Financial globalization and market power

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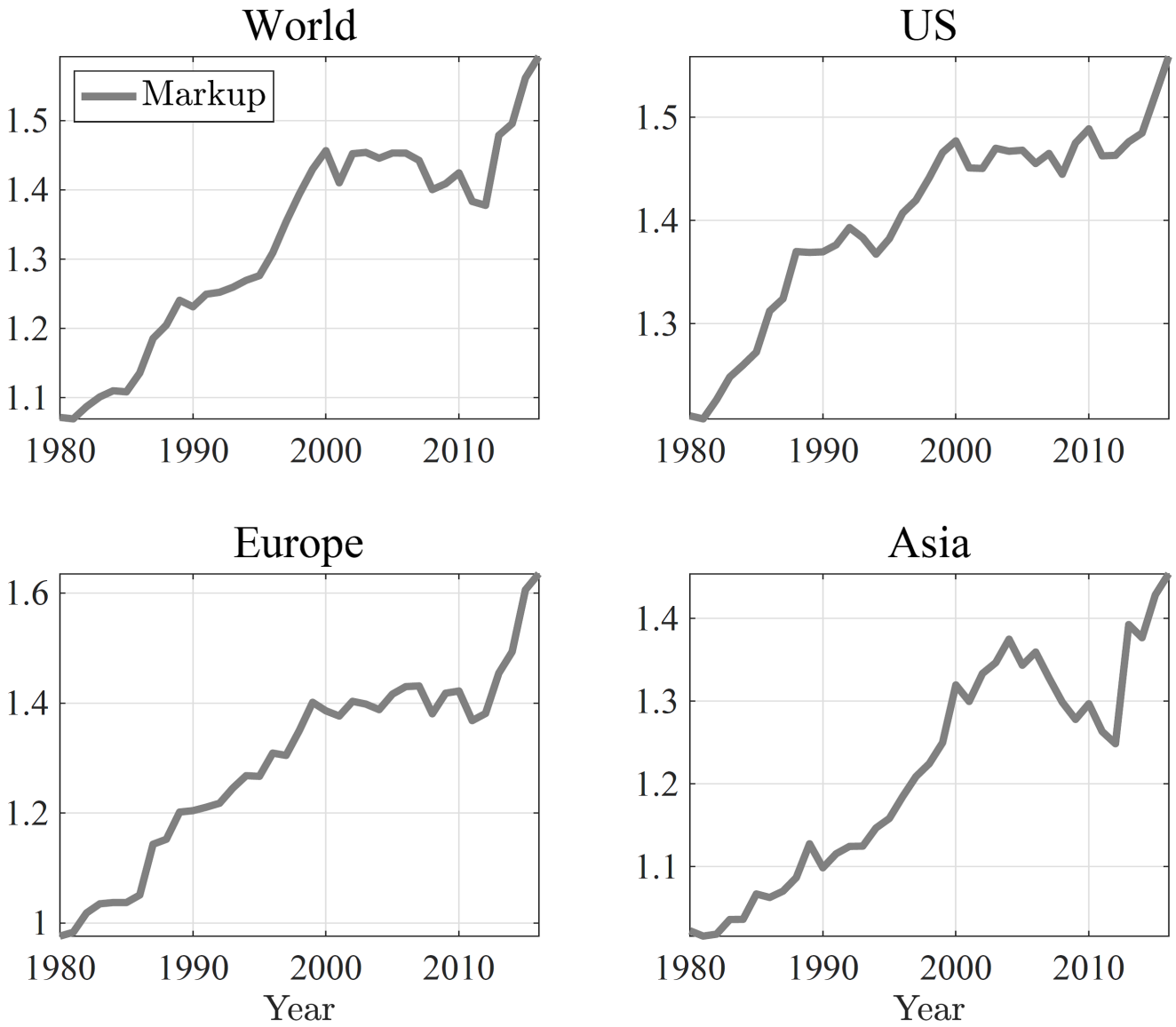
March, 2021

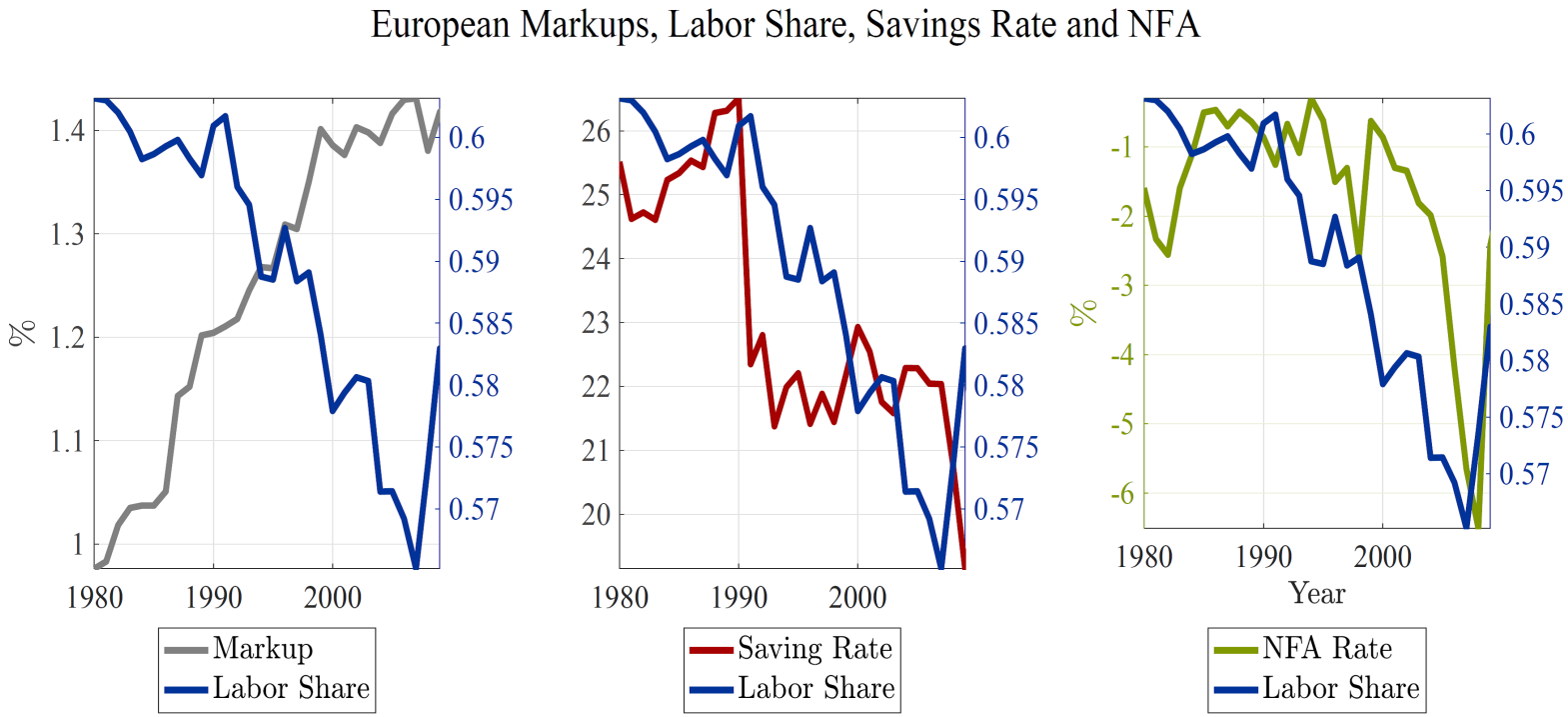
Introduction

- Two major trends in recent decades
  - Financial globalization
  - Rise of market power
- How are they related?
  - How does market power affect innovation and growth?
  - How does globalization affect this link between market power, innovation and growth?
  - If market power is endogenous, how does globalization affect the desirable level of market power?
- Warning: extremely preliminary!
  - Just brainstorming at this stage
  - Comments and suggestions are welcome!

Motivating facts



Motivating facts



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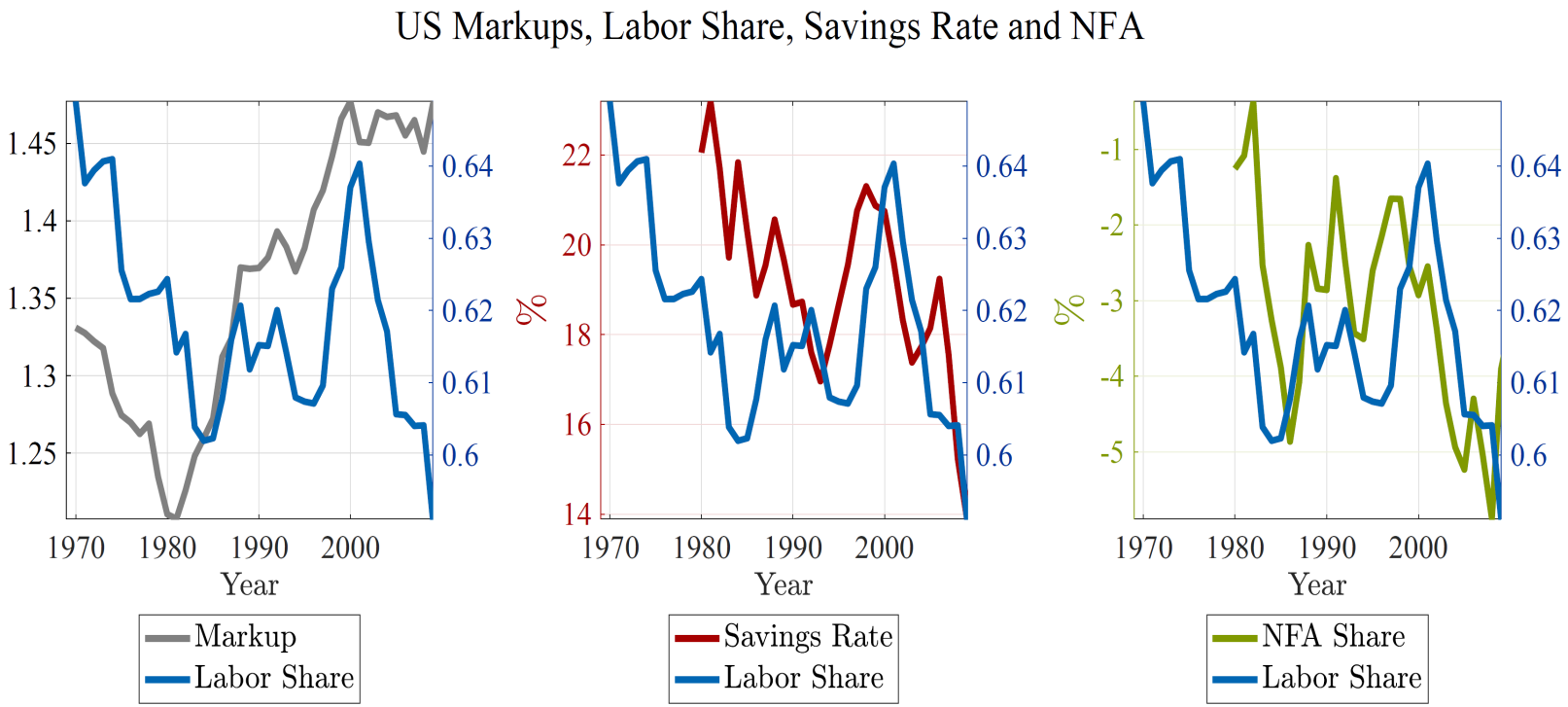


A simple model of market power and growth

- OLG setup, two-period lifetimes and no population growth
- Individuals have $1-\eta$ units of labor during youth and η units during old age:

$$\begin{array}{ll} (1-\eta)\cdot W_t & \text{young-age income} \\ \eta \cdot W_{t+1} & \text{old-age income} \end{array}$$

- Lifetime income of generation t is:

$$Y_t = (1-\eta)\cdot W_t + \eta \cdot \frac{W_{t+1}}{R_{t+1}}$$

- Key blocks of the model: savings and production

Savings

- Preferences of generation t:

$$U_t = \ln C_{1t} + \beta \cdot \ln C_{2t+1}$$

- Optimal consumption:

$$C_{1t} = \frac{1}{1+\beta} \cdot Y_t$$
$$\frac{1}{R_{t+1}} \cdot C_{2t+1} = \frac{\beta}{1+\beta} \cdot Y_t$$

and savings:

$$S_t = \frac{\beta}{1+\beta} \cdot (1-\eta) \cdot W_t - \frac{1}{1+\beta} \cdot \eta \cdot \frac{W_{t+1}}{R_{t+1}}$$

  - Note: savings increasing in R_{t+1}

Welfare

- Welfare of generation t can be evaluated as follows:

$$U_t \propto \ln Y_t + \frac{\beta}{1+\beta} \cdot \ln R_{t+1}$$

- To assess the welfare effect of a change in parameter χ_t, need to consider:
  - Effect on lifetime income or wealth, i.e., $\frac{d \ln Y_t}{d\chi_t}$; and
  - Effect on the cost of living, i.e., $\frac{\beta}{1+\beta} \frac{d \ln R_{t+1}}{d\chi_t}$.

Final good production

- Final good used for consumption and investment.
- Produced by assembling measure M_t of intermediate varieties:

$$Q_t = \left[\int_0^{M_t} x_t(z)^{\frac{\sigma-1}{\sigma}} \, dz \right]^{\frac{\sigma}{\sigma-1}}$$

where $x_t(z)$ denotes quantity of good z used in production and $\sigma > 1$.

- Letting $p_t(z)$ be the price of variety z, profit maximization implies:

$$x_t(z) = p_t(z)^{-\sigma} \cdot Q_t$$

where we have used the final good as numeraire.

Intermediate good production

- Given M_t existing varieties, each one is supplied by a monopolistic firm.
- Profits of monopolist z are given by:

$$\Pi_t(z) = [p_t(z) - W_t] \cdot x_t(z)$$

- Profit maximization implies:

$$p_t(z) = \mu_t \cdot W_t$$

where $\mu_t \in \left[1, \frac{\sigma}{\sigma - 1}\right]$ represents a limit on markups due to antitrust regulation or the presence of a competitive fringe.

Innovation

- What determines the number of varieties M_t?
- The ability to produce a variety of intermediate in period $t+1$ requires investing a unit of the final good at t
  - E.g. cost of creating a blueprint
  - Note: varieties last for one period
- Free entry implies that:

$$1 = \frac{\Pi_{t+1}}{R_{t+1}}$$

- Letting I_t denote total investment in period t, it follows that:

$$M_{t+1} = I_t$$

Equilibrium production and its distribution

- In equilibrium:

$$Q_t = M_t^{\frac{1}{\sigma-1}}$$

$$W_t = \frac{1}{\mu_t} \cdot M_t^{\frac{1}{\sigma-1}}$$

$$\Pi_{t+1} = \frac{\mu_{t+1} - 1}{\mu_{t+1}} \cdot M_{t+1}^{\frac{1}{\sigma-1}-1}$$

- Markups determine how output is distirbuted between wages and profits.

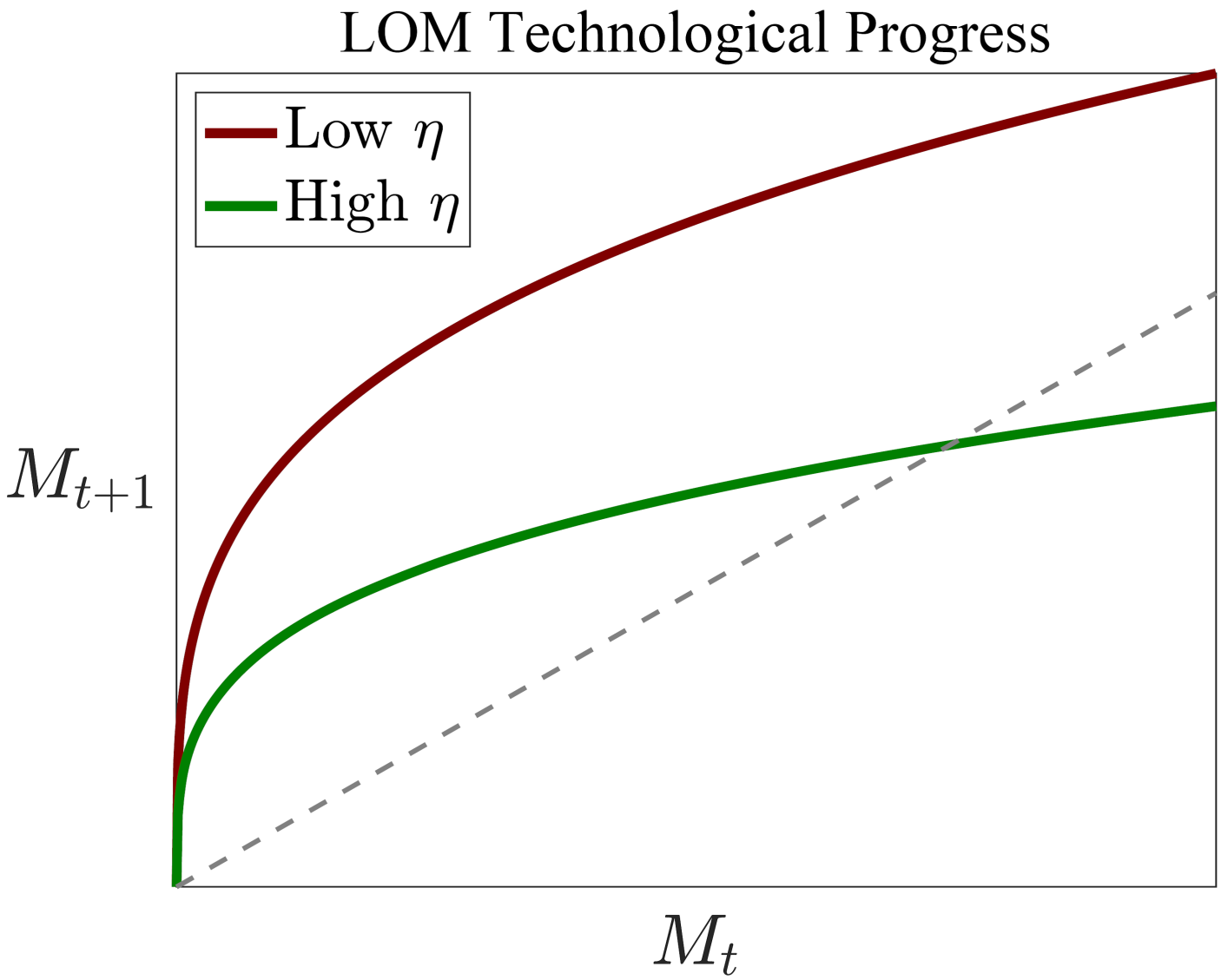
Equilibrium with financial autarky

- In financial autarky, $S_t = I_t$ and thus:

$$M_{t+1} = \frac{\beta}{1+\beta+\frac{\eta}{\mu_{t+1}-1}} \cdot \frac{1-\eta}{\mu_t} \cdot M_t^{\frac{1}{\sigma-1}}$$

- Markups affect both distribution of income and savings
- Assume throughout $\sigma > 2$

Equilibrium dynamics



Effects of markups on innovation and growth

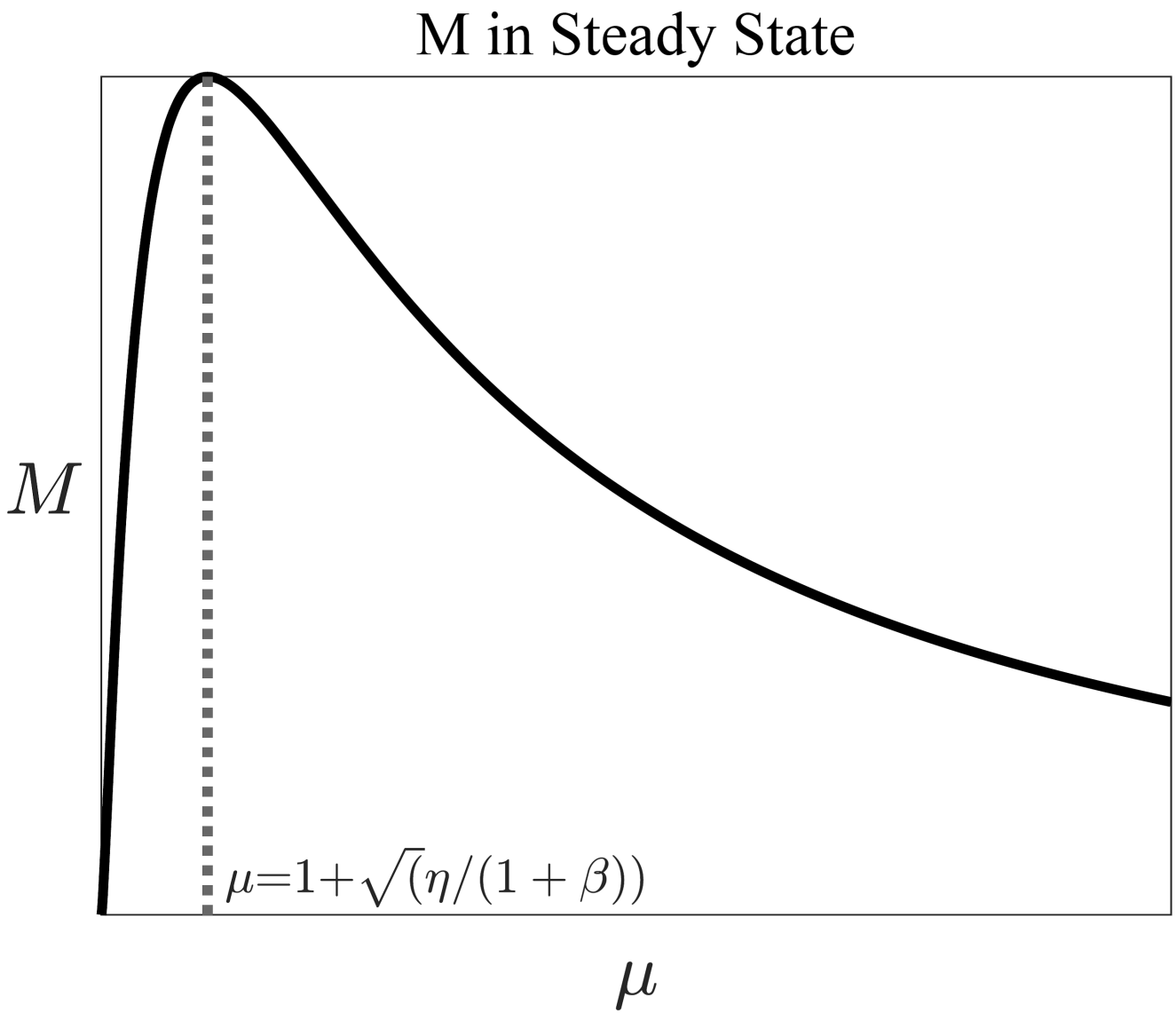
$$M_{t+1} = \frac{\beta}{1+\beta+\frac{\eta}{\mu_{t+1}-1}} \cdot \frac{1-\eta}{\mu_t} \cdot M_t^{\frac{1}{\sigma-1}}$$

- All else equal:
  - An increase in μ_t reduces wages and thus savings: $M_{t+1} \downarrow$
  - An increase in μ_{t+1} increases the interest rate and thus savings: $M_{t+1} \uparrow$
- The markup that mazimizes steady-state output is:

$$\mu = 1 + \sqrt{\frac{\eta}{1+\beta}}$$

  - Key role played by income profile (as captured by η)

Output-maximizing markup



Markups and welfare

- Steady-state welfare can be evaluated through:

$$U \propto \ln Y + \frac{\beta}{1+\beta} \cdot \ln R$$

where

$$Y = \left(1 - \eta + \frac{\eta}{R}\right) \cdot \frac{1}{\mu} \cdot \left(\frac{\beta}{1+\beta+\frac{\eta}{\mu-1}} \frac{1-\eta}{\mu} \right)^{\frac{1}{\sigma-2}}$$

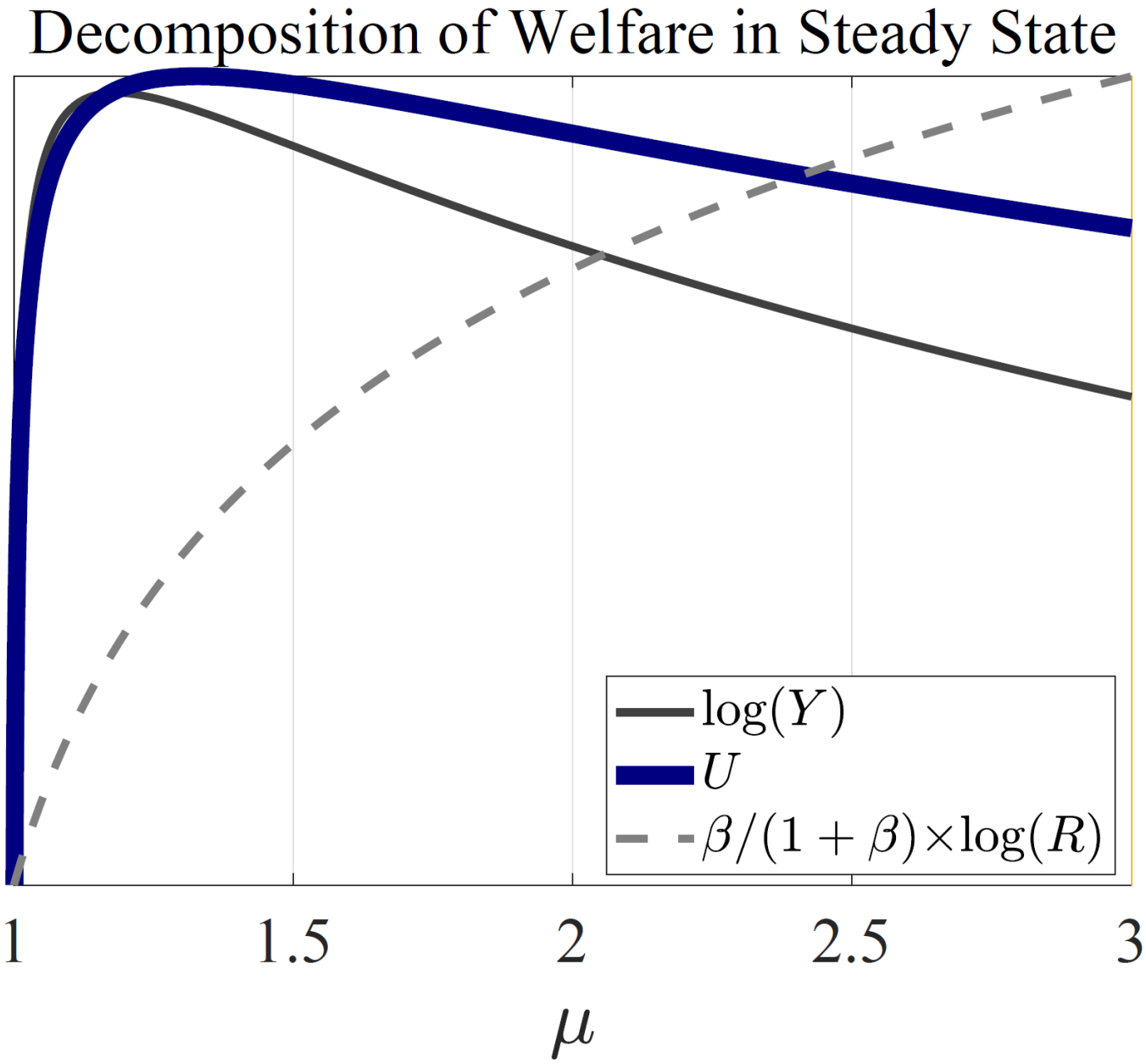
and

$$R = \frac{(\mu-1)\cdot(1+\beta)+\eta}{\beta\cdot(1-\eta)}$$

- Y is inverse U-shaped in μ and R is increasing in μ.
- Define the welfare-maximizing markup as:

$$\mu_C^* = \arg \max_{\mu \in \left[1, \frac{\sigma}{\sigma-1}\right]} U$$

Welfare-maximizing markup



Key takeaway

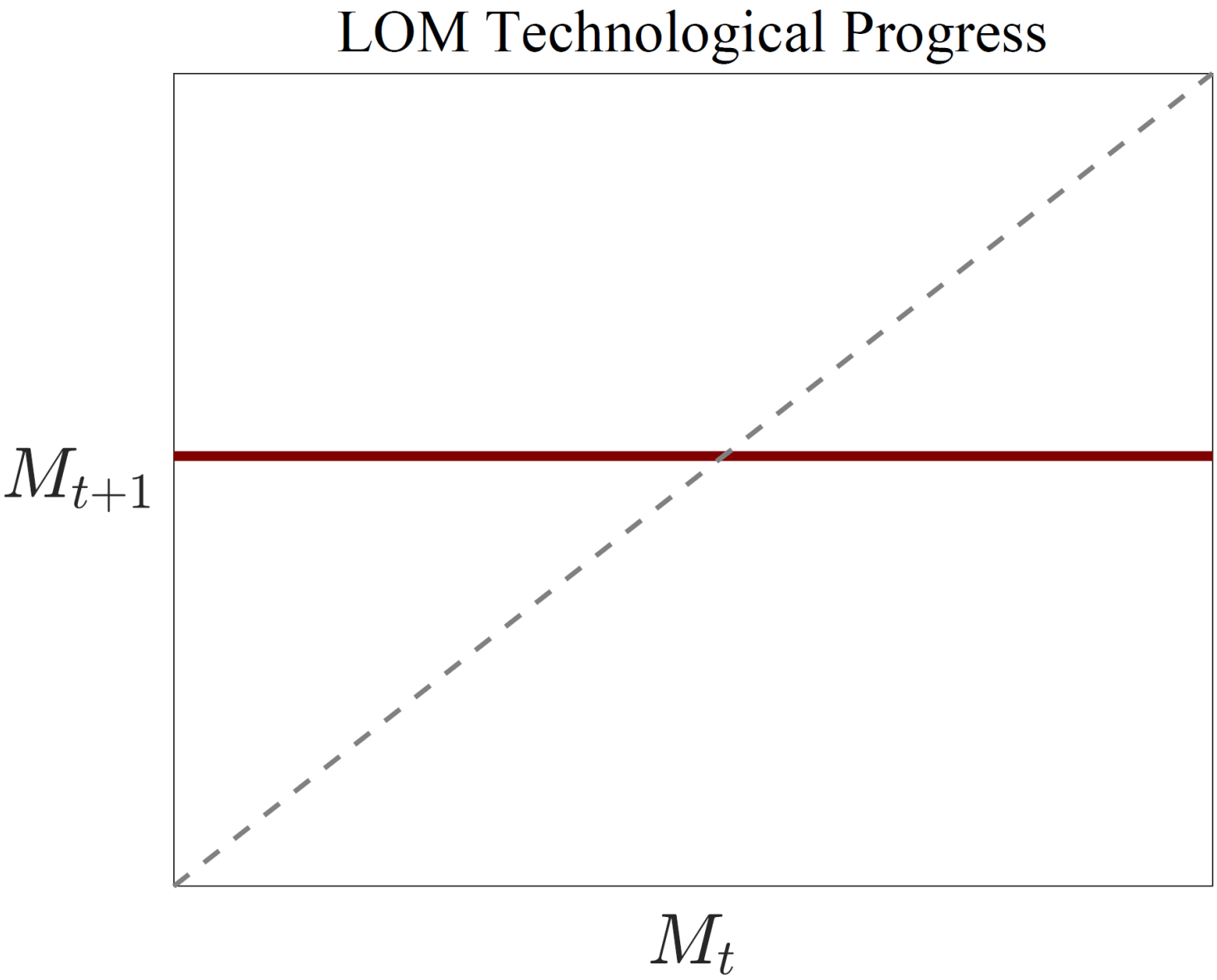
- In financial autarky, innovation and growth are constrained by domestic savings and the effects of markups on savings are ambiguous due to two effects:
  1. Reduce labor income and lifetime savings,
  2. Raise thereturn to savings and reduce present value of future labor income
- Caveats, which make market power less benign than our model suggests:
  - Production factors (here, labor) supplied inelastically
  - Investments are efficient, i.e. resources are not spent to grab market power

Equilibrium with financial globalization (SOE)

- How does financial globalization change the link between market power, innovation and growth?
- With financial globalization, $R_{t+1} = \rho$ and thus:

$$M_{t+1} = \left(\frac{1}{\rho} \cdot \frac{\mu_{t+1} - 1}{\mu_{t+1}} \right)^{\frac{\sigma-1}{\sigma-2}}$$

Equilibrium dynamics



Effects of markups on innovation and growth

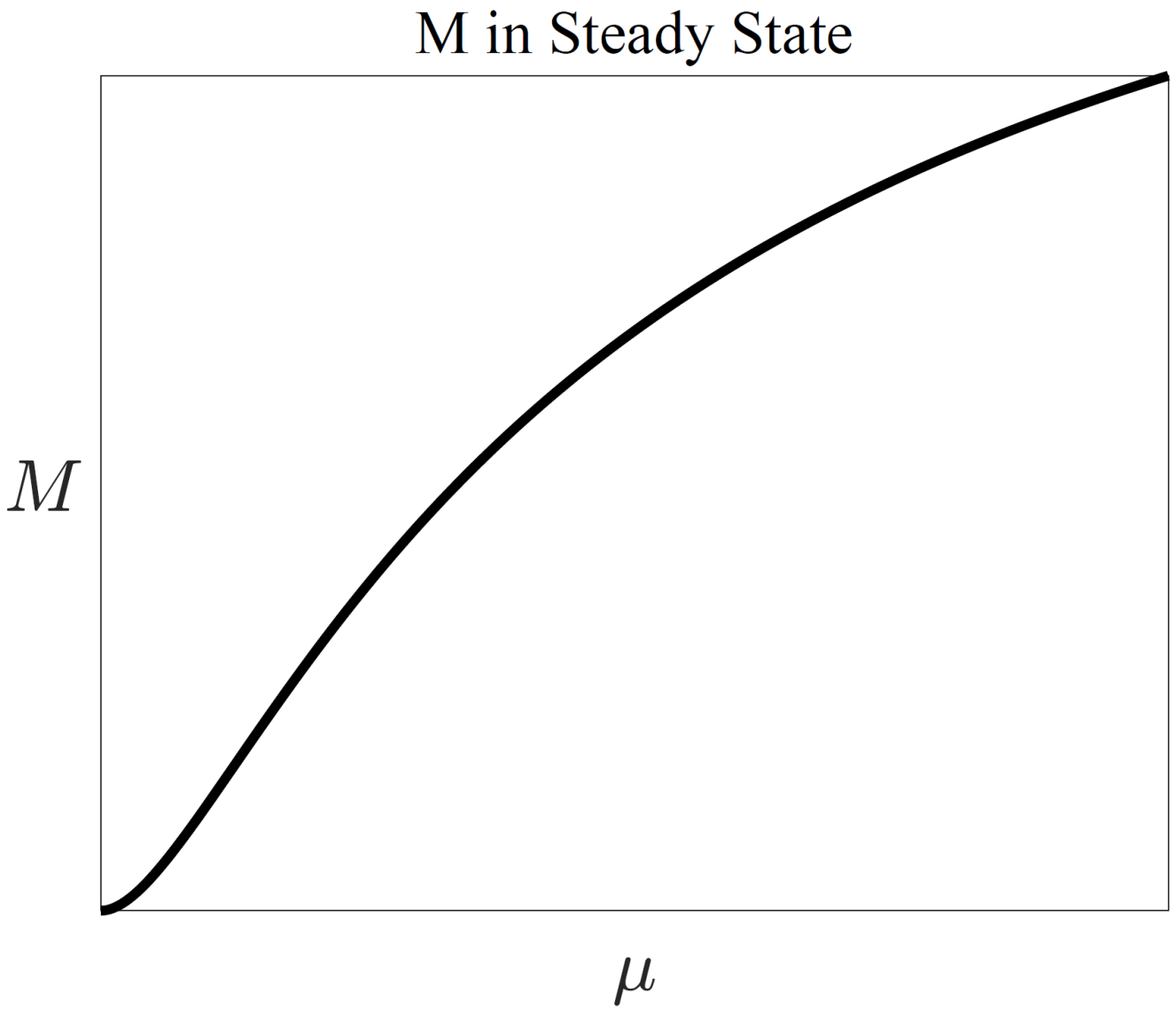
$$M_{t+1} = \left(\frac{1}{\rho} \cdot \frac{\mu_{t+1} - 1}{\mu_{t+1}} \right)^{\frac{\sigma-1}{\sigma-2}}$$

- All else equal:
  - An increase in μ_t has no effect on domestic innovation and growth.
  - An increase in μ_{t+1} attracts foreign savings and raises innovation and growth.
- The markup that mazimizes steady-state output is now:

$$\mu = \frac{\sigma}{\sigma - 1} \text{ for all } t$$

(In fact, the unconstrained output-maximizing markup exceeds the monopolist's choice!)

Growth-maximizing markup



Markups and welfare

- Steady-state welfare can be evaluated through:

$$U \propto \ln Y + \frac{\beta}{1+\beta} \cdot \ln R$$

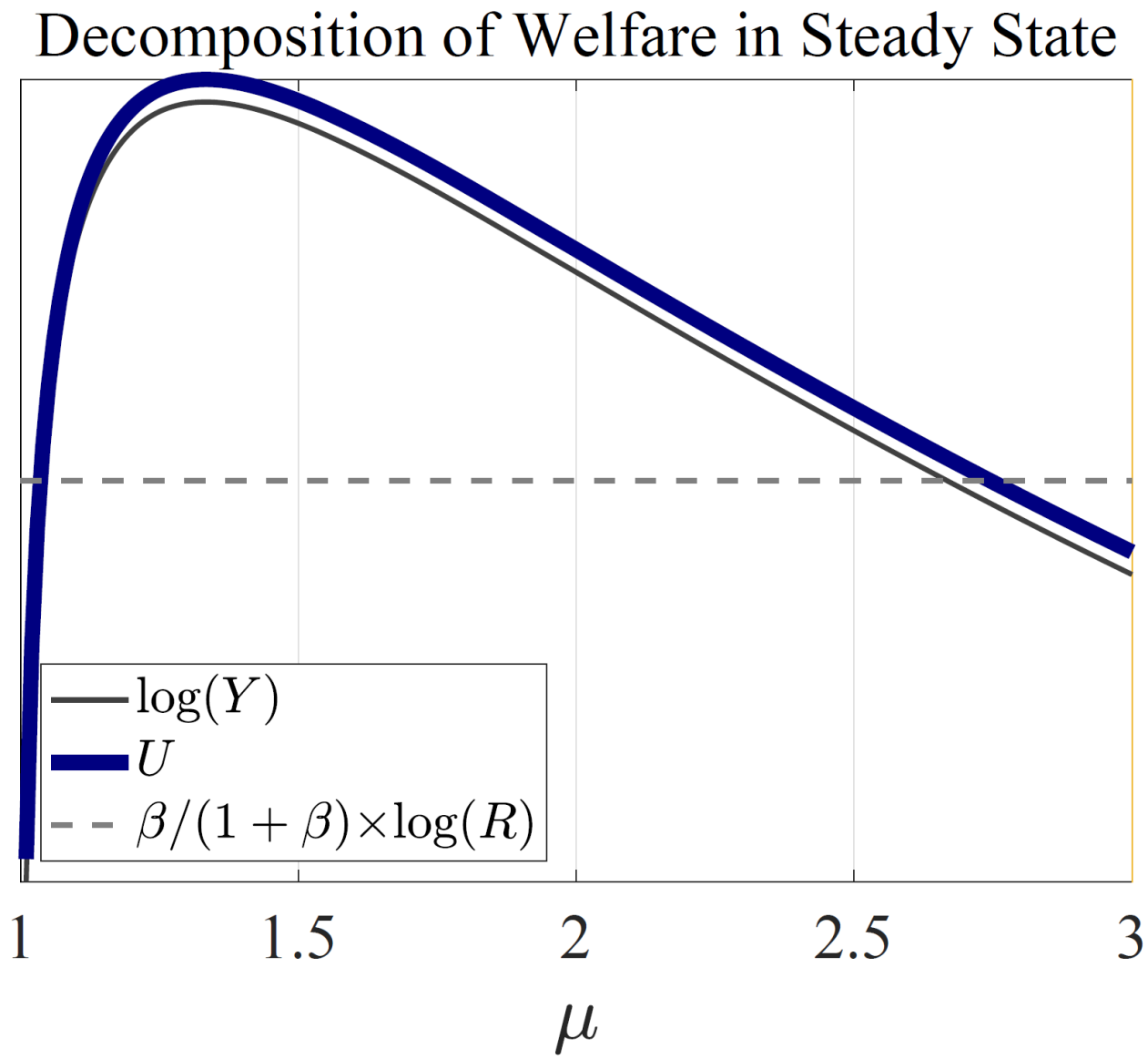
where

$$Y = \left(1 - \eta + \frac{\eta}{\rho}\right) \cdot \frac{1}{\mu} \cdot \left(\frac{1}{\rho} \cdot \frac{\mu - 1}{\mu}\right)^{\frac{1}{\sigma-2}} \quad \text{and} \quad R = \rho$$

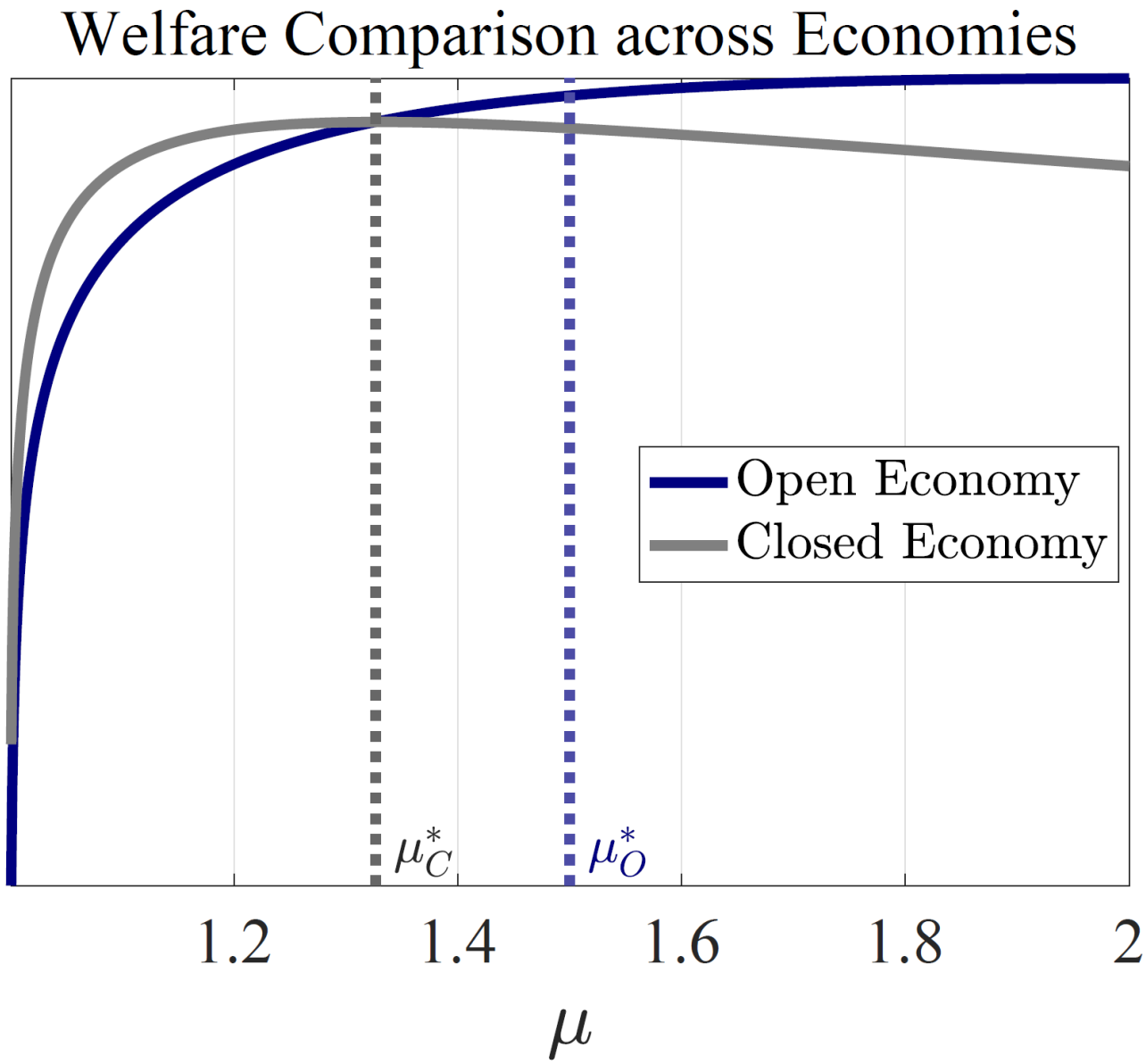
- Y is again inverse U-shaped in μ but now R is independent of μ.
- Welfare is maximized by setting:

$$\mu_O^* = \frac{\sigma}{\sigma - 1}$$

Welfare-maximizing markup



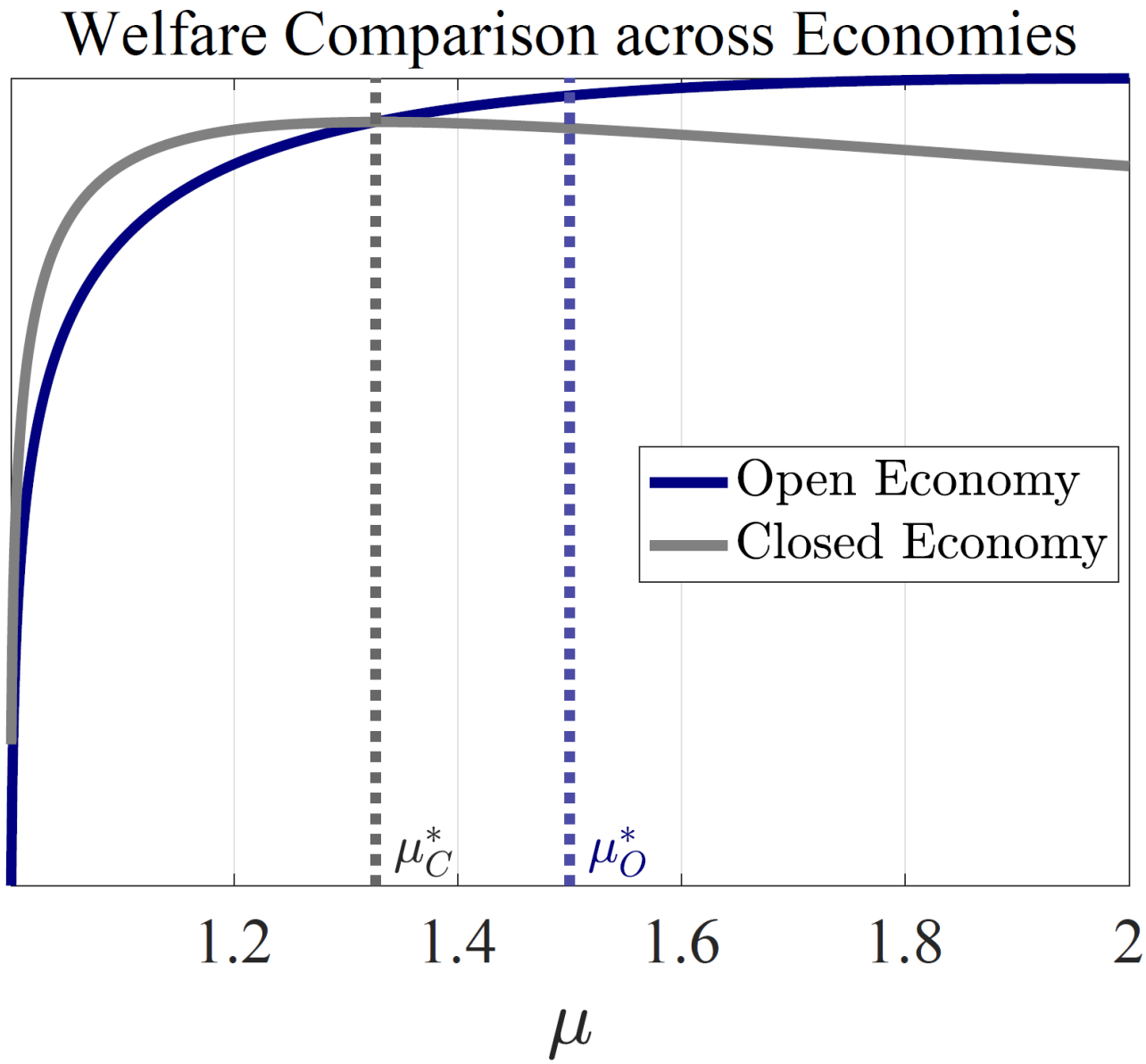
Financial globalization and markups: SOE



The global economy

- Consider global economy composed of a continuum of identical countries
- Suppose countries set μ to maximize steady-state welfare
  - In financial autarky, all countries set $\mu = \mu_C^*$
  - In the open economy, all set $\mu_O^* \geq \mu_C^*$
- From the perspective of each country, higher μ is beneficial
  - Each country faces elastic supply of savings and attracts capital flows by raising μ
- From the perspective of the world economy, however, this is costly
  - Labor income and total savings fall across the globe
  - Countries compete for a lower supply of savings
  - Global slump in innovation and growth!

Financial integration and markups: global equilibrium



Where do we go from here?

- Understand the political economy of market power and how it is affected by financial globalizaiton
- Asymmetries in the global economy (in antitrust regulations, savings rates, lifetime profiles of income, etc...)
- Incorporating additional features to the analysis:
  - Impact on factor supply (physical capital and labor)
  - Inefficient innovation and rent seeking
- ... Any ideas?