Economic Growth through Creative Destruction

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Economic Growth through Creative Destruction

1. Firms

   Workforce after Brain Drain

2. Brain Drain

3. Brain Gain

4. Creative Workforce

5. Technical Schools

6. Talent Pool

7. Firms with Market Share

   Technology, Productivity, Creative Destruction

8. Value Added

9. Society

Productivity Dynamics in Romer Model

Firm 1
Firm 2
Firm 3
Firm 4
Firm 5
Firm 6
Firm 7
Firm 8

Product varieties
Productivity Dynamics in Romer Model

Product varieties

Productivity Dynamics in Romer Model

No Exit, No Turnover!

Product varieties
Productivity Dynamics in **Schumpeterian** Models

- Productivity or quality of production

- Firm 1
Productivity Dynamics in *Schumpeterian* Models

![Diagram showing productivity dynamics between Firm 1 and Firm 2. Firm 1 moves from left to right, indicating an increase in productivity or quality of production. Firm 2 moves from right to left, showing a decrease.](image-url)
Productivity Dynamics in Schumpeterian Models

Productivity or quality of production

Firm 5

Firm 4

Firm 3

Firm 2

Firm 1
Productivity Dynamics in Schumpeterian Models

Growth through exits and turnover!
Entrants push the frontier through creative destruction
Incumbent joins the competition

Economic progress
Incumbent strategically resists the change
Multiple incumbents collude to resist

entrant

incumbents

Economic progress
Productivity Dynamics in Schumpeterian Models

Technology Improvements can happen in two ways:

- Innovate within country
- Adapt from the world
Deepening, Diffusion, and Discovery: The stages of technological progress

**Technology:**
- Not New to Country
  - Not New to World
  - Deepening
  - New to Country
  - Not New to World
  - Deepening + Diffusion
  - New to Country
  - New to World
    - Deepening + Discovery + Discovery

**Options:**
- Contribution to Growth of $A, K$
- $K$, Capital
- $A$, Productivity

**Proximities:**
- JUGAAD
- Proximity to the Frontier

WDR Team (2023)
Schumpeterian Dynamics:
Some Country Case Studies
(Missing) Creative Destruction in Turkiye

Source: Akcigit, Aktug, Ates, Cilasun (2023)
(Missing) Creative Destruction in Turkiye

Exiters productivity

Entrant productivity

Destructive Creation?

Source: Akcigit, Aktug, Ates, Cilasun (2023)
(Missing) Creative Destruction in Italy

Market = 6-digit industry × 20 Regions × 1993-2014

Source: Akcigit, Baslandze, and Lotti (2023, Econometrica)
While the average life-cycle is flat, some Indian firms manage to grow…

…but share of tiny producers stays stubbornly high

Akigit, Alp, and Peters (2021)
Employment Regulations and Firm Growth

Firm size (number of workers)

Source: Akcigit, Akgunduz, Alp, Cilasun, Quintero (2023)
Regulations and Worker Productivity

Source: Akcigit, Akgunduz, Alp, Cilasun, Quintero (2023)
Regulations and Worker Productivity

Source: Akcigit, Akgunduz, Alp, Cilasun, Quintero (2023)
Regulations Can Trigger Informality

Informality rate w/o regulation

Source: Akcigit, Akgunduz, Alp, Cilasun, Quintero (2023)
Regulations Can Trigger Informality

Informality rate w/o regulation
Informality rate with regulation
Extra informality due to regulation

Source: Akcigit, Akgunduz, Alp, Cilasun, Quintero (2023)
Talent and Human Capital

for Creative Destruction
How Do Societies Elevate Their Talents?

- Production workers
- Financial frictions
- Researchers
- Discrimination

Group A

Group B

Lost Einsteins and Curies
Probability of Becoming an Inventor

USA circa 1940s

Parental Income

Source: Akcigit, Grigsby and Nicholas (2018)
Probability of Becoming an Inventor

**USA circa 1940s**

- **At least some college**: Highest probability
- **High School**: Intermediate probability
- **Less than High School**: Lower probability
- **No Education**: Lowest probability

**Danmark 2020s**

- **PhD**: Highest probability
- **Post secondary**: Intermediate probability
- **Upper secondary**: Lower probability
- **Low secondary**: Lowest probability
- **Primary**: Very low probability

Source: Akcigit, Grigsby, and Nicholas (2018)  
Source: Akcigit, Pearce, and Prato (2022)
Tapping into Global Talents

• China invests in US startups, especially in more basic fields.

• More than 80% of all Chinese students go back after studying abroad.

• Number of returnees exceeds one million students a year.
Scientist Productivity and Brain Drain in Turkey

Brain Drain Paradox

Impact of Brain Drain on Collaborating Scientists

Productivity of the author who moves abroad

-10% 0% 10% 20% 30% 40% 50%
-10% -2 -1 0 1 2 3 4 5 6 7 8

Productivity of staying coauthor if remain in touch

-10% 0% 10% 20% 30% 40% 50%
-10% -3 -2 -1 0 1 2 3 4 5 6 7 8

Productivity of staying coauthor if doesn’t remain in touch

-10% 0% 10% 20% 30% 40% 50%
-10% -3 -2 -1 0 1 2 3 4 5 6 7 8

Productivity of the author who comes back

-20% -15% -10% -5% 0% 5% 10%
-20% -3 -2 -1 0 1 2 3 4 5 6 7 8

Energy and Technology Transition
Production technologies can be of two types

- non-green
- green
Productivity Dynamics in Schumpeterian Models
Green technologies are less advanced at the moment.

Subsidies to non-green technologies might hamper the transition.
Thank You!