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ECON 4350 – Growth and Investment – Fall 2011
Problem Set 4 (seminar 4) – October 31

Question 1

How can financial development affect economic growth? (Hint: Look at a closed one-good economy of the "*AK*"-type with a stationary population. Suppose that $\dot{K}(t) = J(t) - \delta K(t)$, with J as gross investments, K stock of real capital, and δ is the rate of depreciation. We have a financial sector (financial intermediaries or banks) that transforms deposits ("savings") into loans to finance investments, while only a fraction of the deposits is channeled to investments. Derive the growth rate in this economy and discuss how finacial development mighrt affect growth.)

Question 2

In an article in "Dagens Næringsliv" last Saturday, Kalle Moene discusses a problem related to "The Paradox of Productivity". Related to that issue you are goint to analyze future growth prospects for the following economy:

A closed economy with a populaion (*N*) growing at a rate *n*. There are three groups of people – the labour force working in the private sector (N_p), the labour force in the public sector (N_O) and a "passive" broup (L). Suppose that $L(t) = \lambda(t)N(t)$, with $\lambda \in (0,1) \ \forall t$, with $\lambda(t)$ an exogenous and growing time path. Private sector produces a composite good $X(t)$ at *t* (the numeraire), that can be used both for consumption and capital accumulation. The production function is of the Cobb-Gdouglas type with a disembodied technical progress ε, so that $X(t) = Ae^{\varepsilon t}N_p(t)^{\alpha}K(t)^{1-\alpha}$, with K as the stock of real , A and α positive constants, with α less than one. Total wage bill in the private sector is $wN_p = \alpha X$, where w is the real wage, whereas capital income is $\pi = (1-\alpha)X$. Only capitalists are saving, with capital accumulation as given by $\dot{K}(t) = (1-\gamma(t))\cdot\pi(t)$, with γ an exogenous share of capital income used for private consumption. Also, only wage earners in the private sector pay taxes, in a total amount equal to T, while all disposable income to wage earnes (in addition to the capitalists' consumption) is used for consumption; hence we have total consumption as given by $C = wN_p - T + wN_O + \gamma\pi$. At last we have the public sector, undertaking the following tasks: Collecting taxes (T), produce a publicly provided good $Y = aN_O$, spending equal to wage bill in the public sector wN_O, so

that public budget is in balance at each point in time, while providing a share b of the publicly provided good to each of the L persons, so that $Y = bL$.
Try to derive and evaluate the growth prospects in theis economy!

Question 3

Explain why a more productive innovation technology within the Aghion-Howitt version of Schumpeter's idea of "creative destruction" will affect the expected growth rate in a positive direction.