The Wealth of Crowds and Innovation in the Digital Age

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Value of Crowdsourcing

- Crowdsourced Digital Goods are playing an increasingly important role in the economy
  - Knowledge repositories
  - User review sites
  - Open source software (OSS)

- Digital goods that are non-pecuniary (free) and effectively limitless
  - Important inputs into production
  - Systematically undercounted in productivity measures (scale without mass)
  - Examples: OSS, YouTube, digitized 3D blueprints, etc.
Exponential technological progress means information costs are approaching zero.

- Leads firms to increasingly engage with external communities.

- Has a decentralizing effect on the firm and the locus of innovation.

Typology of Communities:

- **Chandlerian Logic**
  - Strategic Partners
  - Tactical Contributors
  - Labor Marketplaces

- **Community Logic**
  - Developers
  - Users
  - Community engagements increase when information constraints are reduced.
The Role of Government in Crowdsourcing

Possible levers for government:
- Direct sponsorship of crowdsourcing programs
- Tax incentives for firms and individuals who contribute
- Favoring crowdsourcing in government procurement

To whom do the benefits accrue?
- Crowdsourcing contributions may improve global social welfare
- Are their local/domestic effects as well?
Measuring Digital Dark Matter

- Scanned 1% of the 1.5 billion IPv4 addresses in the US
  - Found ~200,000 web servers, 23% were running Apache (Open Source Software)
  - This leads to an estimate of ~4 million Apache servers in the US
- Impute value using the price of a similar good, Microsoft IIS
  - Value of Apache is between $2 billion and $12 billion
  - Represents a 17% to 19% rate of return, if Apache was the only good to come out of all of the US government’s NSF investment in super-computing centers from 1985-1995
France Policy Study

- France implemented procurement policy changes favoring OSS to save money
- Find policy changes lead to:
  - Substantial increase in OSS contributions
  - Increase in percent of firms using OSS
  - Large increase in IT employment
  - Increase in the number of IT related startups
  - Decrease in number of IT related patents
User Data and Innovation

- Survey: Successful companies are collecting and using customer data, but securing it
  - Security investments can provide a company a competitive advantage
- Customers care about how you use their data
  - Transparency is important
  - GDPR makes this required
- But, research has shown stricter regulation on use of customer data makes innovation more difficult
Regulatory policy/action can encourage crowd participation and openness (data, technology, etc.)

- Helps ensure more widespread opportunities
- But must be balanced with privacy/security concerns