Measuring Economic Security

BY CHARLES GERENA


In an ideal world, the technologies that helped richer countries get rich would eventually find their way to poorer countries. But that transfer doesn't always happen.

A variety of factors influence a country’s adoption of technology, from the labor or natural resources it has available to government policies that either promote or discourage certain industries. A recent paper published by the Federal Reserve Bank of St. Louis finds that the efficiency of a country’s financial system could play a significant role in technology adoption.

Why? Implementing a new technology requires a significant investment with an uncertain payoff, and investors may not have the necessary information to properly assess risks or monitor how their funds are used. “Financial institutions play an important role in constructing mechanisms that ensure investments are used wisely,” note the paper’s authors. “They do this by both monitoring firms and implementing reward structures that encourage firms to truthfully reveal their profits so that investors can be fairly compensated.”

Monitoring firms cannot be done cost effectively in some countries, however, given the state of their financial systems. In these cases, financial intermediaries must use reward structures in place of monitoring; funding is delayed until a new technology is fully implemented and the firm’s performance can be properly assessed. Even with such “backloading” of funds, cash flows generated from technology adoption may not be adequately disclosed.

The paper’s authors model the relationship between the level of technology adoption and the state of a country’s financial system and find that it helps explain differences in income and total factor productivity between India, Mexico, and the United States. The efficiency of the American financial system seems to position it to adopt advanced technology, while the inefficiency of monitoring in Mexico limits that country to implementing intermediate technology that can be funded using a backloading strategy.


Companies engaged in similar work may benefit from agglomerating, or operating in close proximity to each other, even in today’s age of instant communication. That holds true for research and development firms, according to a recent paper published by the Philadelphia Fed.

Economists from the Philadelphia Fed, Ohio State University, and the University of Pennsylvania analyzed the geographic concentration of about 1,000 private R&D labs in 10 northeastern states. “First, the clustering of labs is by far most significant...at very small spatial scales, such as distances of about one-quarter of a mile, with significance attenuating rapidly during the first half-mile,” report the authors. “The rapid attenuation of significant clustering at small spatial scales is consistent with the view that knowledge spillovers are highly localized.”

In addition, they found evidence of significant agglomeration of R&D firms at the metropolitan level. This is consistent with one of the perceived benefits of agglomeration: the pooling and matching of skilled workers.