

Effect of Tax Cuts on Growth Rates

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1 No Labour

This section derives the model of endogenous growth where there is no labour.

1.1 Equilibrium Conditions

We have 4 equilibrium conditions

$$\frac{1 + g_{t+1}}{c_t} = \frac{1}{c_{t+1}} \beta(r_{t+1}(1 - \tau_k) + 1 - \delta) \quad (1)$$

$$y_t = c_t + k_{t+1} - k_t(1 - \delta) \quad (2)$$

$$r_t = \left(\frac{k_t}{A_t}\right)^{\alpha-1} \alpha^2 \quad (3)$$

$$y_t = A^{1-\alpha} k_t^\alpha \quad (4)$$

$$g_t = (\gamma - 1) \lambda (\sigma \lambda (\alpha - 1) \left(\frac{k_t}{A_t}\right)^\alpha)^{\frac{\sigma}{1-\sigma}} \quad (5)$$

1 is the household euler equation, 2 is the goods market clearing equation, 3 is the capital market clearing equation, 4 is the aggregate production function and 5 is the equilibrium growth rate. Since 5 is determined directly by capital stock k_t we would expect that a reduction in τ_k will increase capital stock in the economy and hence increase the growth rate.

1.2 Model Results

In this model, a tax cut on capital unambiguously increases growth rate/innovation rate. The equation which determines this is "no arbitrage" condition on innovation expenditure which has the capital tax rate directly featured in it.

