Government Spending and the Taylor Principle

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Introduction

The general question: Does government size and composition matter for monetary policy?

Here: Steady state government purchases and sufficiency of the Taylor principle.

Background:

- Mankiw (2000): Accounting for hand-to-mouth behaviour is necessary in order to understand the effects of fiscal policy.
- Galí, López-Salido and Vallés (2004) and Bilbiie (2005): When sufficiently many households live hand to mouth, the Taylor principle will not be a useful advice for monetary policy.
- Textbook Keynesian idea: Automatic stabilisation.

Does government size reduce the destabilising influence of hand to mouth households?
Main findings

The effect of government size on the scope for indeterminacy depends on the composition of government purchases.

With CRRA preferences, conventional automatic stabilisation will only lead toward determinacy if government purchases and private consumption are Edgeworth substitutes.
The model


Infinitely-lived households of 2 types

- Ricardian \((1 - \lambda)\),
- and
- Rule-of-thumb \((\lambda)\).

Preferences:

\[
U^i (C^i_t, N^i_t) = \frac{(C^i_t + \xi G)^{(1-\sigma)}}{1-\sigma} - \frac{N^{i1+\phi}_t}{1+\phi} + f(G)
\]

Ricardian households hold capital and rent it out to firms.

Wages are identical across consumer types.

Non-competitive labour market. Unions set wages, firms determine hours. Both consumer types work equally much.
The model

Imperfect competition and staggered pricing (Calvo)

Fiscal policy:

\[ P_t T_t + R_t^{-1} B_{t+1} = B_t + P_t G \]

\[ t_t = \phi_b b_t \]

or

\[ t_t = \phi_b b_t + \gamma_g y_t \]

Monetary policy:

\[ r_t = \phi_\pi \pi_t \]
Key parameter values

Price stickiness
\[ \theta = 0.75 \]

The inverse Frisch elasticity
\[ \varphi = 0.2 \]

Interest rate rule
\[ \phi_\pi = 1.001 \]

Tax rule
\[ \phi_b = 0.3 \]
Indeterminacy and government spending when the Taylor principle is met
Government spending and the required reaction to inflation

\[ \lambda = 0.5 \]
\[ \lambda = 0.56 \]
\[ \lambda = 0.62 \]
Why does government size lead toward indeterminacy?

Without government spending:

Rule of thumb behaviour leads to indeterminacy since real labour income is increased by a sunspot rise in activity.

With government spending:

The rise in gross labour income is propagated by government size.
Why does government size lead toward indeterminacy?

Steady state effects of government spending:

- Wealth effect on consumption and labour
- Unchanged real wages and capital labour ratio

CRRA preferences imply constant elasticity of real wages with respect to consumption

\[ w_t - p_t = \sigma c_t + \psi n_t \]

\[ w_t - p_t = \sigma [\lambda c^r_t - (1 - \lambda) E_t \sum_{i=0}^{\infty} (r_{t+i} - \pi_{t+i+1})] + \psi n_t \]

Hence a given (level) increase in current labour income has a stronger effect on real wages if consumption is low at the outset.

By crowding out steady state consumption, government spending propagates the income effect in non-Ricardian labour supply.
Government spending and indeterminacy when the Taylor principle is met and taxes are proportional to output
Non-separability between private consumption and public expenditure

\[ c_t = E_t c_{t+1} - \frac{\xi \gamma_g + \gamma_c}{\sigma \gamma_c} (r_t - E_t \pi_{t+1}) \]

\[ w_t - p_t = \sigma \frac{\gamma_c}{\xi \gamma_g + \gamma_c} c_t + \psi n_t \]

Government consumption that substitutes for (complements) private consumption reduces (increases) households’ relative risk aversion.
Government spending and indeterminacy with proportional taxes and non-separability
Government spending, proportional taxes and non-separability. The required response to inflation.
Conclusion

The fact that taxes stabilise disposable income, is not sufficient for government size to remove the destabilising influence of hand to mouth behaviour.

Composition matters. Government purchases that are Edgeworth substitutes for private consumption reduce the scope for indeterminacy. Government purchases that are complements have the opposite effect.

When evaluating the stabilising properties of historical interest rate rules in the light of asset market participation, the amount and composition of government purchases should be taken into account.
References


