THE STANDARD MODEL OF CAPITAL TAX COMPETITION
(Zodrow & Mieszko, 1986; Wilson, 1986; Hoft, 1991)

- n identical countries
- all individuals supply one unit of labour and own \( \overline{K}_i \) units of capital
- capital/labour is perfectly mobile/immobile
- capital-market clearing: \( \frac{\partial \bar{K}}{\partial K_i} = K \quad \text{(1)} \)
- single homogeneous good with price normalized to unity
- production function: \( f''(K_i) > 0, f''''(K_i) < 0 \)
- perfect competition in all markets
- tax on capital: \( t_i \) per unit
- equilibrium world net interest rate: \( R \)
- arbitrage condition: \( f''(K_i) - t_i = R(t_i) \quad \forall \ i \in \{1, \ldots, n\} \)

\[
\frac{\partial k_i}{\partial t_i} = \frac{1 + (\partial R/\partial t_i)}{f''(K_i)}, \quad \frac{\partial k_i}{\partial t_i} = \frac{(\partial R/\partial t_i)}{f''''(K_i)}, \quad i \neq j \quad \text{(2)}
\]

\[
\frac{\partial k_i}{\partial t_i} + (n-1) \frac{\partial k_i}{\partial t_i} = 0 \quad \text{(3)}
\]

\[
\frac{\partial R}{\partial t_i} = -\frac{1}{n} \quad \text{(4)}
\]

\[
\frac{\partial k_i}{\partial t_i} = \frac{1 - (1/n)}{f''''(K_i)} < 0 \quad \text{(5)}
\]
utility function: \( u(c_i, g_i) \)

\[ \frac{\partial g_i}{\partial c_i} = -1 \quad \text{(MRT)} \]

government budget constraint: \( g_i = c_i k_i + \bar{a} \)

income of representative agent:

\[ c_i = f(k_i) - f'(k_i) k_i + \bar{a} \]

FOC of government taking others' tax rates as given:

\[ \frac{\partial u}{\partial t_i} = \frac{\partial c_i}{\partial t_i} + m_i (c_i, g_i) \frac{\partial g_i}{\partial t_i} = 0 \]

where

\[ m_i (c_i, g_i) = \frac{\partial u}{\partial g_i} = \frac{\partial u}{\partial c_i} = \text{MRS} \]

Differentiate (6) and (7) w.r.t. \( t_i \), and substitute with (5) into (8)

\[ \bar{a} \left( m_i^2 - 1 \right) + m_i t_i \left( 1 - \frac{1}{m_i} \right) = 0 \quad \forall i \]

\( m=0 \Rightarrow m_i = 1 \Rightarrow \text{MRS} = \text{MRT} \)

\( m>1 \Rightarrow m_i > 1 \Rightarrow \text{underprovision of } g \)

\[ \frac{\partial m_i}{\partial n} > 0 \]