

Budget Deficit, Life Expectancy, and Declining Population Growth in an Endogenous Growth Model with Public Capital

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Abstract

This study constructs an endogenous growth model with public capital and public debt in a finite horizon economy. Most previous studies analyzing the effects of extension of life expectancy adopt an endogenous growth model with public capital against the backdrop of an aging population. Referencing these works, our model incorporates issues of public debt because some previous studies assume the balanced budget rule. We show that debt-financed public investment decreases public capital, possibly disrupting economic growth, particularly if life expectancy is high. Next, we conduct a numerical simulation and demonstrate that a growth-maximizing tax rate decreases with an expanding fiscal deficit. We then extend our model to examine the effects of a declining birth rate and clarify that an extension of life expectancy reduces the public debt-GDP ratio, while a declining birth rate increases it. The model also shows that a declining birth rate does not affect the economy when public investment is fully financed by fiscal deficit. In conclusion, the effects of life expectancy are more pronounced even when accompanied by a significantly declining birth rate.

Keywords: Birthrate; Life Expectancy; Public Investment; Public Debt

JEL Classification: E62; H62; J13

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