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Human capital and financial development in economic growth: new evidence using the translog production function

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Abstract

In this paper we evaluate the contributions of human capital and financial development to economic growth in a panel of 82 countries covering 21 years. The main innovations in the paper stem from the fact that we use a translog production function as a framework for estimating the relationships among economic growth and factor inputs. The factor inputs considered are: labour, physical capital, human capital (deriving from endogenous growth theory), and a monetary factor (money or credit, deriving from the theory of money in the production function). The translog production function enables a richer specification of the relationships among growth and factor inputs, than the more commonly used Cobb–Douglas approach, as it allows for interactions among factor inputs. We find significant evidence of such interactions, suggesting that studies which ignore such interactions are likely to be misleading. Overall, our results suggest that financial development is at least as important as human capital in the growth process. Copyright © 2002 John Wiley & Sons, Ltd.

REFERENCES

Aghion P, Howitt P. 1998. *Endogenous Growth Theory*. The MIT Press: Cambridge, MA.

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Baltagi BH. 1995. *Econometric Analysis of Panel Data*. John Wiley: Chichester.

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Web of Science® Google Scholar

Barro RJ, Lee J-W. 1994. Sources of economic growth. *Carnegie-Rochester Conference Series on Public Policy* **40**: June, 1–46.

Web of Science® Google Scholar

Barro RJ, Sala-i-Martin X. 1995. *Economic Growth*. McGraw-Hill: New York.

Web of Science® Google Scholar

Beck T, Levine R, Loayza N. 2000. Finance and the sources of growth. *Journal of Financial Economics* **58**: 261–300.

Web of Science® Google Scholar

Bencivenga VR, Smith BD. 1991. Financial intermediation and endogenous growth. *Review of Economic Studies* **58**: No. 2, April, 195–209.

Web of Science® Google Scholar

Benhabib J, Farmer REA. 2000. The monetary transmission mechanism. *Review of Economic Dynamics* **3**(3): 523–550.

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Bowles SS. 1970. Towards an educational production function. In *Education, Income and Human Capital*, WL Hansen (ed.). Columbia University Educational Finance Project: New York.

Google Scholar

Brander JA. 1992. Comparative economic growth: evidence and interpretation. *Canadian Journal of Economics* **25**: 4, November, 792–818.

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Coakley J, Fuertes AM. 1997. New panel unit root tests of PPP. *Economics Letters* **57**: 17–22.

Web of Science® Google Scholar

Copeland LS. 1994. *Exchange Rates and International Finance*. Addison-Wesley: Wokingham.

Google Scholar

Coppin A. 1994. Determinants of LDC output growth during the 1980s. *Journal of Developing Areas* **28**: 2, January, 219–228.

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Davidson R, MacKinnon JG. 1981. Several tests for model specification in the presence of alternative hypotheses. *Econometrica* **49**: 551–565.

Google Scholar

Davidson R, MacKinnon JG. 1993. *Estimation and inference in econometrics*. Oxford University Press: New York.

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Evans AD. 1997. The role of human capital, financial development and political stability in economic growth: evidence and interpretation from cross section and panel data. Unpublished PhD thesis, University of Wales, July.

Google Scholar

Finnerty JD. 1980. Real money balances and the firm's production function: a note. *Journal of Money, Credit, and Banking* **12**(4): 666–671.

Web of Science® | Google Scholar

Fischer S. 1993. The role of macroeconomc factors in growth. *Journal of Monetary Economics* **32**: 485–512.

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Fry MJ. 1978. Money and capital or financial deepening in economic development? *Journal of Money, Credit and Banking* **10**: No. 4, November, 464–475.

Web of Science® | Google Scholar

Fry MJ. 1979. The cost of financial repression in Turkey. *Savings and Development* **3**: No. 2, 127–135.

Google Scholar

Fry MJ. 1980. Saving, investment, growth, and the cost of financial repression. *World Development* **8**: No. 4, April, 317–327.

Web of Science® | Google Scholar

Fry MJ. 1981. Interest rates in Asia: an examination of interest rate policies in Burma, India, Indonesia, Korea, Malaysia, Nepal, Pakistan, the Philippines, Singapore, Sri Lanka, Taiwan, and Thailand. June, Study Prepared for the IMF Asian Department, Washington, DC.

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Fry MJ. 1995. *Money, Interest and Banking in Economic Development*, 2nd edn. Johns Hopkins University Press: Baltimore, MD.

Google Scholar

Goldsmith RW. 1969. *Financial Structure and Development*. Yale University Press: New Haven, CT.

Google Scholar

Hasan MA, Mahmud SF. 1993. Is money an omitted variable in the production function? Some further results. *Empirical Economics* **18**(3): 431–445.

Google Scholar

Hausman JA. 1978. Specification tests in econometrics. *Econometrica* **46**: 6, 1251–1273.

Web of Science® Google Scholar

Hsaio C. 1986. *Analysis of panel data*. Cambridge University Press: Cambridge.

Google Scholar

Islam N. 1995. Growth empirics: a panel data approach. *Quarterly Journal of Economics* **110**: No. 4, 1127–1170.

Web of Science® Google Scholar

Jao YC. 1976. Financial deepening and economic growth: a cross-section analysis. *Malayan Economic Review* **21**(1): 47–58.

Web of Science® Google Scholar

Jao YC. 1989. Money supply exogeneity and endogeneity: a review of the monetarist post-keynesian debate. *Greek Economic Review* **11**(2): 203–234.

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King RG, Levine R. 1993a. Finance and growth: schumpeter might be right. *Quarterly Journal of Economics* **108**: No. 3, August, 717–737.

Web of Science® | Google Scholar

King RG, Levine R. 1993b. Finance, entrepeneurship and growth: theory and evidence. *Journal of Monetary Economics* **32**: No. 3, December, 513–542.

Web of Science® | Google Scholar

King RG, Levine R. 1994. Capital fundamentalism, economic development, and economic growth. *Carnegie-Rochester Conference Series on Public Policy* **40**: June, 259–292.

Web of Science® | Google Scholar

Kmenta J. 1967. On estimation of the CES production function. *International Economic Review* **8**: 180–189.

Google Scholar

Knight ME, Loayza N, Villanueva D. 1993. Testing the neo-classical theory of economic growth. *IMF Staff Papers* **40**: No. 3, September, 512–541.

Web of Science® | Google Scholar

Knowles S, Owen PD. 1995. Health capital and cross-country variation in income per capita in the Mankiw–Romer-Weil model. *Economics Letters* **48**: 1, April, 99–106.

Web of Science® | Google Scholar

Landau D. 1986. Government expenditure and economic growth: a cross-country study. *Southern Economic Journal* **49**: January, 783–792.

Web of Science® | Google Scholar

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Leamer EE. 1978. *Specification searches: Ad Hoc Inference with Nonexperimental Data*. Wiley: New York.

Google Scholar

Lee K, Pesaran MH, Smith R. 1997. Growth and convergence in a multi-country empirical stochastic solow model. *Journal of Applied Econometrics* **12**: 357–392.

Web of Science® Google Scholar

Levine R. 1992. Financial intermediary services and growth. *Journal of the Japanese and International Economies* **6**: No. 4, December, 383–405.

Web of Science® Google Scholar

Lucas RE, Jr. 1988. On the mechanics of economic development. *Journal of Monetary Economics* **22**: No. 1, July, 3–42.

Web of Science® Google Scholar

Mahmud SF. 1997. Money in production function: some further results. *Pakistan Economic and Social Review* **35**(1): 1–9.

Google Scholar

Mankiw NG. 1995. The growth of nations. *Brookings Papers on Economic Activity*. No. 1: 275–326.

Web of Science® Google Scholar

Mankiw NG, Romer D, Weil DN. 1992. A contribution to the empirics of economic growth. *Quarterly Journal of Economics* **107**: No. 2, 407–437.

Web of Science® Google Scholar

McKinnon RI. 1973. *Money and capital in economic development*. Brookings Institute: Washington, DC

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Morisset J. 1993. Does financial liberalisation really improve private investment in developing countries. *Journal of Development Economics* **40**: 1, February, 133–150.

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Moulton BR. 1986. Random group effects and the precision of regression estimates. *Journal of Econometrics* **32**: 385–397.

Web of Science® | Google Scholar

Moulton BR. 1987. Diagnostics for group effects in regression analysis. *Journal of Business and Economics Statistics* **5**: 275–282.

Web of Science® | Google Scholar

Murinde V, Agung J, Mullineux AW. 2001. Patterns of corporate financing and financial system convergence in Europe. Review of International Economics (forthcoming).

Google Scholar

Nguyen HV. 1986. Money in the aggregate production function: reexamination and further evidence. *Journal of Money, Credit, and Banking* **18**(2): 141–151.

Web of Science® | Google Scholar

Palley TI. 1996. Old wine for new bottles: putting old growth theory back in the new. *Australian Economic Papers* **35**(67): 250–262.

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Pecorino P. 1995. Inflation, human capital accumulation and long-run growth. *Journal of Macroeconomics* **17**(3): 533–542.

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Romer P. 1986. Increasing returns and long-run growth. *Journal of Political Economy* **94**: No. 5, 1002–1037.

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Romer PM. 1989. Human capital and growth: theory and evidence. NBER Working Paper, No. 3173, November, NBER: Cambridge, MA.

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Roubini N, Sala-i-Martin X. 1992. Financial repression and economic growth. *Journal of Development Economics* **39**: 1, July, 5–30.

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Saint-Paul G. 1992. Technological choice, financial markets and economic development. *European Economic Review* **36**: 763–781.

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Senhadji A. 2000. Sources of economic growth: an extensive growth accounting exercise. *IMF Staff Papers* **47**: No. 1, 129–157.

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Shaw ES. 1973. *Financial Deepening in Economic Development*. Oxford University Press: New York.

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Short ED. 1979. A new look at real money balances as a variable in the production function. *Journal of Money, Credit and Banking* **11**: No. 3, August, 326–339.

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Solow RM. 1956. A contribution to the theory of economic growth. *Quarterly Journal of Economics* **70**: No. 1, February, 65–94.

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Temple J. 1999. The new growth evidence. *Journal of Economic Literature* **37**: No. 1, March, 112–156.

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Toyoda T. 1974. Use of the Chow test under heteroskedasticity. *Econometrica* **42**: 3, May, 601–608.

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