quality of labour. Evidence suggests that development of human capital is highly correlated with growth rates in developing countries.[14]

Although qualitative differences in human capital are difficult to measure, various proxies are used to establish this correlation. Mankiw, et al. augment the basic Solow neoclassical model by using the secondary school enrollment rate as a proxy for human capital. They find it to be highly significant. The entire augmented model explains most of the variation in growth rates between countries.[15] Using the literacy rate as a proxy, Azariadis and Drazen show that this variable is always positively and significantly correlated with GDP per capita growth over the 1960-80 period.[16] Once human capital hits a certain minimum "critical mass," returns to scale can rise significantly. This explains why some economies achieve a higher steady state growth path than other economies and why incomes per capita between countries may not converge to the degree

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[14]In addition, education tends to be one of the main variables which lower birth rates and thus population growth. For a good review of population and development issues, see Nancy Birdsall, "Population Growth," *Finance and Development* (September 1984), 10-14, reprinted in Gerald M. Meier, *Leading Issues in Economic Development*, 5th Ed. (New York: Oxford University Press, 1989), 436-40.

[15]N. Gregory Mankiw, et al. "A Contribution to the Empirics of Economic Growth," *Quarterly Journal of Economics*, Vol. 107, No. 429 (May 1992), 407-37.

[16]Costas Azariadis and Allan Drazen, "Threshold Externalities in Economic Development," *Quarterly Journal of Economics*, Vol. 105, No. 2 (May 1990), 501-26. The authors argue that since the standard neoclassical model's prediction of per capita income convergence has not been borne out by empirical observation, it must be augmented. They elaborate on the standard neoclassical model by adding the idea of "threshold externalities in the accumulation of human capital," which are increasing social returns to scale which become particularly pronounced when the level of human capital hits some critical mass. The authors note, however, "that a relatively highly qualified labor force seems to be a necessary -- not a sufficient -- condition for rapid growth. Many countries in our sample possess a highly qualified labour force, but have apparently failed to put it to good use." (p. 524). The importance placed on the <u>type</u> of human capital development is also relevant to a discussion of long-term productivity growth in Canada. Although Canada spends a higher proportion of GDP on education than any other G-7 country, and has the highest participation rate within the OECD with regard to post-secondary education, total factor productivity growth is well below the OECD average. This contrast has led an increasing number of observers to question whether Canada's educational system is adequately targeted on the human resource needs of the market-place.