

Sovereign Default and Labor Market Dynamics

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Motivation

- During the European debt crisis, peripheral European countries experienced:
 1. High sovereign spreads
 2. Low job finding rates
 3. High job separation rates
- These patterns were not observed in other European countries that did not experience sovereign default risks (see Figure 1).
- ⇒ Suggests a link between sovereign debt fragility and labor market conditions.

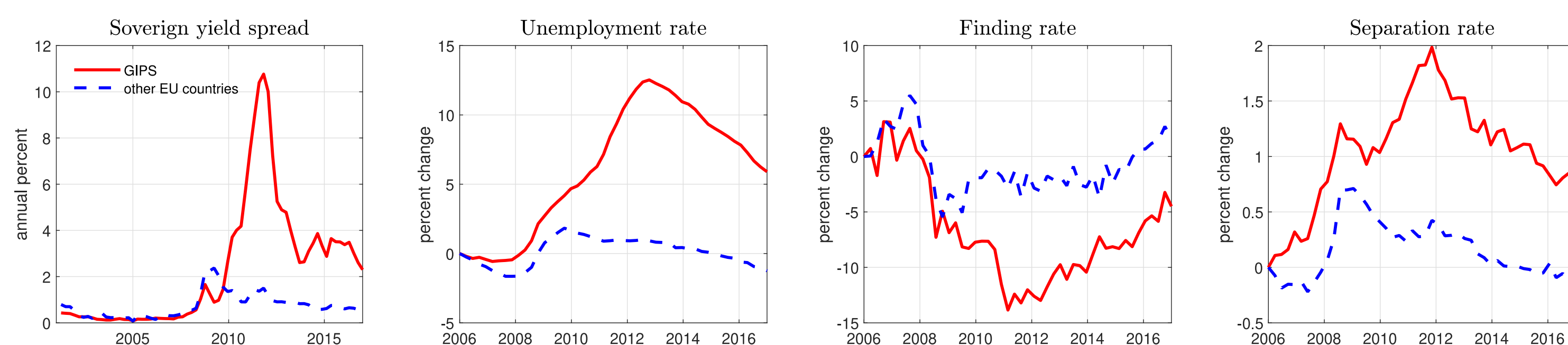


Figure 1. Sovereign Spread and Labor Market Slack in European Countries.

Research Questions

1. What mechanism can help explain the connection between sovereign debt fragility and labor market slack?
2. Are there any policies to improve debt sustainability and labor market outcomes?

Model Summary

- **Framework:** Embed the labor market search and matching frictions (e.g., Diamond, 1982; Mortensen, 1982; Pissarides, 1985) into a quantitative default model à la Eaton & Gersovitz (1981) and Arellano (2008).
- **Agents:** households, firms, and the government.
- **Households:**
 - Two types of members: unemployed with measure u_t and employed ($N_t = 1 - u_t$).
 - Perfect consumption insurance within household
 - Enjoy private & public consumption (c, g)
 - Chooses search effort s_t^o subject to a pecuniary search cost.
 - **Search decision:** Based on the expected present discount value of finding a job.
- **Firms:**
 - A continuum of firms with measure N_t
 - Posts vacancies v_t subject to a job posting cost.
 - **Posting decision:** Based on the expected present discount value of a job position filled.
 - Face aggregate productivity shock (follows an AR(1) process), produce outputs, pay output tax, and bargain wage w_t^N with the employed workers.
 - Exit the market if the firm's surplus cannot cover the idiosyncratic operation cost ⇒ job destroyed.
 - **Endogenous job destruction rate:** determined by (1) economic state and (2) fiscal policy chosen by the government.
- **A Markov government:**
 - Borrows from international lenders and sets fiscal policy (tax, spending, borrowing).
 - May default on debt and face utility cost and temporary financial exclusion.
 - Take the private sector's responses as given.
 - Bonds priced by competitive risk-neutral international lenders.
- **Job Creation:** according to the matching function as in Den Haan et al. (2000):

$$m_t = \mathcal{M}(u_t s_t^o, v_t) = \frac{(u_t s_t^o) \times v_t}{[(u_t s_t^o)^{\sigma_m} + v_t^{\sigma_m}]^{\frac{1}{\sigma_m}}}$$

- **Law of motion for employment:**

$$N_{t+1} = N_t - (\text{fraction of firms exiting}) \times N_t + \mathcal{M}(u_t s_t^o, v_t)$$

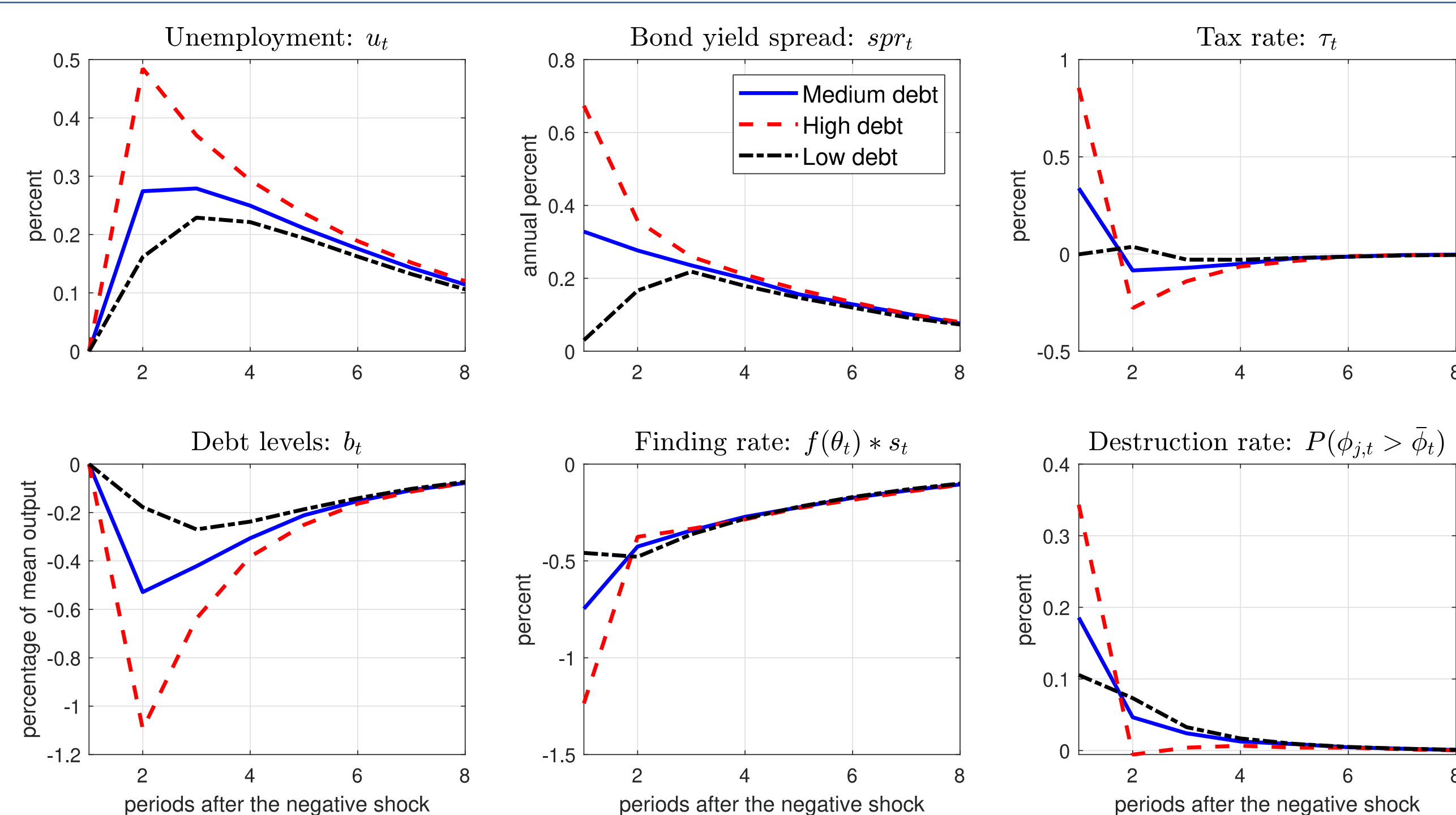


Figure 2. Generalized Impulse Response Functions to a Negative TFP Shock.

Key Mechanism

- Countries with default risk conduct a **procyclical fiscal policy**:
 - Unfavorable productivity shock ⇒ borrowing cost ↑ ⇒ cut back borrowing ⇒ resort to high tax rate and low government spending ($\tau \uparrow$ and $g \downarrow$)
 - Observed in peripheral European countries during the Global Financial Crisis.
- A higher tax rate during high-default-risk episodes has **two effects**:
 1. **Contemporaneous:** $\tau \uparrow \Rightarrow$ firms' surplus $\downarrow \Rightarrow$ job destruction rate $\uparrow \Rightarrow$ unemployment rate $\uparrow \Rightarrow$ tax base $\downarrow \Rightarrow$ default risk \uparrow
 2. **Dynamic:** expectation of $\tau \uparrow$ in the future ⇒ p.d.v. of creating a job $\downarrow \Rightarrow$ current job search and posting $\downarrow \Rightarrow$ unemployment rate $\uparrow \Rightarrow$ default risk \uparrow in the long run.
- **The procyclical fiscal policy creates a negative feedback loop between sovereign risks and labor market slack.**
- **Figure 2:** When debt is high, a negative TFP shock has a greater impact on the labor market due to procyclical fiscal policies.

Policy Experiment

- The dynamic effect above leads to a **time-inconsistency problem**, where:
 - The government ignores how its fiscal policies in period t affects job creation in past periods ($t-1, t-2, \dots$)
 - ⇒ Creates a **role for fiscal commitment**.
- Using our model, we conduct a policy experiment:
 - Assume the government conducts a fiscal consolidation by **committing** to a utility function with a lower weight on public spending g :

$$\tilde{u}(c, g) = \left(1 - \frac{\phi_g}{\tau^c}\right) \frac{c^{1-\sigma}}{1-\sigma} + \frac{\phi_g}{\tau^c} \frac{g^{1-\sigma}}{1-\sigma}$$
 - While the HH's utility function: $u(c, g) = (1 - \phi_g) c^{1-\sigma} / (1 - \sigma) + \phi_g g^{1-\sigma} / (1 - \sigma)$
 - Where $\tau^c > 1$ represents the degree of fiscal consolidation.
- A fiscal consolidation:
 - **Benefits:** Lowers need for $g \Rightarrow$ reduces the cyclicity of fiscal policy ⇒ ameliorates the negative feedback loop between sovereign risk and labor market slack.
 - **Costs:** distorts c/g ratio ⇒ potential welfare loss
- **Figure 3:** Average welfare gain from fiscal consolidation is hump shaped in τ^c
 - Large welfare gain from reduced job destruction rate ⇒ very little welfare gain in a model without endogenous destruction.
- **Table 4: Optimal consolidation improves the labor market, reduces default risk, and generates welfare gains.**

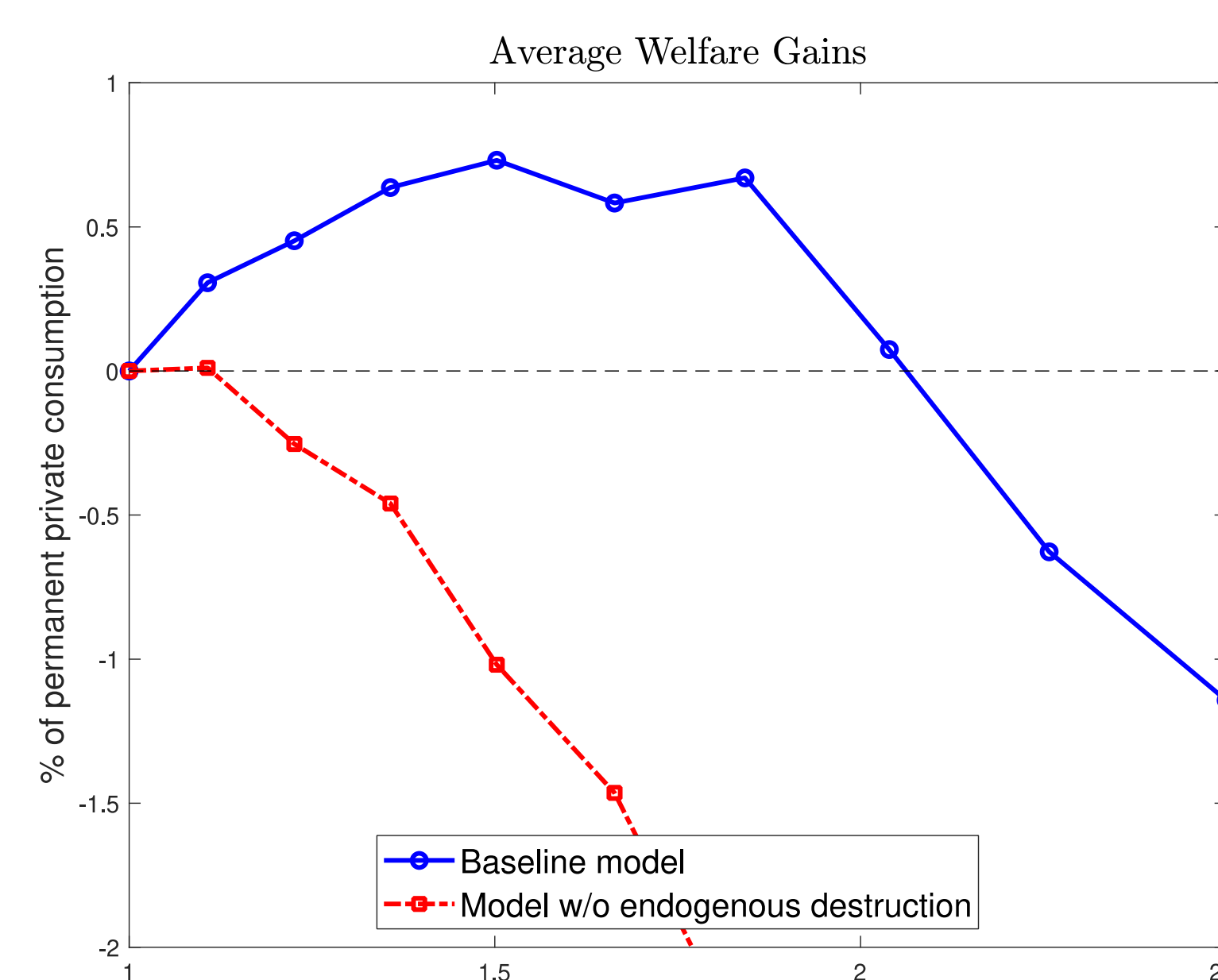


Figure 3. Average Welfare Gain from Different Degrees of Fiscal Consolidation

	Baseline Model	Optimal Fiscal Consolidation
Mean τ (%)	25.6%	21.9%
Mean debt-to-GDP ratio (%)	5.6%	7.3%
Mean spread (%)	1.7%	1.3%
Std. of spread (%)	1.1%	0.7%
Prob. of default (%)	1.5%	0.9%
Mean unemployment (%)	15.8%	13.3%
Std. of unemployment	1.9%	1.7%
Mean finding rate (%)	31.4%	35.1%
Mean destruction rate (%)	5.8%	5.3%
Avg. welfare gain (%)	-	0.73%

Table 4. Simulated Moments in the Baseline Model and Model with Optimal Fiscal Consolidation

Conclusions

- **Overview:** Embeds the labor search and matching friction into a quantitative default model.
- **Findings:**
 - The government fails to internalize the adverse effect of raising tax rates on the value of an employment position in past periods ⇒ smaller incentive to post vacancies and search for jobs.
 - This time inconsistency issue leads to a prolonged unemployment cycle and heightened default risk during economic recessions.
- **Policy Recommendation:** Imposing long-run commitment measures, such as a fiscal consolidation program, can simultaneously improve labor market conditions and increase debt sustainability, thus achieving a sizable welfare gain.

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