Fiscal Policies: Taxes

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Question

- What is the government's main duty?
  - Governance
    - Regulation
    - Protect Property right
  - Provide Public goods
  - Internalize Externalities
  - Antitrust
  - Redistribution
  - Stabilization
  - .....
- Market Failure
- Government Failure

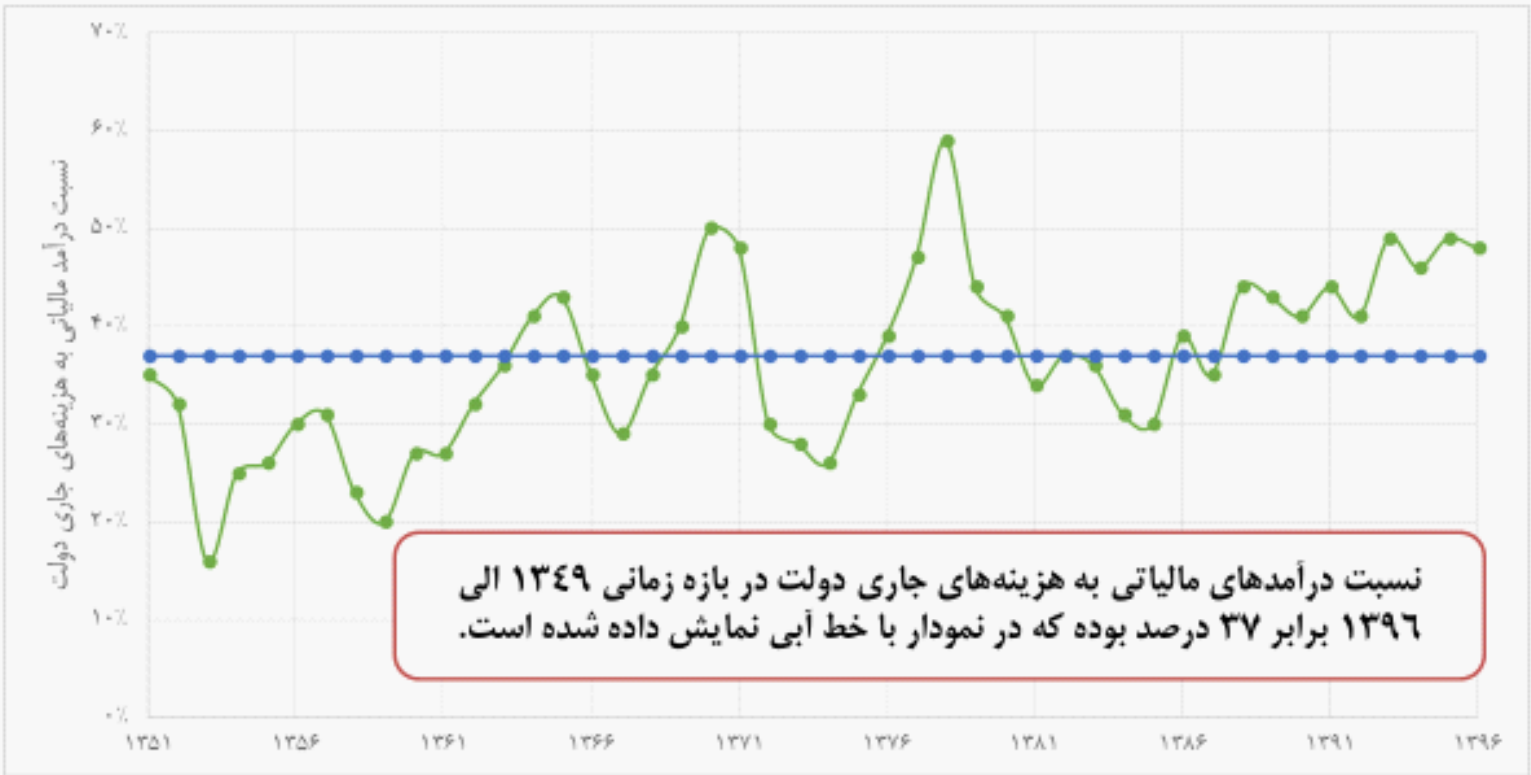
Government Objectives

- Ramsey Government: Optimum Aggregate Welfare
- Mirrlees Government: Optimum Socially Welfare
  - Maxiizing a social optimum function which is a weighted average of HHs' welfare.

Financing Governments' Expenditures

- Taxes (Corporate taxes, Value-added tax, Personal Income, Social Security Taxe, Excise Tax, Import Taxes)
- Debts
- Money (Seigniorage)
- Natural Resources Income like Oil Income or ...
- Selling Assets

سهم مالیات از هزینه‌های جاری دولت



منبع: بانک مرکزی

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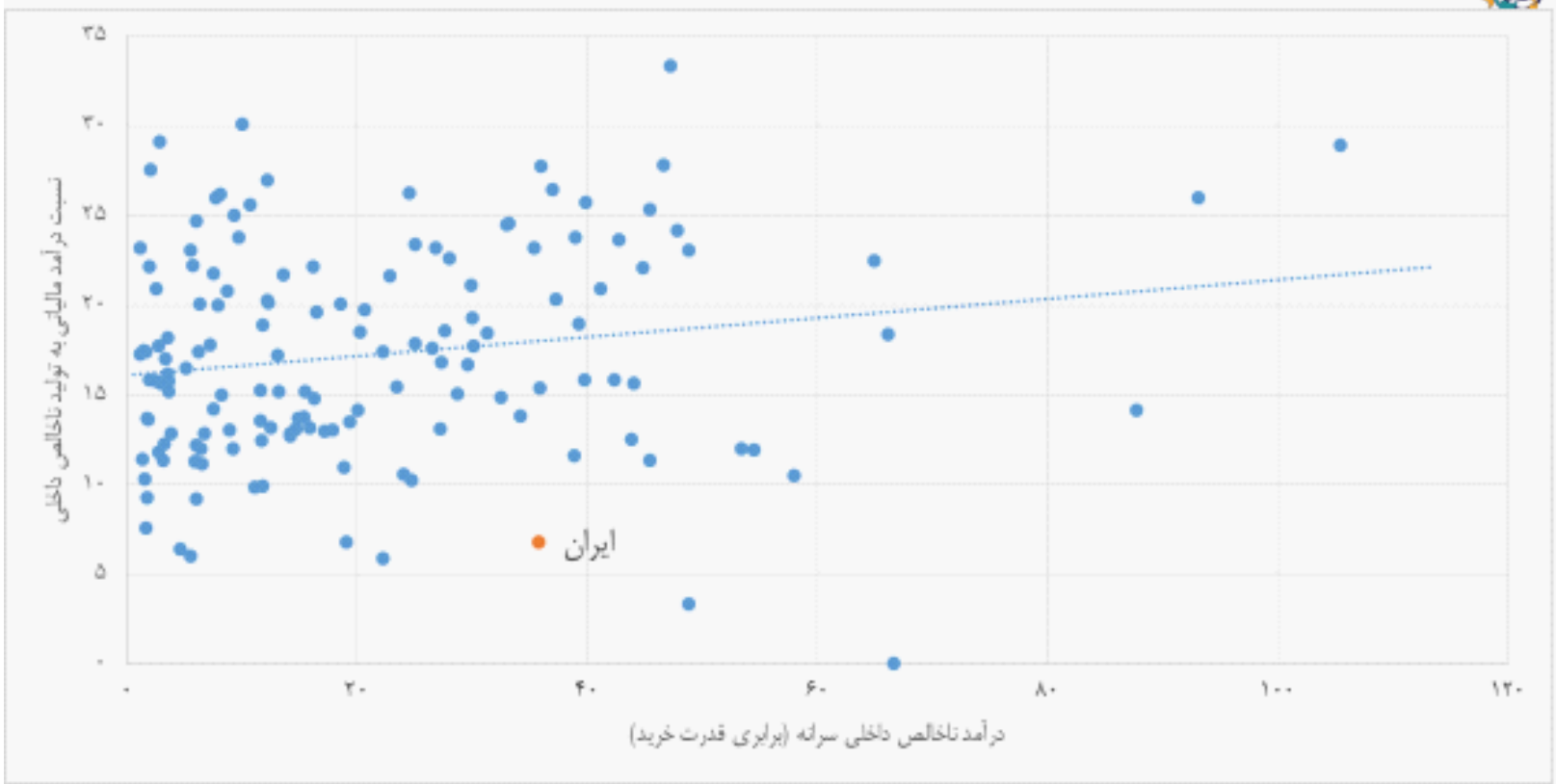
نسبت درآمد مالیاتی به تولید ناخالص داخلی سرانه ایران در مقایسه با سایر کشورها بسیار پایین است.



منبع: بانک جهانی، بانک مرکزی، مرکز آمار (۱۳۹۶)

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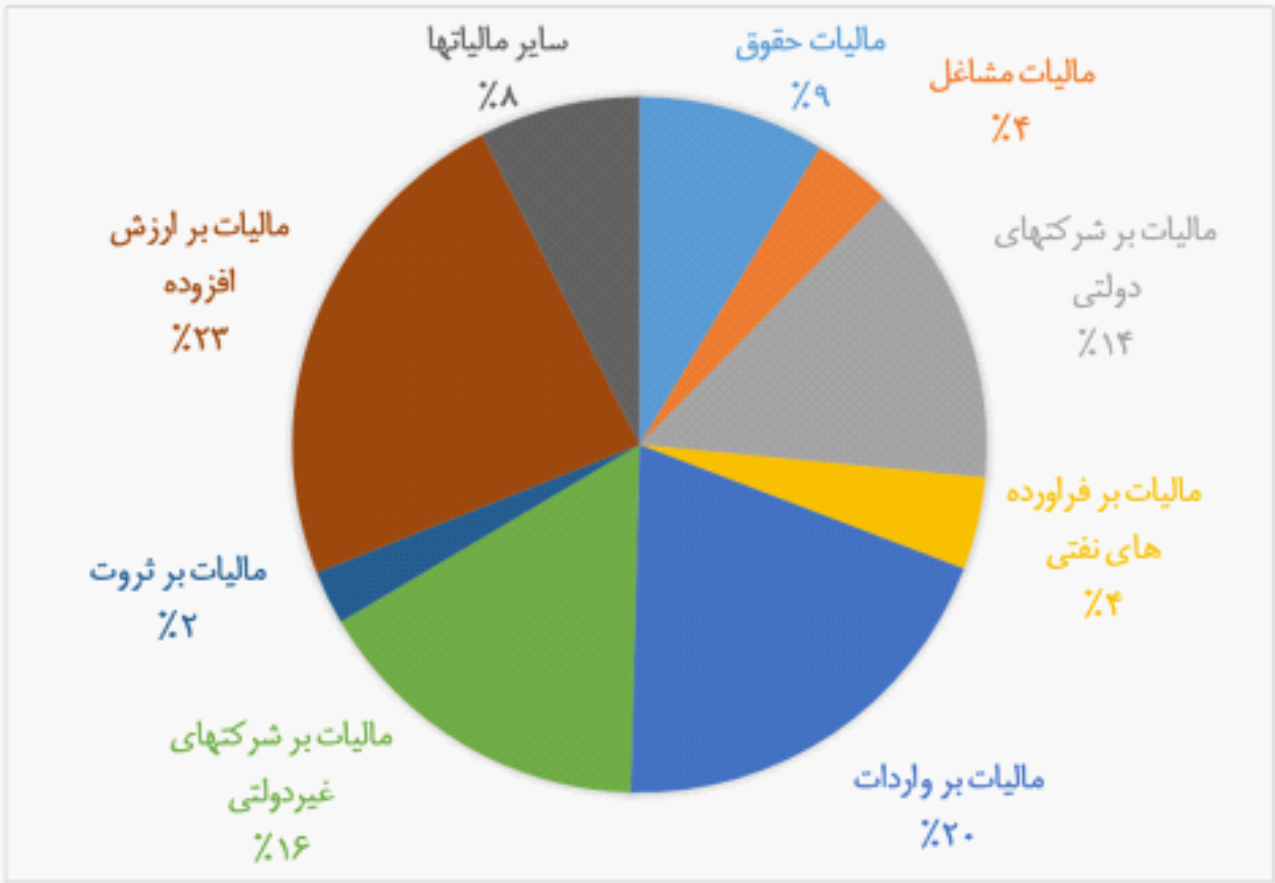
سهم پایه‌های مختلف مالیاتی (۱۳۹۶):
مالیات بر شرکتها سهم بزرگی داشته و مالیات بر درآمد سهم بسیار کوچکی دارد.



منبع : بانک مرکزی

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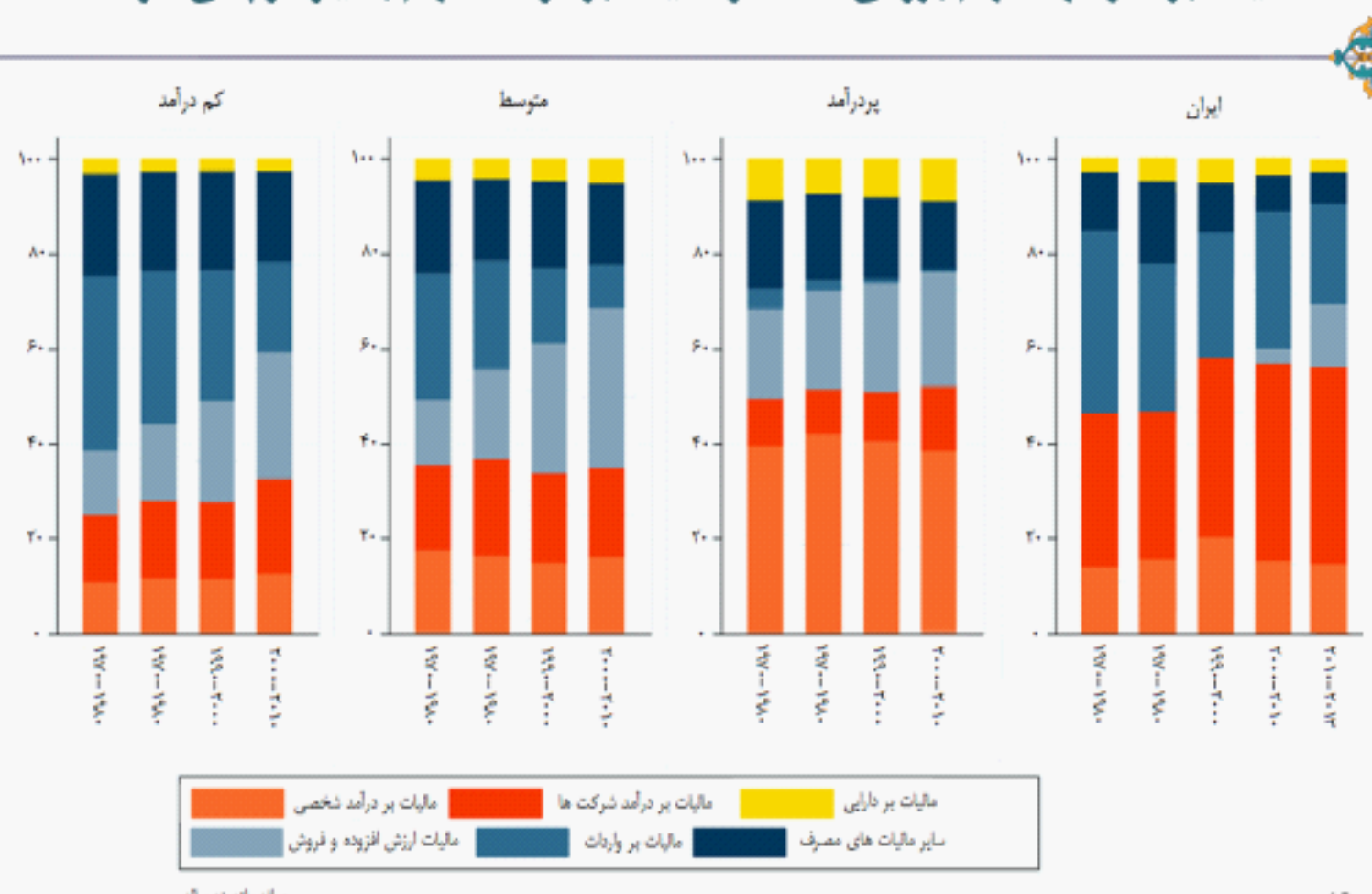
Iran

مقایسه سهم پایه‌های مالیاتی در ایران و جهان:
مالیات بر شرکتها سهم بزرگی داشته و مالیات بر درآمد سهم بسیار کوچکی دارد.



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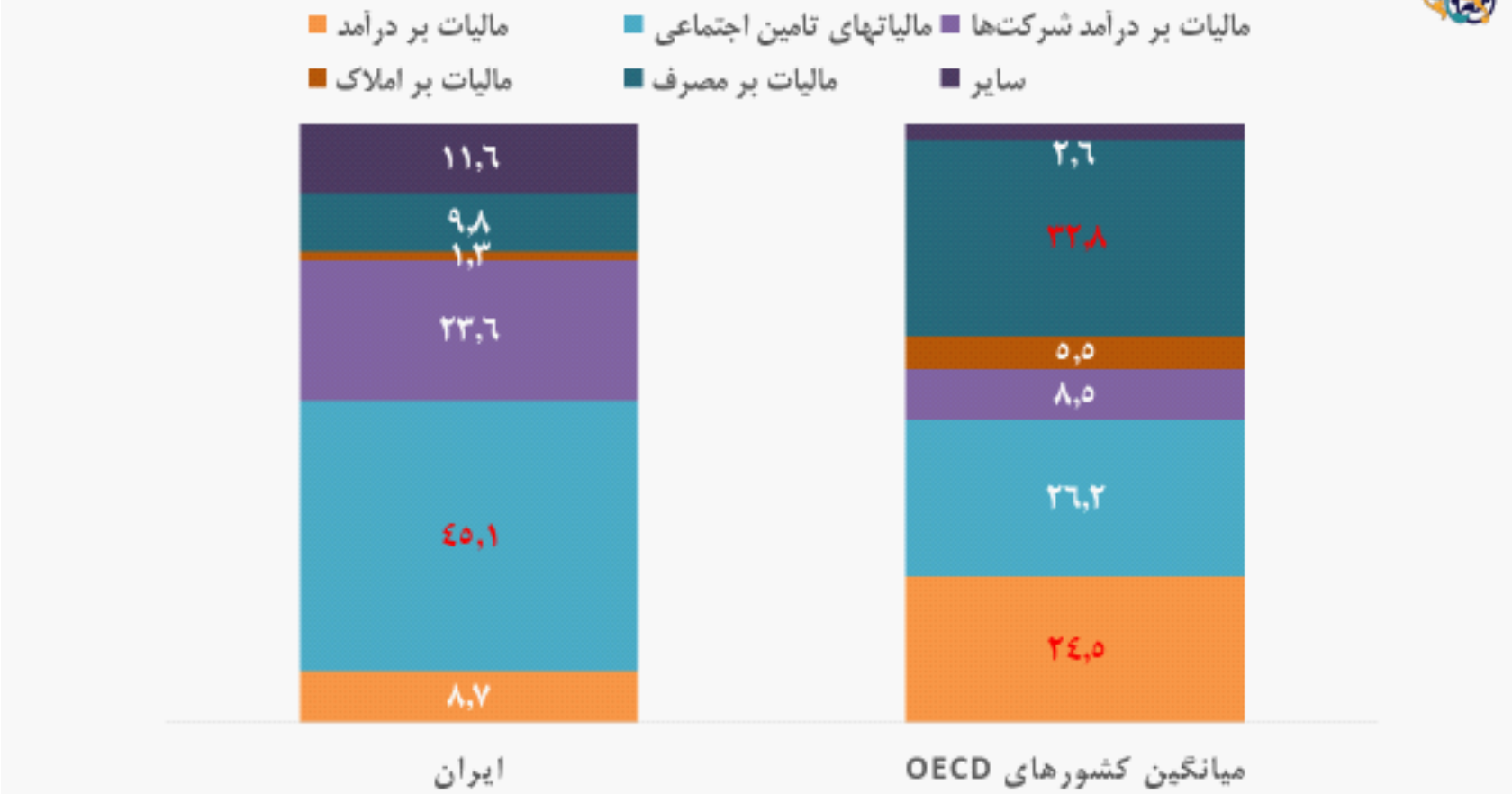
ترکیب درآمدهای مالیاتی (۲۰۱۲):
مالیات بر شرکتها و نیز مالیات تامین اجتماعی سهم بزرگی داشته و مالیات بر درآمد سهم بسیار کوچکی دارد.



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Model

- A simple model
  - Household
  - Production
  - Government
- Types of taxes
  - Labor income Tax
  - Capital Income Tax
  - Consumption Tax
  - Natural Resources Lump-sum Tax

Model: government

- Government Expenditures $= G = T =$Taxes
- $c_g = \phi\left(G - S'\right)$ where $\phi \leq 1$:
  - S' is the subsidy transfers from government
  - c_g could be public or private goods that government produces with some level of efficiencies, usually less that one (mostly close to zero ;))
- Explanations of c_g and S
  - What does Government actually do
    - When it receives taxes?
    - When it produces a public (or private) good?
    - When it redistributes the taxes?

Model: Labor Income Tax

- Firm problem:

$$Y = AH$$

- Household Problem

$$\begin{aligned} & \max_{c,h} U\left(c_p, c_g, h\right) \\ \text{s.t. } c_p &= \left(1-\tau\right) wh + S' \end{aligned}$$

where t is the tax rate and S' is the subsidy transfers from government

- Example:

$$\begin{aligned} & \max_{c,h} 2\sqrt{c_p + c_g} - h \\ \text{s.t. } c_p &= \left(1-\tau\right) wh + S' \end{aligned}$$

Model: Labor Income Tax

- Equivalent problem

$$\begin{aligned} & \max_{c,h} 2\sqrt{C} - h \\ \text{s.t. } C &= (1-\tau)\, wh + S \end{aligned}$$

where $S = S' + c_g$

Model: Labor Income Tax

- HH's Solution

$$\begin{aligned} h &= (1-\tau)\, w - \frac{S}{(1-\tau)\, w} \\ c &= (1-\tau)^2\, w^2 \end{aligned}$$

- Firm's solution:

$$w = A$$

Model: Labor Income Tax

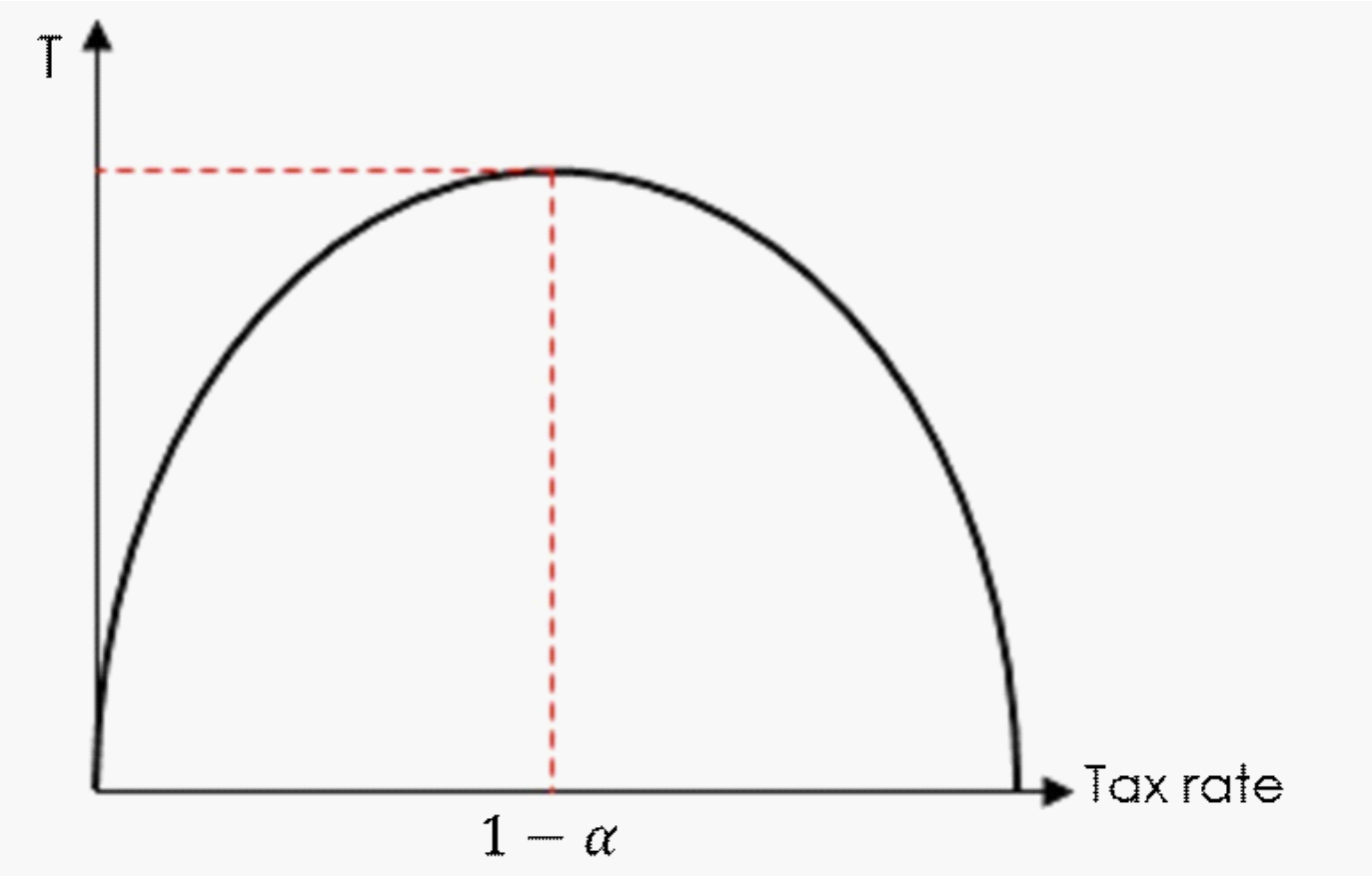
- Suppose $S' = 0 \Rightarrow S = c_g = \phi G = \phi \tau w h$
- Equilibrium

$$
\begin{aligned}
h &= \left(\frac{1-\tau}{1-\tau+\phi\tau} \right) (1-\tau) A \\
G &= \left(\frac{1-\tau}{1-\tau+\phi\tau} \right) (1-\tau) \tau A^2 \\
C &= (1-\tau)^2 A^2 \\
C_p &= (1-\tau)^2 A^2 \left(\frac{1-\tau}{1-\tau+\phi\tau} \right) \\
Y &= \left(\frac{1-\tau}{1-\tau+\phi\tau} \right) (1-\tau) A^2 \\
\mathit{Welfare} &= \left(\frac{1-\tau+2\phi\tau}{1-\tau+\phi\tau} \right) A (1-\tau)
\end{aligned}
$$

Model: Labor Income Tax

- Laffer Curve

$$G = T = \tau (1 - \tau) A^2$$



Model: Capital Income Tax

- Production:

$$Y = AK^{\alpha}$$

- Household

$$\max_{c_t, k_{t+1}} \sum_{t=0}^{\infty} \beta^t U(c_t)$$

$$\text{s.t. } c_t + k_{t+1} - (1-\delta) k_t = (1-\tau)\left[v_t k_t + \pi_t\right]$$

- Government

$$G_t = T_t = \tau\left(v_t k_t + \pi_t\right)$$

Model: Capital Income Tax

- Solution:

$$\frac{u_{ct}}{u_{ct+1}} = \beta \left(1 - \delta + (1 - \tau) v_{t+1}\right)$$

- Firm:

$$\begin{aligned} \pi_t &= Y_t - v_t k_t \\ v_t &= \alpha A K_t^{\alpha - 1} \end{aligned}$$

- Government: Assume $\phi = 0$

Model: Capital Income Tax

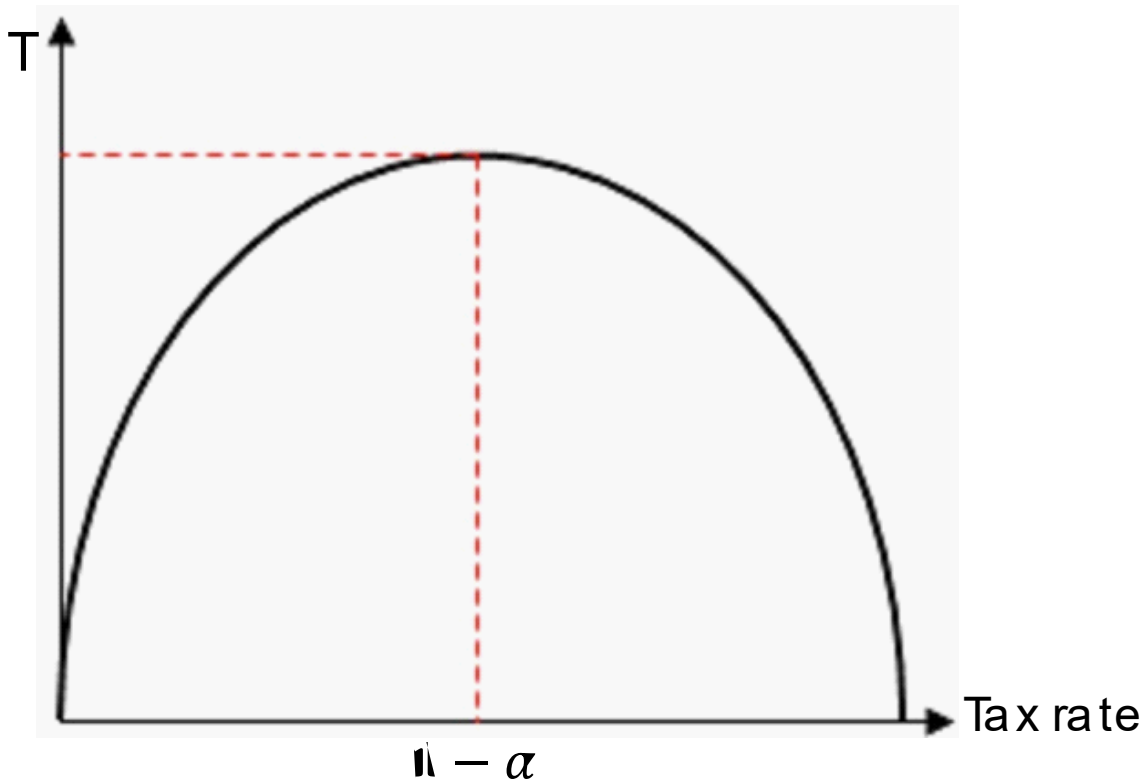
- Steady State Equilibrium

$$
\begin{aligned}
1 &= \frac{1}{1+\rho}\left(1-\delta+(1-\tau)\,\alpha A K_{ss}^{\alpha-1}\right) \\
K_{ss} &= \left(\frac{\alpha}{\rho+\delta}(1-\tau)\right)^{\frac{1}{1-\alpha}} = K_0\,(1-\tau)^{\frac{1}{1-\alpha}} \\
Y &= A\left(\frac{\alpha}{\rho+\delta}(1-\tau)\right)^{\frac{\alpha}{1-\alpha}} = Y_0\,(1-\tau)^{\frac{\alpha}{1-\alpha}} \\
I_{ss} &= \delta K_{ss} \\
C_{ss} &= (1-\tau)\,A K_{ss}^{\alpha} - \delta K_{ss} = C_0\,(1-\tau)^{\frac{1}{1-\alpha}}
\end{aligned}
$$

Model: Capital Income Tax

- Laffer Curve:

$$G_{ss} = T_{ss} = K_0^{\alpha} \tau \left(1 - \tau\right)^{\frac{\alpha}{1-\alpha}}$$



Model: General Taxation

- Production:

$$Y = AK^{\alpha}L^{1-\alpha}$$

- Household

$$\max_{c_t, k_{t+1}} \sum_{t=0}^{\infty} \beta^t U\left(c_t, l_t\right)$$

$$\text{s.t. } c_t + k_{t+1} - \left(1-\delta\right)k_t = \left(1-\tau_{lt}\right)w_t l_t + \left(1-\tau_{kt}\right)\left(v_t k_t\right) + \pi_t$$

- Government

$$G_t = T_t = \tau_{lt} w_t l_t + \tau_{kt}\left(v_t k_t + \pi_t\right)$$

Model: General Taxation

- Optimum τ_{kt}, τ_{lt} : Solution:

$$\begin{aligned} \tau_{kt} &= 0 \text{ for } t \geq 1 \\ \tau_{lt} &= \bar{\tau}_l \text{ for } t \geq 0 \end{aligned}$$

Complement public good

- For each G :there is a tax rate $\tau(G)$ to finance G and also $C_g = \phi G$
- HH Welfare

$$U\left(C_g, C_p^*(\tau), I^*(\tau)\right)$$

- Government problem: Choose G s.t.

$$\max_G W\left(\underset{+}{\phi G}, \underset{-}{\tau(G)}\right)$$

Government Expenditures Effects

- Distortion and productivity Effect
- Crowding out Consumption
- Crowding out Investment
- Fiscal Multiplier