New Data and Facts on H-1B Workers across Firms

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Introduction

Measuring H1-B at Firm-level

- Long standing controversy regarding H-1B visa program
- Scarce evidence on the effects of these visas at firm level
- Limited by lack of firm-level data on H-1B visas
  - An important exception is Doran et al. (2014). Few petitions
  - Other studies have relied on LCAs (Kerr and Lincoln 2010, Ghosh et al. 2014, etc.)
- LCAs are not good enough

LCAs vs. i129s

- LCA data is easy to obtain
- Useful proxy for a firm's general interest in H-1B workers
- Not good measure of actual petitions or approvals
- LCAs filed at virtually no cost for any number of workers
- Often companies request the exact same number of applications every year!
- In contrast, H-1B petitions (i129s) are worker-specific and there's a significant marginal cost

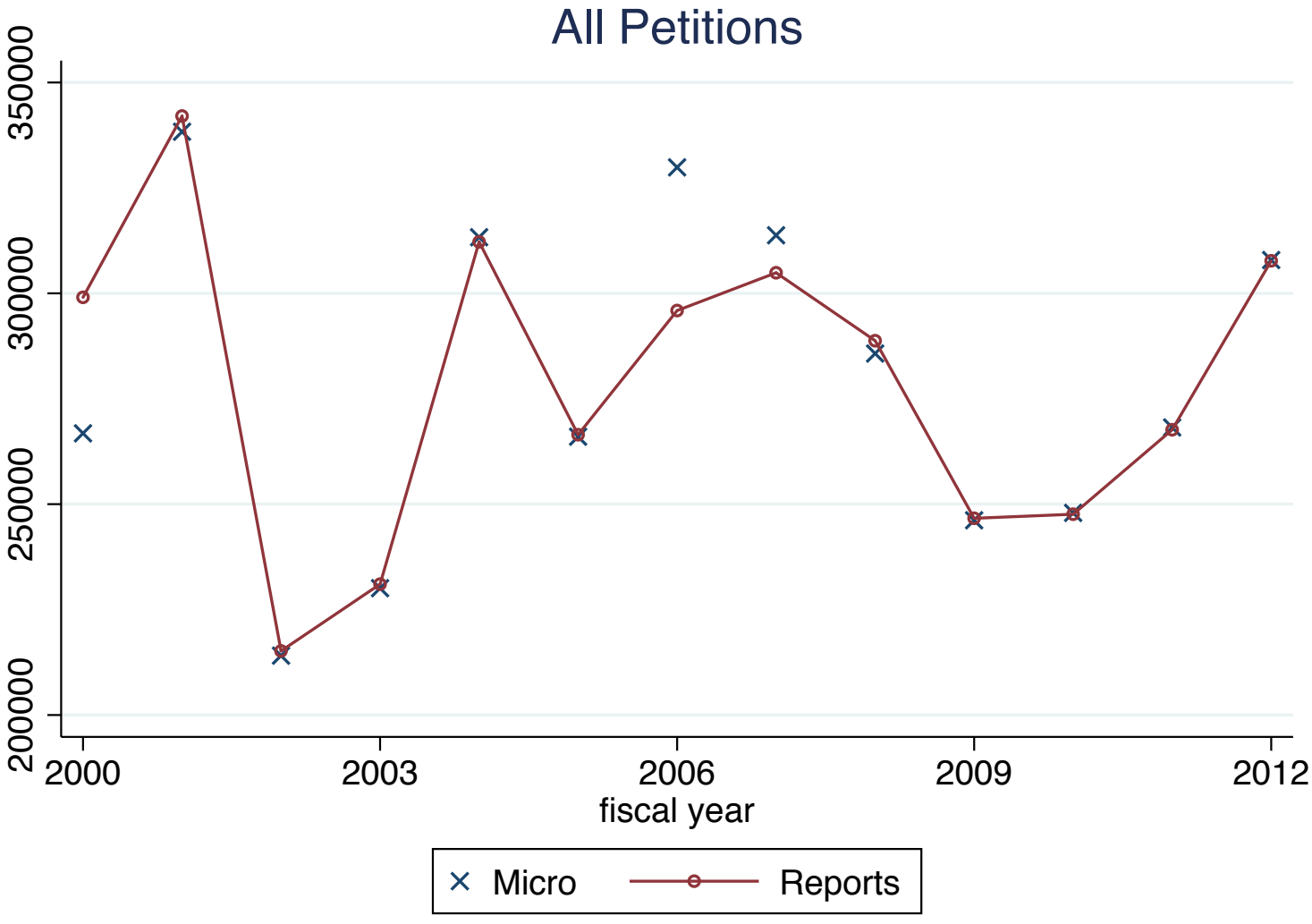
This Paper

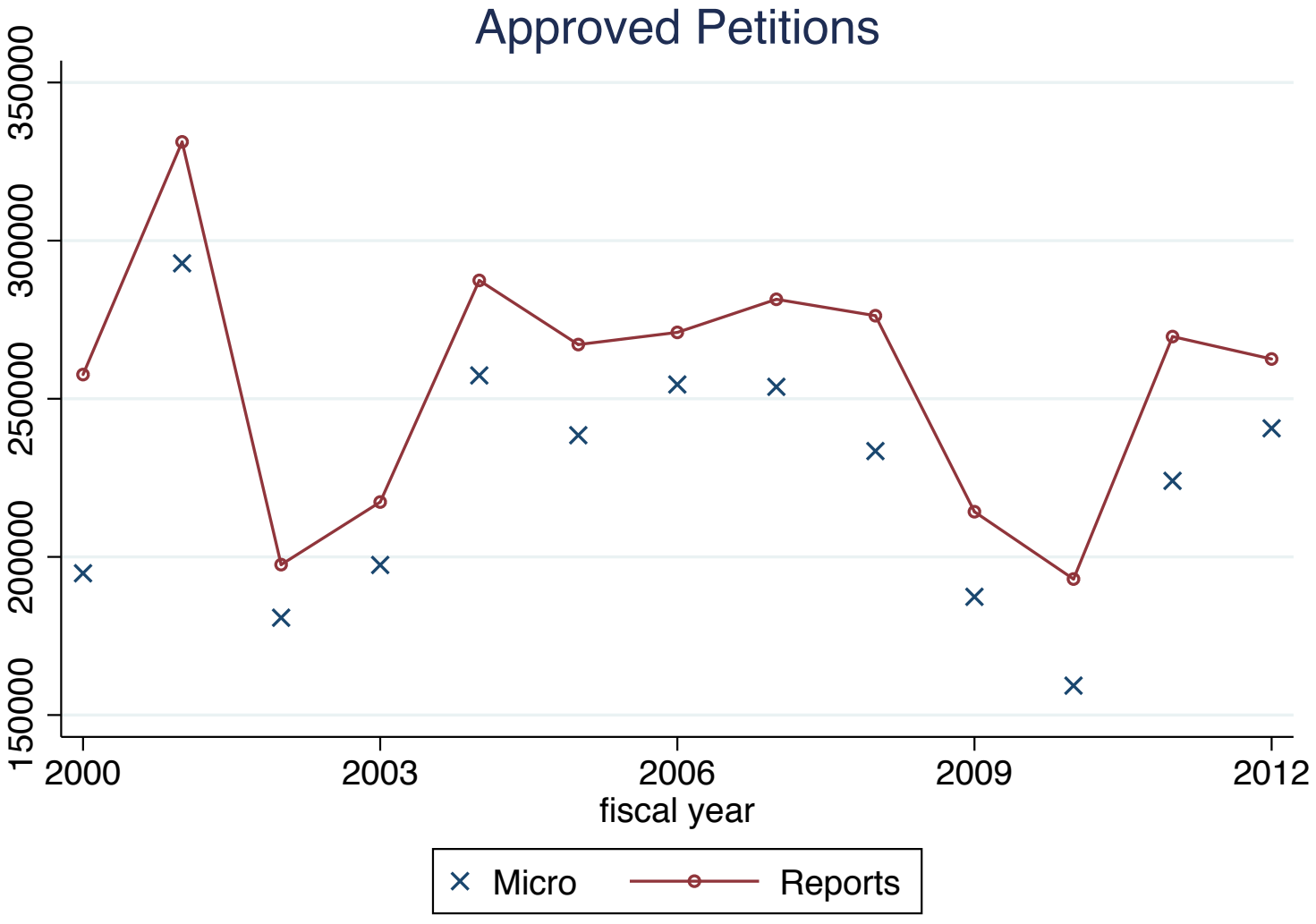
1. Describe administrative USCIS micro data on petitions for H-1B workers (i129s) for 1997-2012
2. Assess validity by comparing to aggregate totals published in the USCIS annual reports
3. Build longitudinal firm-level dataset for approved H-1B petitions using string-matching techniques
4. Present main facts
5. Match H-1B dataset to Compustat and describe characteristics of H-1B users

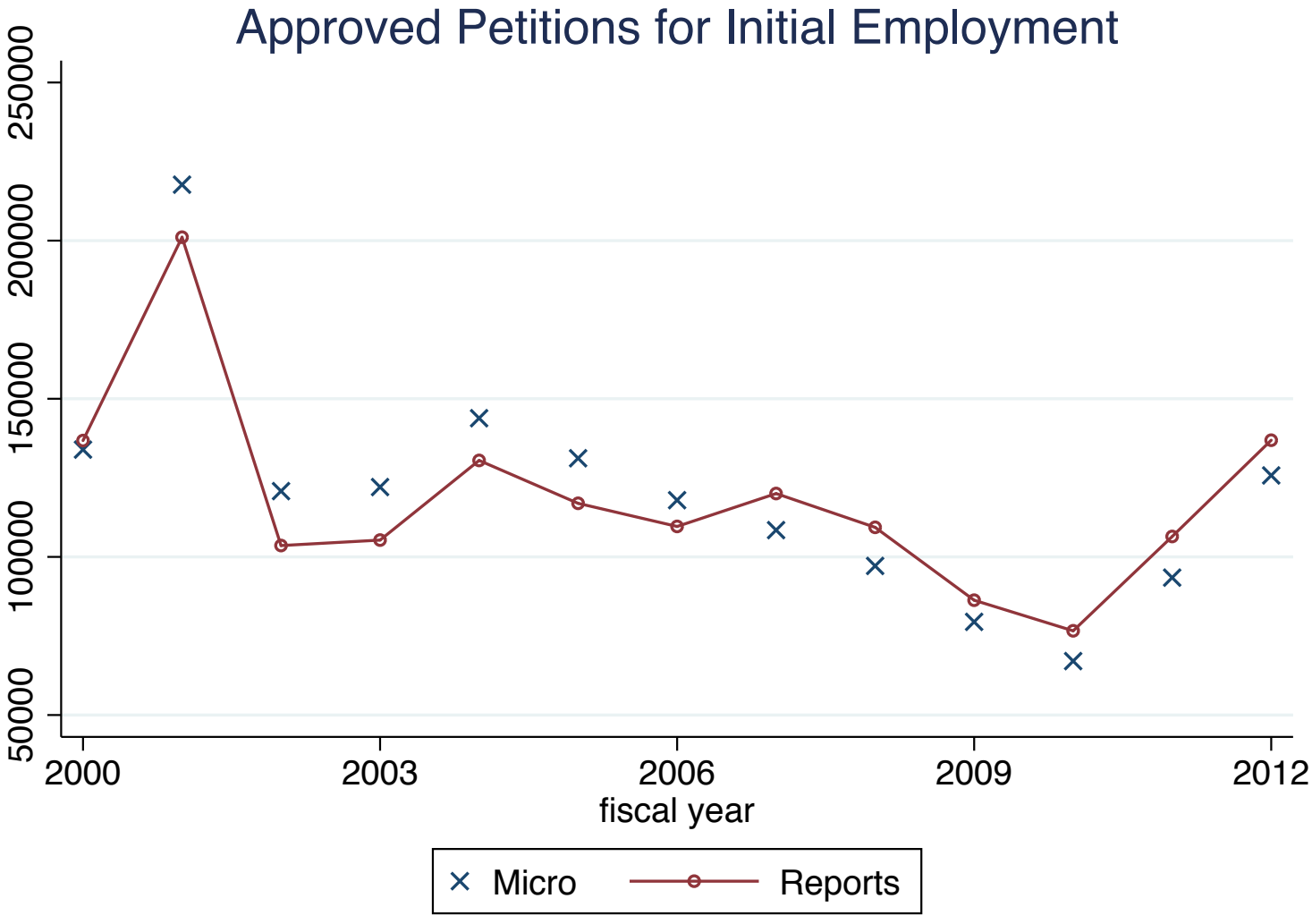
H-1B Petitions Data 1997-2012

H1-B Petitions Data

- USCIS data obtained through FOIA
- Universe of (processed) i129 cases for years 1997-2012
  - Prior to 1999 severely incomplete
- 3.72M petitions, 3.02M (82%) approved
- For each case, we know:
  - Receipt date, status (approved, denied, etc.), new or continuing employment, ...
  - Petitioner's information: name, zip code, ...
  - Beneficiary's information: country of birth, age, education, salary, occupation, field of study
- Almost perfect match of petitions received in most years
- Strongly pro-cyclical demand
- For approved petitions, better match for initial-employment petitions


All Petitions
350000
300000
250000
200000
2000
2003
2006
2009
2012
fiscal year
Micro
Reports


Approved Petitions
150000
200000
250000
300000
350000
2000
2003
2006
2009
2012
fiscal year
Micro
Reports


Approved Petitions for Initial Employment
250000
200000
150000
100000
50000
2000
2003
2006
2009
2012
fiscal year
Micro
Reports

Firm-level panel

Aggregation by firm

- Challenging task because we lack a numerical identifier
  - 52 separate entries containing the word "MICROSOFT": "MICROSOFT CORP", "MICROSOFT COPORATION" (sic), "MICROSOFT CO", etc.
- **Step 1**: manual name harmonization
  - Harmonize common words (such as 'INCORPORATED', 'GLOBAL' 'RESEARCH') for all petitions
  - Manually harmonize names for top 3k petitioners (approx. 60% of all petitions)
  - The 3.7M petitions collapse to 1.3M company-year observations
  - We aggregate obvious affiliates based on name (e.g. 'AMAZON DIGITAL', 'AMAZON FULFILLMENT', 'AMAZON TECH', 'AMAZON WEB')
- **Step 2**: automatic name harmonization for all companies
  - Parse company names to remove DBA and FKA from name
  - Group observations with similar names (Levenshtein distance)
  - Results in 0.4M companies and 1.2 million company-year obs.

Main Findings: all companies

- Initial-employment approved petitions for years 2000-2012
- Highly concentrated in a few occupations:
  - 46% of issued to Computer-related occupations
  - 13% for Managers; 11% Architects and engineers; 10% Education; 6% Medicine and health
- Geographically concentrated:
  - 21% in *NY / Northeastern NJ*
  - 6.3% in *San Jose, CA*; 6.3% in *Washington DC/MD/VA*; 4.7% in *Boston MA/NH*
- Large increase in concentration:
  - Top20 share from 8% (2000), 16% (2004), 40% (2012)
  - Increasing role of global IT consulting companies
- Widely used by public school districts and research universities

Demand for H-1B Visas

Determinants Demand

- We hypothesize that H-1B visas are useful to firms in periods of scarcity of skilled workers
- We estimate a model for the number of (initial-employment) petitions:

$$pet_{isot} = (\alpha_i + \alpha_s + \alpha_o + \alpha_t) + \beta ER_{sot} + \varepsilon_{icot}$$

- Test for $\beta > 0$
- We estimate an elasticity of $1/4$
- As the occupation-specific local ER increases, firms file more petitions for H-1B visas
- Not purely a cost-saving strategy

H-1B Petitions Compustat firms

Merging with Compustat

- H-1B petitions do not contain any other firm info beyond name and location
- We merge our dataset (approx. 400k firms) with Compustat (approx. 7k), also on the basis of company names
  - 3k perfect matches
  - 8k potential matches
  - After clerical review, 4.3k matches corresponding to 3k firms (42% of Compustat)

Example: COGNIZANT

Year	gvkey	Approved petitions Initial emp.	Approved petitions Cont. emp.
COGNIZANT			
2000	111864	327	131
2001	111864	451	222
2002	111864	185	197
2003	111864	599	273
2004	111864	1,197	685
2005	111864	817	482
2006	111864	586	1,457
2007	111864	663	1,347
2008	111864	417	1,329
2009	111864	1,308	1,319
2010	111864	4,050	2,510
2011	111864	4,963	3,501
2012	111864	9,484	6,152

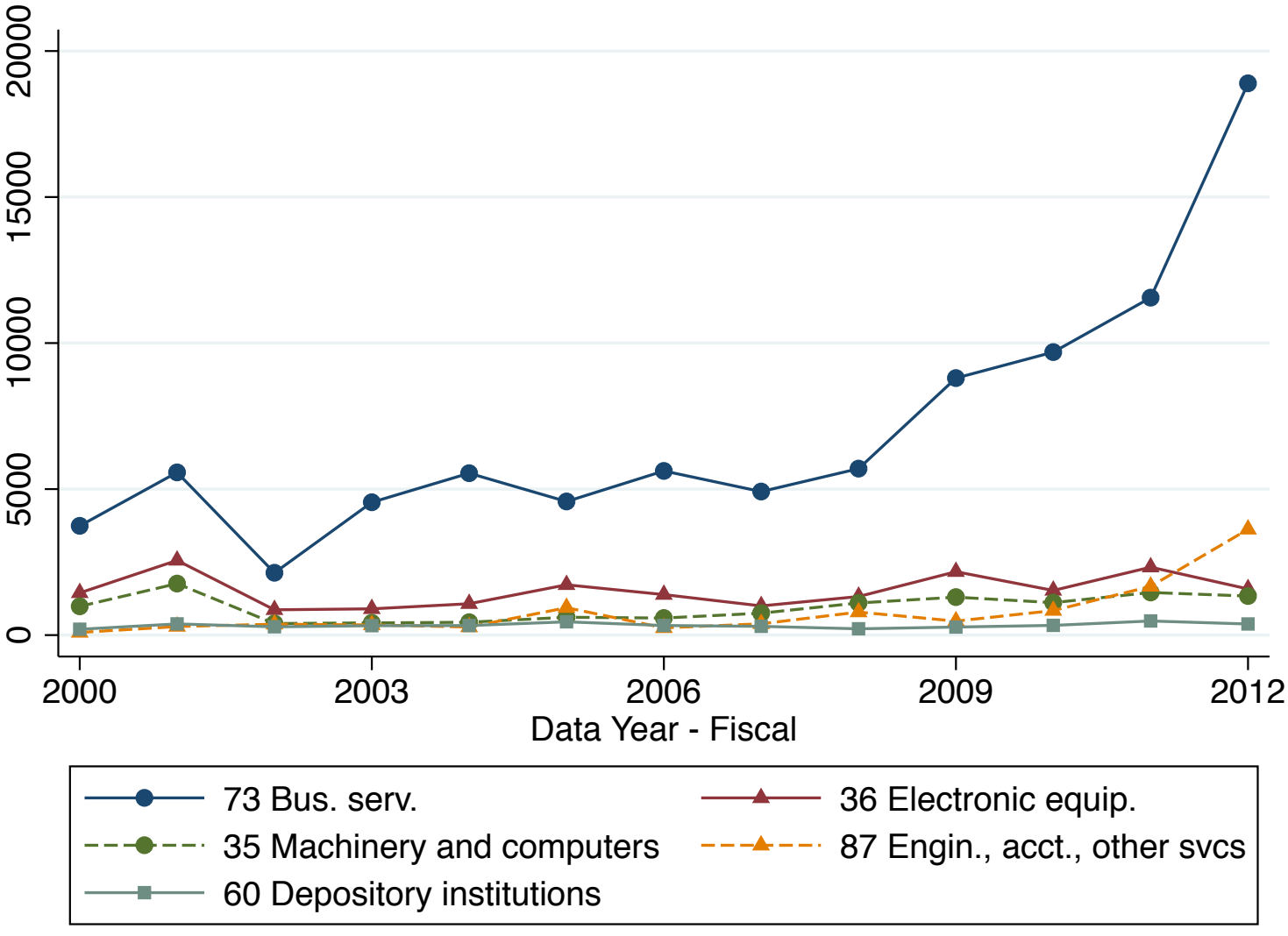
Facts Public Comp.

- Most public firms do not use H-1B visas
  - 80% without approved petitions in 2012
  - Only 5% of companies are heavy users (11+ approved)
- Users of H-1B visas are larger in terms of employment, revenue and market value
  - Also larger growth rates
- Business services (73) is the top-receiving industry
  - Accelerating since 2008
  - Increase in intensity of use
  - Also 'Engineering, Accounting and Other Bus. Services (87)'

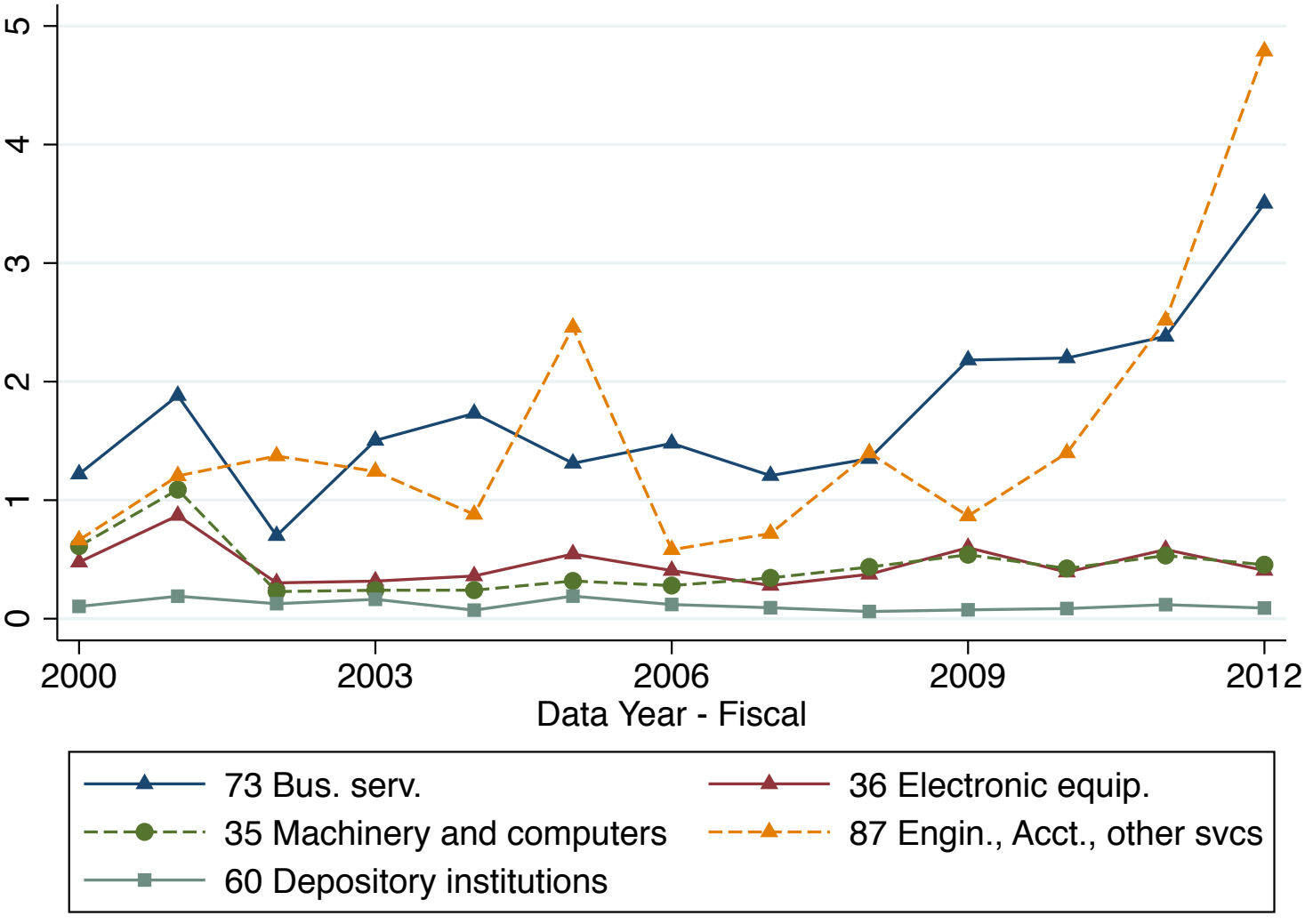
Characteristics of H1-B users

Year	2000	2000	2000	2012	2012	2012
H1B	none	1 to 10	11+	none	1 to 10	11+
Employment (M)	10	16	44	8	13	35
Revenue ($MM)	2,462	3,744	12,593	3,103	4,296	17,330
Market value ($MM)	1,765	4,830	29,783	1,803	3,528	21,851
Growth Employment	11.2%	12.4%	15.2%	6.0%	6.4%	8.8%
Growth Revenue	32.4%	61.1%	85.3%	20.5%	19.3%	20.7%
Growth Market value	.	.	.	30.1%	62.3%	40.1%
Mode SIC2d	60, 28	73,36	73,36	60,73	73,36	73,36

Approved petitions for initial empl.



Initial-emp approvals per 1000 employees



Conclusions

- The dataset on H-1B petitions will be very helpful to address many research questions
  - String matching is a never-ending process
- Probably the main benefit of H-1B visas is to increase the pool of skilled workers in times of worker scarcity
- However, rapidly increasing share of visas devoted to outsourcing of IT services
- May affect the productivity and welfare effects of H-1B visas