Time Inconsistency of Fiscal Policy: An Example

Alberto Bisin

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We will consider the problem of a government which finances the provision of a public good through Ramsey taxation of savings. We will show that the government may prefer to allow hidden savings to avoid the time inconsistency problem of capital taxation. Thus, the government may allow a “shadow economy” or “black markets” because they serve as a commitment device ex-post.¹

Consider an economy with 2 periods and 3 dates, 0, 1 and 2. The economy is populated by a continuum of ex-ante identical agents who care about consumption at time 1 and 2 and about a public good at time 2, with preferences represented by

\[ u(c_1) + \beta (u(c_2) + v(g)) \]

where \( c_t \) is the consumption of the single consumption good at time \( t \), \( g \) is the public good provided by the government at time 2, and \( u(c) \) and \( v(g) \) are strictly increasing and strictly concave utility functions.

Each agent is endowed with a constant endowment \( \bar{\theta} \) at time 1. Each agent chooses his savings plans independently, and the government, to finance the public good, must impose a tax \( \tau \) on savings \( s \). The government’s budget constraint requires that \( g \leq \tau R s \). The pre-tax gross interest rate on savings is \( R = \beta^{-1} \).

Given the tax \( \tau \) and the amount of the public good \( g \), each agent chooses savings \( s \) to maximize:

\[
\max_s \ u(\bar{\theta} - s) + \beta \left( u(\left(1 - \tau\right)Rs) + v(g) \right).
\]

Let the solution of this problem, that is, the solution to the first order condition

\[ u'(\bar{\theta} - s) = (1 - \tau)u' ((1 - \tau)Rs), \]

be denoted by \( s = f(\tau) \). Assume that \( f'(\tau) < 0 \) and thus that preferences are such that agents react to an increase of the tax rate \( \tau \) with a reduction in savings.²

¹We consider a finite horizon problem and thus do not study “sustainable equilibria” as in Chari and Kehoe (1990).
²This is the case if the coefficient of relative risk aversion of \( u \) evaluated at the equilibrium consumption at time 2 is less than 1. Thus, with constant relative risk aversion, it is the case as long as the coefficient of relative risk aversion is less than 1.
Consider now the optimal taxation and provision of the public good problem of the government. In the case in which the government has commitment, its problem takes the distortion of the agents’ savings behavior induced by taxes into account. The problem can be written as:

$$\max_{s,\tau} \ u(\bar{\theta} - s) + \beta (u((1 - \tau)Rs) + v(\tau Rs))$$

subject to

$$s = f(\tau),$$

where we have substituted for $g$ using the budget constraint. The solution to this problem is characterized by the first order condition

$$u'((1 - \tau)Rs) = v'(\tau Rs) \frac{s + \tau f'(\tau)}{s}.$$  \hspace{1cm} (1)

Consider instead the optimal taxation and provision of the public good problem of the government in the case in which the government has no commitment. In this case, the choice of the tax $\tau$ and the public good $g$ is effectively done after the agents have already chosen their savings plans $s$, at time 1. The problem solved by the government therefore is:

$$\max_{\tau} \beta (u((1 - \tau)Rs) + v(\tau Rs))$$

for given $s$. The solution of this problem is characterized by the first order condition

$$u'((1 - \tau)Rs) = v'(\tau Rs).$$  \hspace{1cm} (2)

Note that, from our assumption that $f' < 0$ it follows that $\frac{s + \tau f'(\tau)}{s} < 1$. Therefore, comparing (1) and (2) we conclude that a government without commitment chooses higher taxes and therefore induces inefficiently low savings. The provision of the public good, $\tau Rs$ may be higher or lower.

Suppose that the government without commitment has the option of allowing agents free access to a hidden savings market, at the same interest rate $R$, and that the government can not seize hidden savings. Again, this can be interpreted as an assumption that agents can opt out of the economy and simply consume their hidden savings. If allowed free access to such a market, agents will always contribute all their savings to it, to avoid taxes, and receive no provision of the public good. We conclude therefore that it may be optimal for such a government to allow the hidden savings market to operate. This is the case whenever the agents prefer no taxes and no public good to the ex-post optimal taxation and public good provision of a government without commitment. In contrast, a government with commitment would never allow hidden savings since all agents would then save in hidden accounts and no public good could be provided.

To summarize:
Proposition 1  (i) With commitment, the government strictly prefers not to allow hidden storage. (ii) Without commitment, the government strictly prefers to allow hidden storage.