Discussion of "On The Mechanics of Firm Growth"

by Erzo G. J. Luttmer

Mark L. J. Wright

University of California, Los Angeles

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Motivation 1

- Striking patterns in the evolution of allocation of resources across *production units*
  - Establishments (plants)
  - Enterprises (firms)
- Size distribution reasonably approximated by Zipf's Law
  - But ... some evidence that upper and lower tails are thinner than predicted by Zipf's Law
- Growth rates reasonably approximated by Gibrat's Law
  - But ... small and young production units grow faster than old and large production units

Motivation 2

- These patterns are important in discussions of economic policy
  - Faster growth of small/young firms often cited as evidence of financial imperfections, and in support of policies to help small business
  - Relatively fat tails of size distribution in developing countries often cited as evidence of corruption
- Important to understand the causes of these patterns
  - Are they evidence of inefficiencies?
  - If so, precisely *what* inefficiencies?

Existing Literature

- Models of financial market inefficiencies
  - Cabral and Mata (2003), Clementi and Hopenhayn (2002), Albuquerque and Hopenhayn (2002), Cooley and Quadrini (2001) and many others
- Models with efficient dynamics
  - learning: Jovanovic (1982)
  - evolution of productivity and selection: Hopenhayn (1992), Luttmer (2007)
  - specific factors: Rossi-Hansberg and Wright (2007)
  - R&D and new product lines: Ericson and Pakes (1995), Kortum and Klette (2003)

Erzo's Paper

- Model of economic growth due to addition of new product lines as in Kortum and Klette (2003)
- New products introduced by either replicating old product designs, or by entrepreneurial effort
- Firms are groups of product lines:
  - Existing firm's grow by replicating product lines
  - New products produced using only entrepreneurial effort are associated with firm entry (all entrants at smallest scale)

Erzo's Results

1. Adding aggregate growth to KK model generates size distribution closer to data
   - Without growth, entry of firms implies existing firms decline in size resulting in "too thin" right tail
2. Model implies large firms too old
   - Firms enter at smallest size, and take many centuries to rise to largest size observed in data (ten times longer than observed in practice)
3. Obsolescing product lines with noisy replication of high quality products "fixes" this implication
   - New products more productive, young small firms grow fast, but also more likely to exit

Overall Comments

- Clean, elegant model (replication of "Erzo blueprint")
- Clearly and honestly exposited
- Emphasis on product development as engine of growth is plausible and intuitive
- Focuses attention on an important moment in the data – age of large firms – that has been neglected
- My comments and questions focus upon:
  - Theory vs Data: Interpretation of firms and products
  - Age of large firms as discipline on models
  - Some other relevant moments of data

Theory vs Data: Firms

- Model is about introduction of new "products"
- Firms do not appear explicitly
- Introduces firms as bundles of products:
  - new firms are new products produced by entrepreneurial innovation
  - firms grow only by replicating product designs
- Seems plausible at first, but ...
  - hard-wires new firms to be of smallest size
  - abstracts from other forms of growth (e.g. M&A's)
  - should measure age as data of first product design (not foundation or incorporation)
  - direct data on product lines?

Theory vs Data: Product Lines

- Model is about introduction of new "products"
- Key parameter is number of employees per product line
- Calibrates to between 1/4 and 2 employees per product
  - Too few to be taken literally as a new product
  - Interpret as task? process?
- Fundamentally difficult to measure, but crucial to empirical implications of model due to assumption that new firms start with one product
- Maybe new firms should start with bundle of products?
- This would help with matching age of largest firms, and with matching moments of age distribution of firms

Data on Entry & Age Distribution

- Rossi-Hansberg and Wright (2007) document substantial entry by large *establishments*
- Rossi-Hansberg and Wright (unpublished) document size distribution of young establishments looks much like size distribution of old establishments

Scale Dependence in Net Exit Rates

- Small establishments exit (net) more than large establishments (e.g. Mansfield 1962, Dunne, et. al. 1989)

Figure 4: Net Exit Rate, 1995-1996

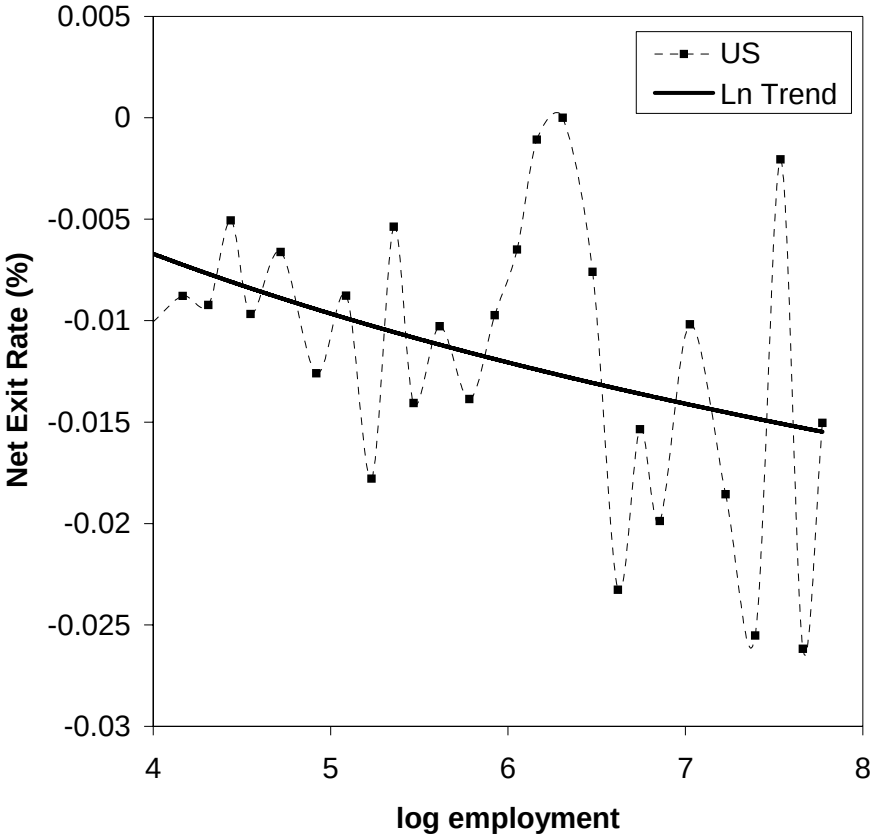
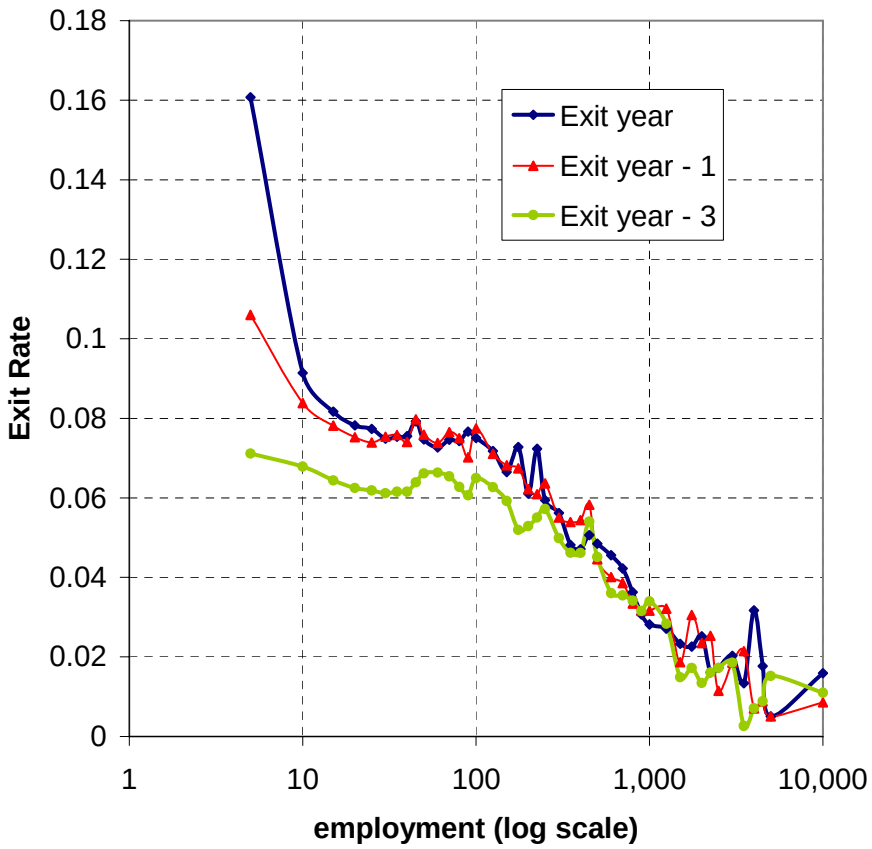
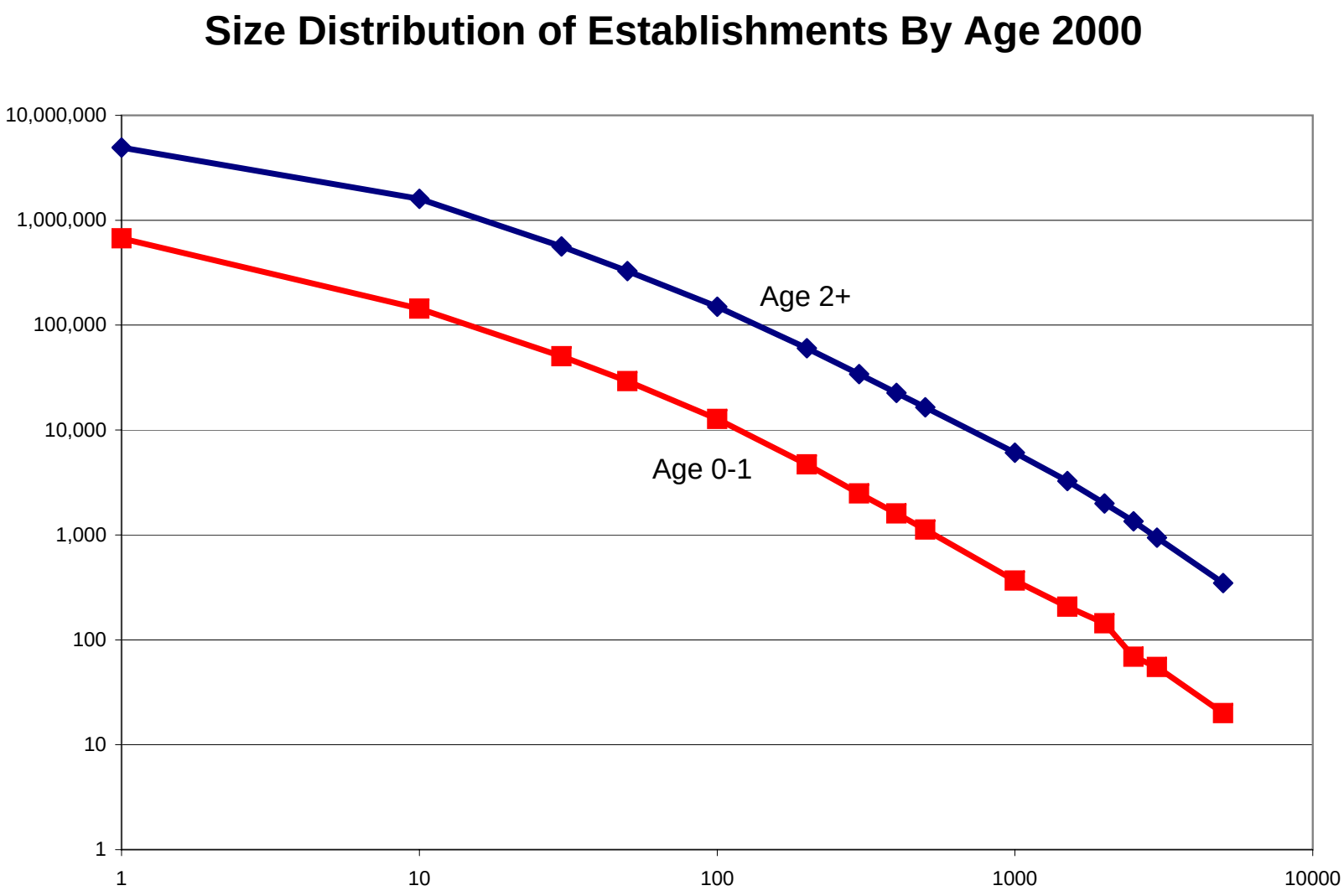


Figure 5: Exit Rates US, 1995-1996



Data on Size & Age Distribution



Concluding Thoughts

- Clean, clear, stimulating paper
- Optimism about empirical potential of theories based on firms growth due to new product lines
- Important to match age of large firms

Concluding Thoughts

- Clean, clear, stimulating paper
- Optimism about empirical potential of theories based on firms growth due to new product lines
- Important to match age of large firms while also matching facts about size of young firms
- Fundamental difficulty remains: what is a firm?
  - Focus on establishments?
  - Better data on product lines? UPC codes?
  - Model other reasons for establishment of firms? taxes? regulations? Test using cross jurisdictional data?