 50 times higher than per capita income in Ethiopia and the Democratic Republic of the Congo (Zaire). Dispersion across the 95th-5th percentiles of countries was more than a factor of 32. What explains these profound differences in incomes across countries?

This paper develops a model in which complementarity and linkages are at the heart of the explanation. High productivity in a firm requires a high level of performance along a large number of dimensions. Textile producers require raw materials, knitting machines, a healthy and trained labor force, knowledge of how to produce, security, business licenses, transportation networks, electricity, etc. Macroeconomics often works with production functions that exhibit substantial substitutability between inputs, but at the level of the production process itself, it is not clear that such a high degree of substitutability is warranted. Without electricity or production knowledge or raw materials or security or business licenses, production of textiles --- or any other good for that matter --- is likely to be severely hindered.

Linkages between activities are also likely to be important. Low productivity in transportation reduces agricultural productivity. Irregular electricity supplies hinder manufacturing. Lack of clean water leads to poor health among students and teachers, leading to inadequate training and low output elsewhere in the economy. Bureaucratic bottlenecks in trade may limit imports of replacement parts and have widespread effects. This notion that linkages affect development dates back at least to Hirschman (1958).

The metaphor that works best to describe this paper is the old adage, "A chain is only as strong as its weakest link." Complementarity and linkages in the economy mean that problems at any point in the production chain can sharply reduce overall output. The strength of a typical link need not differ by a large amount between rich and poor countries. Instead, what differs is the strength of the weakest links.

The contribution of this paper is to build a model in which these ideas can be made precise. We show that complementarity and linkages amplify small differences across economies. With plausible average differences in productivity across countries, we are able to explain 50-fold differences in per capita income.