



Early-Stage Business Formation:

An Analysis of Applications for Employer Identification Numbers

Kimberly Bayard, Federal Reserve Board
Emin Dinlersoz, U.S. Census Bureau
Timothy Dunne, University of Notre Dame
John Haltiwanger, University of Maryland
John Stevens, Federal Reserve Board

Central Question

Q: Can applications for Employer Identification Numbers (EINs) provide timely information about new business formation?

Central Question

Q: Can applications for Employer Identification Numbers (EINs) provide timely information about new business formation?

A: Yes.

Important things to know about EINs

- Tax identifier
- Internal Revenue Service > Census Bureau
- Don't need to be an employer

Application for Employer Identification Number

(For use by employers, corporations, partnerships, trusts, estates, churches, government agencies, Indian tribal entities, certain individuals, and others.)

EIN

Department of the Treasury
Internal Revenue Service

▶ See separate instructions for each line. ▶ Keep a copy for your records.

Name and Address

Type or print clearly.	1 Legal name of entity (or individual) for whom the EIN is being requested	
	2 Trade name of business (if different from name on line 1)	3 Executor, administrator, trustee, "care of" name
	4a Mailing address (room, apt., suite no. and street, or P.O. box)	5a Street address (if different) (Do not enter a P.O. box.)
	4b City, state, and ZIP code (if foreign, see instructions)	5b City, state, and ZIP code (if foreign, see instructions)
	6 County and state where principal business is located	
	7a Name of responsible party	7b SSN, ITIN, or EIN

8a Is this application for a limited liability company (LLC) (or a foreign equivalent)? <input type="checkbox"/> Yes <input type="checkbox"/> No	8b If 8a is "Yes," enter the number of LLC members ▶
--	--

8c If 8a is "Yes," was the LLC organized in the United States? Yes No

Type of entity

9a **Type of entity** (check only one box). **Caution.** If 8a is "Yes," see the instructions for the correct box to check.

<input type="checkbox"/> Sole proprietor (SSN) _____	<input type="checkbox"/> Estate (SSN of decedent) _____
<input type="checkbox"/> Partnership	<input type="checkbox"/> Plan administrator (TIN) _____
<input type="checkbox"/> Corporation (enter form number to be filed) ▶ _____	<input type="checkbox"/> Trust (TIN of grantor) _____
<input type="checkbox"/> Personal service corporation	<input type="checkbox"/> National Guard <input type="checkbox"/> State/local government
<input type="checkbox"/> Church or church-controlled organization	<input type="checkbox"/> Farmers' cooperative <input type="checkbox"/> Federal government/military
<input type="checkbox"/> Other nonprofit organization (specify) ▶ _____	<input type="checkbox"/> REMIC <input type="checkbox"/> Indian tribal governments/enterprises
<input type="checkbox"/> Other (specify) ▶ _____	Group Exemption Number (GEN) if any ▶ _____

9b If a corporation, name the state or foreign country (if applicable) where incorporated	State	Foreign country
---	-------	-----------------

Reason for application

0 Reason for applying (check only one box)		<input type="checkbox"/> Banking purpose (specify purpose) ▶ _____
<input type="checkbox"/> Started new business (specify type) ▶ _____	<input type="checkbox"/> Changed type of organization (specify new type) ▶ _____	<input type="checkbox"/> Purchased going business
<input type="checkbox"/> Hired employees (Check the box and see line 13.)	<input type="checkbox"/> Created a trust (specify type) ▶ _____	<input type="checkbox"/> Created a pension plan (specify type) ▶ _____
<input type="checkbox"/> Compliance with IRS withholding regulations		
<input type="checkbox"/> Other (specify) ▶ _____		

Wage date 

11 Date business started or acquired (month, day, year). See instructions.	12 Closing month of accounting year		
13 Highest number of employees expected in the next 12 months (enter -0- if none). If no employees expected, skip line 14.	14 If you expect your employment tax liability to be \$1,000 or less in a full calendar year and want to file Form 944 annually instead of Forms 941 quarterly, check here. (Your employment tax liability generally will be \$1,000 or less if you expect to pay \$4,000 or less in total wages.) If you do not check this box, you must file Form 941 for every quarter. <input type="checkbox"/>		
<table border="1"> <tr> <td>Agricultural</td> <td>Household</td> <td>Other</td> </tr> </table>		Agricultural	Household
Agricultural	Household	Other	
15 First date wages or annuities were paid (month, day, year). Note. If applicant is a withholding agent, enter date income will first be paid to nonresident alien (month, day, year) ▶ _____			

Industry details

16 Check one box that best describes the principal activity of your business.		<input type="checkbox"/> Health care & social assistance	<input type="checkbox"/> Wholesale-agent/broker
<input type="checkbox"/> Construction	<input type="checkbox"/> Rental & leasing	<input type="checkbox"/> Transportation & warehousing	<input type="checkbox"/> Accommodation & food service
<input type="checkbox"/> Real estate	<input type="checkbox"/> Manufacturing	<input type="checkbox"/> Finance & insurance	<input type="checkbox"/> Wholesale-other
		<input type="checkbox"/> Other (specify)	<input type="checkbox"/> Retail
17 Indicate principal line of merchandise sold, specific construction work done, products produced, or services provided.			

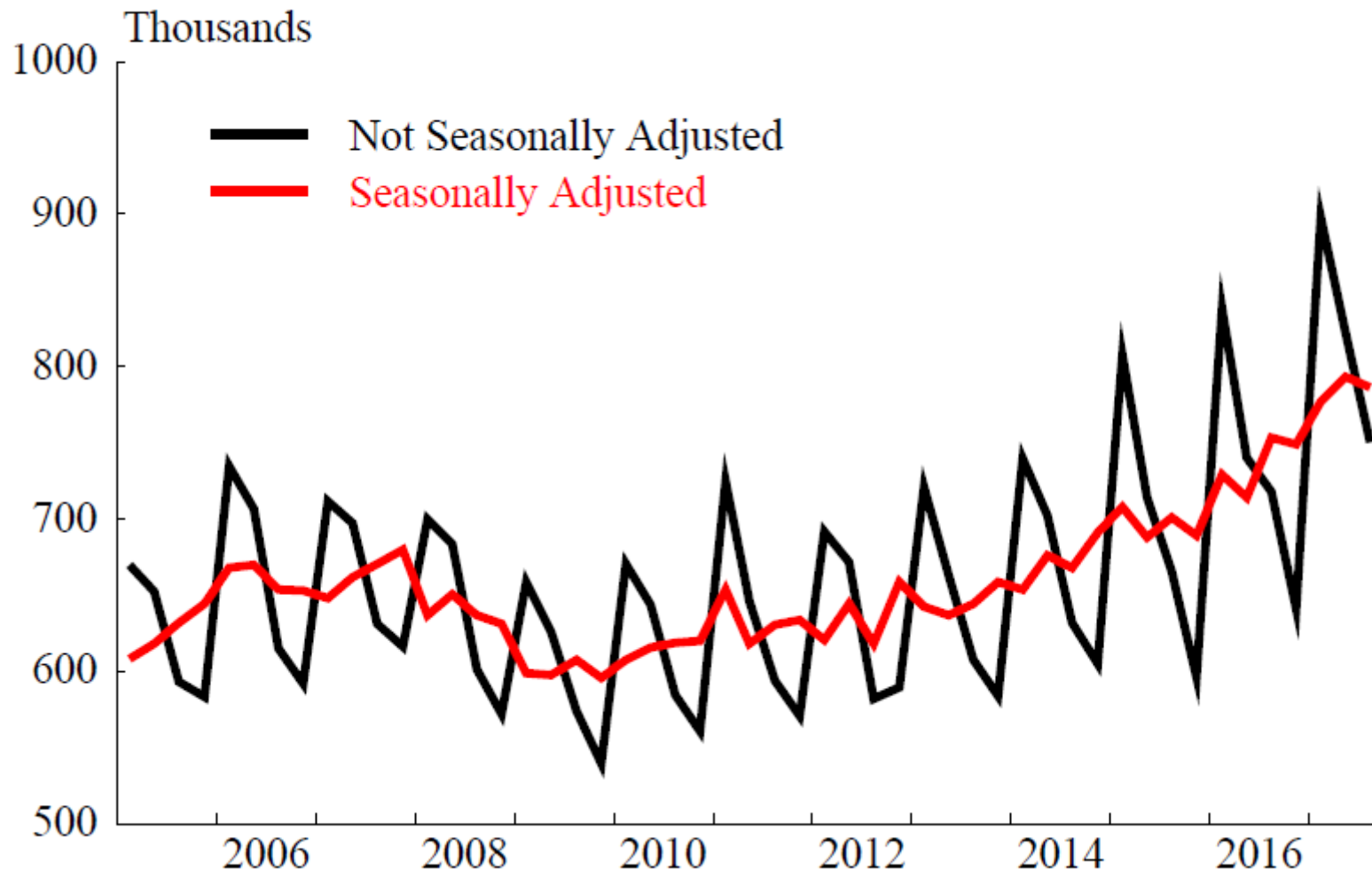
18 Has the applicant entity shown on line 1 ever applied for and received an EIN? Yes No
If "Yes," write previous EIN here ▶ _____

Complete this section only if you want to authorize the named individual to receive the entity's EIN and answer questions about the completion of this form.		
Third Party Designee	Designee's name	Designee's telephone number (include area code) ()
	Address and ZIP code	Designee's fax number (include area code) ()
Under penalties of perjury, I declare that I have examined this application, and to the best of my knowledge and belief, it is true, correct, and complete.		Applicant's telephone number (include area code) ()
Name and title (type or print clearly) ▶ _____		Applicant's fax number (include area code) ()
Signature ▶ _____	Date ▶ _____	

Employer Identification Numbers

- Data from 2004:Q3 – 2017:Q3
- Omit applications with missing or bad geography (non-US state), “bad” industry or type of entity. Overall, drop about 12 million observations.
- Left with about 30.5 million applications, about 650,000 per quarter

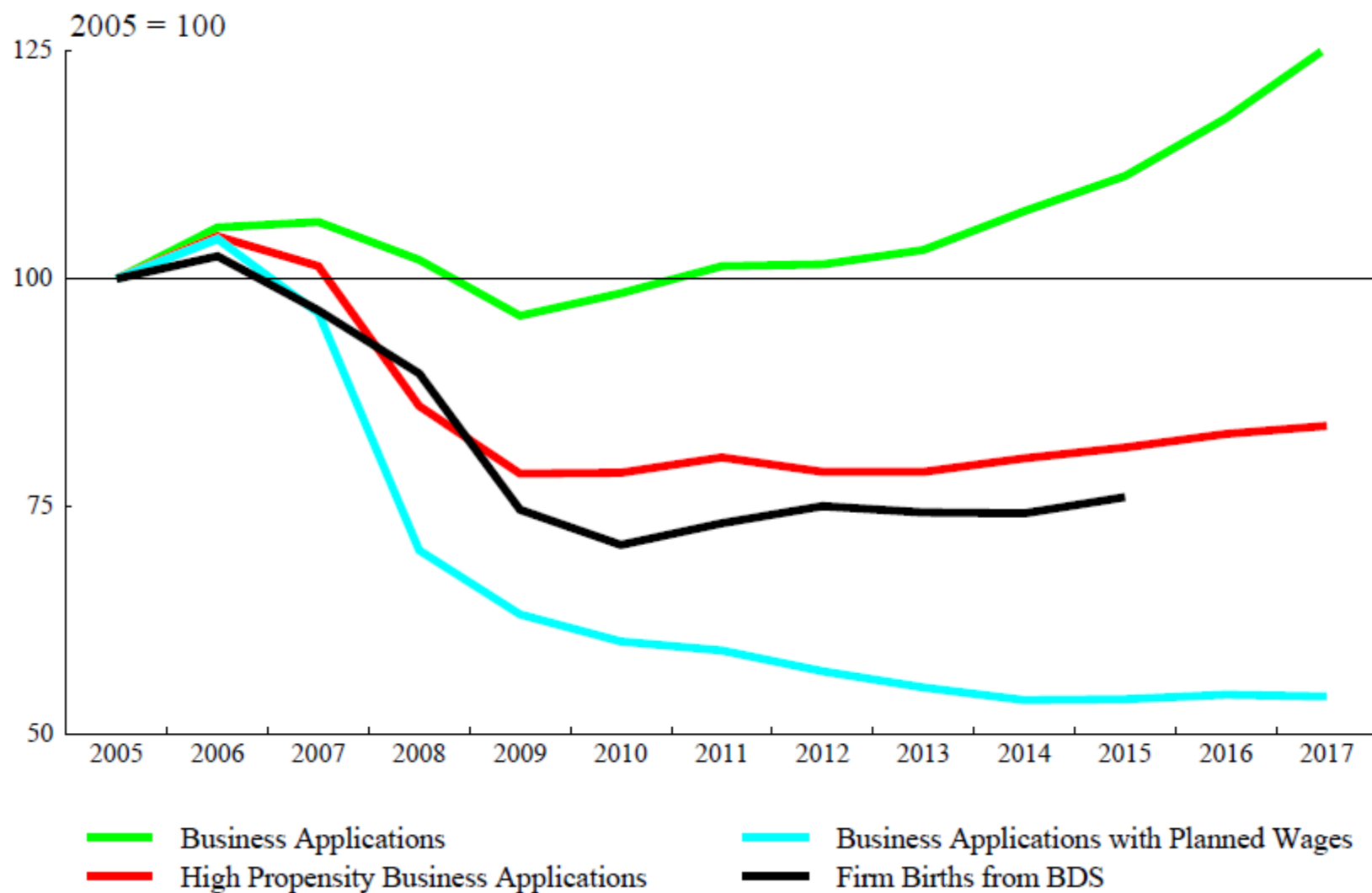
Number of EIN Applications



Applications for EINs are....

- A lot more plentiful than business formations
(~2½ million per year vs. ~450,000 per year)
- A lot more timely than measures of business formation
(2 week lag vs. 2 year lag)

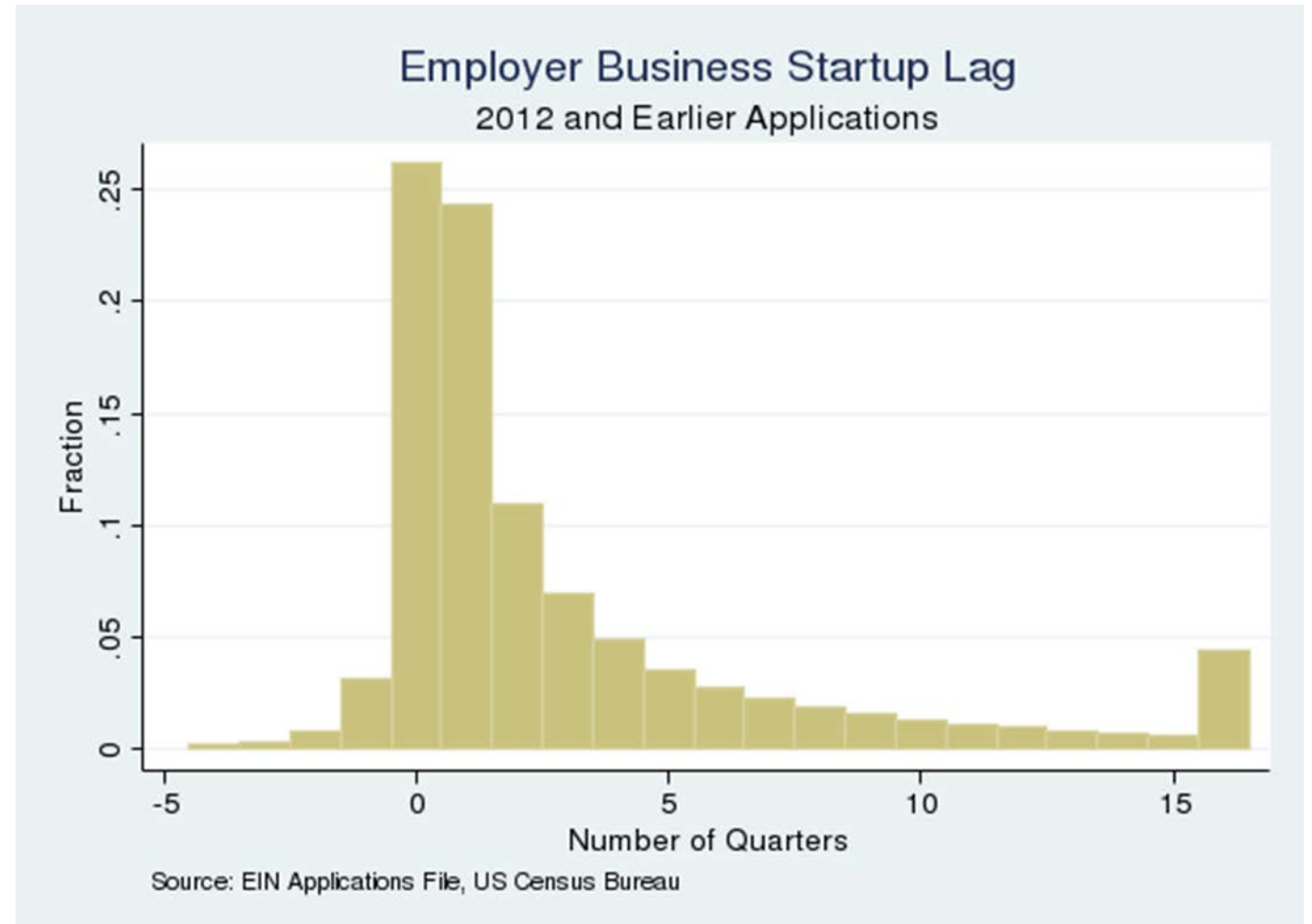
Applications and New Business Formations



Applications for EINs...

Don't always become businesses right away

75 percent of applications that transition to employer businesses do so in 4 quarters



Basic Steps - Business application to business formation

- EIN applications (2017:Q3) > EIN < Census Bureau's Business Register (2015)
- Estimate how many applications will become businesses *in the next four quarters*
 - Use “in-sample” data to model probability an application becomes a business.
 - Apply these probabilities to applications in the “out-of-sample” period to estimate the number of new businesses in that period.

Constructing expected business formations

Construct the probability, \hat{P}_{igt+k} , that application i in geography g transitions to an employer business over the period $t+k$. $F()$ is a probit specification

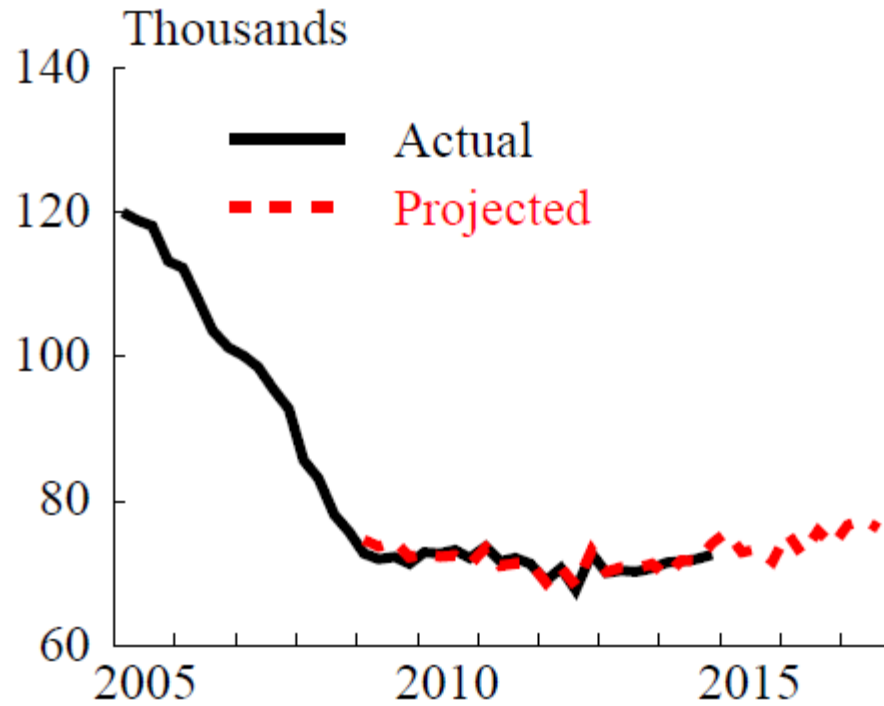
$$\hat{P}_{igt+k} = F(Z_{igt}; \hat{\beta}_{gt})$$

Construct an estimate, \hat{S}_{igt+k} , of the expected number of business formations by $t+k$

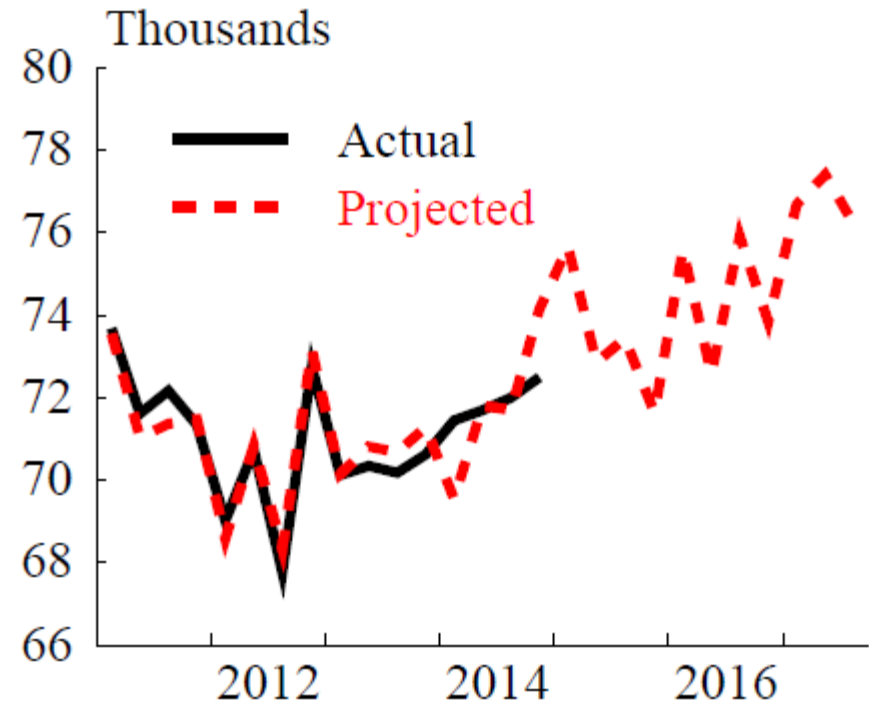
$$\hat{S}_{igt+k} = \sum_{i=1}^{N_{gt}} \hat{P}_{igt+k}$$

Actual and Projected Business Formations within 4 quarters of EIN Application

2005 to 2017



2011 to 2017



Regional, State, Local data....

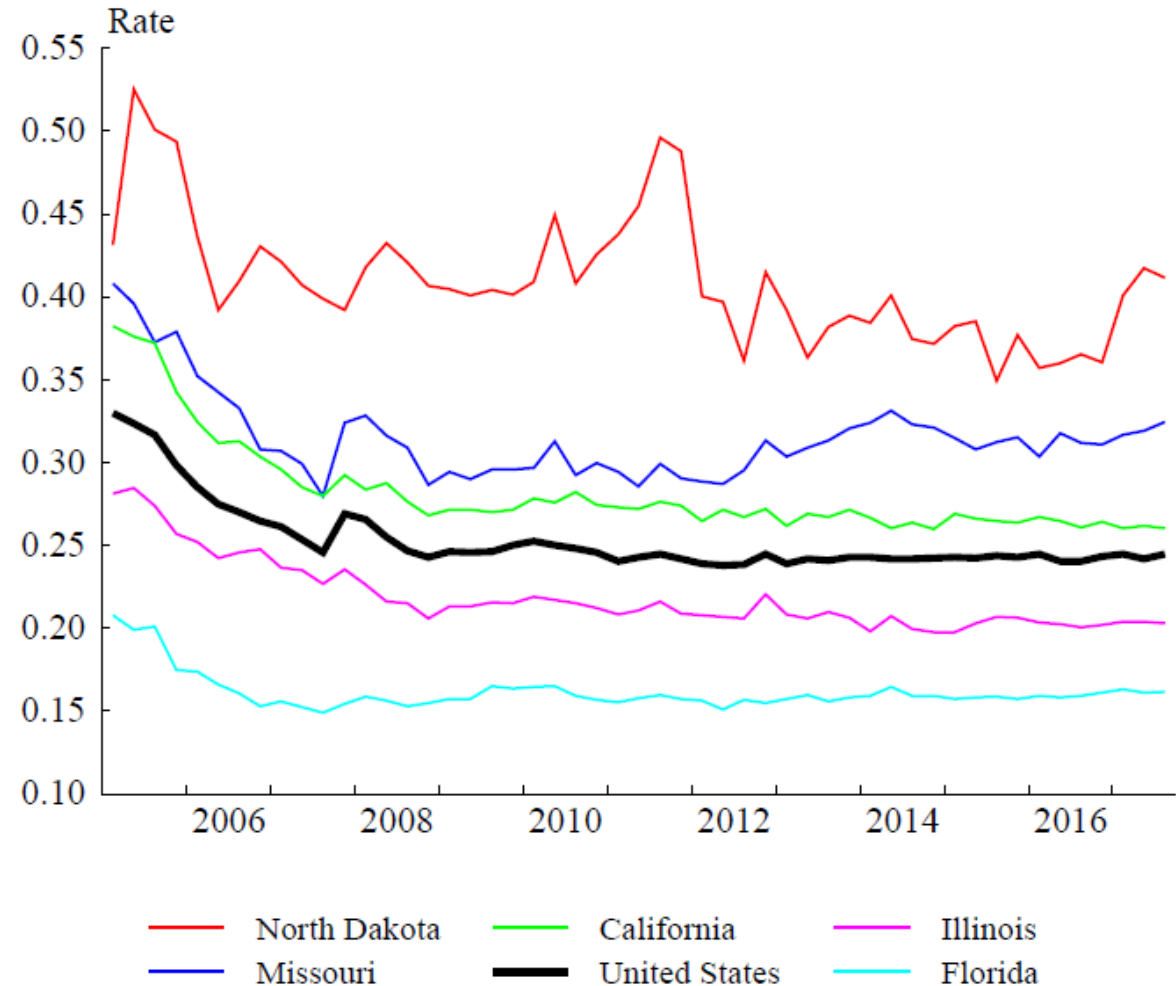
One example of sub-national analysis

- State variation in “formation rates”
- This variation is persistent

In the paper:

- County-level differences
- CBSA-level analysis

Business Formations per High Propensity Business Application
(seasonally adjusted)



Public version of Business Formation Statistics and next steps...

- **Business Formation Statistics (BFS)** on the U.S. Census Bureau website.
 - 4 series on applications (for each of the U.S, the 50 U.S. states, and D.C.)
 - 8 series on projected business formations
 - Quarterly frequency, both seasonally adjusted and not-seasonally adjusted
 - In the future, will update on a regular, rolling basis
- Looking ahead: Monthly releases on applications, research projects
- Finally, a plug for administrative data: comprehensive, timely, free