



Old and New Growth

**Theories: An Assessment
Pisa (Italy), October 5-7, 2001**

COMMUNICATION PROPOSAL:

Different roles for human capital in economic growth.

The case of Europe.

Marta Cristina Nunes Simões
(mcsimoes@sonata.fe.uc.pt)

Faculdade de Economia da Universidade de Coimbra
GRUPO DE ESTUDOS MONETÁRIOS E FINANCEIROS (GEMF)
Av. Dias da Silva, 165, 3004-512 Coimbra, PORTUGAL
<http://www4.fe.uc.pt/gemf>

Keywords: exogenous vs endogenous economic growth, human capital, education

Classification JEL: O41, O47, O52

Abstract

According to UNESCO, in 1995 the EU members spent in average 5% of its GNP on education and its share of public expenditure was around 10%. These numbers show the importance given to education by the European countries. However, many empirical growth studies are not very clear about the influence of human capital in a country's economic welfare, especially for samples of OECD countries. What are exactly the benefits associated with higher schooling years? Although the benefits of education are not exclusively economic¹ these are certainly important for population welfare.

Human capital has always been considered as a major source of growth by economic theory. However the introduction of this input in growth models wasn't made until the 80's in the works of Lucas (1988), Romer (1990a) and Mankiw, Romer and Weil (1992), just to name a few. Since then many were the empirical studies that tried to measure the relative importance of this input to economic growth. Some examples can be found in Azariadis and Drazen (1990), Barro and Lee (1993), Benhabib and Spiegel (1994), Islam (1995), Pritchett (1999) and de la Fuente and Doménech (2000). These studies use different samples: some use samples with quite similar economies like the OECD members others use samples with very different countries. Surprisingly enough, the results on the importance of human capital for economic growth are not very clear for samples with homogeneous countries.

Is there an explanation for these strange results? It is never possible to forget the measurement problems associated with human capital. The most common proxy for this variable is the average schooling years of a country's population. However, if this education lacks quality then it most probably won't show any positive influence in economic growth. But human capital proxies that control for the quality of education are hard to come by.

Yet another explanation for the lack of influence of human capital in economic growth for OECD countries lies on the model specification. How exactly does human capital influence economic growth: only through final goods production or also as a source of R&D? Exogenous growth models test solely the first explanation while endogenous growth models consider both explanations.

Considering a group of similar countries made of seventeen European economies between 1960 and 1995 this work tries to shed some light into the problem of the channel through which human capital influences economic growth. We begin with the work of Mankiw, Romer and Weil (1992) as a mean of comparison. We then consider the Benhabib and Spiegel (1994) model where human capital has a double role in economic growth: through factor accumulation and as a source of R&D. Finally, we analyse the work of Papageorgiou (1999) where the influence of human capital also depends on the education levels. Primary education influences positively final goods productions while R&D activities depend on post-primary education.

¹ "Education does not have to be justified solely on the basis of its effect on labour productivity. This was certainly not the argument given by Plato or de Tocqueville and need not be ours. Students are not taught civics, or art, or music solely in order to improve their labour productivity, but rather to enrich their lives and make them better citizens." Weiss (1995, p.151) cited by Temple (2000, p.41).

Bibliographical References

- [1] Ahn, S. e Hemmings, P. (2000), *Policy influences on economic growth in OECD countries: an evaluation of the evidence*, Economics Department Working Papers n°246, vol. 102, OCDE, Paris.
- [2] Azariadis, C. e Drazen, A. (1990), *Threshold externalities in economic development*, Quarterly Journal of Economics, Vol. 105(2), pp. 501-526.
- [3] Barro, R. (1991), *Economic growth in a cross section of countries*, Quarterly Journal of Economics, Vol. 106(2), Maio, pp. 407-443.
- [4] Barro, R. e Lee, J.-W. (1993), *International comparisons of educational attainment*, Journal of Monetary Economics, Vol. 32(3), pp. 363-394.
- [5] Barro, R. e Lee, J.-W. (1996), *International measures of schooling years and schooling quality*, American Economic Review, Vol. 86(2), Maio, pp. 218-223.
- [6] Barro, R. e Lee, J.-W. (2000), *International data on educational attainment: updates and implications*, Center for International Development, WP n°42, Abril.
- [7] Benhabib, J. e Spiegel, M. (1994), *The role of human capital in economic development: evidence from cross-country data*, Journal of Monetary Economics, vol. 34, pp. 143-173.
- [8] de la Fuente, A. e Domenéch, R. (2000), *Human capital in growth regressions: how much difference does data quality make?*, CEPR Working Paper n°2466, Maio.
- [9] Islam, N. (1995), *Growth empirics: a panel data approach*, Quarterly Journal of Economics, vol. 110(1195), Novembro, pp. 1127-1170.
- [10] Krueger, A. e Lindahl, M. (2000), *Education for growth: Why and for whom?*, NBER Working Paper n°7591, Março.
- [11] Lucas, R. (1988), *On the mechanics of economic development*, Journal of Monetary Economics, vol.22(1), pp.3-42.
- [12] Mankiw, N., Romer, D. e Weil, D. (1992), *A contribution to the empirics of economic growth*, Quarterly Journal of Economics, vol. 107, pp. 407-437.
- [13] Papageorgiou, C. (1999), *Human capital as a facilitator of innovation and imitation in economic growth: further evidence from cross country regressions*, mimeo, Louisiana State University.
- [14] Pritchett, L. (1999), *Where has all the education gone?*, mimeo, The World Bank, Dezembro.
- [15] Romer, P. (1990a), *Human capital and growth: theory and evidence*, Carnegie-Rochester Conference Series on Public Policy, vol. 32, pp. 251-286.
- [16] Romer, P. (1990b), *Endogenous technical change*, Journal of Political Economy, vol. 102, pp. S71-S96.
- [17] Solow, R. (1956), *A contribution to the theory of economic growth*, Quarterly Journal of Economics, vol. 70(1), pp. 65-94.
- [18] Temple, J. (1998), *Robustness tests of the Augmented Solow model*, Journal of Applied Econometrics, vol. 13, n°4, pp. 361-375.
- [19] Temple, J. (1999), *Growth regressions and what the textbooks don't tell you*, mimeo, Hertford College, University of Oxford.
- [20] Temple, J. (2000), *Growth effects of education and social capital in the OECD*, mimeo, Nuffield College, University of Oxford.
- [21] Temple, J. (2001), *Generalizations that aren't? Evidence on education and growth*, mimeo, Department of Economics, University of Bristol.
- [22] Wößmann, L. (2000), *Specifying human capital: a review, some extensions and development effects*, Kiel Working Paper n°1007, Outubro.