Resilient Kaldor: Growth Facts with Intellectual Property Products Capital

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We assess Kaldor's growth facts using up-to-date national accounts in 31 OECD countries. These countries have completed the adoption of a new system of national accounts that gradually capitalizes intellectual property products (IPP). First, we show that the macroeconomic time series that emerge from national accounts after the capitalization of IPP are inconsistent with Kaldor's growth facts: (a) the aggregate capital-to-output ratio increases over time; (b) the capital share of income increases over time; (c) the rate of return on capital increases; and (d) there is an increasing wedge between labor productivity and wages. Second, we argue that behind these results lies an accounting assumption: national accounts assume that IPP rents are all attributed to capital income. Applying alternative splits of IPP rents between capital and labor we find growth facts that are largely consistent with Kaldor's: a steady capital-to-output ratio, a secularly trendless capital share, a steady rate of return and no discernible difference between wage growth and labor productivity growth. Third, we discuss the implications of these new measures of aggregate capital that incorporate IPP for cross-country income and growth differences. We find that the contribution of IPP capital to cross-country differences in income and growth are extremely sensitive to the distribution of IPP rents. The mechanism is simple: the larger is the set of IPP rents that are allocated to labor, the larger (lower) is the contribution of human capital (physical capital) in explaining differences in income per capita and growth.

研究目的

In 2009, the United Nation Statistical Commission adopted the new System of National Accounts from 2008 (SNA08). The most notable update in the new system is the capitalization of intangibles in national accounts which recognizes the growing importance of these assets in the economy. Following SNA08, national accounts create a separate investment account labeled intellectual property products (IPP) which include R&D and artistic originals, in addition to computer software introduced in SNA 1993. In this paper, we investigate using the national accounts of 31 OECD countries how much the recent capitalization of IPP in national accounts alters the Kaldor facts.

概　要

Kaldor (1961) analyzes the behavior of a set of macroeconomic ratios in modern industrialized economies. His summary of the behavior of these ratios put forth a set of stylized growth facts that are at the core of modern macroeconomic growth and business cycle theory. These so-called Kaldor facts can be summarized as:

(1) The capital-output ratio remains steady over long periods.
(2) Capital (and labor) income shares remain steady over long periods.
(3) The rate of return to capital is steady over time.
(4) Labor productivity grows at a steady rate.
(5) There is a huge difference in productivity growth across countries.

Here, note that the Kaldor facts are unambiguously interconnected. The combination of a steady capital-to-output ratio (Fact 1) together with a steady capital share of income (Fact 2) implies a steady rate of return on capital (Fact 3). Analogously, combining the fact that the labor share of income is steady over time (Fact 2) with a steady growth of labor productivity (Fact 4) implies that wages must grow at the same steady rate than labor productivity. Note that this interconnection across growth facts implies that altering the behavior of one single time series -- e.g., a change in the stock of aggregate capital -- can trigger changes in several macroeconomic ratios and deviations from the Kaldor facts.

In 2009, the United Nation Statistical Commission adopted the new System of National Accounts from 2008 (SNA08). The most notable update in the new system is the capitalization of (some) intangibles in national accounts which recognizes the growing importance of these assets in the economy. Following SNA08, national accounts create a separate investment account labeled intellectual property products (IPP). To be precise, the set of IPP measured by national accounts includes research and development (R&D) and artistic originals, in addition to computer software introduced since SNA 1993. By 2016, most OECD countries have implemented the new system. In this paper, we investigate how much the recent capitalization of intellectual property products (IPP) in national accounts alters the Kaldor facts. We argue that the capitalization of IPP alters the Kaldor facts mainly through three channels: changes in the series of aggregate capital; changes in aggregate output; and changes in the series of capital income.

To quantitatively assess the implications of the capitalization of IPP on the Kaldor facts, we construct a new dataset using the national accounts for 31 OECD countries that have implemented the SNA08 in which IPP is capitalized. We find: (a) the aggregate capital-to-output increases over time; (b) the capital share of income increases over time; (c) the rate of return increases; and (d) there is an increasing wedge between labor productivity and wages. We conduct these analyses across time and across stages of development. We show that (a)-(d) are the result of IPP capitalization by recomputing the Kaldor statistics with an accounting

counterfactual that entirely decapitalizes IPP from national accounts, an exercise consistent with pre-SNA93 data. Without IPP capital, we find that (a) is constant, (b) is constant (c) remains constant and (d) there is no wedge between labor productivity and wages.

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