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The household fallacy☆

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HIGHLIGHTS

- Governments do not need to raise taxes or lower spending to balance budgets.
- They may instead set tax rates and expenditures independently of economic conditions.
- A policy of this kind need not lead to explosive debt dynamics.
- Austerity is not required to maintain government solvency.

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ABSTRACT

We refer to the idea that government must 'tighten its belt' as a necessary policy response to higher indebtedness as the *household fallacy*. We provide a reason to be skeptical of this claim that holds even if the economy always operates at full employment and all markets clear. Our argument rests on the fact that, in an overlapping-generations (OLG) model, changes in government debt cause changes in the real interest rate that redistribute the burden of repayment across generations. We do not rely on the assumption that the equilibrium is dynamically inefficient, and our argument holds in a version of the OLG model where the real interest rate is always positive.

In the midst of the Great Recession, John Boehner, former speaker of the U.S. House of Representatives, stated that *it's time for government to tighten their belts and show the American people that we 'get it'* (CBS News' Face the Nation, March 2, 2009). This argument has popular appeal with the average person who is familiar with the concept of budgeting in his or her everyday life. But the idea that government too must 'tighten its belt' as a necessary policy response to higher indebtedness is what we call the *household fallacy*.

The 'belt tightening' view has been widely criticized by a group of journalists and academic economists, most notably Wolf (2013) and Krugman (2015). Wolf and Krugman used arguments based on Keynesian economics to claim that austerity, reducing government spending or increasing taxes, was the wrong policy response to the Great Recession.[1] They argued that the level of employment is often inefficiently low, and that fiscal stimulus in a recession can reduce inefficient levels of unemployment and generate sufficient new tax revenues to pay for itself.

We provide a different reason to be skeptical of the claim that fiscal deficits must be actively adjusted to repay outstanding debt. Our results hold even if the economy always operates at full employment and all markets clear. They rest on the fact that, in an overlapping-generations (OLG) model, changes in government debt cause changes in the real interest rate that redistribute the burden of repayment across generations. The interest rate adjustments that generate this redistribution arise under standard assumptions about utility and endowments but are assumed away in the workhorse representative agent (RA) model. Our argument

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[1] For an updated version of the Keynesian argument see Eggertsson and Krugman (2012) and for an alternative reinterpretation of The General Theory with different policy implications, see Farmer (2012).

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does not rely on the assumption that the equilibrium is dynamically inefficient and it holds in a version of the OLG model where the real interest rate is always positive.

1. Why government debt is different: Debunking the fallacy

Governments are monopoly suppliers of risk-free treasury securities. In contrast to households, which are assumed to be price-takers, government debt-management policies have first-order implications for the interest rate. We show that an increase in government debt can, under plausible parameterizations of the economy, cause a drop in the *real* interest rate. As a consequence, the fiscal authority can run an *active* policy that ignores the level of debt when determining the path of the primary fiscal deficit.[2] To make this point formally, we use a two-generation overlapping generations model. The key to our result is that the agents who hold government debt are distinct from those who repay it through higher taxes.[3]

1.1. The supply of government bonds

Consider a government which purchases g_t units of a consumption good in period t, financed from lump-sum taxation τ_t and from the sale of one period pure discount bonds. A bond issued at date t is a claim on consumption goods at date $t+1$ and we use the symbol b_{t+1} to denote the number of these bonds issued at date t. Let R_{t+1} be the real interest factor from t to $t+1$ and let $1/R_{t+1}$ denote the date t price of the bond. The one-period government budget constraint is given by the expression,

$$\frac{b_{t+1}}{R_{t+1}} + \tau_t = b_t + g_t, \quad \text{for all } t. \tag{1}$$

Let d_t, defined as,

$$d_t \equiv g_t - \tau_t, \tag{2}$$

be the primary fiscal deficit, with negative values of d_t denoting a surplus. Using this definition, we may rewrite Eq. (1) governing the accumulation of government debt as,

$$\forall t: \quad b_{t+1} = R_{t+1} \cdot (b_t + d_t). \tag{3}$$

1.2. The demand for government bonds

Every period, the young receive an after tax endowment of 1 unit of the consumption good and the old receive an after tax endowment of $w^2 \geq 0$ units of the consumption good.[4] Using the convention that a superscript denotes the period of life and a subscript denotes calendar time, the saving of the young, s_t^1, is related to their consumption, c_t^1, by the identity,

$$s_t^1 \equiv 1 - c_t^1,$$

and consumption in each period of life solves the following maximization problem,

$$\max_{c_t^1,\, c_{t+1}^2} \frac{\left(c_t^1\right)^\alpha + \beta\left(c_{t+1}^2\right)^\alpha - (1+\beta)}{\alpha},$$

$$\text{s.t.: } c_t^1 + \frac{c_{t+1}^2}{R_{t+1}} = 1 + \frac{w^2}{R_{t+1}}.$$

Here, $\beta > 0$ and $\alpha \leq 1$ are parameters, with the elasticity of intertemporal substitution given by $\eta \equiv 1/(1-\alpha)$ and log-utility corresponding to $\alpha \to 0$. This problem has a closed-form solution for consumption, with the implied savings function of the young equal to,

$$s^1(R_{t+1}) \equiv s_t^1 = 1 - \frac{R_{t+1}^{1-\eta} + w^2 R_{t+1}^{-\eta}}{R_{t+1}^{1-\eta} + \beta^\eta}. \tag{4}$$

Since the old don't save, aggregate savings are equal to the savings of the young: $S(R_{t+1}) \equiv s^1(R_{t+1})$. For bond markets to clear, aggregate savings must equal the existing supply of government bonds b_t plus a stock of new bonds issued (or retired) to cover the primary deficit d_t (or surplus), i.e.

$$\forall t: \quad S(R_{t+1}) = b_t + d_t. \tag{5}$$

Crucially, Eq. (5) establishes that whenever bond demand is less than infinitely elastic, i.e. as long as $S(\cdot)$ is not vertical, the market clearing real interest rate R_{t+1} will depend on the stock of debt $b_t + d_t$ which the government has to refinance.

1.3. The real rate as an automatic stabilizer

Our full model comprises Eqs. (3) and (5) with initial condition $b_1 = \bar{b}_1$. In what follows we limit attention to dynamics around steady states that satisfy the following two conditions.

Condition 1 (*Active Fiscal Policy*)**.** *The primary fiscal deficit d_t is constant and negative*

$$\forall t: d_t \equiv d < 0.$$

We further impose

Condition 2 (*Dynamic Efficiency*)**.** *There exists a date t and a number $\epsilon > 0$, such that*

$$\forall s \geq t: R_s > 1 + \epsilon.$$

Condition 1 is meant to characterize fiscal policymakers, who, to paraphrase John Boehner, 'don't get it'. Specifically, they fail to adjust the size of the primary deficit d in response to changes in economic conditions and the level of debt outstanding. We focus on this case to demonstrate that, contrary to those who argue for austerity to counteract a recession, an unresponsive fiscal policy need not result in explosive debt dynamics. In line with post-war US experience, we assume that d is negative and hence the treasury runs a primary surplus.[5]

Condition 2 requires that the equilibrium real rate eventually becomes strictly positive. We make this assumption to rule out models with a negative interest rate in which the equilibrium is dynamically inefficient. It is well known that fiscal policy can be active in this case as a negative interest rate erodes the value of government debt.

Iterating on Eq. (3), and imposing Condition 1 yields,

$$b_1 = \sum_{t=1}^{+\infty} \left(\frac{-d}{\prod_{\tau=2}^{t} R_\tau} \right) + \lim_{s \to +\infty} \frac{b_s}{\prod_{\tau=2}^{s} R_\tau}.$$

[2] Leeper (1991) refers to a fiscal policy as *active* if taxation and expenditure are independent of the path of real interest rates.

[3] The two-period overlapping generations model has been extensively used in the literature. See, for example, Gale (1973), Cass et al. (1979), Balasko and Shell (1981), Grandmont (1985) and Geanakoplos and Polemarchakis (1991). Gourieroux et al. (1982) and Azariadis and Guesnerie (1986) study stochastic extensions, while Diamond (1965) replaces government debt with capital as the sole investment opportunity. Farmer and Zabczyk (2018) show that the same mechanism that allows fiscal policy to be 'active' in the model is also present in a carefully calibrated setup featuring 72 cohorts.

[4] Taxes are covered in more detail in Section A of a Technical Appendix that is available online.

[5] Cochrane (2018) shows that the US ran a primary surplus of approximately 2% of potential GDP in almost every year prior to the Great Recession.