The Integrated Longitudinal Business Database: Measuring Job Creation among the Universe of Business Entities

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Potential for Job Creation

- Many policymakers and organizations around the world have called upon entrepreneurs to create new jobs (OECD 2014).
- Birch (1979) found that small businesses were the principal driver of job creation in the U.S. economy.
- Recent evidence indicates that young and high-impact businesses (defined as having high rates of growth in sales and employment) disproportionally contribute jobs in the economy (Haltiwanger, Jarmin and Miranda 2013, Kulick, Haltiwanger, Jarmin and Miranda 2016 and Tracy 2011).
- Job creation is one of the most important aspects of entrepreneurship, but we know relatively little about the hiring patterns and decisions of startups.

The Importance of Non-Employer Startups

- Previous research on job creation focuses on employer firms, primarily due to data and conceptual challenges.
- But the exclusion of non-employer firms represents a limitation for understanding job creation among startups for three main reasons.
- Employer firms that start as non-employers will be misclassified as startups or new firms
- Exclusion of non-employer startups underestimates the size of the startup cohort and may result in overstating job creation per startup
- Movement between non-employer and employer status might be misidentified as startup, closure, and/or attrition
- In all cases ignoring the non employer history of firms might miss important early entrepreneurial dynamics that are crucial to understanding job creation and employment growth in the U.S.

The Integrated Longitudinal Business Database (iLBD)

- The iLBD provides panel data on the universe of non-employer firms matched to the universe of employer firms over time.
- Constructed by linking employer and non-employer business units by a variety of identifiers including the EIN, the SSN, and name and address
- Linked identifier allows us to follow the progress of firm by employment growth, transition to employer status, revenue growth, survival, etc…
- Builds on the earlier work of Davis et al (2007)
  - We focus on startups, both non-employer and employer
  - Industries
  - Database still in development (1997 cohort completed, create all cohorts)

Major Advantages of the iLBD

- Universe of startups (both non-employer and employer)
- Information on job creation (employees, payroll)
- Many cohorts can be followed with panel data (employees, revenues, survival, etc…)
- Administrative data, essentially no attrition
- Contemporaneous measures, no retrospective questions
- Possible to link founder (SSN) to business – examine founder characteristics

Available Variables in the iLBD

Variable Name	Scope/Non-Missing
Nonemployer/Employer	LBD Indicator
EIN Case	~15% of obs
Legal Form	
Industry	
Geographical Location	Zip, Address, State
Name	
SpouseID	PIK only (~70% obs)
Year	1992-2013
Startup Year	1992-2013
Age Of Startup	0-21
Number Of Employees	<2% obs are non-zero
Payroll	<2% obs are non-zero
Revenue ($ 000s)	
Interest	EIN only (~15% observations)
Rents	EIN only (~15% observations)
Assets	EIN only (~15% observations)
Revenues From 1st , 2nd And 3rd Record	PIK only
Industry For 1st , 2nd And 3rd Record	PIK only

Underlying Non-Employer and Employer Data

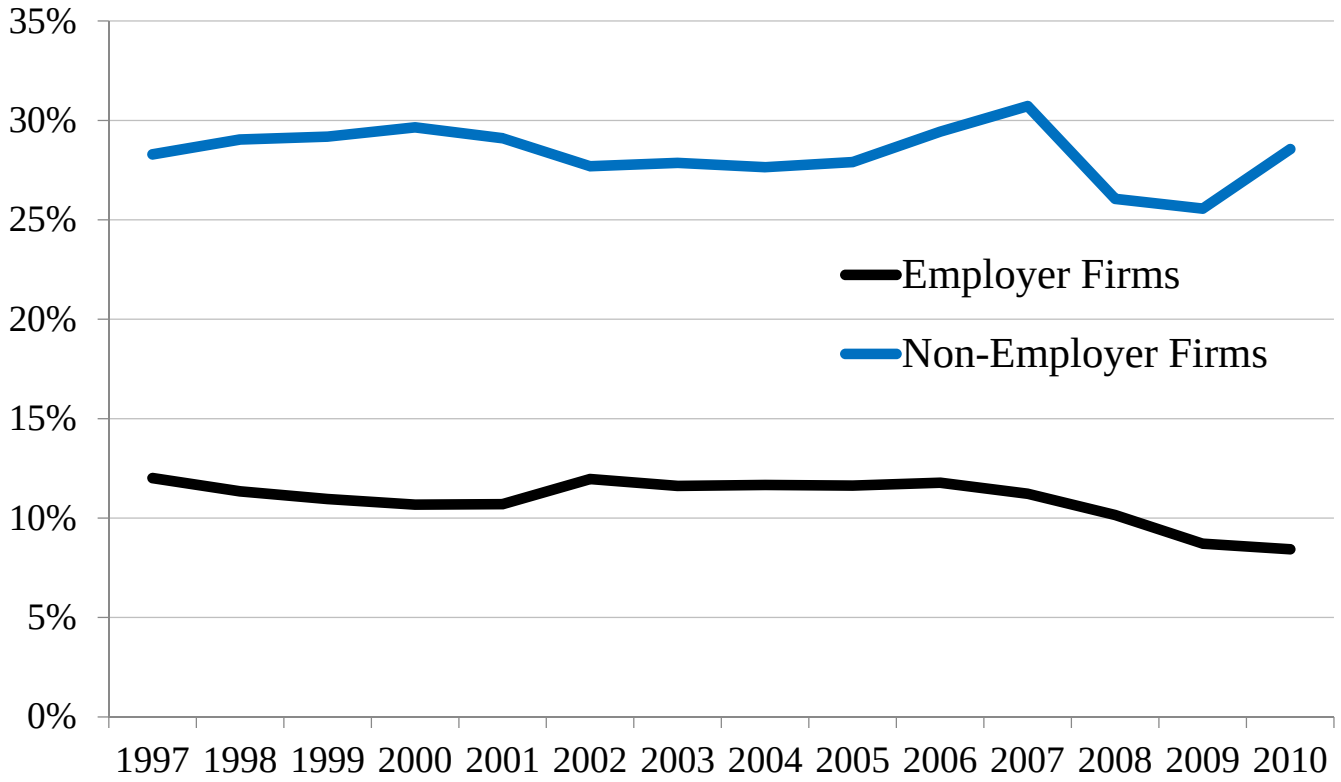
	Total Units (MM)	Non-Employer Tax Units (MM)[1]	Employer Firms(MM) [2]	Percent Non-Employer	Total Startups (MM)	Non-Employer Startups (MM) [1]	Employer Startups (MM) [2]	Percent Non-Employer
1997	20.19	15.44	4.75	76	4.94	4.37	0.57	88
1998	20.5	15.71	4.79	77	5.11	4.56	0.54	89
1999	20.98	16.15	4.83	77	5.24	4.71	0.53	90
2000	21.37	16.53	4.84	77	5.42	4.90	0.52	90
2001	21.86	16.98	4.88	78	5.46	4.94	0.52	90
2002	22.55	17.65	4.9	78	5.47	4.89	0.59	89
2003	23.61	18.65	4.96	79	5.77	5.20	0.58	90
2004	24.53	19.52	5.01	80	5.98	5.40	0.58	90
2005	25.53	20.39	5.14	80	6.29	5.69	0.60	90
2006	25.95	20.77	5.18	80	6.72	6.11	0.61	91
2007	26.95	21.71	5.24	81	7.26	6.67	0.59	92
2008	26.55	21.35	5.2	80	6.09	5.56	0.53	91
2009	26.72	21.69	5.03	81	5.98	5.55	0.44	93
2010	27.06	22.11	4.95	82	6.73	6.31	0.42	94

[1] Source: Non-employer Statistics, [2] Source: Business Dynamic Statistics

Key Question

- What are the startup rates of non-employer and employer businesses?

Startup Rate (%) from Non-employers and Employers



Source: Non-employer Statistics and Business Dynamic Statistics

Key Question

- Are non-employers just different than employers?

Sectoral breakdown of Non-Employer and Employer Firms

Sector	Non-Employer	Employer (Unweighted)	Employer (Employment Weighted)
Construction	11.8%	10.9%	6.1%
Entertainment	6.8%	9.9%	11.3%
Finance, Real Estate	9.9%	10.2%	6.6%
Health and Education	12.5%	11.4%	17.5%
Information	1.8%	1.5%	2.5%
Management	8.9%	5.6%	9.8%
Manufacturing	1.5%	4.6%	12.2%
Other Industries	1.7%	0.9%	1.2%
Other Services	14.1%	10.5%	5.1%
Professional Services	14.3%	11.6%	6.6%
Retail Trade	10.3%	14.3%	12.5%
Transportation and warehousing	4.5%	2.8%	3.3%
Wholesale Trade	1.9%	5.7%	5.1%

Key Question

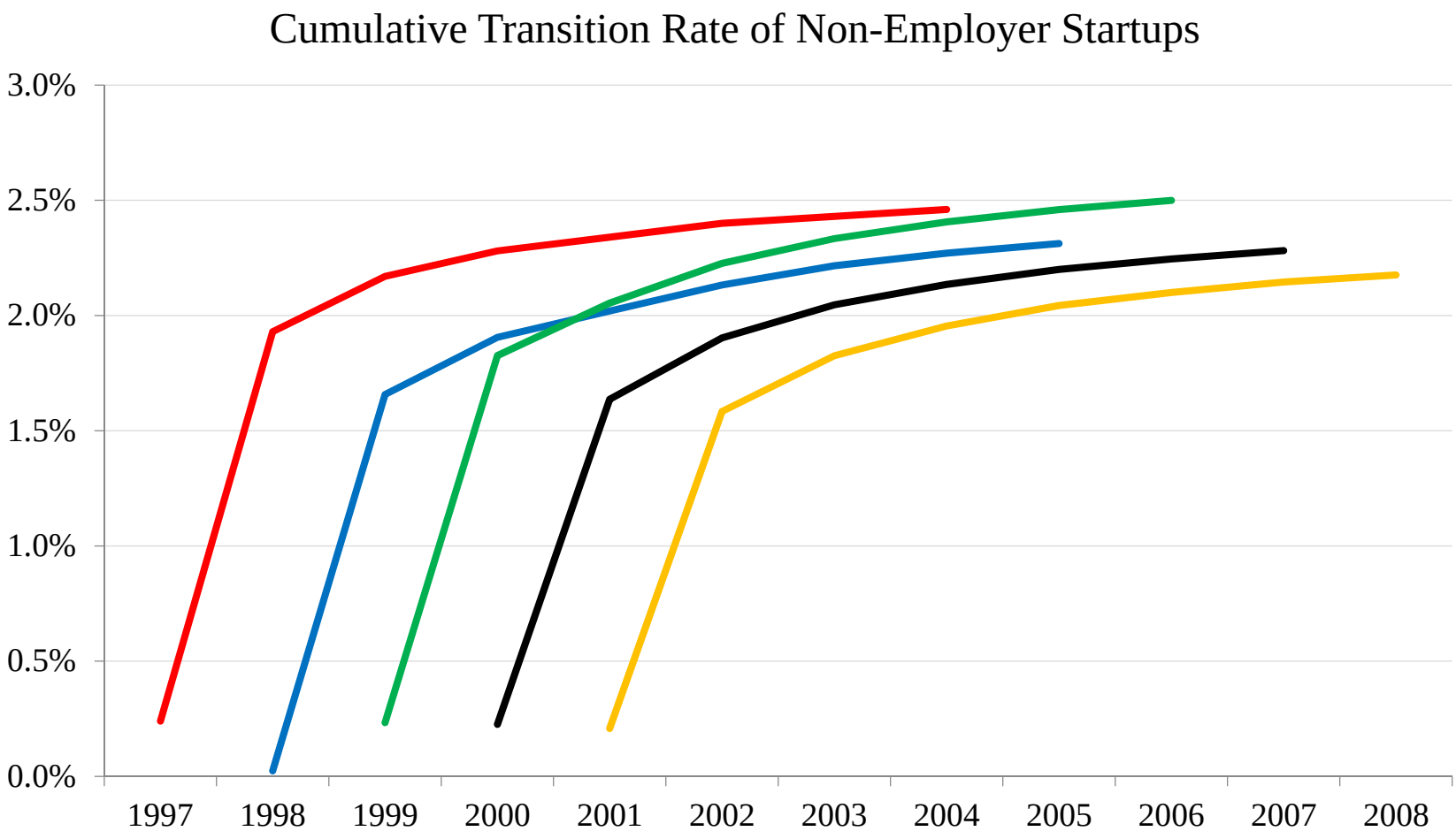
- What are transition rates from non-employer to employer status among non-employer startups?

Table 1.A: Distribution across Years in which Non-Employer Startup Hired Its First Employee - All Non-Employers
Integrated Longitudinal Business Database (ILBD)

	Percent	Universe
Hired first employee at:		
1 year after startup	1.9%	84,500
2 years after startup	0.2%	10,200
3 years after startup	0.1%	4,900
4 years after startup	0.1%	2,900
5 years after startup	0.1%	2,500
6 years after startup	0.0%	1,500
7 years after startup	0.0%	1,200
Has not hired employee by end of study period	12.7%	556,200
Exit before hiring employee by end of study period	84.8%	3,704,800
Total number of non-employer startups:		4,368,700

Notes: (1) The data consists of the universe of non-employer startups in 1997. (2) Non-employer startups are defined as non-employers appearing in the non-employer data for the first time in at least three years.

Cumulative Transition Rate by Cohort, Non-Employer Firms



Source: Non-employer Statistics

Non-Employers

- Corporations and Partnerships
  - 11-16% of observations
  - Registered for Employment Identification Number
  - Identified by zero payroll
  - More than 20x likely to transition to employer firms than Sole Props
- Sole Props
  - 84-89% of observations
  - Data collected from 1040

Table 1.C: Distribution across Years in which Non-Employer Startup Hired Its First Employee - Incorporated Cases
Integrated Longitudinal Business Database (ILBD)

	Percent	Universe
Hired first employee at:		
1 year after startup	16.2%	52,700
2 years after startup	2.3%	7,500
3 years after startup	1.1%	3,500
4 years after startup	0.6%	2,100
5 years after startup	0.5%	1,500
6 years after startup	0.3%	1,000
7 years after startup	0.2%	800
Has not hired employee by end of study period	8.8%	28,600
Exit before hiring employee by end of study period	70.0%	227,800
Total number of non-employer startups:		325,500

Notes: (1) The data consists of the universe of non-employer startups in 1997. (2) Non-employer startups are defined as non-employers appearing in the non-employer data for the first time in at least three years.

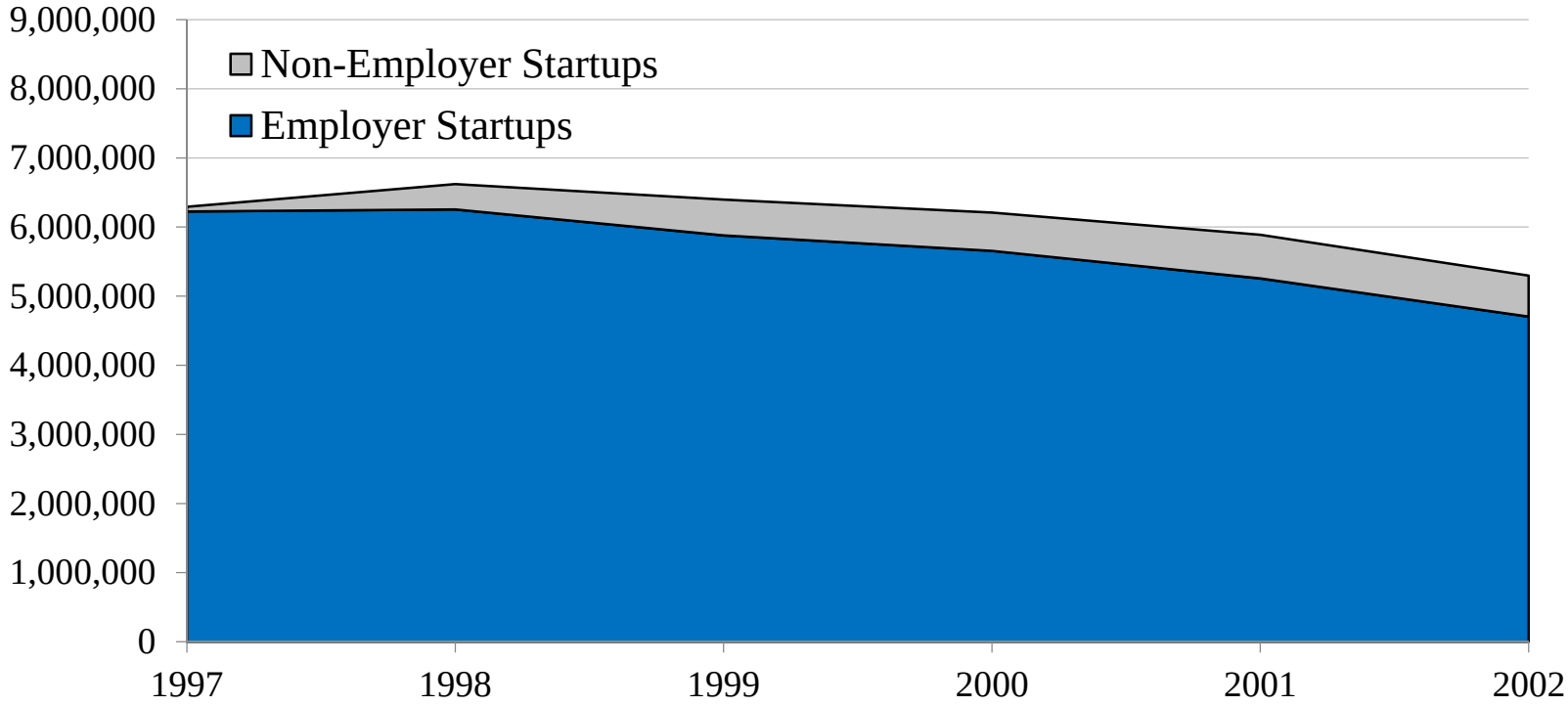
Sectoral Composition of Transition Firms

Sector	Transition Rate 7+ years after startup
Agriculture	1.6%
Mining	2.3%
Construction	2.8%
Manufacturing	5.5%
TCU	2.1%
Wholesale	6.0%
Retail	3.0%
FIRE	2.3%
Services	2.2%
NEC	1.7%

Key Question

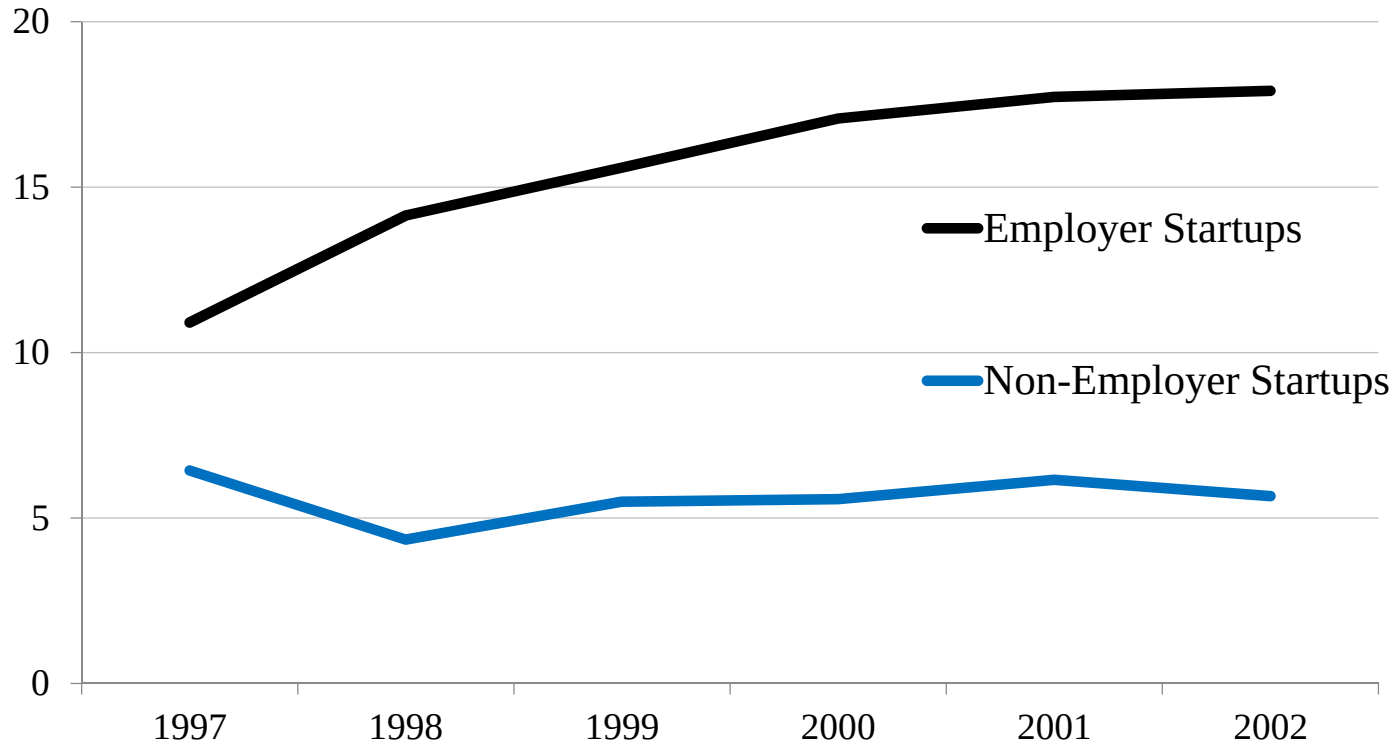
- What are job creation levels of non-employer and employer startups?

Cumulative Job Creation for 1997 Startup Cohort of Non-Employer and Employer Firms in First 5 years



Source: Non-employer Statistics and Business Dynamic Statistics

Average Employment Size of 1997 Startup Cohort (non-employer startups with subsequent employees only)

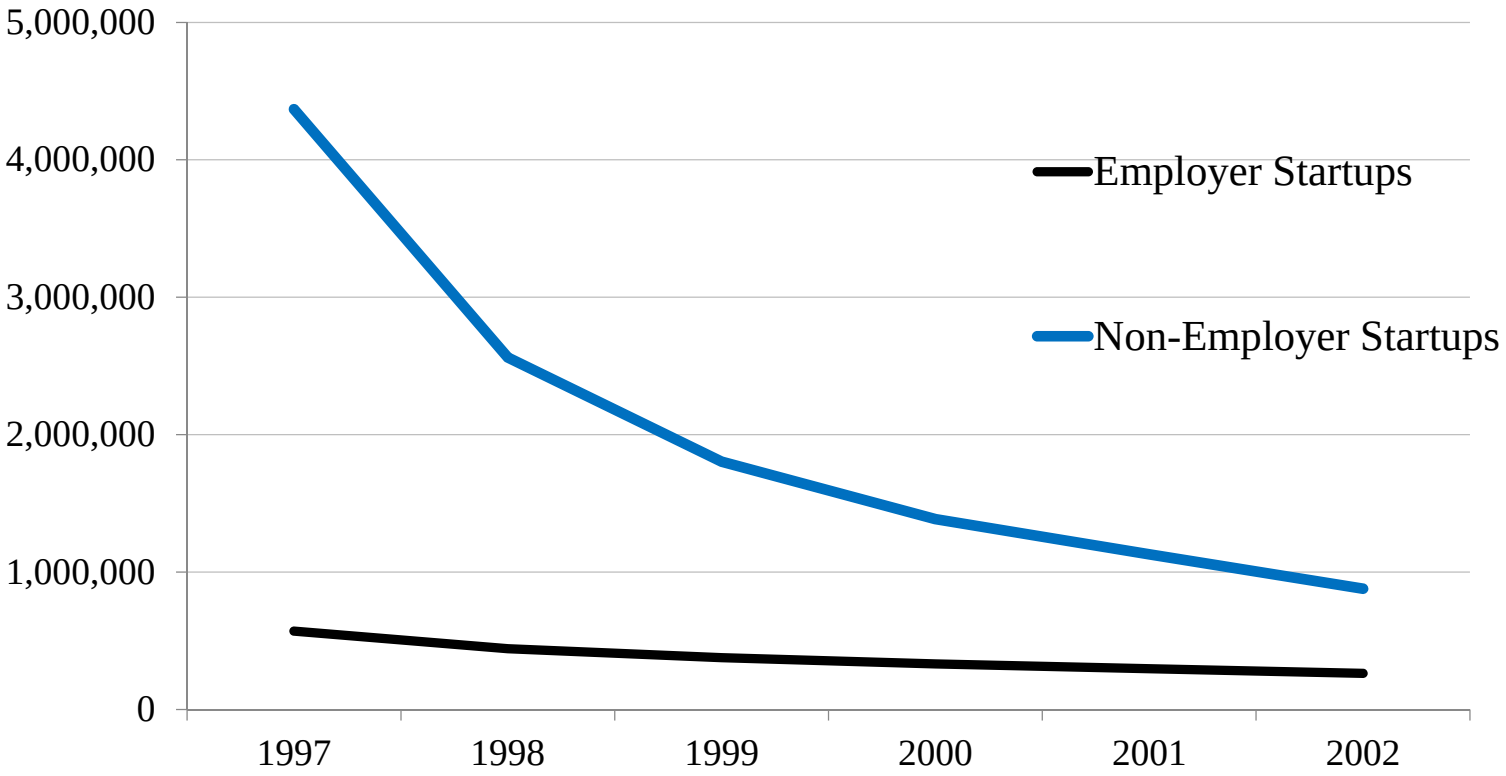


Source: Non-employer Statistics and Business Dynamic Statistics

Key Question

- What are the survival rates for non-employer and employer startups?

5-year Survival Rate for 1997 Cohort, Non-Employer and Employer Startups



Source: Non-employer Statistics and Business Dynamic Statistics

A Few Examples of Additional Research

- Who makes up the population of entrepreneurs?
- Up-or-out dynamics and contribution of continuers and high growth non employers startups to revenue growth
- High tech startups
- Do firms who start off as non-employer firms differ from other start-ups?
- Short-term vs. long-term job creation among startups
- Payroll or quality of job creation among startups