Discussion of: "The Secular Decline in Business Dynamism in the U.S." by DHJM, 2014

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This Paper

Contribution:

- Trend decline in Job Creation, Job Destruction and Firm Entry
- Account for job flows' decline with cross-firm composition
  - **Age, industry**, size, location
  - Sizable compositional heterogeneity
  - Modest explanatory power (15%)
- Newer evidence: High growth and volatility firms decline post-2000

Decomposition

$$F_t - F_{t-1} = \underbrace{\sum_{i \in \mathcal{C}} s_{i,t-1} \Delta F_{i,t}}_{\text{within}} + \underbrace{\sum_{i \in \mathcal{C}} F_{i,t} \Delta s_{i,t}}_{\textbf{between}}$$

- **Age component:** accounts for 26% of **declining** reallocation
  - Young firms have highest job flows
  - Share of young firms declining
- **Industry component:** accounts for 13% of **increasing** reallocation
  - Faster decline in Services/Retail vs. Manufacturing
  - Industry Composition: Services/Retail growing vs. Manufacturing
  - But: Services/Retail has higher **level** of flows
  - Level effect dominates trend decline
- **Net Effect:** Offsetting age / industry effects
  - All jointly account for 15% of decline in reallocation

The Big Picture

DHJM are ultimately after:

- Do declining flows indicate an inefficient allocation of resources?
- If so, is this inefficiency harmful?
  - What is the impact on aggregate productivity, growth and welfare?
- If so, is there a relevant policy intervention?

This Discussion

- Do declining flows indicate an inefficient allocation of resources?
- **Need a model**
  - Definition of inefficiency
  - Framework for studying sources / impact of inefficiency
- Answer: **Ambiguous**
  - Declining flows can be due to firm-level distortions
  - Declining flows can be due to lower distortions
  - Need data to disentangle channels (model informs this)

Model Economy

- Develop a stylized industry equilibrium model
  - Model: Hopenhayn (1992), Melitz (2003), Luttmer (2007)
  - Frictions: Hsieh and Klenow (2014)
  - Recent: Jaef (2014)
- Key Ingredients:
  - Focus on age-dependent distortions
  - Study impact of distortions on firm entry
- 10 minute discussion... let's discuss details afterward!

Final Good Production

- Perfectly competitive final good sector
- Purchases intermediate inputs of each variety at prices $\{p(z)\}$
- CES Production function:

$$Q = \left(\int q(z)^{\frac{\sigma-1}{\sigma}} dM(z) \right)^{\frac{\sigma}{\sigma-1}}$$

- Standard inverse-demand:

$$p(z) = \left(\frac{q(z)}{Q} \right)^{-1/\sigma} P$$

Intermediate Goods Production

- Continuum of intermediate producers, $M(z)$
- Produces with technology, $q = z^{\frac{1}{\sigma-1}} l$
- Draws "idiosyncratic wedge" from $G(\tau|z)$
- Profits:

$$\Pi(z) = \max_{q(z),l(z)} \left\{ (1-\tau) p(z) q(z) - w l(z) \right\}$$

Firm Dynamics

- **Time discounting** at interest rate, $r > 0$
- Productivity grows with age, $z_a = e^{\gamma a}$
- Exogenous exit, $\delta > 0$ (no period fixed costs)
- Pareto firm size distribution is stationary if $\gamma < \delta$
  (c.f. Luttmer, 2007)

Firm Entry

- Idiosyncratic distortions affect firm entry, M_e
- Fixed entry cost, $f_e > 0$
- Free Entry Condition: $v_e \geq w f_e$
- Entry Value:

$$v_e = \frac{\gamma \pi}{r + \delta} \cdot \Omega_e$$

$$\Omega_e \triangleq \int z(1-\tau)^{\sigma} G(\tau|z) f(z) d\hat{M}(z)$$

$$f(z) = \left(\frac{r+\delta}{\gamma} \right) \cdot z^{-\left(1+\frac{r+\delta}{\gamma}\right)}$$

Misallocation

- Idiosyncratic distortions affect aggregate productivity, $Z = Q/L$

$$Z = M^{\frac{1}{\sigma-1}} \cdot \Omega^{-1} \Lambda^{\frac{\sigma}{\sigma-1}}$$

$$\Omega = \int z(1-\tau)^{\sigma} G(\tau|z) h(z) d\hat{M}(z)$$

$$\Lambda = \int z(1-\tau)^{\sigma-1} G(\tau|z) h(z) d\hat{M}(z)$$

$$h(z) = \left(\frac{\delta}{\gamma}\right) z^{-\left(1+\frac{\delta}{\gamma}\right)}$$

- Frictionless Productivity ($\tau = 0$ for all firms):

$$Z^* = (M^* \Omega^*)^{\frac{1}{\sigma-1}}$$

Entry Distortions

- Can show:

$$\boxed{\frac{M_e}{M_e^*} = \frac{1+\phi}{\left(\frac{\Omega/\Omega^*}{\Omega_e/\Omega_e^*}\right)+\phi}}$$

- Let $\tau \neq 0$. If $r > 0$, then:

$$\frac{\Omega}{\Omega^*} \neq \frac{\Omega_e}{\Omega_e^*}$$

$$M_e \neq M_e^*$$

- Intuition: Backloading
  - If $r = 0$, firm only cares about static profits
  - $r > 0$ provides a dynamic role for distortions

Age-Dependent Distortions (Case 1)

- Suppose we **subsidize <u>old</u>, tax <u>young</u> firms**

$$G(\tilde{\tau}|z_a) = \left\{ \begin{array}{ll} 1/2 & \text{if } z_a < z^{med},\ \tilde{\tau} = \tau \\ 1/2 & \text{if } z_a > z^{med},\ \tilde{\tau} = -\tau \end{array} \right\}$$

- Compute distortions:

$$\frac{\Omega}{\Omega^*} = \left[(1/2)^{\frac{\delta-\gamma}{\delta}} \cdot (1-\tau)^{\sigma}\right] + \left[\left(1-(1/2)^{\frac{\delta-\gamma}{\delta}}\right) \cdot (1+\tau)^{\sigma}\right]$$

$$\frac{\Omega_e}{\Omega_e^*} = \left[(1/2)^{\frac{r+\delta-\gamma}{\delta}} \cdot (1-\tau)^{\sigma}\right] + \left[\left(1-(1/2)^{\frac{r+\delta-\gamma}{\delta}}\right) \cdot (1+\tau)^{\sigma}\right]$$

- Then:

$$\boxed{\frac{\Omega/\Omega^*}{\Omega_e/\Omega_e^*} > 1 \quad \Longrightarrow \quad \frac{M_e}{M_e^*} < 1}$$

Age-Dependent Distortions (Case 2)

- Suppose we **tax <u>old</u>, subsidize <u>young</u> firms**

$$G(\tilde{\tau}|z_a) = \left\{ \begin{array}{ll} 1/2 & \text{if } z_a < z^{med},\ \tilde{\tau} = -\tau \\ 1/2 & \text{if } z_a > z^{med},\ \tilde{\tau} = \tau \end{array} \right\}$$

- Compute distortions:

$$\frac{\Omega}{\Omega^*} = \left[(1/2)^{\frac{\delta-\gamma}{\delta}} \cdot (1+\tau)^{\sigma}\right] + \left[\left(1-(1/2)^{\frac{\delta-\gamma}{\delta}}\right) \cdot (1-\tau)^{\sigma}\right]$$

$$\frac{\Omega_e}{\Omega_e^*} = \left[(1/2)^{\frac{r+\delta-\gamma}{\delta}} \cdot (1+\tau)^{\sigma}\right] + \left[\left(1-(1/2)^{\frac{r+\delta-\gamma}{\delta}}\right) \cdot (1-\tau)^{\sigma}\right]$$

- Then:

$$\boxed{\frac{\Omega/\Omega^*}{\Omega_e/\Omega_e^*} < 1 \quad \Longrightarrow \quad \frac{M_e}{M_e^*} > 1}$$

Intuition:

- Interest rates determine impact of age-varying distortions on entry
- $r > 0$ and subsidize old, tax young firms
  - Less value on receiving subsidy at old-age
  - Distortions reduce entry flows
- But taxing old, subsidizing young **increases** entry incentives
  - $r > 0$ implies less profit backloading
  - Distortions increase entry flows!
- Observationally equivalent entry flows:
  - Subsize old, tax young
  - Tax old, subsidize young but decreasing size over time
  - Which one is it?

Misallocation and Entry

- $Z = M^{\frac{1}{\sigma-1}} \Omega^{-1} \Lambda^{\frac{\sigma}{\sigma-1}}$

- Increasing distortions ($\tau \uparrow$) implies
  - Decrease in $\Omega^{-1} \Lambda^{\frac{\sigma}{\sigma-1}}$
  - Number of firms M ambiguous!
  - M can offset other TFP distortions

- Sager (2013):
  - Micro-found age-dependent distortion as financial friction
  - Embed in Aghion-Howitt model
  - Distortions decrease M and productivity growth
  - Decline in high growth / IT firms?

This Discussion

- Do declining flows indicate an inefficient allocation of resources?
- Need evidence: how distortions differentially affect young and old firms
- Disentangle source of decline in entry (business dynamism)
  - Due to increasing distortions (case 2)?
  - Due to decreasing distortions (case 1)?
  - Distribution of distortions matter
- Also ambiguous effect on aggregate productivity
- Similar exercises could be done with
  - heterogeneous industries
  - high growth / volatility firms

This Paper

- Very interesting work!
- Opens up many questions for future research
- Highlights the need for
  - Re-examining existing data
  - Collecting new data
  - BLS and Census are fighting the good fight

Thank You!