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Growth Performances and Input-Output Networks Across Countries

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Abstract

Observed differences in the long-term economic performances across countries have been a great puzzle for economics. Initially apparent gaps between quantity and quality of factors of production (capital, labor and land) are regarded as the most promising factors to explain the puzzle. Then exogenous technlogical differences enveloped in the concept of total factor productivity growth have been the most significant explanation. However, recently institutional factors such as 'strength of private property rights and rule of law' emerge as the most important explanatory variables. Nonetheless, being not well-defined subjects and suffering from endogeneity problems these institutional factors fall short of a convincing and plausible explanation. On the other hand, input-output networks and firm networks, especially reflecting the forward and backward linkages (see Hirschmann 1958) used to be a major framework for industrialization and development questions. The convergence puzzle is now being tackled by using the new methodological tools of network theory applied to the input-output networks. We first calculate a new centrality measure based on "counting betweenness" measure of Blöchl et.al (2011), which considers only intermediate goods matrix. This measure will trace the paths of a unit flow exogenously created between a source and a target sector for every possible pair of sectors and will analytically specify the average number of times that the unit flow spends on a given sector. Thus, the measure will also reflect the number of transactions that the unit flow can induce at a given sector. The input-output tables are published in a standardized form in WIOD database for 40 countries and 35 sectors from 1995 to 2011. We employ the new centrality measure to these input-output tables to determine the centrality of the sectors in each economy and at each time period. We then construct indices of heterogeneity by calculating gini coefficients from the sector centrality measures for national input-output networks for 17 distinct years and for each country. These indices mainly reflect how "unbalanced" the input-output networks of each country at each year (Acemoglu et. al. 2015) . We use the established panel dataset which also include generic variables in cross-country growth regressions such as capital stock, emplyment, trade opneness and institutional variables such as "Rule of Law" and "Quality of Government" indices. Controlling for other variables, we find that there is a statistically significant relationship between economic growth performances across countries and the gini coefficients. The results

underline the importance of structural factors behind the income and growth disparities across countries.

Keywords Input-Output; Networks; Growth Volatility

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