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Is the convergence of the manufacturing sector unconditional?

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Abstract

In *Unconditional Convergence*, Rodrik (2011b) documented that manufacturing industries exhibit unconditional convergence in labor productivity. We provide a novel semi-parametric specification for convergence equations and show that the speed of convergence varies systematically with country-specific characteristics. We consider the flexible smooth transition model with multiple transition variables, which allows each group to have distinct dynamics controlled by a linear combination of known variables. We found evidence that the laws of motion for industry productivity growth are different across countries, varying with political institutions. The speed of convergence also has a non-monotonic relationship with trade openness and education.

JEL classification: Q43; Q47

Keywords: Unconditional convergence; Semiparametric models; Productivity growth

Resumo

Em *Unconditional Convergence*, Rodrik (2011b), documentou que industrias do setor de manufaturas possuem convergência incondicional da produtividade do trabalho. Neste artigo nós propomos um modelo semi-paramétrico para equações de convergência e mostramos que a velocidade de convergência muda sistematicamente com características específicas dos países estudados. Nós consideramos um modelo flexível de transição suave e com múltiplas variáveis de transição. Nós encontramos evidências que as leis do movimento para o crescimento na produtividade da indústria é diferente nos países.

Palavras-chave: Convergência incondicional; Modelos semi-paramétricos; Crescimento

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1. Introduction

The rapid economic growth that emerging and developing economies experienced in the last decades, specially in the run-up to the global financial crisis of 2008–2009, gave a new life to the debate about economic convergence – i.e., whether poorer countries tend to grow faster than the richer ones, then converging in living standards. Discussions about the risk of decay of the supremacy of the U.S. and other advanced economies (Eichengreen, 2011; Subramanian, 2011), and the prospects of the developing world growth (O'Neill, 2011; Rodrik, 2011a) abound.

Rodrik (2011a,b) documented that manufacturing industries exhibit unconditional convergence in labor productivity. Differences between the results with country-level data and those obtained for industrial sectors can be associated to the process of technology dissemination and capital mobility. In particular, the results obtained by Rodrik (2011a,b) suggest that technology and capital spread easier across industrial sectors than across countries. Therefore, sectors are more likely to face similar steady-states than countries.

In this paper we bring evidence that speed of labor productivity convergence changes across countries, identifying key drivers of the convergence process. Our basic questions are: Can we identify a multiple regime dynamics in industry productivity growth across countries? Are country-specific features related to the industry productivity growth? In what magnitude? Using the same data set as Rodrik (2011a,b) – UNIDO's INDSTAT 4, available for a wide range of countries –, we provide a novel semi-parametric specification for convergence equations and show that the speed of convergence varies systematically with country-specific characteristics.

We investigate whether unobserved heterogeneity in the convergence coefficient at the country level is associated with geographic conditions, trade openness, political institutions and education. In principle, these variables might affect the steady-state and the process of capital accumulation. Hence, the goal is to test if these variables change the convergence process, at the country level, on top of the mechanisms identified in Rodrik (2011a,b).

We consider the flexible smooth transition model with multiple groups and multiple transition variables proposed by Medeiros and Veiga (2005). This model allows that each group has distinct dynamics controlled by a linear combination of known variables. This specification is very flexible and nests several linear and nonlinear models and can be as well interpreted as a semi-parametric model.

We found evidence that the laws of motion for growth are different across countries and those with political institutions that are more permissive converge faster. Less democratic states grow at higher paces according to our estimates, a result that is compatible with those documented in Barro (1996, 1999). The speed of convergence also has a non-monotonic relationship with trade openness and education, suggesting faster convergence at the extremes. Differences across countries in the convergence coefficient is not only of statistical significance, but also economically meaningful. The lower and upper values of the estimated convergence coefficient are, respectively, -3.7% and -2.8% per year, which means that the half life to productivity convergence varies in a range of about 7 years (between 18 and 25 years). The mechanisms through which these elements affect convergence are beyond the scope of the paper but, in contrast to the results found in Rodrik (2011a,b), we found salient features at the country level that affect income and growth.

1.1. Literature

Whether income levels of poorer economies are growing more rapidly than richer economies is not only an important question in the literature of Development Economics, but it is also related with the issue of validating competing growth theories. In the neoclassical growth literature, unconditional convergence implies that there is only one steady state level of per capita income to which all economies approach, and conditional convergence implies that equilibrium differs by economy, and each particular economy approaches its own but unique per capita income equilibrium (Islam, 2003). There are numbers of works with different approaches showing evidences of conditional convergence (Mankiw et al., 1992; Islam, 1995). It is widely known, however, that empirical works have found to be hard to prove unconditional economic convergence when a broad and diversified sample of countries is considered (Islam, 2003; Durlauf et al., 2005).

Baumol (1986) shows that (unconditional) convergence of output per capita is observed among developed countries, but it is not shared by less developed economies, suggesting that there would exist "convergence clubs". Indeed, a non-linear specification for the growth equation hold for a class of growth models, starting with Azariadis and Drazen (1990). Their model produces multiple locally stable steady states in per capita output. Cross-country growth behavior