

Treatise on public debt

Alfred Greiner

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Abstract

This contribution summarizes insights as regards the effects of public debt in the form of a treatise.

1. Public debt and real economic evolution are both endogenous variables determined by the underlying economic policy and by structural parameters

2. Sustainability

2.1 The inter-temporal budget constraint of the government holds if the level of outstanding public debt equals the present value of future primary surpluses at any point in time.

2.2 The inter-temporal budget constraint of the government must hold for any feasible allocation.

2.3 The inter-temporal budget constraint of the government implies that a rise in public debt goes along with an equivalent rise of future primary surpluses in present value terms, unless the GDP growth rate exceeds the interest rate.

2.4 An increase of the primary surplus can be achieved through

- (i) a collection (reduction) of non-distortionary taxes (transfer payments),
- (ii) higher distortionary taxes,
- (iii) a reduction of public spending.

2.5 The central bank can support the government to fulfill the inter-temporal budget constraint by raising the nominal money supply.

*Department of Business Administration and Economics, Bielefeld University, P.O. Box 100131, 33501 Bielefeld, Germany, agreiner@wiwi.uni-bielefeld.de

2.6 There exists an upper bound for the primary surplus to GDP ratio.

2.7 If the GDP growth rate falls short of the interest rate, a permanently rising debt to GDP ratio is not sustainable since this would require permanently rising primary surpluses relative to GDP which, however, is excluded (see 2.6).

2.8 If the GDP growth rate exceeds the interest rate on public debt, the government can grow out of debt, i.e. any positive primary surplus growing at the same rate as the GDP guarantees sustainability.

3. Effects of a sustainable public debt policy on the real economy

3.1 If the government raises (reduces) lump-sum taxes (transfers) as the debt to GDP ratio rises, public debt is neutral, i.e. the Ricardo equivalence theorem holds.

3.2 A rise of distortionary taxes or a decline of productive public spending shifts resources from investment to consumption, thus, reducing long-run economic growth, implying that economies with higher debt to GDP ratios experience lower growth.

3.3 Reducing unproductive public spending to achieve higher primary surpluses implies that economies with larger debt to GDP ratios have lower long-run growth because a larger fraction of savings is used for unproductive debt services, giving a lower (shadow) price of wealth and lower labour supply.

3.4 An underdevelopment trap can arise implying that there are two saddle point stable long-run growth paths, one with high growth and a low debt to GDP ratio, the other with low growth and a high debt to GDP ratio. If the initial debt to GDP ratio falls short of a certain critical value, the economy converges to the high growth path if it exceeds the critical value it converges to the low growth path.

3.5 A rise of the nominal money supply reduces the debt to GDP ratio, raises real economic growth and increases the rate of inflation. But, if the nominal money growth rate exceeds a certain threshold sustained growth is not feasible or only when the government is a creditor.

3.6 In case of unemployment due to wage rigidities as a result of labour unions setting the wage rate, public debt is neutral and does not affect the allocation of resources. In this case, deficit financed productive public investment can reduce unemployment, raise economic growth while the debt to GDP ratio rises.

3.7 With labour market rigidities, an underdevelopment trap can arise with two balanced growths path where one goes along with high growth and the other is associated

with low growth, independent of the debt policy of the government.

3.8 The emergence of an underdevelopment trap in 3.7 can be avoided by making the labour market more flexible, i.e. by raising the reaction of wages to the level of unemployment.

4. Stability

4.1 Stability is given if the economy converges to a balanced growth path such that the debt to GDP ratio does not become explosive.

4.2 The reaction of the primary surplus to higher public debt must be sufficiently large to assure stability of the economy. Otherwise, the debt to GDP ratio diverges.

4.3 If the reaction of the primary surplus is a linear function of public debt, stability is given if and only if the reaction coefficient exceeds the difference between the net interest rate on public debt and the GDP growth rate.

4.4 For a certain critical value of the reaction coefficient, a Hopf bifurcation can occur that gives rise to stable limit cycles. This implies that the debt to GDP ratio and the growth rates of all other variables are permanently oscillating around their balanced growth path values.

4.5 A balanced government budget or a slight deficit, where public debt grows less than GDP, imply stability of the economy.

5. Consolidation Policies

5.1 With flexible (labour) markets a reduction of the debt to GDP ratio raises long-run growth and welfare.

5.2 The highest long-run growth rate is achieved for a zero debt to GDP ratio, neglecting the possibility that the government is a creditor.

5.3. In a growing economy, the debt to GDP ratio can be reduced by running a balanced budget or by a slight deficit where the public debt grows but less than GDP.

5.4 A slight deficit can lead to higher welfare than a balanced budget, both in case of welfare enhancing public spending and when public spending does not affect welfare.

References

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