# Endogenous Growth and External Balance in a Small Open Economy


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This paper puts forward an intertemporal model of a small open economy which allows for the simultaneous analysis of the determination of endogenous growth and external balance in the presence of perfect capital mobility.

The model assumes infinitely lived overlapping generations of households, that maximize lifetime utility from consumption, and competitive firms that maximize their net present value, in the presence of adjustment costs for investment. Domestic securities are assumed perfect substitutes for foreign securities and the economy is assumed small, in the sense of being a price taker in international goods and assets markets. The endogenous growth rate is determined solely as a function of the determinants of domestic investment, such as the world real interest rate, the technology of domestic production and adjustment costs for investment, and is independent of the preferences of consumers and budgetary policies. Given the domestic growth and investment rates, the preferences of consumers and budgetary policies determine the domestic savings rate. The current account and external balance are determined by the difference between domestic savings and investment.

Because there is an investment schedule which is independent of the savings schedule, the model determines both the growth rate, as a function of the investment rate, and the current account, as the difference between domestic savings and investment. We demonstrate that under perfect capital mobility, both adjustment costs for investment and overlapping generations are sufficient conditions for the existence of a balanced growth path.

The model is simple and analytically tractable, and does not require the knife edge conditions that characterise representative household endogenous growth models of a small open economy under perfect capital mobility.


In representative household endogenous growth models, such as the model of Turnovsky (1996 a,b), a balanced growth path exists for a small open economy only if the world real interest rate is equal to the pure rate of time preference plus the growth rate of domestic output. This is a crucial knife edge condition. Otherwise domestic output and domestic consumption grow at different rates. This problem is usually addressed by either postulating capital market imperfections (Barro, Mankiw and Sala-i-Martin (1995), Turnovsky (1997)), or by postulating an endogenous labor supply (Turnovsky 2000). This knife edge condition is not necessary in the endogenous growth overlapping generations model of a small open economy presented in this paper.

The overlapping generations framework utilized in this paper provides an alternative to the representative household endogenous growth models of a small open economy utilised in the literature. The model is based on intertemporal optimisation on the part of both firms and households, and allows for the simultaneous determination of the endogenous growth rate, current account dynamics and external balance.

The model generates firm predictions which are in principle testable. Because there is an investment schedule which is independent of the savings schedule, the model determines both the growth rate, as a function of the investment rate, and the current account, as the difference between domestic savings and investment. We demonstrate that both adjustment costs for investment and overlapping generations are sufficient conditions for a balanced growth path with external balance to exist in the presence of perfect capital mobility.

We use the model to analyse the effects of openess, as well as the effects of shocks to the world real interest rate, domestic productivity shocks and changes in domestic budgetary policy.

It is shown that an economy that moves from autarky to openess, will end up with a higher growth rate and a negative net external position if the world real interest rate is lower than its autarky equilibrium real interest rate. In the opposite case, the economy will end up with a lower growth rate than under autarky and a positive net external position.

A rise in the world real interest rate results in a fall of the investment rate and the endogenous growth rate and an improvement in the net external position of the economy. The current account improves, because of a fall of domestic investment relative to savings, and this improvement is sustained as the economy gradually converges to a new long run equilibrium with higher net external assets relative to output.

A rise in the aggregate productivity of domestic capital, i.e a positive supply shock, causes a rise in the endogenous growth rate but also a deterioration in the net external position. This is because the higher investment leads to a worsening of the current account, which leads to convergence to a new long run equilibrium with lower net external assets relative to output.

Population growth, in the form of the entry rate of new generations, does not affect the endogenous growth rate, but has a negative impact on both external balance and steady state consumption. Population aging, in the form of a permanent reduction of the rate of growth of new households has the opposite effect. It causes a temporary reduction in private consumption, an improvement in the current account and a gradual improvement in the net external position of the economy.

We finally analyse budgetary policies. A tax financed rise in the government consumption to output ratio does not affect the growth rate, but it causes a deterioration in the current account, as the fall in private consumption does not fully compensate for the rise in government consumption. This is because Ricardian equivalence does not hold in this overlapping generations model. The deterioration in the current account leads to convergence to a new long run equilibrium, with lower net external assets relative to output. On the other hand, a one off increase in the government debt to output ratio has similar effects. It does not affect the growth rate, but it causes a deterioration in the current account, as current generations increase consumption relative to output, because Ricardian equivalence does not hold. Again, the deterioration in the current account leads to convergence to a new long run equilibrium, with lower net external assets relative to output.

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