The Optimal Quantity of Capital and Debt

Hagedorn, Holter, and Wang (HHW)

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The question and earlier findings

The Question: What is the optimal quantity of government debt ($B$) and optimal tax on capital ($\tau_k$)?

Prior literature (Ramsey taxation):

- Representative agent models: Barro (1979); Chamley (1986) and Judd (1985).

> Optimal long-run $\tau_k = 0$.

> Optimal $B/Y$ set to smooth labor tax distortions (long-run level depends on initial conditions).
The question and earlier findings

The Question: What is optimal $B/Y$ and $\tau_k$?


*Insurance* and *redistribution* considerations also play roles.

> Optimal $\tau_k > 0$ in the long run.

> Until recently, no quantitative findings for optimal $\tau_k$ and $B/Y$. 
The Question: What is optimal $B/Y$ and $\tau_k$?

- Acikgoz (2015):
  > Points out optimal steady state is independent of initial conditions.
  > Uses this to compute optimal long-run $B/Y$ and $\tau_k$ for US economy.
This paper

Optimal policy in incomplete markets framework.

Contribution:

- Formalizes and proves that optimal steady-state allocations and policies are independent of initial conditions.
- Provides quantitative evaluation of optimal $B/Y$ and $\tau_k$ for US economy including full transition.
Benchmark quantitative findings

Optimal policy in steady state:

- \( B/Y = 4, \tau_k = 0.11, \tau_n = 0.77. \)
- Very high \( B/Y \) and low \( \tau_k \) compared to status quo policy.

Intuition:

1. Precautionary savings imply: \( 1 + (1 - \tau_k)r < \frac{1}{\beta}. \)

\[ \equiv 1 + \bar{r} \]

Optimal to set \( K \) at Golden Rule level: \( 1 + F_K - \delta = \frac{1}{\beta}. \)

\[ \Rightarrow \tau_k > 0. \]

2. When \( B \uparrow \Rightarrow \bar{r} \uparrow \Rightarrow \tau_k \downarrow. \)
Benchmark quantitative findings

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- $B/Y = 4, \tau_k = 0.11, \tau_n = 0.77$.
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Intuition:

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Optimal to set $K$ at Golden Rule level: $1 + F_K - \delta = \frac{1}{\beta} = 1 + r$.

\[\Rightarrow \tau_k > 0.\]

2. When $B \uparrow \Rightarrow \bar{r} \uparrow \Rightarrow \tau_k \downarrow$. 

Increasing $B$ increases $\bar{r}$ and $(K + B)/Y$, implying a higher fraction of asset income and lower fraction of labor income in total income.

- Since labor income is risky, provides insurance.
- Since asset income is unequally distributed, has a redistributive cost.
- Which dominates depends on calibration of wage process and implied income risk vs. wealth inequality.
- In HHW, former dominates: high $B/Y$ and low $\tau_k$ optimal.
- In Dyrda and Pedroni (2016), the opposite is true and $B/Y = -0.15$ and $\tau_k = 0.45$ (follow Catenada et al 2003).
Very interesting paper on a very important issue!

- Main idea that there is a reason to tax capital and issue government debt in incomplete markets is not novel.

- Quantitative analysis is the novelty and results are striking.

- Seems like results sensitive to calibration (of esp. the wage process and implied labor income risk and wealth inequality).

- Can you put more empirical discipline on model implied labor income risk and wealth inequality?
With higher lump-sum transfers, optimal $B/Y$ decreases. Would results remain under progressive taxes?

Counterfactual exercises on wage process that changes implied risk and inequality.

How would your results change in an open economy?

Does the Straub-Werning criticism apply? Specifically, do you force the economy to converge to steady state in computation?