Increasing the Capital Income Tax Leads to Faster Growth

Harald Uhlig, Noriyuki Yanagawa
Department of Economics, Princeton University
Princeton, NJ 08544, U.S.A.

INTRODUCTION.

This paper shows that under rather mild conditions, higher capital income taxes lead to faster growth in an overlapping generations economy with endogenous growth. Government expenditures are financed with labor income taxes as well as capital income taxes. Since capital income accrues to the old, taxing it relieves the tax burden on the young and leaves them with more income out of which to save. We argue that savings are sufficiently interest inelastic so that higher savings and therefore higher growth result. The basic argument is not seriously challenged by a grandfather clause for initial capital or by the old receiving some labor income as well. The reasoning is similar to Feldstein (1978), Auerbach (1979) and in particular Jones and Manuelli (1992), but in contrast to the conventional wisdom about the effect of capital income taxation as, say, in Lucas (1990).

THE MODEL.

Consider a two-period OLG with one consumption good per period and one representative agent born at each date $t = 0, 1, \ldots$. Agents have a homothetic utility function in consumption and thus consume a fraction $C(R)$ of their total life-time wealth, when young, given the interest factor $R$ between the two periods of their life. They are endowed with $\lambda$ units of time when young and $1 - \lambda$ units of time, when old, which they supply inelastically as labor.

Each period, the consumption good is produced by a competitive sector of firms according to the production function

$$y = k^p \left( n \frac{K}{\alpha} \right)^{1-p}, \quad (1)$$
where \( k \) and \( n \) are the firm-specific capital and labor inputs, \( K \) denotes the aggregate capital stock and \( \rho, \alpha \) are parameters (see e.g. Romer (1986) for a justification of this externality-extended production function). Aggregate production is thus \( Y = aK \), where \( a = \alpha^{\rho - 1} \). Dividends per unit of capital are \( d = \rho Y/K = \rho a \) and wages per efficiency unit \( \alpha/K \) of time are \( w = (1 - \rho)\alpha^\rho \), independent of time. The aggregate resource constraint each period is \( C + H + X = Y \), where \( H \) is government consumption and \( X \) is investment. The capital stock evolves according to \( K_{t+1} = (1 - \delta)I_t + X_t \), so that a unit of capital commands a price of \( v = d + (1 - \delta) = \rho a + 1 - \delta \).

Government consumes the fraction \( \gamma \) of output each period, which it can finance via a capital income tax \( \tau_k \) on all of \( v \) (hence \( R = (1 - \tau_k)v \)), a labor income tax \( \tau_{L,t} \) or debt. We assume for simplicity that the debt-output ratio is constant at some \( b \geq 0 \) over time except the initial period. The budget constraint is achieved by adjusting \( \tau_{L,t} \).

Solving the model leads to the equations

\[
\tau_{L,t} = \frac{\gamma}{1 - \rho} - \left( 1 - \frac{R}{g_t} \right) \frac{b}{1 - \rho} - \frac{\rho a + 1 - \delta}{(1 - \rho)a} \tau_K, \quad t \geq 1.
\]  

(2)

and

\[
g_{t+1} = \frac{(1 - C(R))\lambda - \frac{b}{(1 - \tau_{L,t})(1 - \rho)}}{C(R)^{1 - \lambda} + \frac{1}{a(1 - \tau_{L,t})(1 - \rho)}},
\]  

(3)

where \( g_{t+1} \) is the growth rate from period \( t \) to \( t+1 \). These two equations can simply be simulated forward.

**THE BENCHMARK CASE.**

\( b = 0 \) and \( \lambda = 1 \) leads to

\[
g = a(1 - \rho)(1 - \tau_L)S(R; 1),
\]  

(4)

where \( S(R; 1) \) is the saving rate of the young, given that only the young earn income: \( S(R; 1) = 1 - C(R) \). The argument is now easy to see: a higher capital income tax leads to a lower labor income tax (see eqn. (2)) and thus to a lower growth rate, provided savings are not too interest elastic:

**Proposition 1** If the overall utility is characterized by a constant intertemporal elasticity of