

Wealth taxation and Innovation in a Schumpeterian ABM



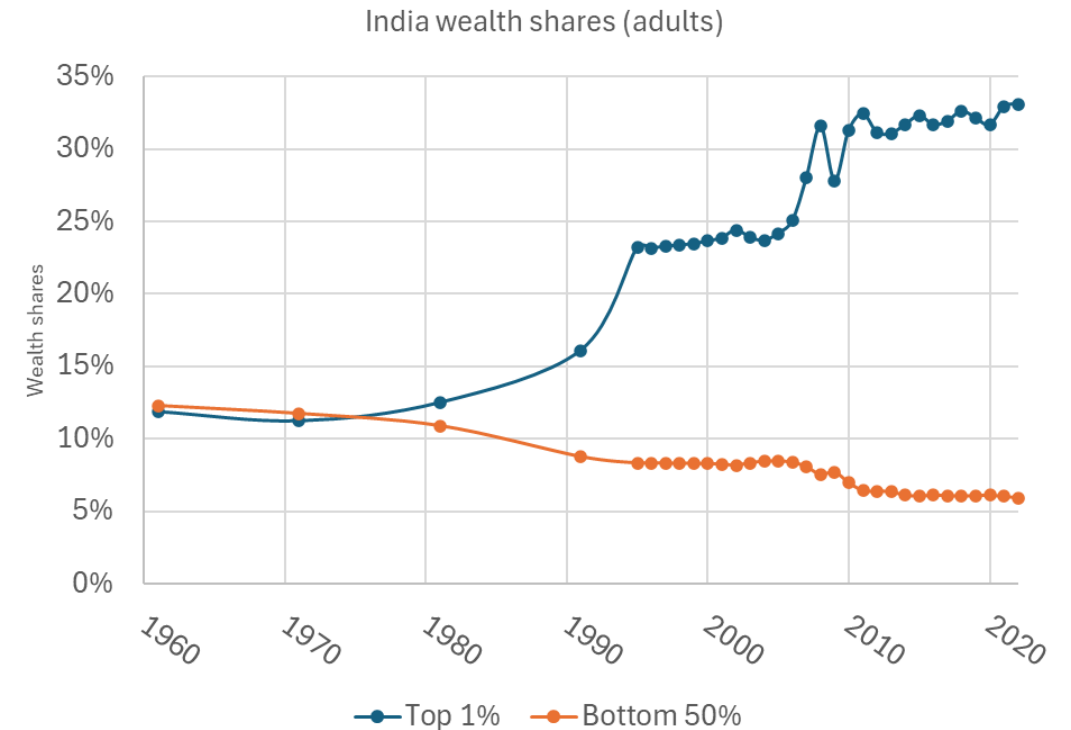
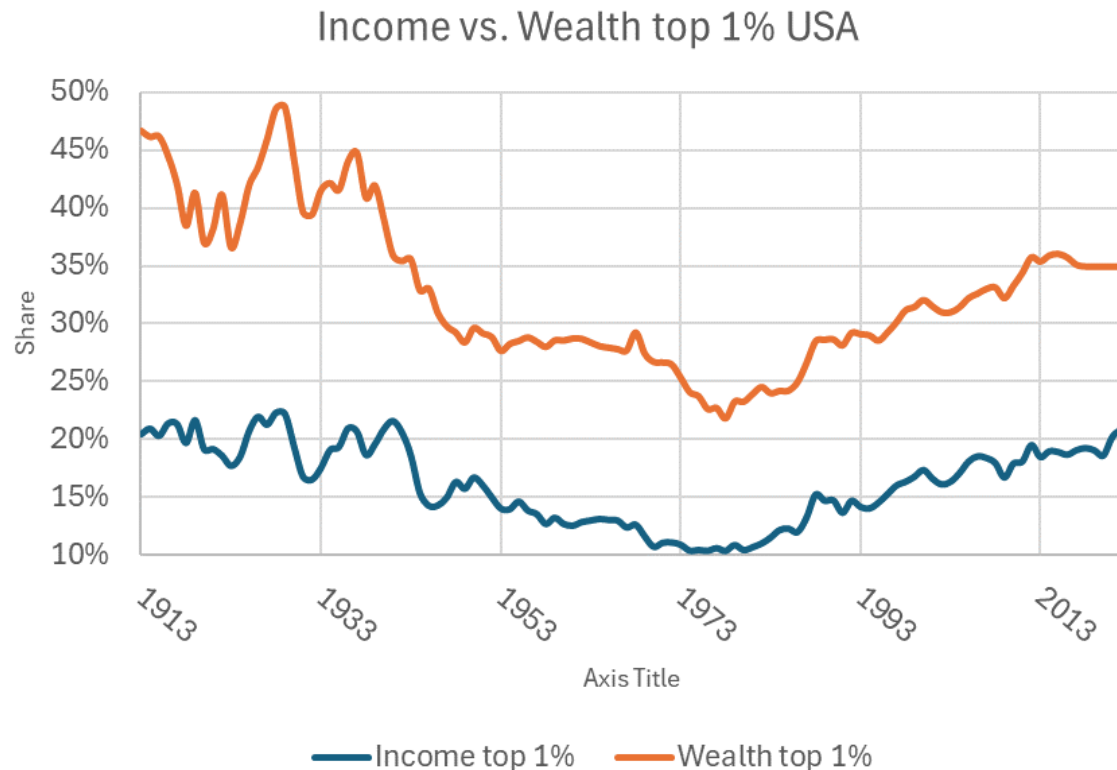
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EAEPE 2025, Athens

*Intermediate
Feedback wanted!*

Wealth inequality is rising & larger than income inequality



Data: <https://wid.world/>

Wealth inequality anti-democratic & anti-environmental?

Political power comes with access to resources

Acemoglu, D., & Robinson, J. A. (2006). *Economic origins of dictatorship and democracy*. Cambridge University Press.

Scheve, K., & Stasavage, D. (2017). Wealth inequality and democracy. *Annual Review of Political Science*, 20, 451-468.

Ansell, B., & Samuels, D. (2018, August). Why inequality does not undermine democracy. In *American Political Science Association, Annual Meeting*.

“Finally, the bulk of total emissions from the global top 1% of the world population comes from their investments rather than from their consumption.”

Chancel, L. Global carbon inequality over 1990–2019. *Nat Sustain* 5, 931–938 (2022). <https://doi.org/10.1038/s41893-022-00955-z>

Is taxation of, and redistribution of, wealth a solution?

Even if taking complexity of the economy into account?

What happens to the economy overall?

To innovation and long-run growth&welfare?

ABMs of wealth inequality & taxation are so far elementary and few

Vallejos, H. A., Nutaro, J. J., & Perumalla, K. S. (2018). An agent-based model of the **observed distribution of wealth in the United States**. *Journal of Economic Interaction and Coordination*, 13, 641-656.

Wicaksono, G., & Mansury, Y. (2020). An Agent-Based Model of Wealth Inequality with **Overlapping Generations, Local Interactions**, and Intergenerational Transfers. *Innovations in Urban and Regional Systems: Contributions from GIS&T, Spatial Analysis and Location Modeling*, 213-239.

Khouw, T. (2021). **Globalization and inequality in an agent-based wealth exchange model** (Doctoral dissertation, Boston University).

Empirical results are varied and difficult to assess

Tax evasion opportunities high in reality and hence “actual” behavioural responses difficult to measure.

OECD. "The Role and Design of Net Wealth Taxes in the OECD." OECD Tax Policy Studies, No. 26. Paris: OECD Publishing, 2018. <https://doi.org/10.1787/9789264290303-en>.

Tendency is towards strong response and elasticity of a wealth tax
(very uncertain though)

Advani, A., & Tarrant, H. (2021). Behavioural responses to a wealth tax. *Fiscal Studies*, 42(3-4), 509-537.

Key paper we
make use of

JOURNAL ARTICLE

Growth, inequality, and declining business dynamism in a unified Schumpeter Mark I + II model



Patrick Mellacher ✉

Industrial and Corporate Change, dtaf012, <https://doi.org/10.1093/icc/dtaf012>

Published: 14 May 2025 **Article history** ▼



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■ Split View

“ Cite

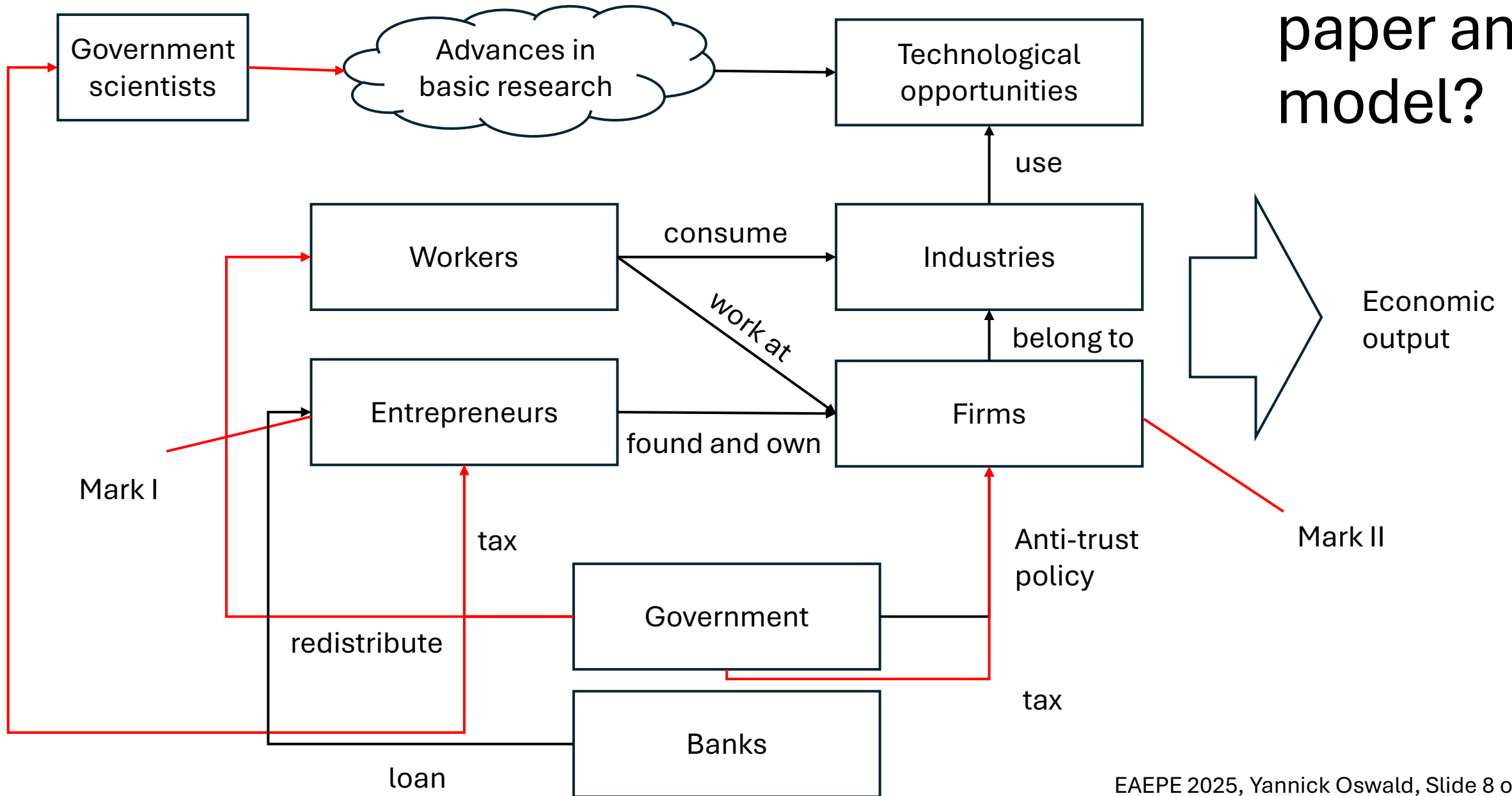
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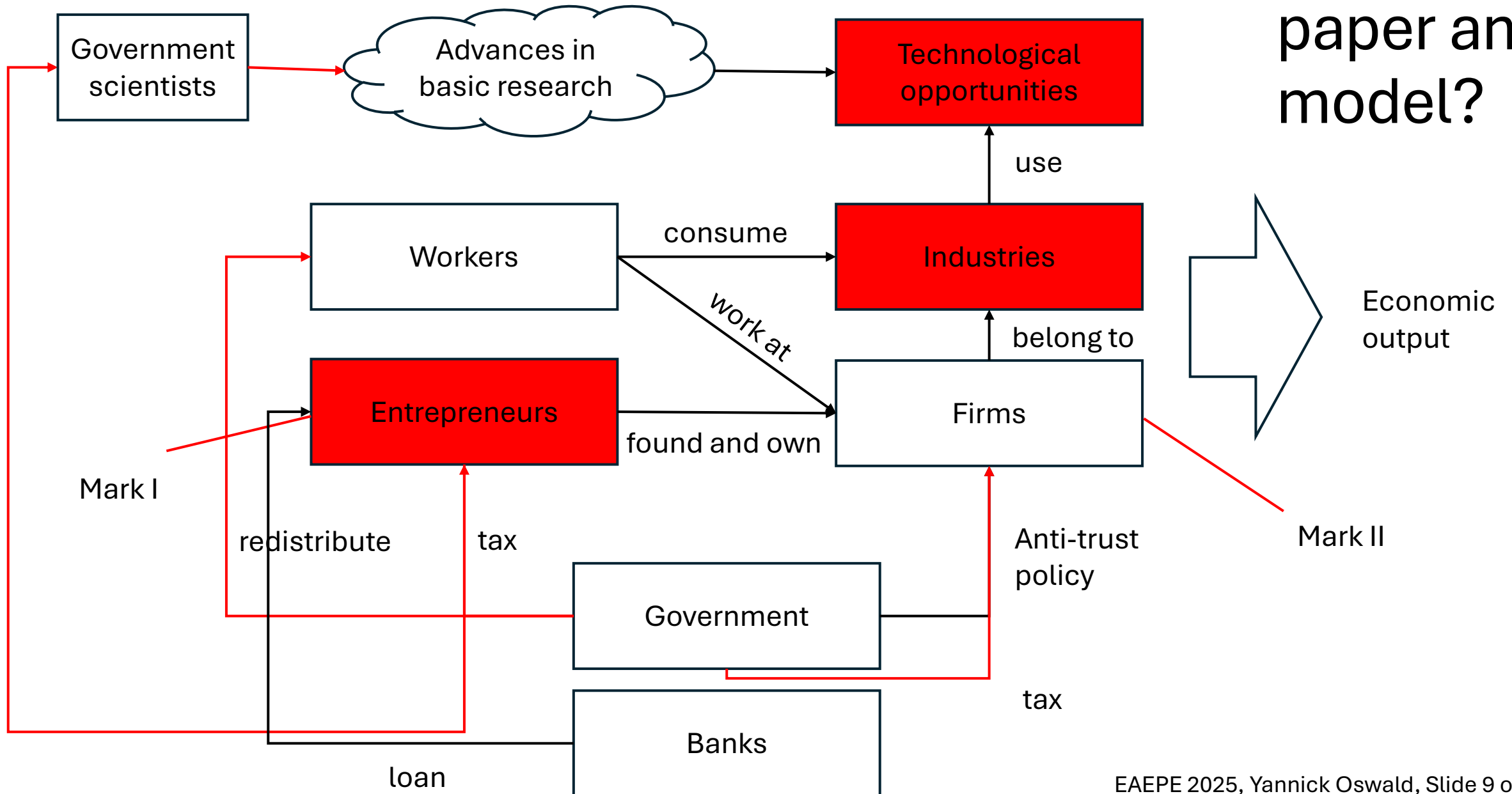
Abstract

I develop a Schumpeterian agent-based model in which the entry and exit of firms, their productivity and markup, the birth of new industries, and the social structure of the population are endogenous. I use this model to study the causes of rising inequality and declining “business dynamism” since the 1980s. My hybrid model combines features of (i) the so-called Schumpeter Mark I (centering around the entrepreneur), (ii) the Mark II model (emphasizing the innovative capacities of firms), and (iii) Cournot competition, with firms using ordinary least squares

Why this paper and model?



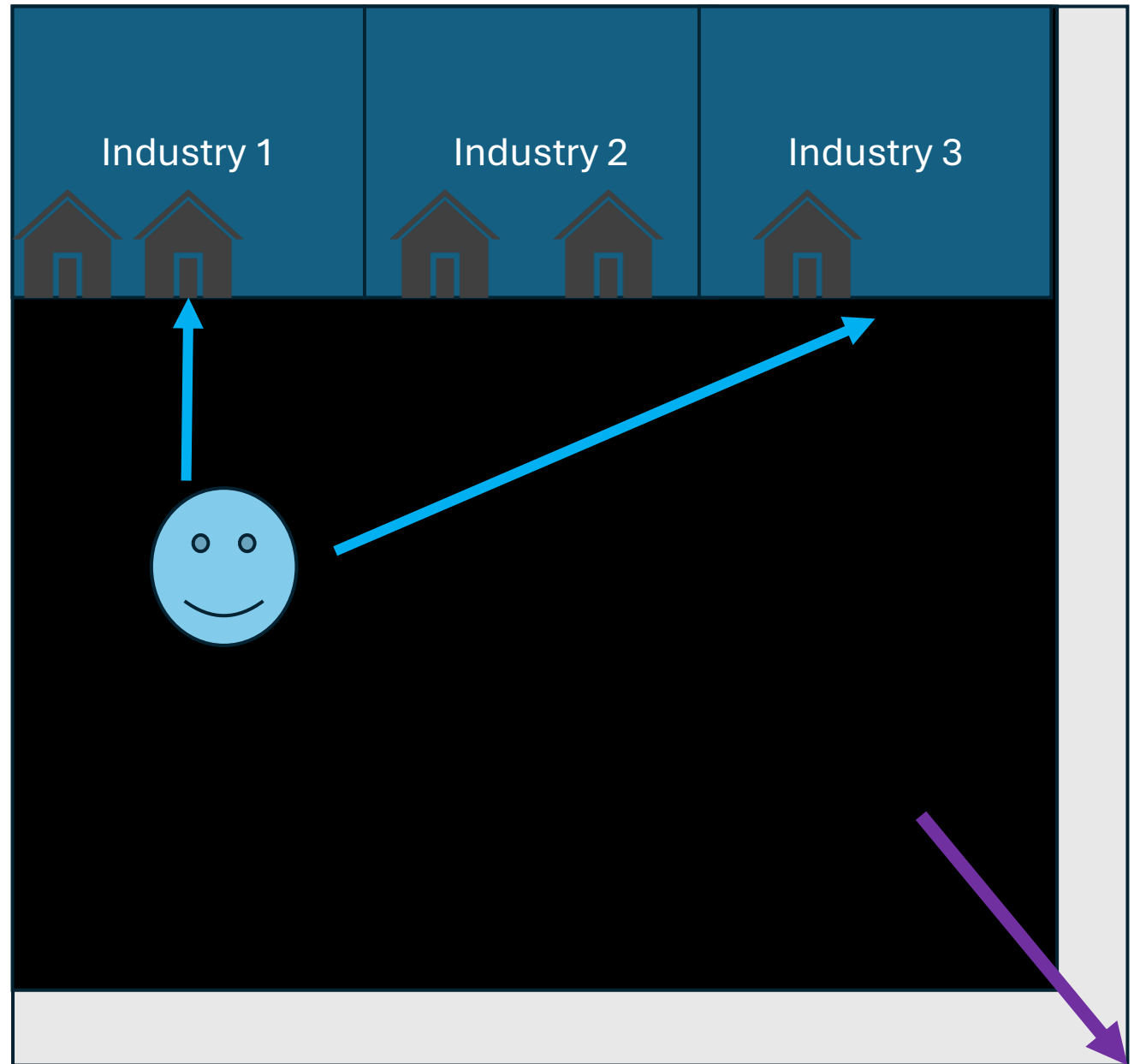
Why this paper and model?



Technological
opportunity space

&

fundamental
entrepreneurial activity

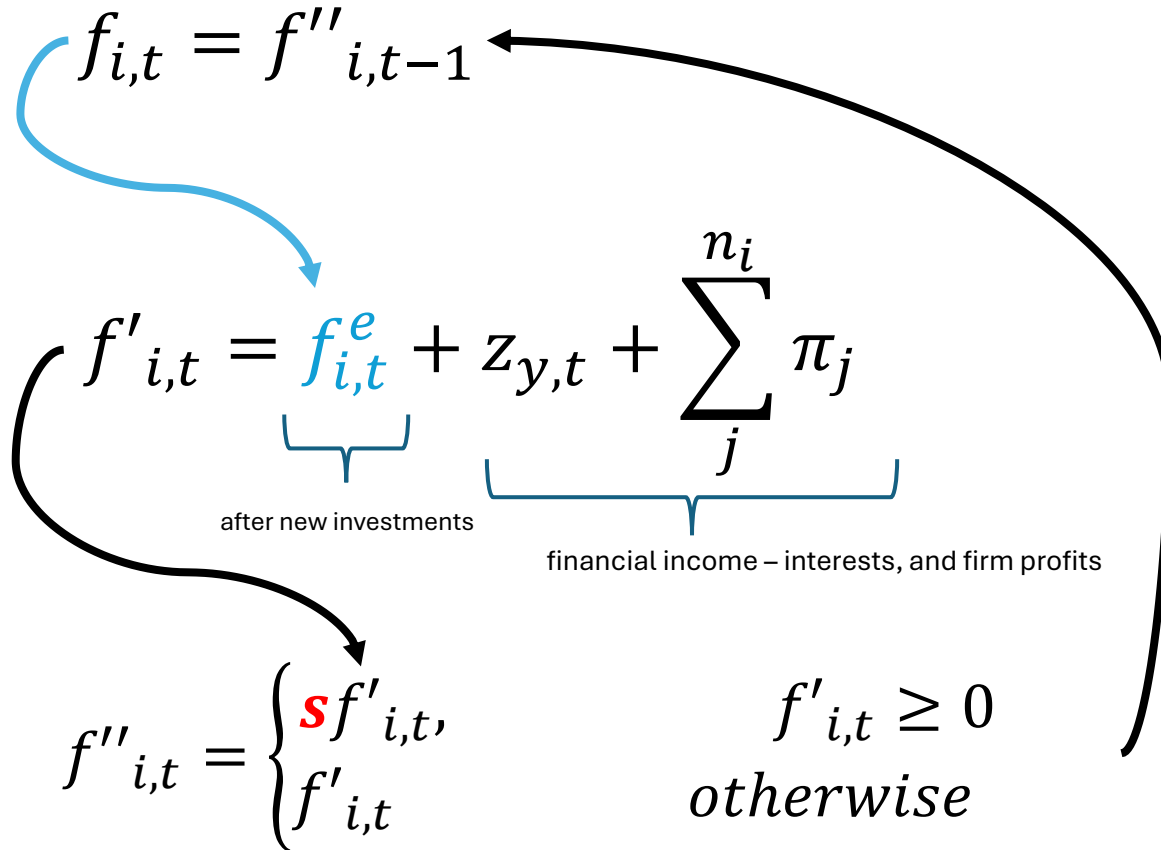


Initialisation and calibration

- Inspired by the literature like Dosi et al. 2010
- Calibrated to USA long-run and stylised facts

Entrepreneurial activity (1)

– savings and income

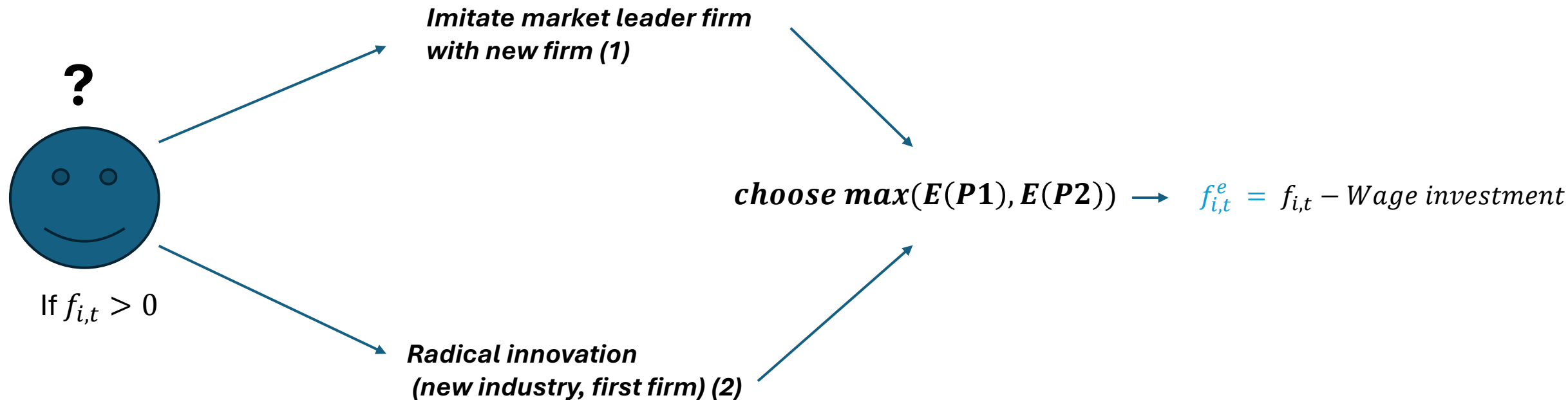


Funds at start of period
= savings left from last period

Funds after **entrepreneurial activity**

Funds after consumption = savings

Entrepreneurial activity (1)



Entrepreneurial activity(2)

$$E(P) = p \cdot (ED - LC - i)$$

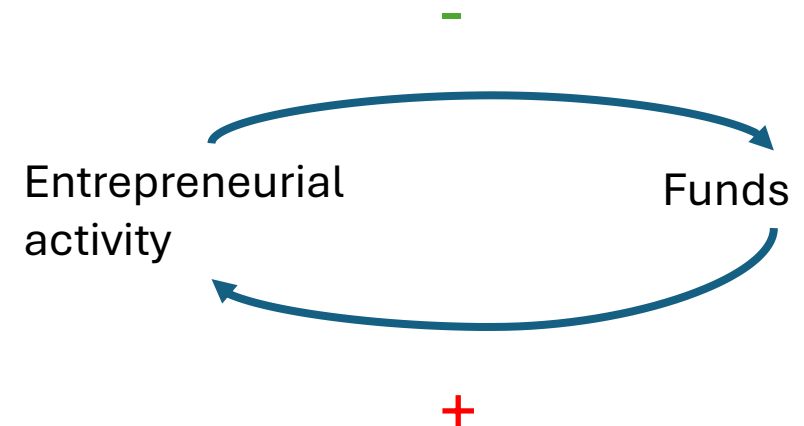
Might be zero & depends on funds

p = success probability

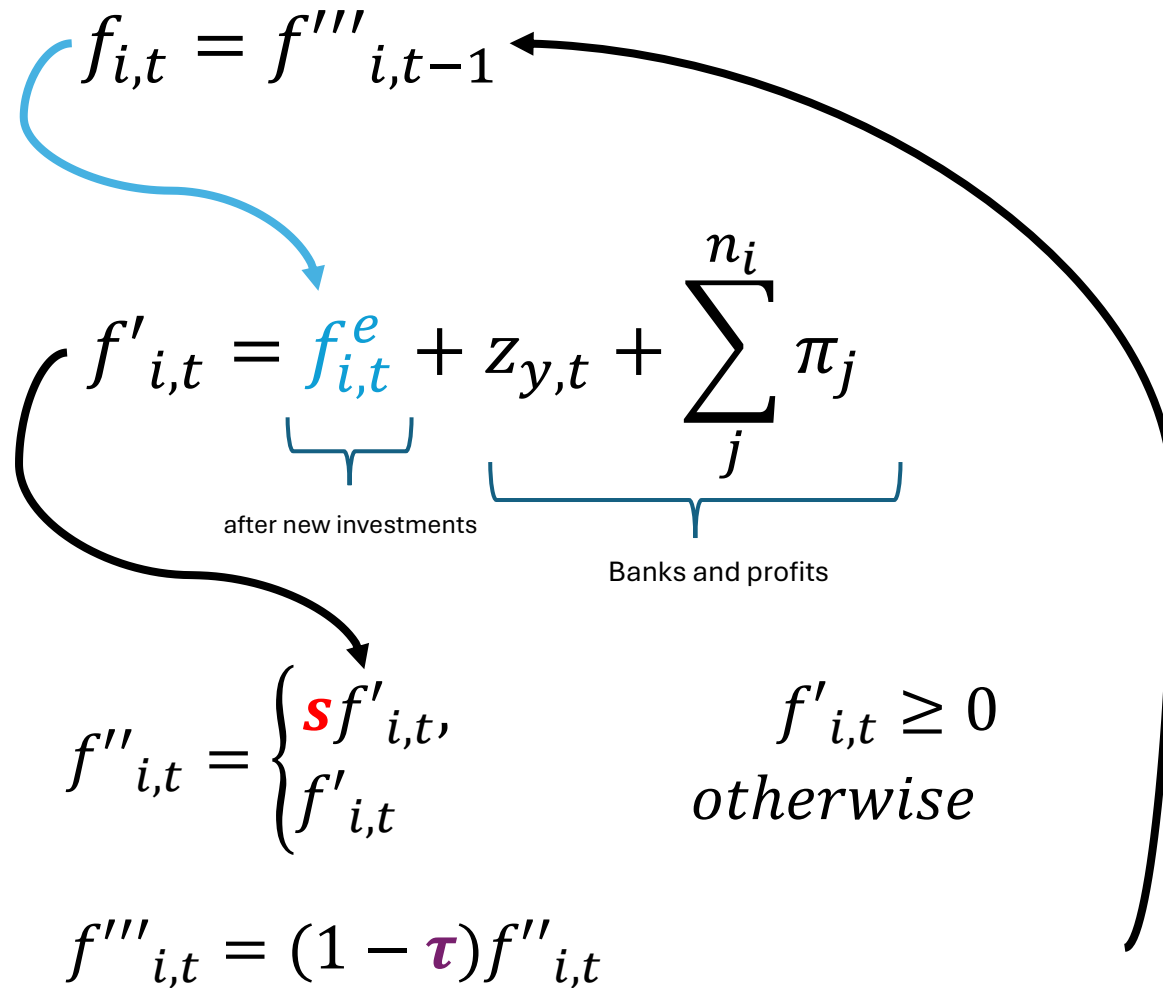
ED = expected demand

LC = Labor cost

i = interest payment



Saving behaviour of entrepreneurs (2)



Funds at start of period
= savings left from last period

Funds after entrepreneurial activity

Funds after consumption = savings

Funds after wealth tax
Baseline = 0.25% per Q, ~ 1% per year

Behavioural response of entrepreneurs (3)

the parameter s

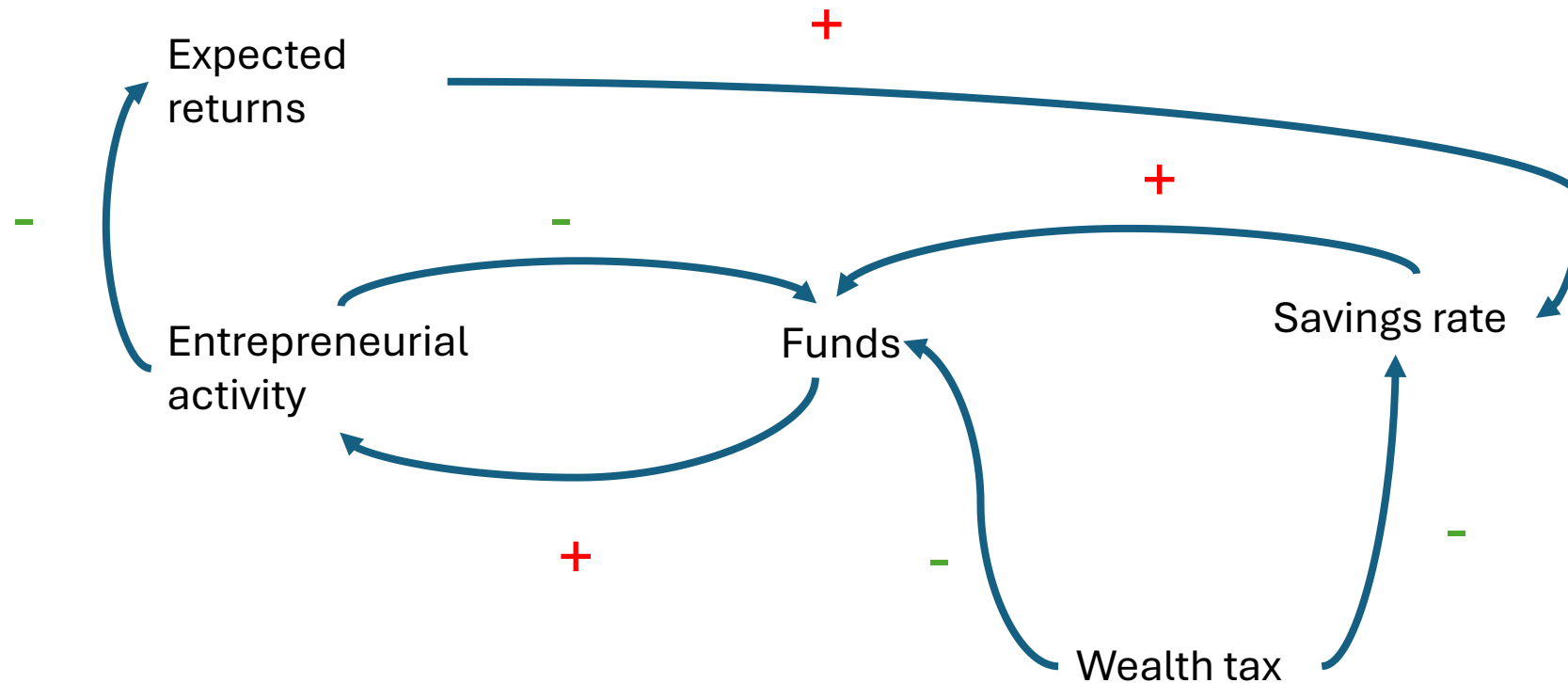
$$s_{i,t+1} = (1 - \lambda)s_{i,t} + \lambda \underbrace{s'_{i,t}}_{\text{Target savings rate}}$$

$$s'_{i,t} = \frac{1}{1 + \exp(-(\underbrace{\beta_0}_{\text{Base rate}} + \underbrace{\beta_1 \varphi_1}_{\substack{\text{Increase if} \\ \text{expected} \\ \text{returns} \\ \text{increase} \\ \text{Of} \\ \text{entrepreneuri} \\ \text{al activity}}} - \underbrace{\beta_2 \varphi_2(\tau)}_{\text{Wealth Tax}}))}$$

Entrepreneurs react with – (7% to 18%)
saving rate response per 1% wealth tax

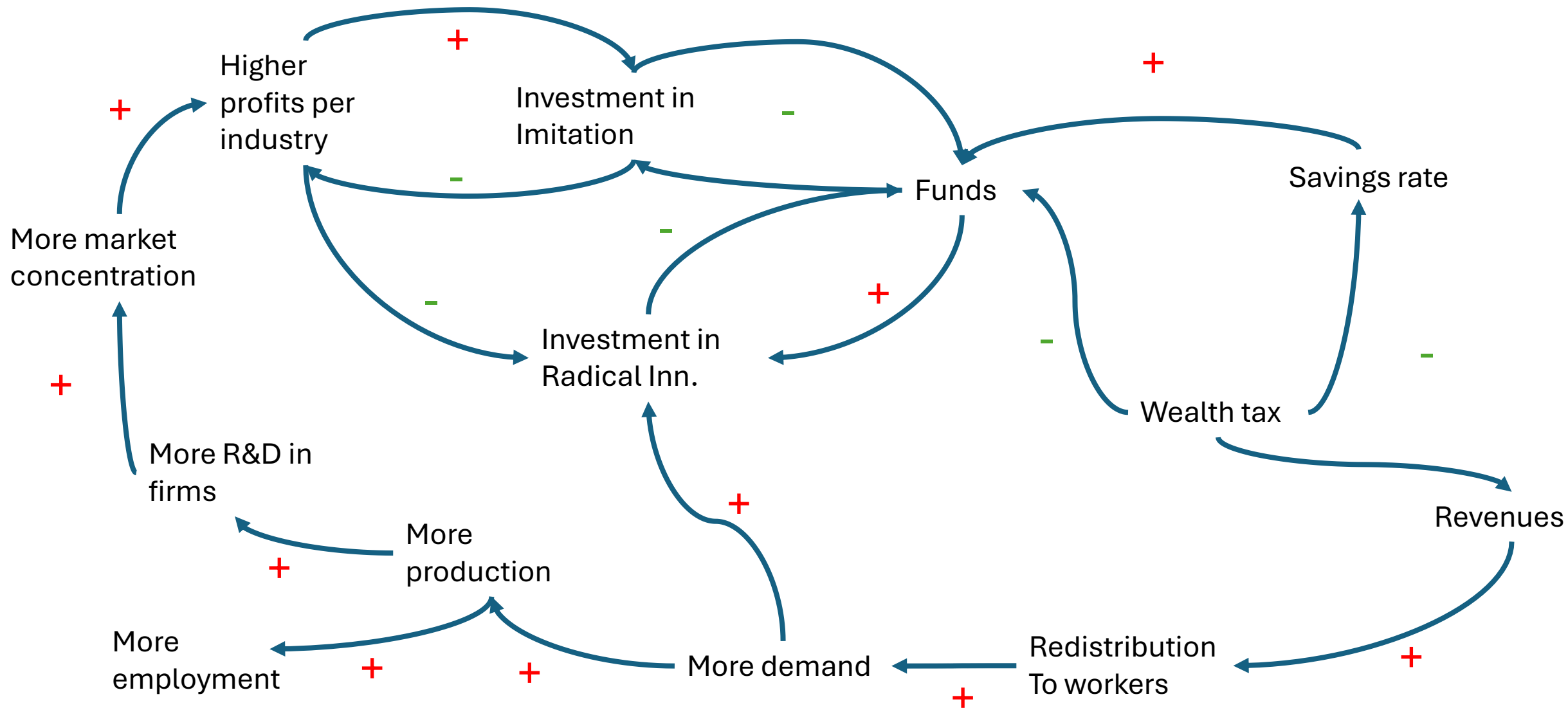
Saving behaviour understood?

Complexity of our model is high



Keynesian effects of a wealth tax

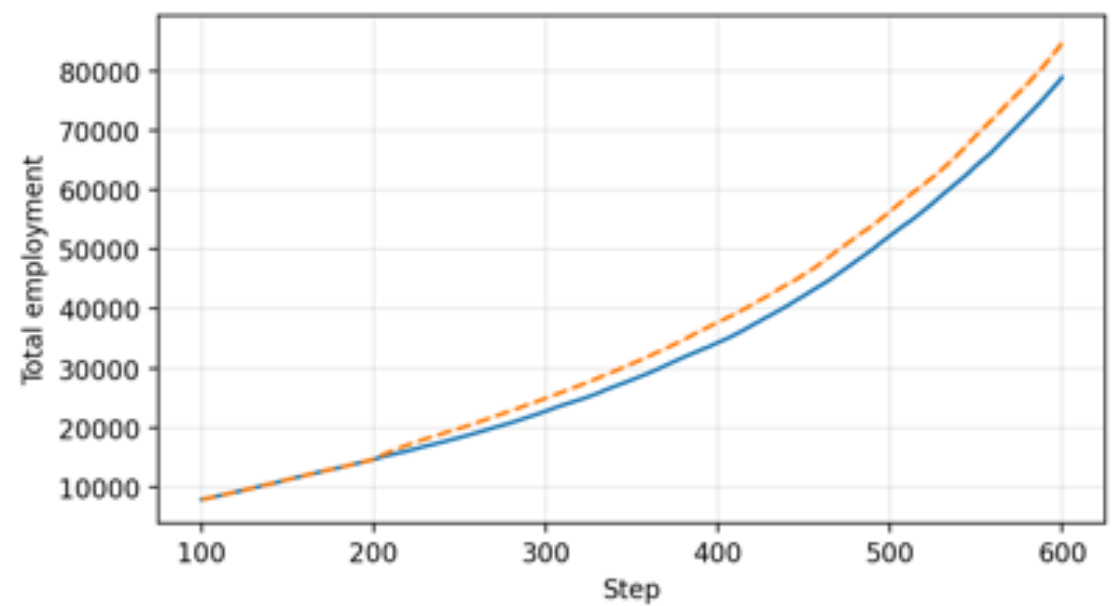
$$\text{Total demand} = d_t = \underbrace{n_t^w (1 - u_t)}_{\text{Worker consumption}} + \underbrace{\sum_{i=1}^{n_t^e} \tau f''_{i,t-1}}_{\text{Total Tax revenue}} + \underbrace{\sum_{i=1}^{n_t^e} (1 - s) f_{i,t}}_{\text{Consumption of entrepreneurs}}$$



= *Higher profits and productivity but less industrial diversity?*

Model some preliminary results

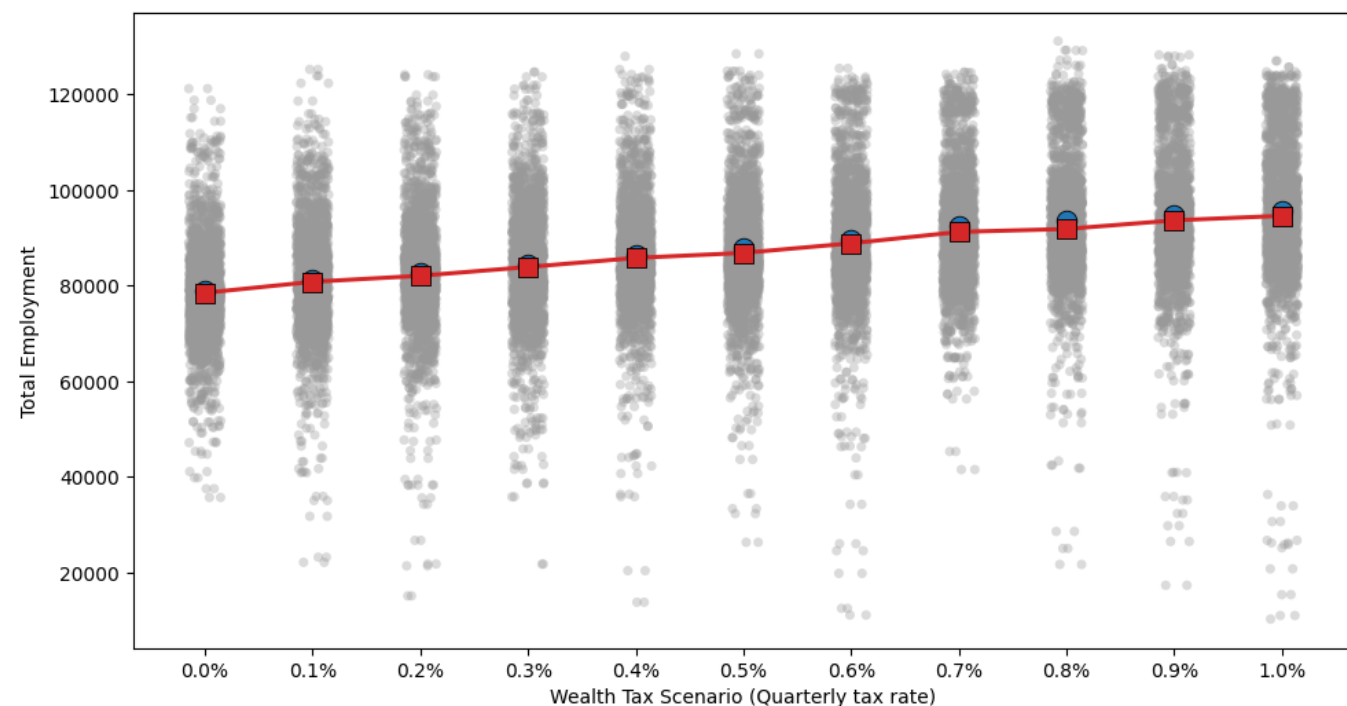
Wealth tax stimulates employment



— Wealth tax = 0.00% - - - Wealth tax = 0.25%

Shaded band = 95% CI of the mean

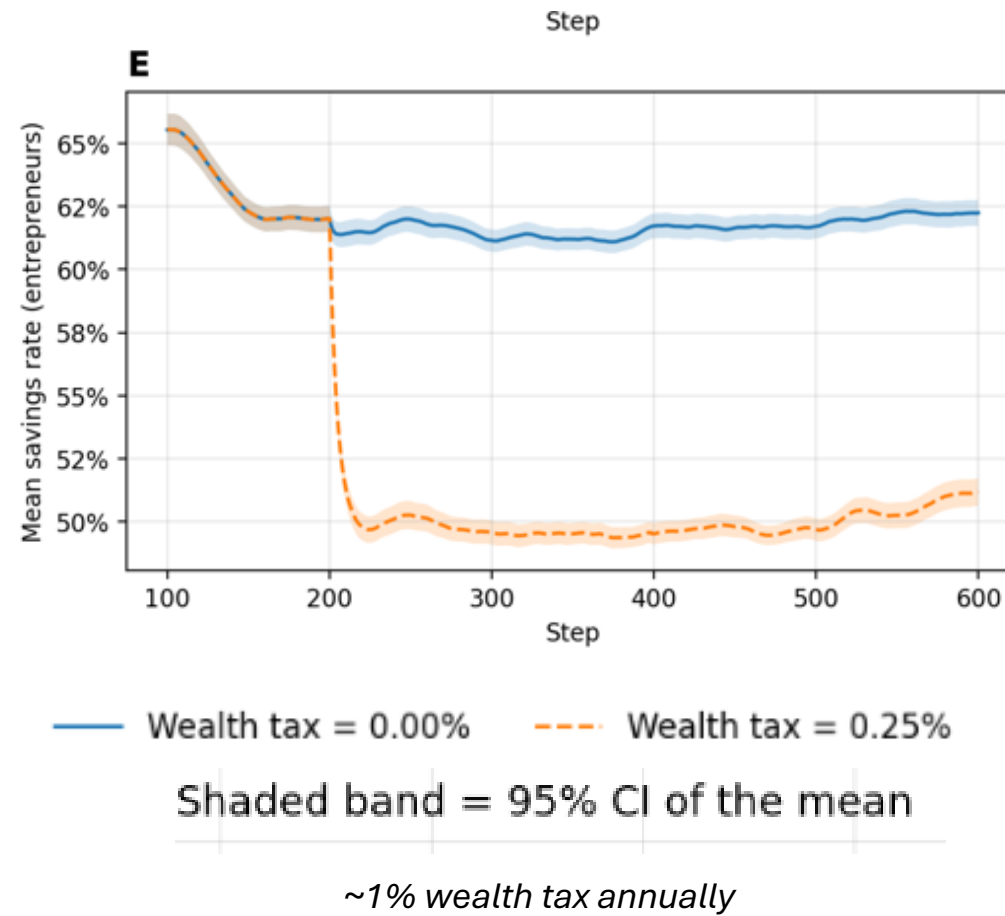
~1% wealth tax annually



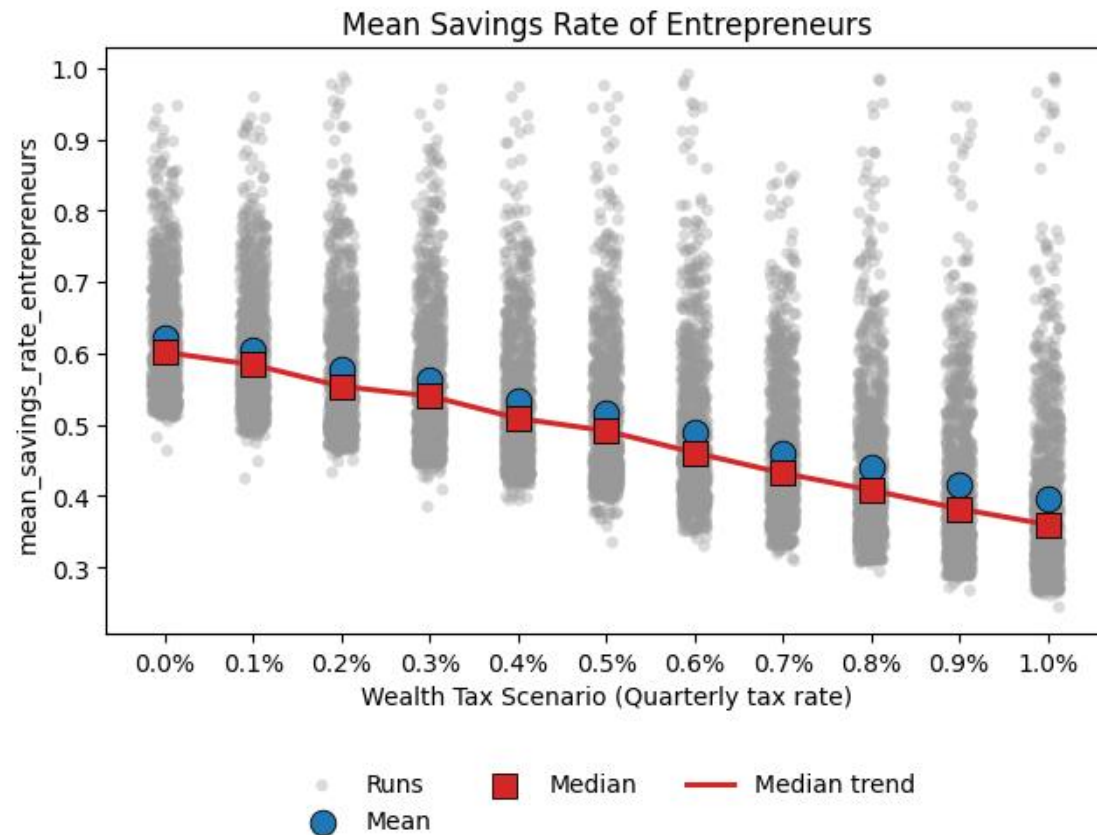
● Runs ■ Median — Median trend
● Mean

t = 600

Wealth tax effects on entrepreneurs (1)



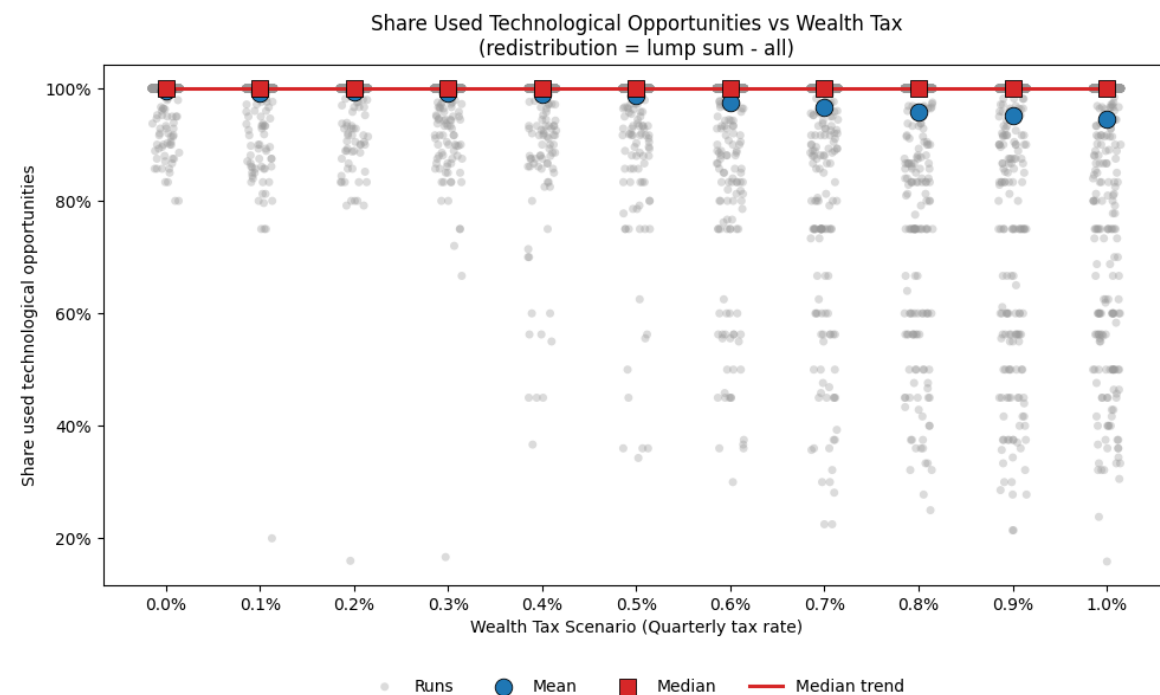
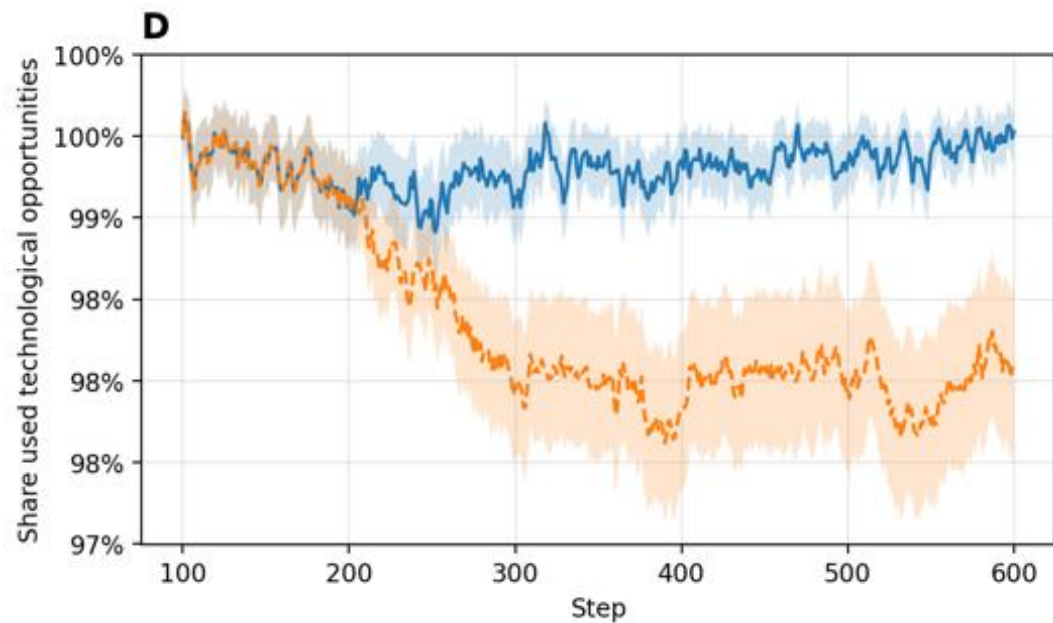
Wealth tax effects on entrepreneurs (2)



$t = 600$

Wealth tax effect on innovation (1)

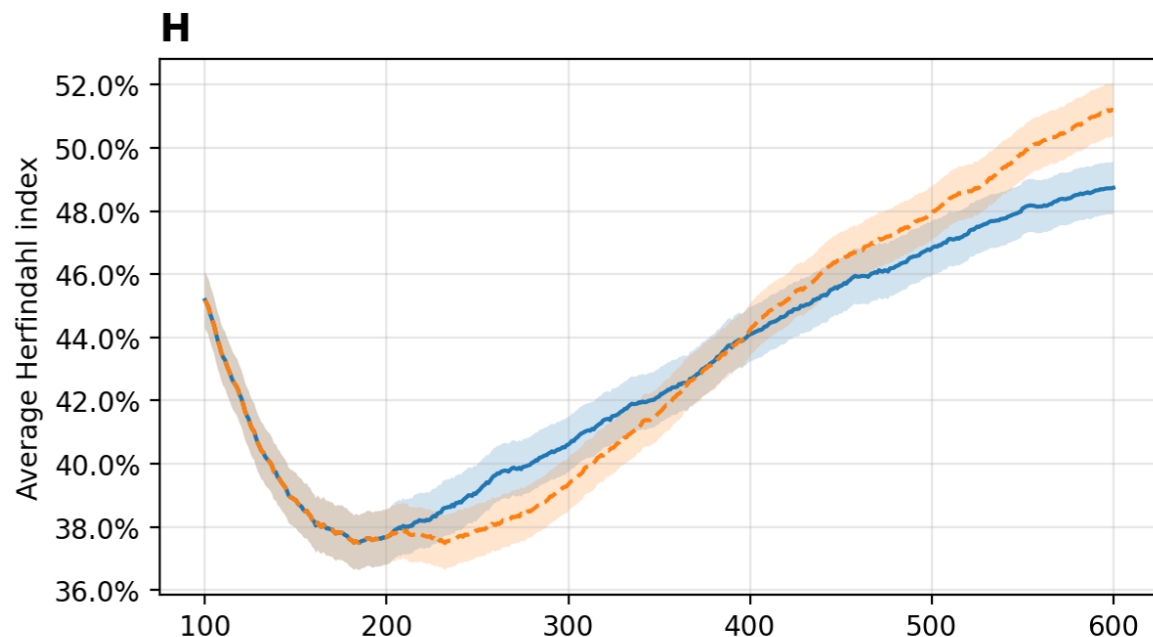
Less industrial diversity



t = 600

Wealth tax effect on innovation (2)

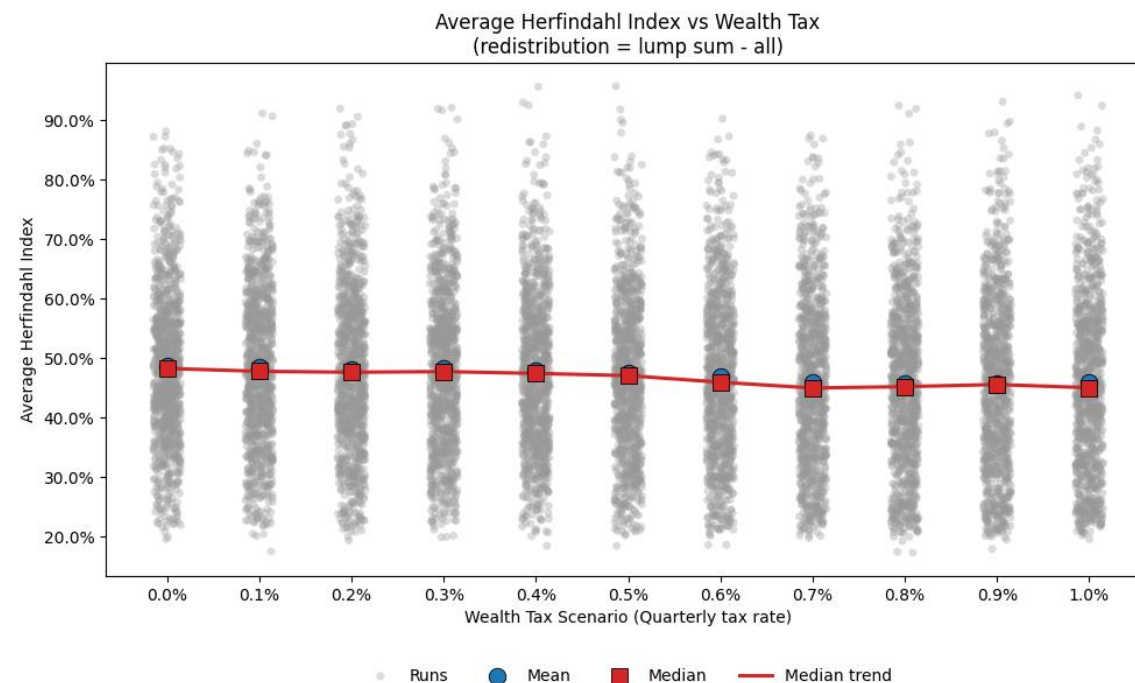
- long run higher market concentration



— Wealth tax = 0.00% - - - Wealth tax = 0.25%

Shaded band = 95% CI of the mean

~1% wealth tax annually



t = 600

Conclusions

- Likely wealth taxation does decrease radical novel industries
- Stimulates overall production and output
- ***However at this point we do not have the entrepreneurial state!***

Thanks for listening