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The trade-off between public debt reduction and automatic stabilisation ☆

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ABSTRACT

This paper addresses the basic tradeoff between the stabilisation properties of budgets and the sustainability of long run fiscal positions. The modeling framework consists of a simple non-monetary endowment economy with overlapping generations, extended to account for stochastic endowments and borrowing constrained households. A benign government chooses the optimal degree of responsiveness of net taxes to individual incomes and an optimal measure of long-run public debt in order to smooth households' consumption across states of nature. In the presence of a deficit constraint for the government, the results point to the desire for lower debt levels than those currently prevailing in European Union countries in order to enable a more effective hedging of personal income uncertainty by means of more active automatic fiscal stabilisers. The optimal degree of automatic stabilisation and debt reduction is conditional on the characteristics of economic cycles.

1. Introduction

A substantial buildup of public debt can erode the scope for effective counter-cyclical fiscal policy stabilisation. The experience of several advanced economies over the last decades has indicated that moving to a more sustainable fiscal policy — for example, through reducing public debt levels — may help improve the ability of fiscal policy to attenuate the effects of economic fluctuations. From a political economy standpoint, however, it may be difficult to find appetite among current taxpayers (and voters) to shoulder the burden of moving to a more sustainable fiscal position, as while a policy of debt reduction would provide a permanent improvement in fiscal stabilisation against income shortfalls, the excess burden of paying down accumulated government debt would be temporary, falling on current taxpayers. In this respect, the pursuit of a credible yet responsive fiscal policy framework can benefit from explicit policy rules, such as deficit limits. This can be illustrated by the experience of countries within the European Union over the last decade, where a strong correlation between the reduction in general government gross debt ratios in GDP and the estimated degree of automatic stabilisation (see Fig. 1) suggests that more sustainable fiscal positions yield scope for enhanced budgetary responsiveness.

In this paper, we build a simple model to analyse under what conditions current taxpayers would be willing to unilaterally shoulder a higher tax burden to finance public debt reduction in order to enhance the functioning of automatic stabilisers for themselves and subsequent generations in the absence of altruism.[1] The analysis is based on a dynastic overlapping generations framework `a la Weil (1989) applied to a simple endowment economy with a household and government sector, along with incomplete capital markets which prevent consumption smoothing in the presence of stochastic shocks to income.

The model indicates that myopic fiscal policymaking that considers only the welfare of the current generation of taxpayers leaves plenty of room for self-insurance motivated debt reduction. Subjecting fiscal authorities to borrowing limits of some sort induces a tradeoff, whereby households with a self-insurance motive can only obtain higher automatic budgetary stabilisation by paying higher taxes. This, in turn, allows for debt reduction to obtain enhanced automatic stabilisation in the face of income shortfalls.[2] The current generation of taxpayers, even in the absence of altruistic links, can be shown to optimally choose to shoulder a state-contingent excess tax designed to

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[1] This argument is strengthened with population ageing pressures, a setting in which many industrialised countries currently stand. For the analysis of a related tradeoff between public debt reduction and price variability see Annicchiarico (2007).

[2] Such limits on public borrowing could be either *formal*, via explicit deficit limits or other similar rules governing public finances or *informal* via, for instance, credit rationing of international financial markets (in the vein of Bertola and Drazen, 1993, and Mannasse, 1996).

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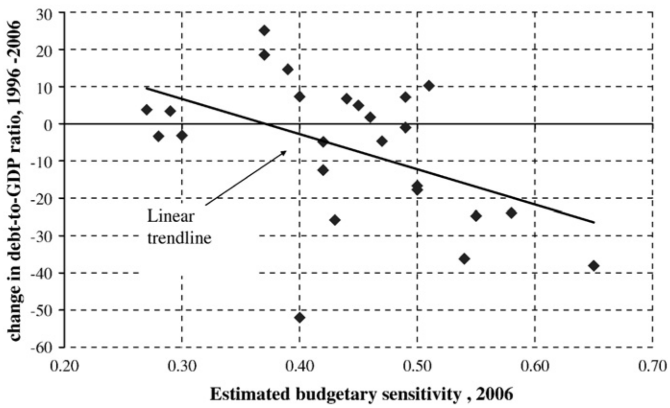

Fig. 1. Debt reduction and budgetary sensitivities in EU countries.

reduce public debt levels and thereby determine the level at which debt per capita should be stabilised for itself and future generations of taxpayers. The magnitude of such public debt reduction hinges on the characteristics of shocks hitting the economy, and in particular heterogeneity in the probability distribution for national income leads to large differences in desired long-run debt levels. In general, a higher amplitude of exogenous national shocks implies a lower optimal public debt level to provide scope for adequate consumption stabilisation. This may help explain the pace at which debt has been reduced in the course of the last decade across various European Union countries.

The finding that debt reduction can give room for enhanced automatic stabilisation — and thereby help households to smooth consumption in the face of income shocks — contrasts with the literature which focuses on the liquidity-enhancing impact of government transfers on households in a closed economy with idiosyncratic shocks to income (see, for instance, Flodén, 2001, Aiyagari and McGrattan, 1998, and Woodford, 1990). The key difference lies both in the nature of uninsurable risk individual-specific risk versus aggregate risk and the treatment of fiscal sustainability issues. Taking into account the latter can imply that automatic stabilisation and debt are no longer perfect substitutes as tools to insure households against income shortfalls. The tradeoff we analyse would be consistent with the empirical findings of Gali and Perotti (2003) in which it is argued that following the fiscal consolidations of the 1990s, most industrialised countries began to experience a decline or at least a deceleration in their debt/GDP ratios in conjunction with a trend towards more countercyclical fiscal policies. [3]

The rest of the paper is organised as follows. In Section 2 we present the model. Then, we move to discuss the fiscal policy problem which the government solves optimally — first in the absence of any formal deficit limit in Section 3, then in the case where deficit limits apply in Section 4. In Section 5 we briefly discuss an application of our theoretical framework to European Union countries in the context of the Stability and Growth Pact. Section 6 presents some concluding remarks.

2. The model

2.1. The native household problem

An endowment economy is originally populated by one infinitely lived native household, and receives a steady inflow of newcomers, the conceptual analog of immigrants in Weil (1989), from next period onwards. Each newcomer is identical to the native household in longevity, measure, preferences and initial wealth. Households are endowed with the same amount of a non-durable consumption good at the start of each period, which fluctuates randomly around a stationary level y^*. Resident population growth is denoted by n, which is also equal to the growth rate of output given the absence of capital and productivity assumptions. Time is discrete and at the beginning of each period the endowment of each household receives the same aggregative shocks. The absence of idiosyncratic shocks to household endowments implies a common self-insurance motive, obviating any need for a domestic capital market or risk pooling. Accordingly, transactions in financial claims are assumed to be exogenous, taking place outside the boundaries of the economy. This implies we will be assuming a small open economy. Following Krusell and Smith (1998), we impose an outright non-negative financial wealth condition which, coupled with a government ability under certain conditions to borrow on behalf of its citizens, lends a key role to government as a financial intermediary.

Preferences are defined over consumption and take the following form:

$$E_t \sum_{j=t}^{\infty} \left(\frac{1}{1+\delta}\right)^j U\left[c_j(g_j)\right] \tag{1}$$

where c_t is consumption, δ the individual net rate of time preference, g_j the random discrepancy between the actual realisation of individual endowment at time j (y_j), and y^* (what we label the output gap). $G_j \equiv G(g_j|g_0,g_1,\ldots,g_{j-1})$ denotes the (known) distribution function of the history of such random discrepancies. We assume g_t to follow an stationary AR(1) process, $g_t=\rho g_t-1+e_t$, where e_t are i.i.d. drawings from a known uniform distribution defined over a compact symmetric support that yields a corresponding, proportional compact symmetric support $[-\epsilon,+\epsilon]$ for g_t. $0<\rho<1$ measures persistence.

Consumption and accumulation decisions are made to satisfy a set of period flow budget constraints,

$$c_t(g_t) + w_t - (y^* + g_t) + s_t - w_{t-1}(1+r) + k_t \le 0, \quad \forall t \ge 0 \tag{2}$$

and a set of contemporary borrowing constraints,

$$w_t \le 0, \quad \forall t \ge 0 \tag{3}$$

for some predetermined w_{-1}. In Eqs. (2) and (3), w_{t-1} and w_t denote assets carried over from the earlier period and into the next period, respectively. For simplicity, household net wealth is assumed to be non-negative. A financial claim costs one consumption good and entitles its owner to $1+r$ goods next period, where r denotes the real interest rate. s_t is a tax paid by the entire population present at time t, and k_t is a non-negative tax that is equal to zero for everybody except the native household.

After observing the realisation of the endowment shock in the first period, the native household draws up consumption and lending in such a way as to maximise its lifetime utility (Eq. (1)) subject to Eqs. (2) and (3), for any arbitrary fiscal plan characterised by the series $\{s_t, k_t; t \ge 0\}$. The associated Euler condition at any time t can be written in the following form (see, for example, Deaton, 1991):

$$U'(c_t(g_t)) = \max\left[U'(y^* + g_t - (s_t + k_t) + (1+r)w_{t-1}), \beta^{-1}E_t(U'(c_{t+1}(g_{t+1})))\right] \tag{4}$$

$\forall_t \ge 0$, where $\beta \equiv \frac{1+\delta}{1+r}$ (with $1<\beta<1+r$), and $U'(c(g_t))$ represents the marginal utility of consumption at time t. The borrowing constraint binds at t if the marginal utility evaluated at $y^*+g_t-(s_t+k_t)+(1+r)w_{t-1}$ exceeds the anticipated discounted marginal utility at any future period. Otherwise, the current and the expected marginal utilities are equated in the usual way.

[3] Our results are also broadly consistent with the simulation results of Barrell and Pina (2003) that find that, provided countries comply with their announced fiscal consolidation programmes, built-in stabilisers and European fiscal rules (Europe's Stability and Growth Pact) would be compatible. For an alternative rationalization see Kleven and Kreiner (2003).