# Alternative Measures of Innovation (and Firm Performance)

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# Disclaimer

- Any opinions and conclusions expressed herein are those of the authors and do not necessarily represent the views of the U.S. Census Bureau. All results have been reviewed to ensure that no confidential information is disclosed.

# CAED 2012 Papers – Sources and Measures of innovation

- Manufacturing Census/Surveys
  - Product expansion
- Community Innovation Surveys (CIS)
  - Process innovation
  - Product innovation
  - Organizational change (?)
  - R&D (internal, external, purchased)
- Administrative data
  - Patents

# U.S collected innovation measures

- **2007 Economic Census**
  - Did this establishment design, engineer, or formulate the manufactured products that it sold, produced, or shipped?
  - Product data
- **ICT supplement to Annual Capital Expenditures Survey**
  - Own software investment
- **Business R&D and Innovation Survey (BRDIS)**
  - R&D expenditures by industry, national aggregates
  - Added CIS-like innovation questions

- **2012 Economic Census**
  - Enterprise Statistics (all MU, sample 100k SUs)
    - Firm Worldwide Receipts
    - Revenue from Intellectual Property (IP)
    - Manufacturing Services
  - Product data

# Statistical Agency Perspective

- Collecting data is extremely expensive
  - Add questions surveys (innovation)
  - Supplement existing surveys (ICT-ACES, MOPS-ASM)
- Budgets are getting smaller, not larger
- Administrative data is one way to more effectively allocate scarce resources
  - R&D Tax credit
  - Business Expenses? (intangibles)

# Alternative Measure of Innovation: Trademarks

- Serial Number
- Registration Number and Date (since 1884)
- Filing Date (1975 onwards)
- Type of Mark
- Owner name and address
- International and U.S. Classes
- Live/Dead (Dead Marks from 1983)
- Mark Drawing Code
- Register
- Other Registrations

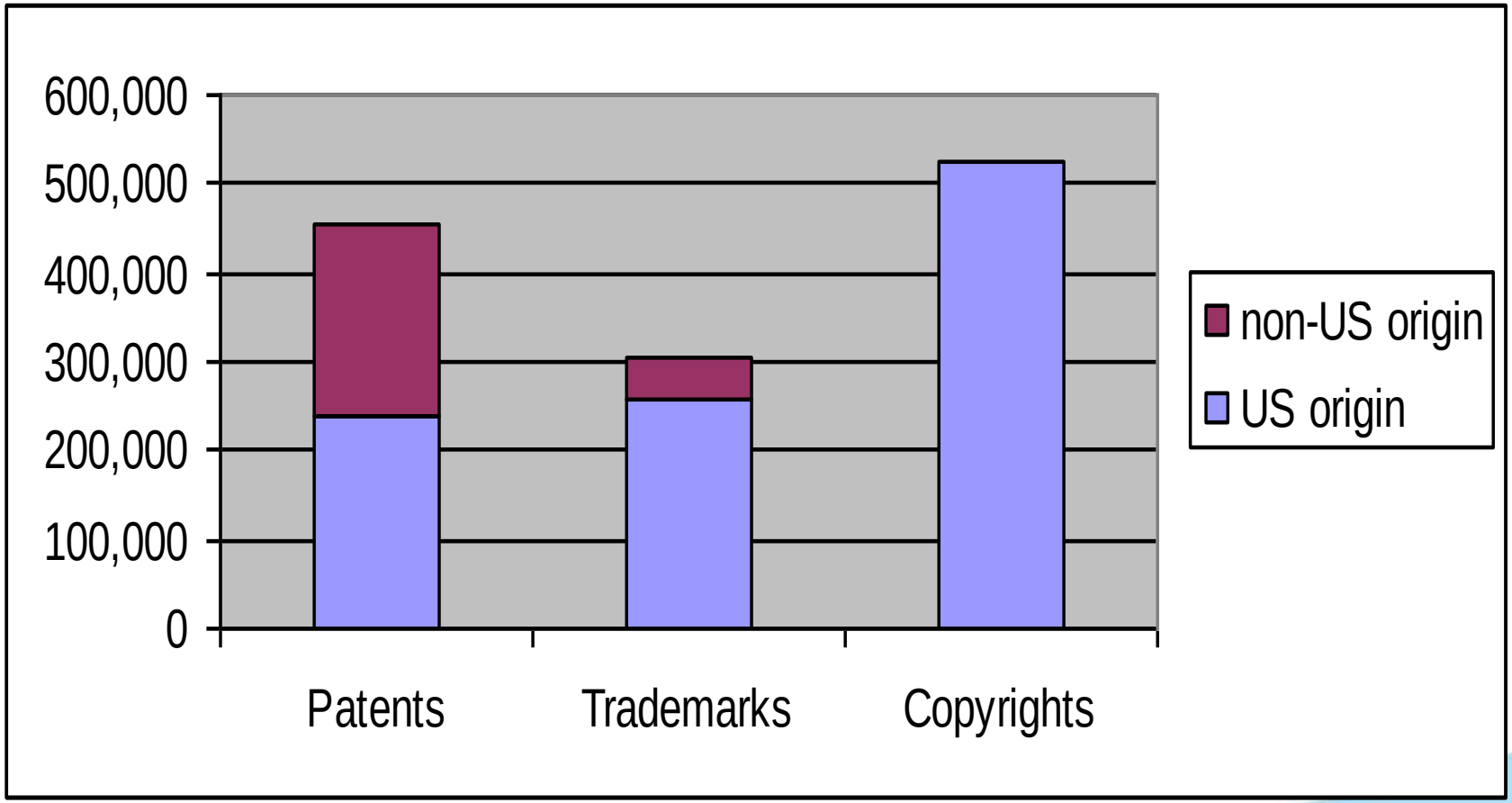
# Alternative measure of innovation: copyrights

- Copyrights
  - 2008-current requires name and address
  - 1974-2007 N&A is optional
- Universal coverage of activity
  - Many of these innovations occur outside of the manufacturing sector (Harry Potter, Grand Theft Auto)
  - Not as concentrated in large firms (34% of trademarks) as other innovative activities (e.g. patents)
  - Ability to look more closely at the role of SMEs and possibly credit constraints
- Can be linked to the Census Bureau's business register, other data sources

# Innovation Measurement

- Statistical agencies may collect these data, but what are the stratifying variables in the frame?
  - Industry (manufacturing)
  - Payroll (large)
- Administrative data (patents, trademarks, copyrights) provide additional information that could be used to improve sampling of innovative activities.

# How often do firms apply for IP? Counts in 2007



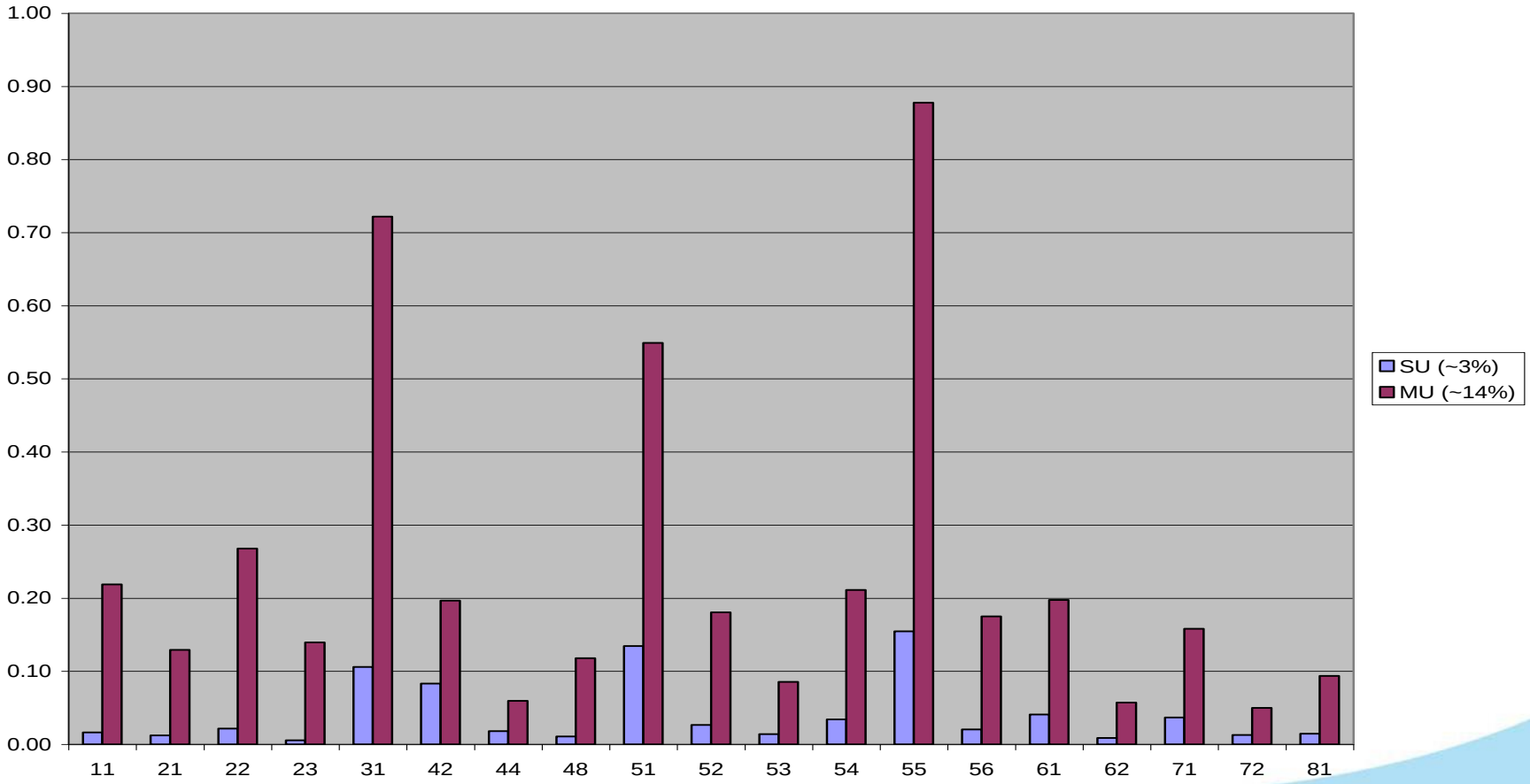
# Business Dynamics Statistics

- Job creation/destruction
  - State
  - Industry
  - Age*
- Improved Statistics
  - Trade (imports/exports)
  - Innovation (patents, trademarks, copyrights)

# What's been done?

- Name and Address Matching:
- 2008 snapshot of all active trademarks
  - 1.6M domestic trademarks
- 2008 business register
  - 7M establishments
  - Aggregated to firm
    - MUs – industry is where the most payroll is classified

# Trademarks by sector, firm type

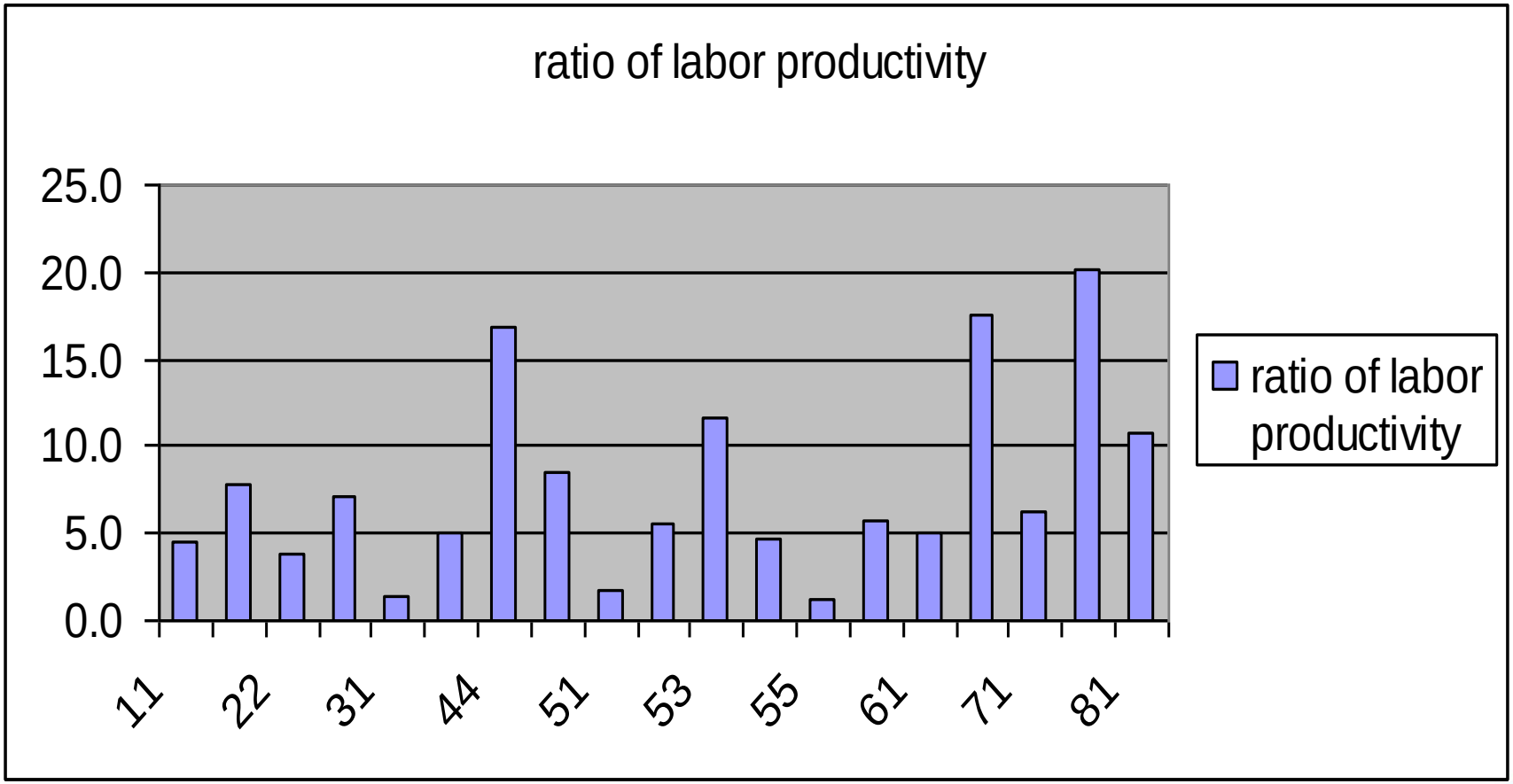



United States Census Bureau
People, Places and Our Economy

# Firm Performance

- TFP – not feasible for all industries, but could use K and L for an annual sample of firms.  No E or M outside of manufacturing.
- Labor productivity?

# Single-units firms (trademarks/no trademarks)



# Very preliminary

- Yearly match for trademarks
- Clean copyright data, matching research

- Describe the data
- Theoretical model
- Empirical analysis