Discussion of "Endogenous Production Networks and Non-Linear Monetary Transmission" by Mishel Ghassibe (2022)

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European Central Bank
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Paper's Summary (as I Understood It)

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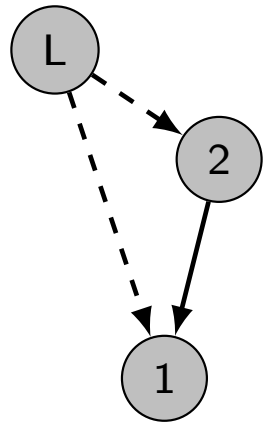
This Discussion

- Recover the paper's key insights in a simplified version of the model.
- Some comments on how one may want to interpret the results

A Micky Mouse Model of Endogenous Production Networks



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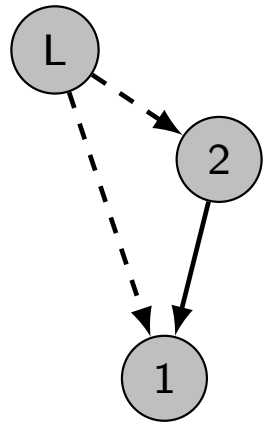

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- **Industry 1**: No nominal rigidities, but a flexible production technology:

$$p_1 = \mathrm{mc}_1 = \min\left\{\frac{1}{A} w^{1-\alpha} p_2^{\alpha}, \frac{1}{B} w^{1-\beta} p_2^{\beta}\right\}$$

where $\alpha > \beta$ and $A > B$.

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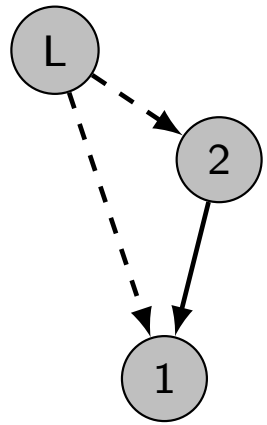
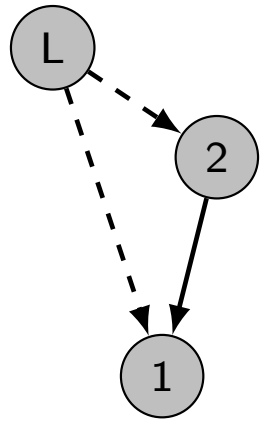


- **Representative household**: consumes good 1 and has utility: $u(C, L) = \log C - L$.

$$w = m.$$

Micky Mouse Endogenous Networks



$$\mathrm{mc}_1 = \min\left\{\frac{1}{A}w^{1-\alpha}p_2^{\alpha}, \frac{1}{B}w^{1-\beta}p_2^{\beta}\right\}$$

- Industry 1 would use the A-technology if and only if

$$A/B \geq (p_2/w)^{\alpha/\beta}.$$

- Therefore,

$$\log \mathrm{GDP} = \begin{cases} \log A + \alpha(\log m - \log p_2) & \text{if } A/B \geq (p_2/w)^{\alpha/\beta} \\ \log B + \beta(\log m - \log p_2) & \text{if } A/B < (p_2/w)^{\alpha/\beta} \end{cases}$$

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Model's Key Insights

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- Degree of monetary non-neutrality:

$$\frac{\mathrm{d} \log \text{GDP}}{\mathrm{d} \log m} = \begin{cases} \alpha\delta & \text{if } (m^\delta z_2^{1-\delta})^{\alpha-\beta} > B/A \\ \beta\delta & \text{if } (m^\delta z_2^{1-\delta})^{\alpha-\beta} < B/A \end{cases}$$

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(3) *Size dependence:* $\log \text{GDP}$ is nonlinear in $\log m$.

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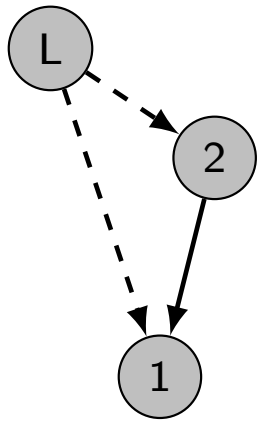

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- The mini model recovered all insights of the model (albeit in a simplified way).
- Yet, it exhibits neither
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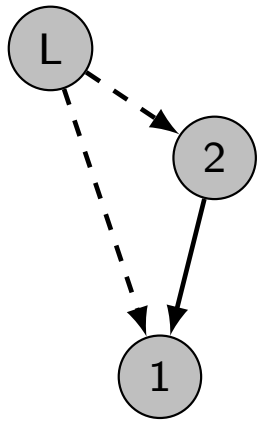

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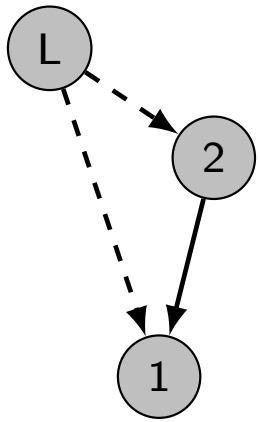
- What matters is that endogenous choice of technology by industry 1 changes the effective degree of price stickiness in the economy.

Comment 2: Pushing Even Further



- same setting as before, but replace endogenous network with a CES technology

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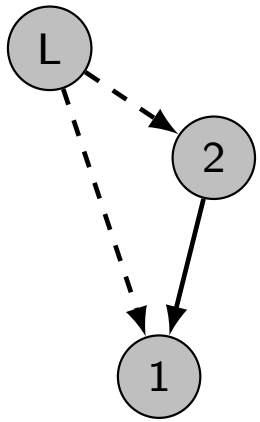

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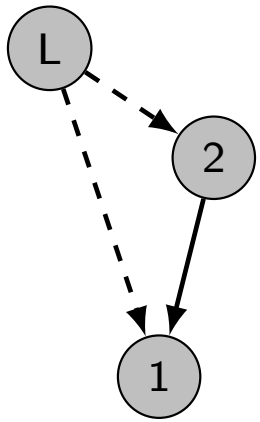

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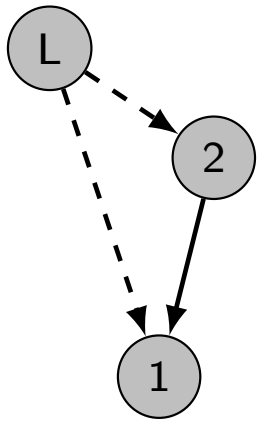

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- As long as $\theta > 1$, monetary policy is cycle, path, and size dependent.
- **Intuition**: the effective of degree of price stickiness depends on the initial conditions.

Summary

- Really nice paper, masterfully done, and with novel empirical findings (on how monetary shocks reshape the extensive margin of the network).

- More thought about the actual underlying mechanism and interpretation:
  - how central is network endogeneity?
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- Would be nice to get results/insights that are fundamentally due to network endogeneity.