

*Findings reports on ongoing operational, economic, and sector work carried out by the World Bank and its member governments in the Africa Region. It is published periodically by the Knowledge and Learning Center on behalf of the Region. The views expressed in Findings are those of the author/s and should not be attributed to the World Bank Group.*



## Revisiting Growth and Convergence: Is Africa Catching Up?

22681

The neoclassical Solow framework has been the workhorse for empirical analysis of growth in industrial and developing countries. In this framework, steady state economic growth (defined as the state in which output grows at a constant rate) depends on exogenous technological progress and population growth. In particular, without technological progress, output per capita does not grow.

An important feature of the neoclassical model that has been the central focus of empirical work is the convergence property: output levels of countries with similar technologies converge to a given level in the steady state. In the end, *ceteris paribus*, the lagging poor countries will tend to catch up with the rich. Using cross-sectional analysis the majority of the literature seems to have reached a consensus on the issue of convergence: the poor do catch up with the rich, at a rate of 2–3 percent per year.

The obvious shortcoming of the neoclassical model is that long-run per capita growth is determined by the exogenous rate of technological progress. Work on endogenous growth theory has introduced alternative models that explain long-run growth, and provide a theory of technological progress: growth is generated by factors other than ex-

ogenous technical change. Endogenous growth models have provided mechanisms through which economic and social policies can affect long-run growth through their effects on human and physical capital accumulation. Recent cross-country empirical work on growth has been inspired by these extensions of the neoclassical model extended that include government policies, human capital, and technology diffusion.

### Objectives

This study examines rates of convergence for African and OECD countries and investigates the determinants of per capita growth rates drawing on the neoclassical and endogenous growth theories, and focusing on issues of economic estimation. Specifically, the study addresses the following:

- Are countries converging towards their steady states, and, if so, how fast are they getting there?
- Are differences between countries' per capita growth rates explained by how far away the countries are from their steady states or by the determinants of their steady states?
- Is the neoclassical growth framework adequate to describe cross-country differences?

# Findings

- Human capital accumulation enhances economic growth because it is a direct input to research or because of positive externalities. In light of this, if a measurement of human capital accumulation is added to the analysis, is the “augmented” neoclassical framework adequate to describe cross-country differences?
- Can economic policies affect per capita income growth or do policies have only transitional effects? In particular, how do the following affect long-term economic growth:

*Financial development.* Appropriate monetary policy promotes a stable financial environment necessary for economic growth by maintaining a low inflation rate. High and variable rates of inflation are expected to lower the monetary authorities’ credibility and reduce the returns on private savings and investment.

*Government consumption.* Higher budget deficits crowd out private investment as result of higher real interest rates. Also, higher government spending creates expectations of future tax liabilities and hence, distorts incentives and lowers growth.

*Trade openness.* The proposition that more outward-oriented economies tend to grow faster has been tested extensively in the literature, and the majority of the evidence tends to support this proposition.

*Political liberty.* Observers believe that political and economic freedoms are mutually reinforcing; in this view, increasing political rights promotes economic rights and therefore stimulates growth. Also, ethnic

divisions influence economic growth, the rationale being that polarized societies have more difficulties agreeing on the provision of public goods such as infrastructure, education, and growth-enhancing policies.

## Conclusions

The paper notes that cross-country empirical work that fails to account for country-specific effects and endogeneity of explanatory variables yields inconsistent estimates of rates of convergence. The estimation method used in this paper corrects for those inconsistencies. In particular, taking into account country-specific effects, as well as potential endogeneity produces strikingly higher rates of convergence than the ones reported in the literature.

The specific results of this study are as follows:

- Rates of convergence are estimated at above 10 percent, which implies that countries are very close to their steady states. The theoretical implication of finding rates of convergence in excess of ten percent for both African and OECD samples is that countries are very close to their steady states. This result (i) suggests that observed differences across per-capita incomes between countries can be explained primarily by differences in their steady state values, *not* the distance from their steady states; and (ii) calls for more policy activism: policies can not only accelerate the pace of countries reaching their long run levels of incomes, but most importantly, they can affect the long run income levels.

- The neoclassical framework, both in its textbook and augmented

form, is not consistent with the empirical evidence and therefore cannot account for the important features of cross-country income differences.

- Various economic factors such as initial conditions, investment, population growth, human capital development, government consumption, openness, financial development, and the political environment, are found to contribute to economic growth. Focusing on the Africa sample alone, there is evidence to support the hypothesis that African economies with higher savings rates, lower population growth rates, more outward-oriented policies, a faster pace of financial development, and a more democratic environment, have tended to grow faster; there is only tentative evidence that government consumption impinges negatively on growth.

- Differences in the rates of physical and human capital development as well as population growth rates between the OECD and Africa samples highlighted the greater importance placed upon higher human and physical capital development as well as low population growth rates for the African countries.

---

*This article is based on the publication “Revisiting Growth and Convergence: Is Africa Catching Up?” by Charalambos G. Tsangarides, Africa Region Working Paper Series, No. 10, December 2000. For more information, please contact the author: [Ctsangarides@worldbank.org](mailto:Ctsangarides@worldbank.org) and/or visit the website, <http://www.worldbank.org/afr/wps/index.htm>*