Job separation risk and home ownership: evidence from assistant professors

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A Useful Calculator

- Home price
- How long will you stay?
- Mortgage and closing costs, taxes, and other investments.

A Useful Calculator

- Home price
- How long will you stay?
- Mortgage and closing costs, taxes, and other investments.

Philadelphia, PA

Buy if you will stay more than 2 years.
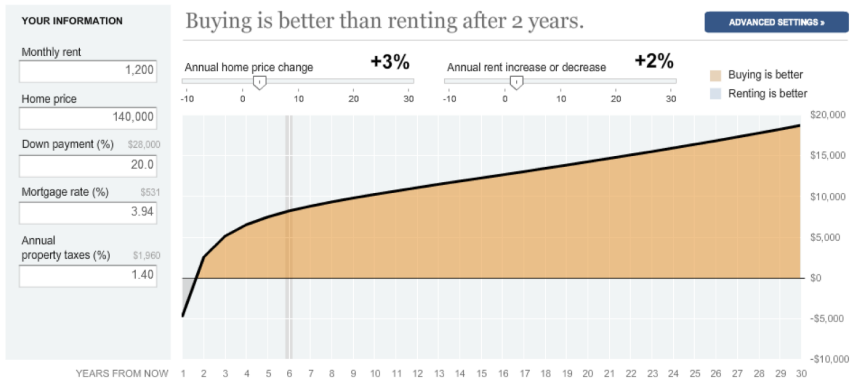
Boulder, CO

Buy if you will stay more than 5 years.
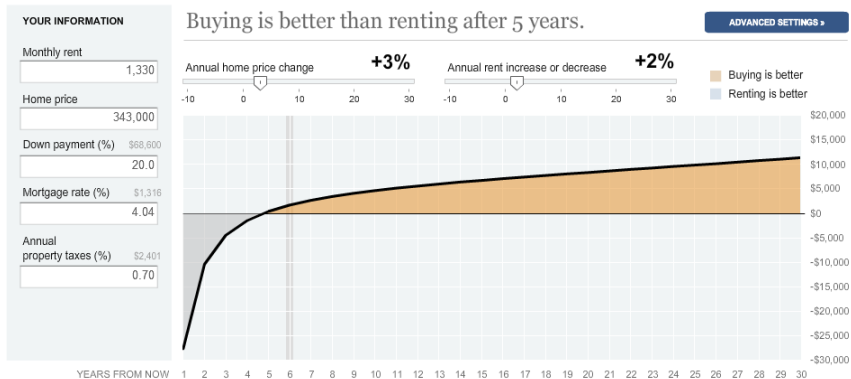
Chapel Hill, NC

Buy if you will stay more than 7 years.
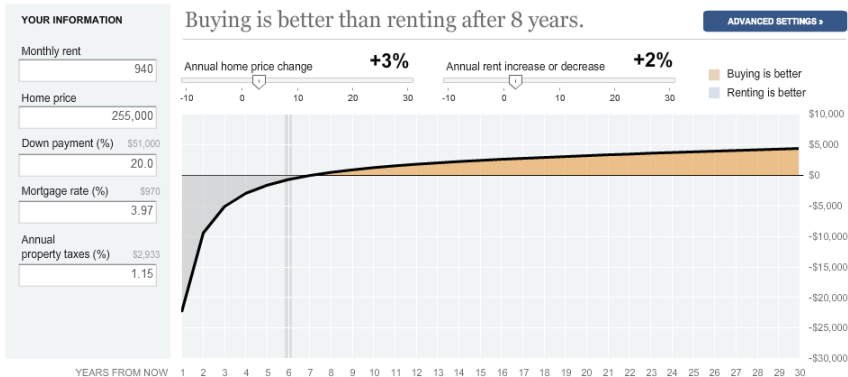
Question

Home ownership
↑
How long will you stay?

Question

Home ownership
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Risk that you'll need to move for work.

Question

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What is the effect of job separation risk on home ownership?

Expected Job Loss and Mobility Over Next 12 Months

$$\text{Pr(Move)} \quad = \quad \underset{(1.39)^{***}}{17.01} \quad + \quad \underset{(0.09)^{***}}{0.29} \quad \text{Pr(Lose Job)} \quad + \quad \varepsilon$$
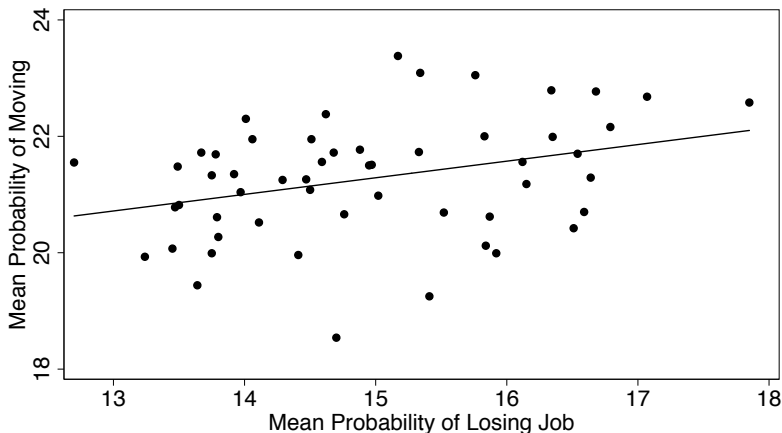
Source: NY Fed *Survey of Consumer Expectations*. Survey means, Jun 2013 - Nov 2017 ($T = 52$). Robust SE. *p*-values: */**/*** : 10/5/1.

This Paper

We study the homeownership decisions of tenure track assistant professors at top-50 public U.S. economics departments.

- **Unique setting**: APs have job security for 5-7 years, followed by an "up-or-out" review.

- Finding another suitable job **typically requires moving** due to specialized skills.

- Tenure probabilities vary across departments and are **directly measurable**.

- We supplement **public records data** with a **survey** of all APs in these departments as of 2016 to elicit *preferences* and *beliefs*.

Results

1. **Heterogeneity in job separation risk**: Quasi-random assignment of risks due to,

   - Gender Antecol et. al. (2016), Sarsons (2017)
   - Research experience and department Brogaard et. al. (2017)

2. **Main result**: A 1% increase in tenure prob inc. prob of buying by **between 1/3 and 2/3%**.

3. **Perceptions of risk**: Individuals' understanding of labor market risk is systematically biased towards mean.

4. **Implications**: Our estimates imply number of people choosing to rent instead of buy should have increased by about 5.5% during Great Recession. It increased by 5.4%.

Roadmap

Roadmap

Data Collection

Economics Department Rankings

Number of citations are weighted by recursive impact factor and discounted by citation age.
Source: RePEc Top US Economics Departments as May 2016.
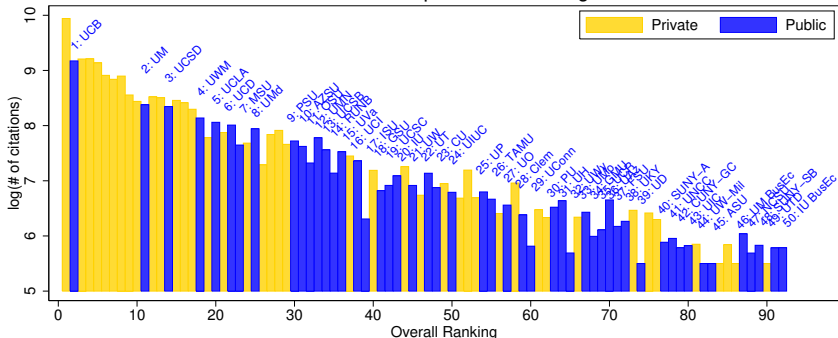
- Historical course catalogues for RePEc Top 50 public economics departments from CollegeSource.org: '95-'96 to '15-'16.

- Previous and next job from CV scrape.

- Gender from probabilistic name assignment.

Observed Careers, 1995-6 to 2015-6: By-Gender.
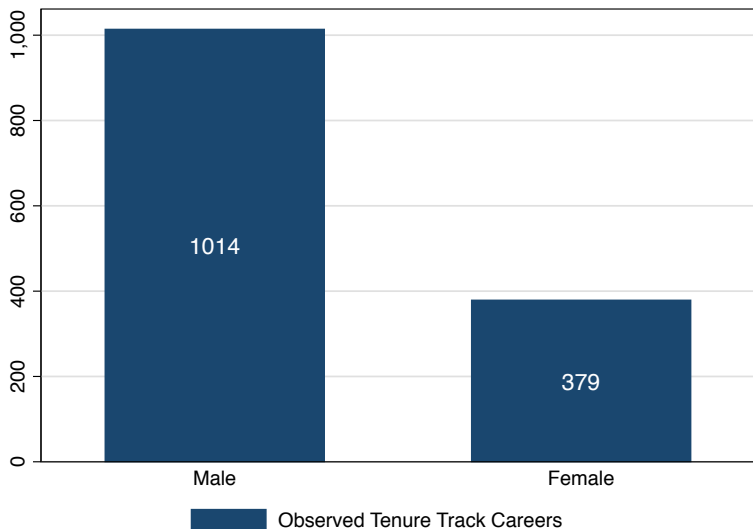
Ratio = 2.7 to 1. Excludes 21 ($<$ 1%) N/A genders. Total = 1,414.

Left-Censoring
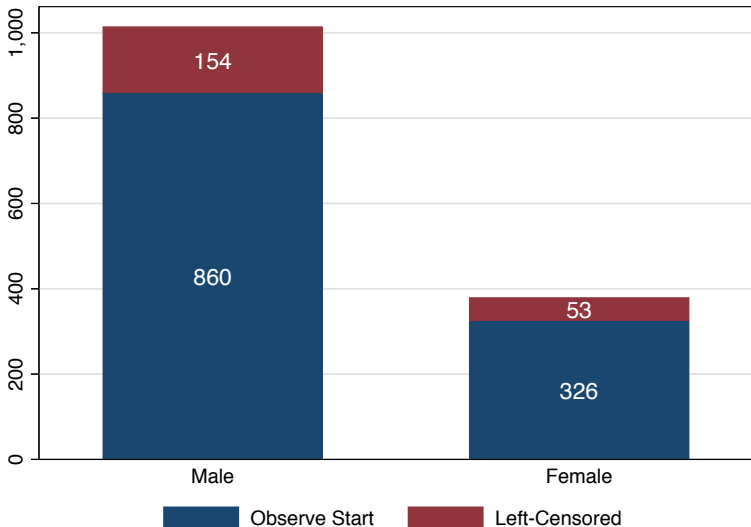
Left-Censored: Pre-existing career at start of 1995-6 academic year.

Previous Career Experience
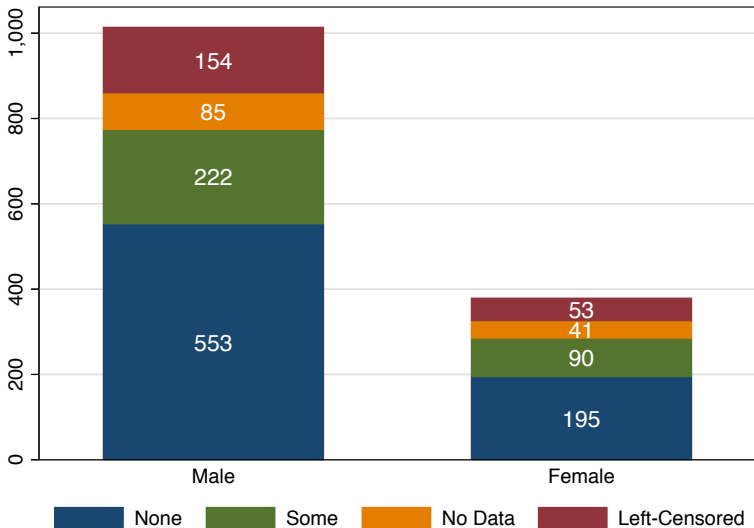
None/Some Ratio: Male = 2.5 to 1. Female = 2.2 to 1.

Right-Censoring
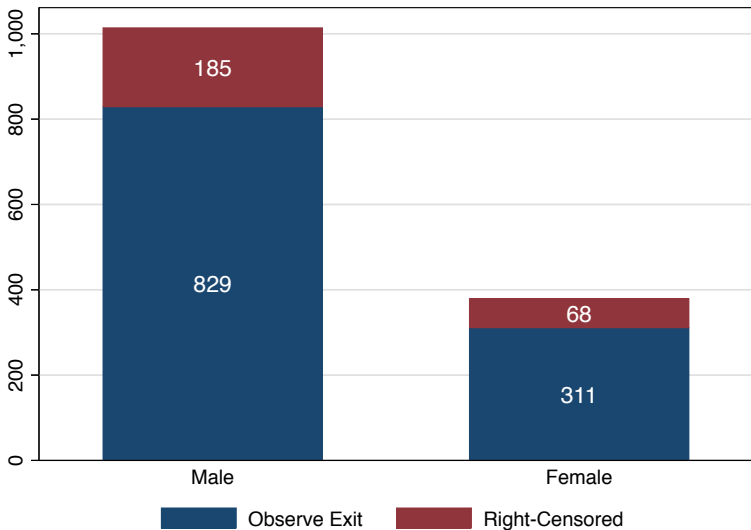
Right-Censored: Still on tenure track as of 2017-8 academic year.

Career Outcomes
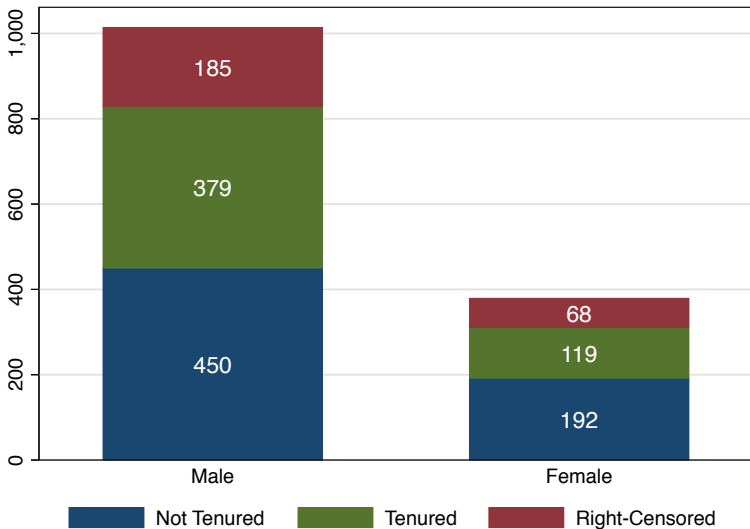
Fraction tenured: Male = 46%. Female = 38%.

Assistant Professors **without** Career Experience
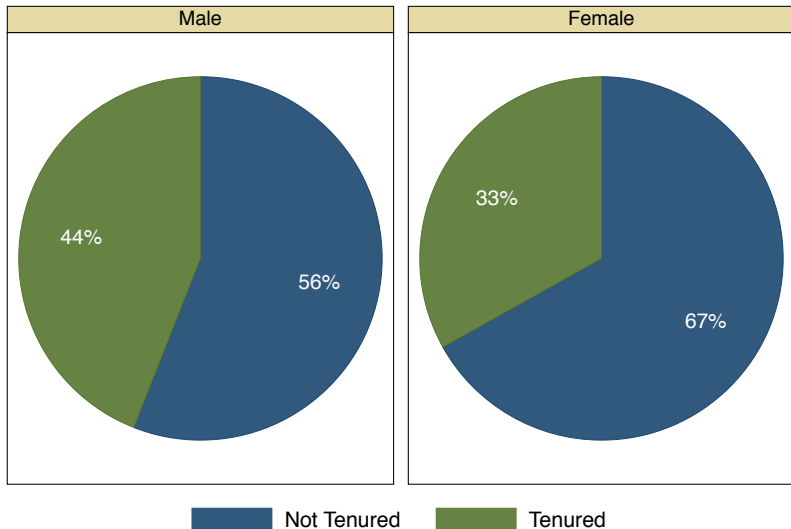
Sample: 553 Male and 195 Female.

Distinct by-gender.

Assistant Professors **with** Career Experience

Male	Female
39%	38%
61%	62%

Not Tenured Tenured
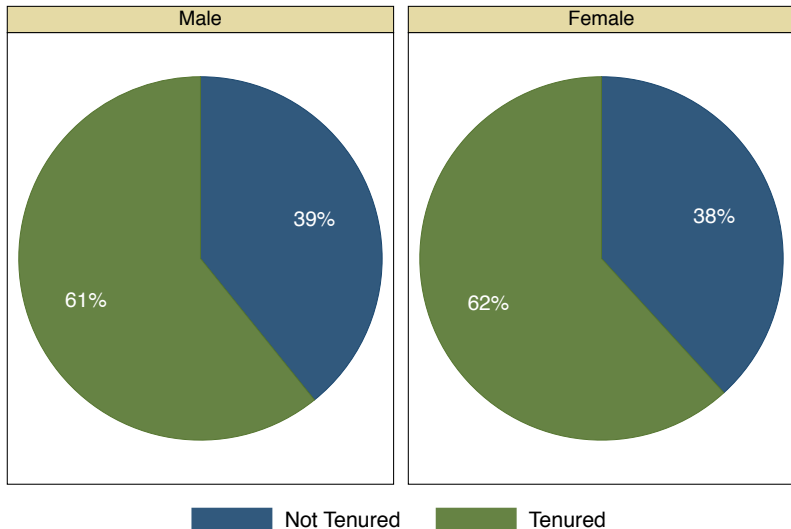
Sample: 222 Male and 90 Female.

Higher tenure rates than without experience. **Similar** by-gender.

Tenure Rates by-Department Rank
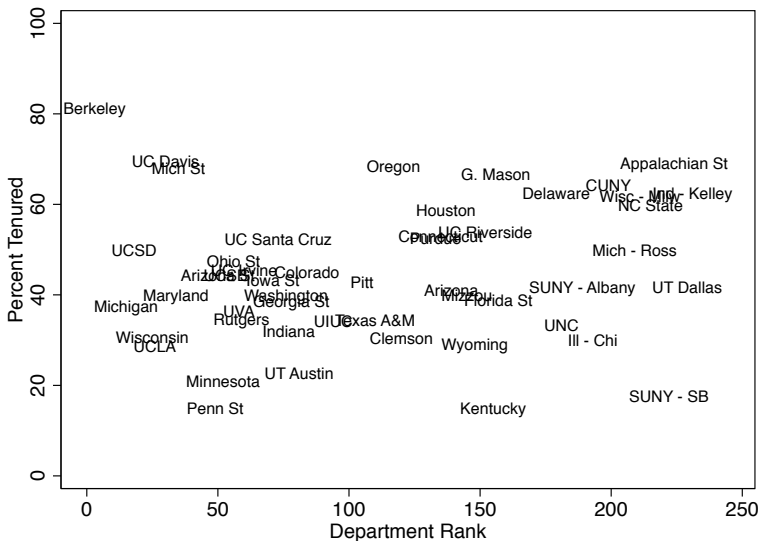
All 1,161 not right-censored cases.

Tenure Rates by-Department Rank: U-Shaped, 10% level
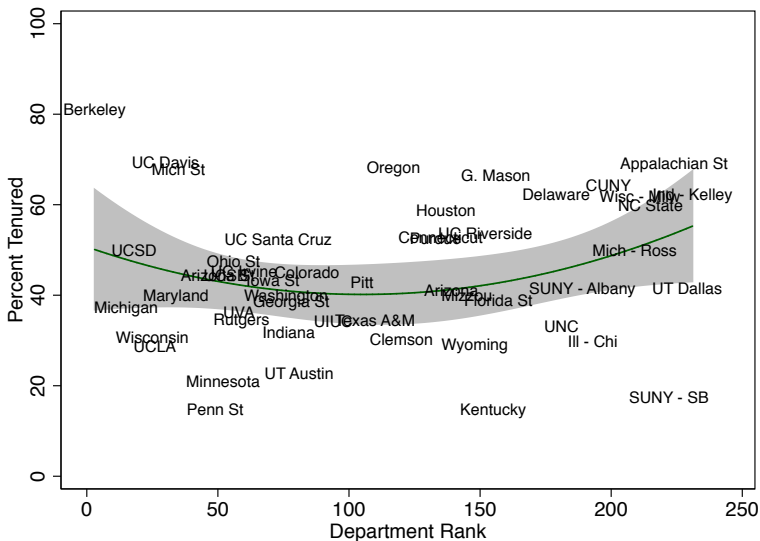
H_0: No U-Shape. p-value $= 0.076$ (Lind and Mehlum, 2010).

Roadmap

Destinations of Not Tenured

Not Tenured does **not** necessarily mean Failed Case.
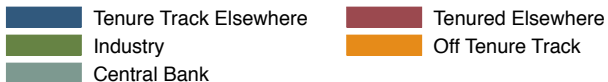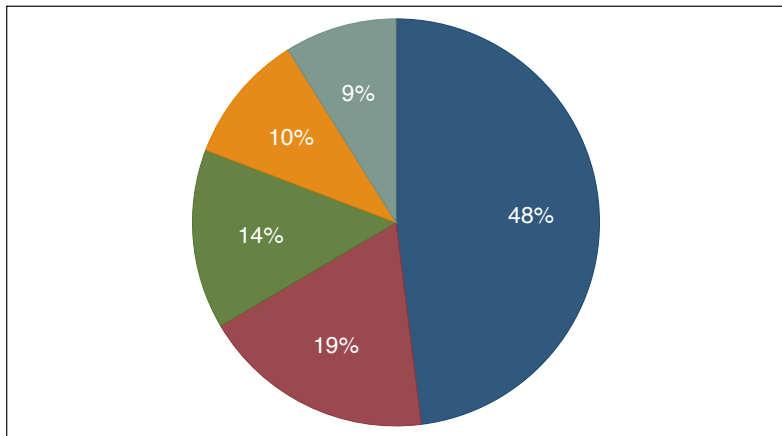
430 not right-censored careers. Both genders plus unknown. Omits 233 N/A cases and 3 that passed away.

Rule of Thumb: Thirds?
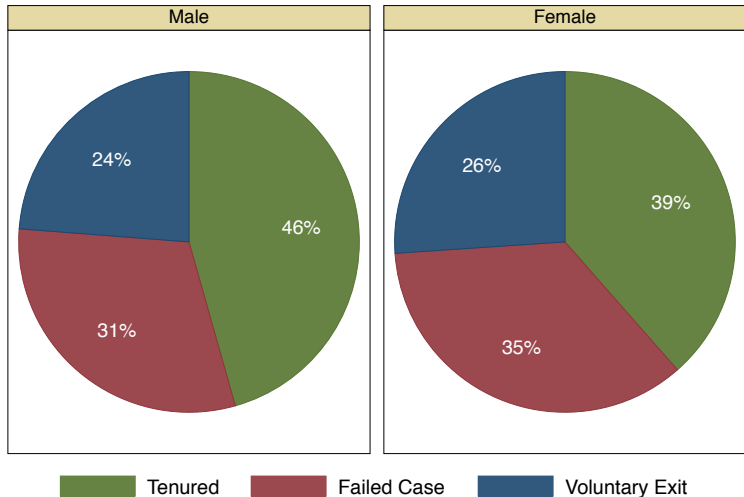
Sample: 930 completely observed careers. Omits 3 that passed away.

Conditional on No Voluntary Exit: 60% Male tenured, 53% Female.

Prob. Density of Type and Timing of Exit: Start of Year 1

Male, no experience: Exit at end of year on *x*-axis.

Prob. Density of Type and Timing of Exit: Start of Year 2

Male, no experience: Exit at end of year on x-axis.

Prob. Density of Type and Timing of Exit: Start of Year 3

Male, no experience: Exit at end of year on *x*-axis.

Legend: Tenured, Failed Case, Voluntary Exit
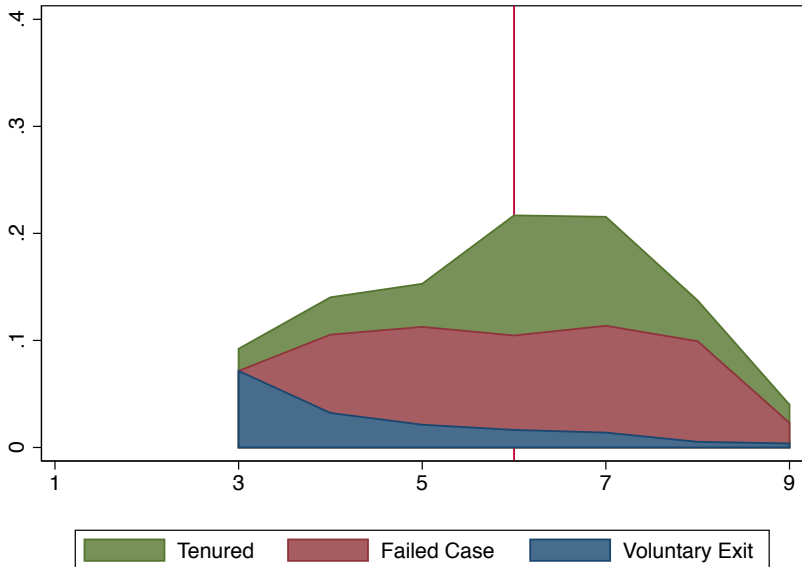
Prob. Density of Type and Timing of Exit: Start of Year 4

Male, no experience: Exit at end of year on *x*-axis.

Legend: Tenured | Failed Case | Voluntary Exit
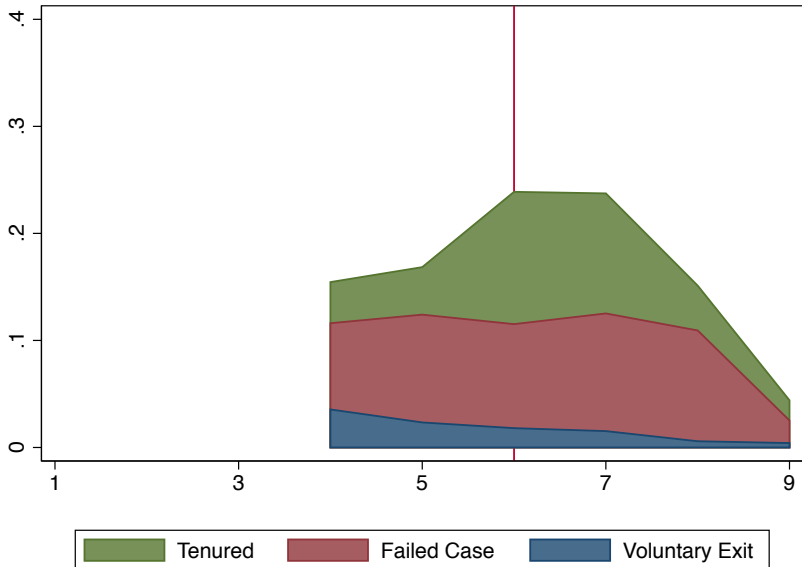
Prob. Density of Type and Timing of Exit: Start of Year 5

Male, no experience: Exit at end of year on x-axis.

Legend: Tenured, Failed Case, Voluntary Exit
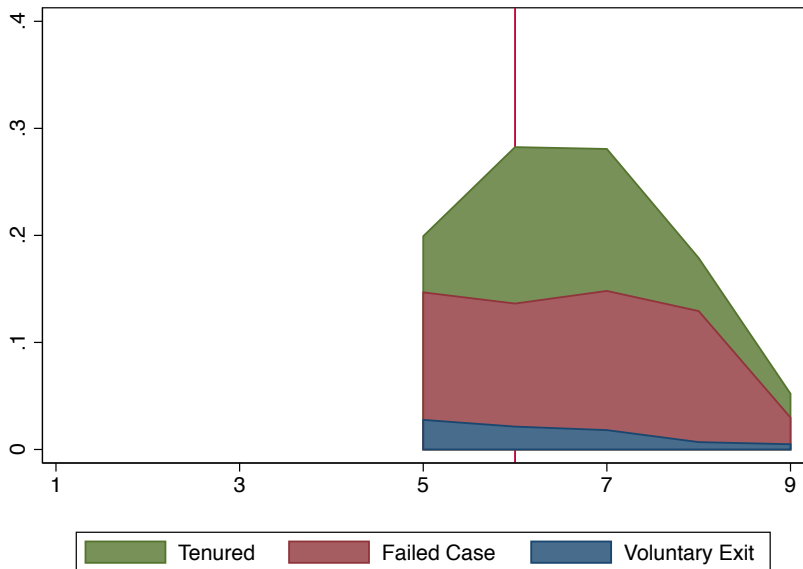
Prob. Density of Type and Timing of Exit: Start of Year 6

Male, no experience: Exit at end of year on x-axis.
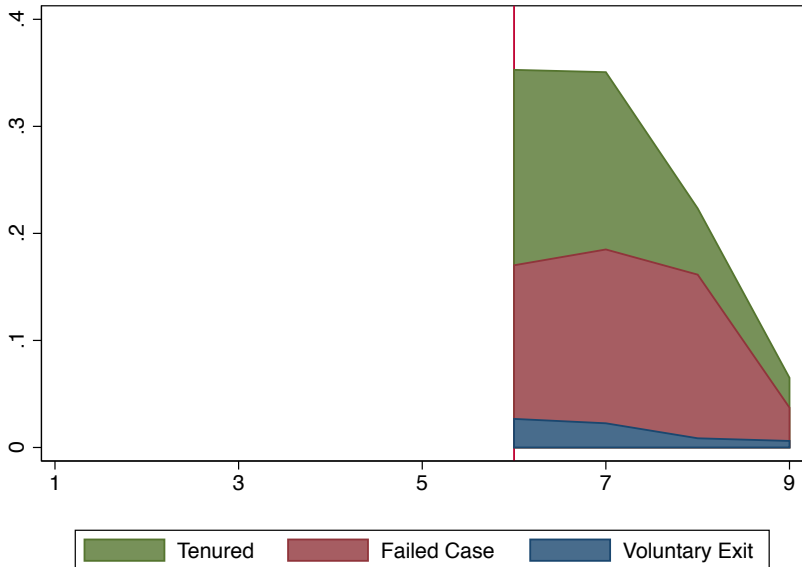
Failed Case Rates by-Department Rank
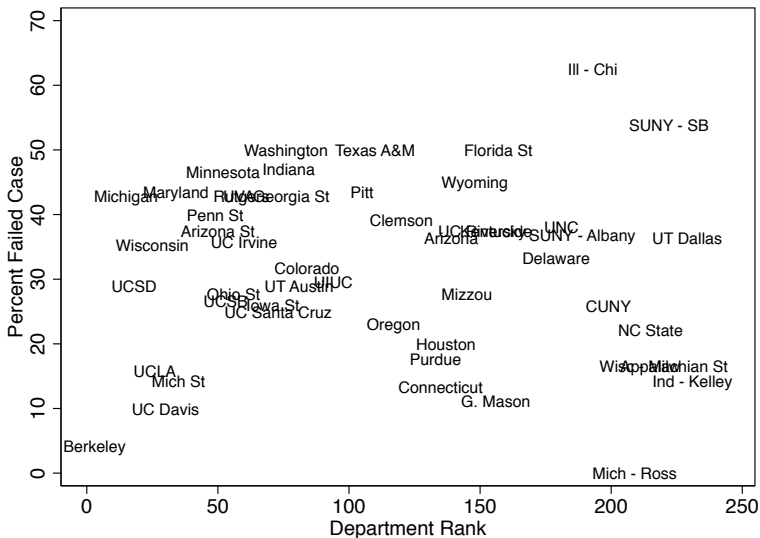
All 930 not censored cases.

Failed Case Rates by-Dept Rank: Inverted U, 5% level
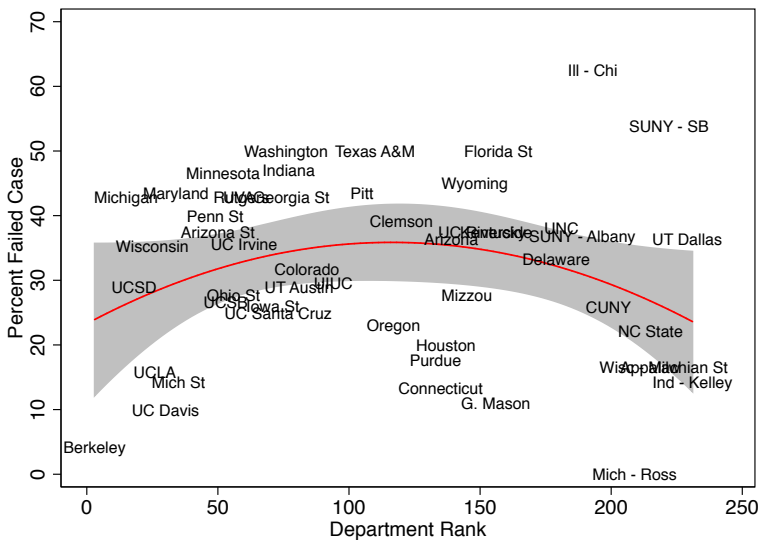
H_0: No U-Shape. p-value $= 0.041$ (Lind and Mehlum, 2010).

Roadmap

Study Group

We now turn attention to **348** individuals who were still on the tenure track as of the 2015-2016 academic year.

- 28% Female (27% in whole sample)

- 72% No Experience (71% in whole sample)

- Age at start of tenure track: No experience median=30.
  With-experience median=33.

This is the group whose home ownership we will study, and who we also ultimately survey.

Median U.S. House Prices: By-County, 2015.
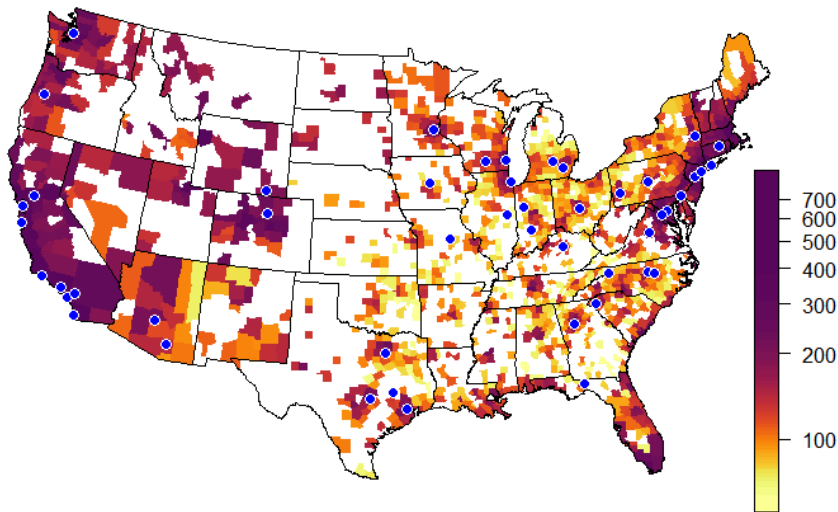
Circles indicate top-50 public Economics Departments.

Public Records: Owner-Occupied Housing

Rents | Buys While On Tenure Track | N/A
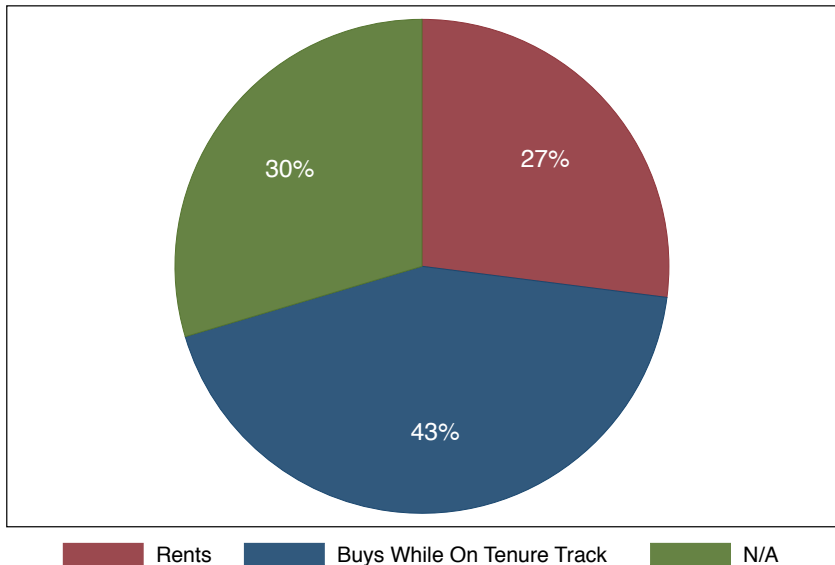
Source: Public records. 348 AP's still on tenure track in 2015-6.

Mean purchase year: 2.5. Median sales price: $421,000.

Does Tenure Probability Predict Home Ownership?

Binomial Logit: =1 if owns.

	(1)	(2)	(3)	(4)
Pr. Tenured w/n 3 Years (%)	**0.015*****	**0.015*****	**0.015*****	**0.014*****
	(0.005)	**(0.005)**	**(0.004)**	**(0.005)**
Log 12 Month Salary	0.21	0.19		
	(0.36)	(0.36)		
Log Median County Home Price	0.30	0.26		
	(0.29)	(0.30)		
County Price / Rent Ratio			0.01	0.01
			(0.03)	(0.03)
Female	-0.22	-0.22	-0.19	-0.23
	(0.28)	(0.28)	(0.27)	(0.27)
Pubs / Year on Tenure Track		0.09		0.10
		(0.07)		(0.08)
Observations	897	897	1,125	920
Pseudo R^2	0.02	0.02	0.02	0.02

Robust SE clustered by-dept. p-values: */**/***: 10/5/1.

Marriage is an Important Determinant of Home Purchase

Binomial Logit: =1 if owns.

	(1)	(2)
Prob. Tenured w/n 3 Years (%)	**0.014****	**0.013****
	(0.007)	**(0.006)**
Log 12 Month Salary	1.85***	
	(0.67)	
Log County Median Home Price	0.30	
	(0.48)	
County Price / Rent Ratio		-0.03
		(0.05)
Married	1.43***	1.33***
	(0.43)	(0.42)
Gender & Publication Controls (Both Insignificant)	YES	YES
Observations	476	493
Pseudo R^2	0.11	0.09
Marginal Effect of 1% Increase in Tenure Prob.	**0.35%**	**0.33%**

Marriage and salary are weakly negatively corr, making salary now significant. Robust SE clustered by-dept. p-val: */**/***: 10/5/1.

Roadmap

Survey Design

- Surveyed 341 of the 348 whose home purchase we previously analyzed, plus 35 new AP's as of 2016-7 academic year (376 total).

- Asked about previously mentioned unobserved variables, and other things.

- First email November 11, 2016, two follow-ups.

- Offered lottery with prize of Amazon gift cards.

Survey Respondent Characteristics

Of the 144 (38%) who completed the survey in full,

- 28% are female.

- 27% entered their current position with experience elsewhere.

- 58%: Mean perceived tenure probability in department given no voluntary exit.

- 62% own their home.

For the most part, these survey respondents look like those whose home ownership we studied in public records.

Eliciting Beliefs About Tenure Probability

To the best of your knowledge, what is the probability that a **typical** assistant professor who wants tenure will receive it at your department? Please answer with a number between 0 and 100% (0% = no one gets tenure, 100% = everyone gets tenure).

| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |

% chance of getting tenure

How certain are you of this number?

○ Very

○ Somewhat

○ Not very

How do you think **your own** chances of getting tenure compare to the typical assistant professor at your department? Please answer with a number between 1 and 7, where "4" indicates "same as the typical professor".

| 1: Lower than typical | 2 | 3 | 4: Typical | 5 | 6 | 7: Higher than typical |
| ○ | ○ | ○ | ○ | ○ | ○ | ○ |

Eliciting Beliefs About Tenure Probability

Survey Responses: Owners vs. Renters

	Owns	Rents	Difference	Predicted
N	90	54		
Tenure Prob in Dept?[1]	**60.6**	**54.9**	**5.6***	+
Certainty?[2]	1.81	2.72	-0.09	
How Do You Compare?[3]	4.78	4.56	0.22	+

p-values: */**: 10/5.

_____

[1] Respondents were asked to give probability for "Typical" AP in their dept.
[2] 1=not very, ..., 3=very
[3] 1=below average, ..., 4=average, ..., 7=above average

Prob. a "Typical" AP Who Wants To Be Tenured Will Be
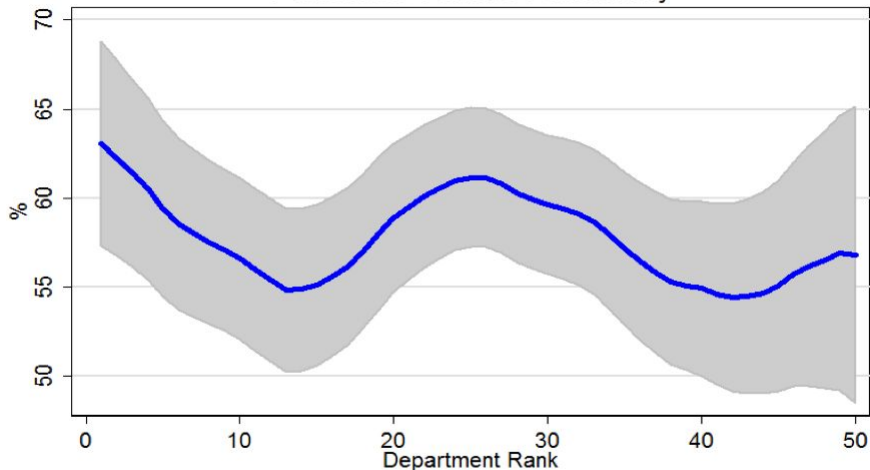
Perceived Tenure Probability

Data from survey of 144 junior professors at top-50 public university economics departments.
Kernel regression and 2-SE confidence band, half-width = 5.

Prob. a "Typical" AP Who Wants To Be Tenured Will Be

Perceived Tenure Probability

Data from survey of 144 junior professors at top-50 public university economics departments.
Kernel regression and 2-SE confidence band, half-width = 5.

Perceived Tenure Probs Are Biased Towards Mean
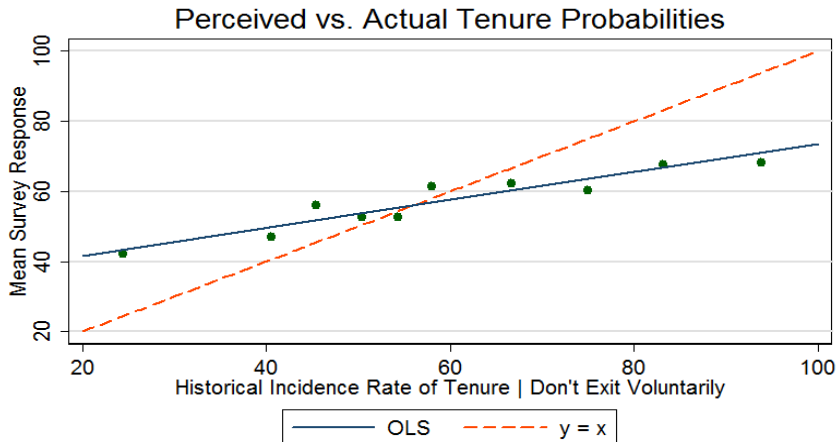
Perceived vs. Actual Tenure Probabilities

Data from survey of 144 junior professors at top-50 public university economics departments and college catalog records over 1995-2016.

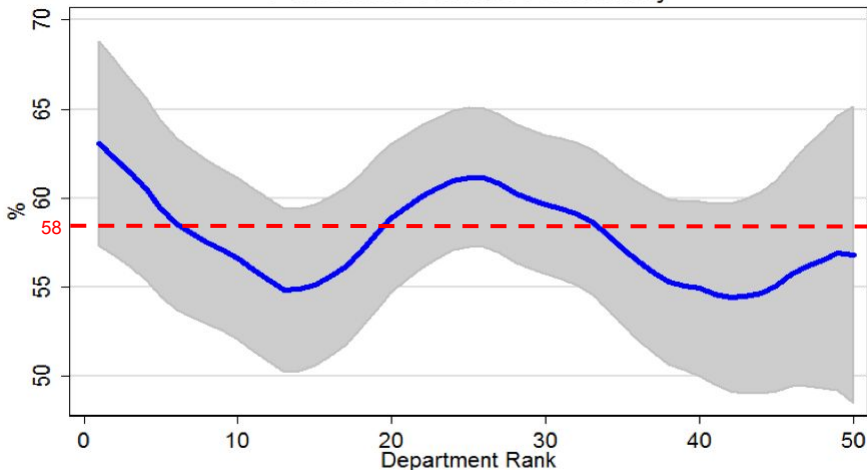Binned scatter plot and equal-weighted regression line across departments. OLS slope = 0.40 (SE = 0.09).

But, stat. sig. slope indicates professors know department's history.

Does Perceived Tenure Prob. Predict Home Ownership?

Cross-Sec. Binomial Logit: $=1$ if owns.	(1)	(2)	(3)	(4)
Tenure Prob. (%)	**0.027****	**0.030****	**0.022***	**0.027****
	(0.011)	**(0.012)**	**(0.013)**	**(0.012)**
Year on Tenure Clock	0.66***	0.66***	0.52***	0.68***
	(0.14)	(0.14)	(0.13)	(0.16)
HH Income (categorical, 1-10)	0.54***	0.51***		0.33
	(0.20)	(0.19)		(0.23)
log(Median House Price) in CBSA	-1.01**			-1.08**
	(0.46)			(0.48)
Median Price / Rent ratio in CBSA		-0.10**		
		(0.042)		
Afford to buy in first year?			0.73*	
			(0.43)	
Married?				1.74**
				(0.80)
American?				1.51***
				(0.39)
Risk Tolerance (0-10)				-0.142
				(0.106)
Demographic Controls				YES
Observations	135	135	135	133
Pseudo R^2	0.24	0.24	0.16	0.34
Marg. Effect of 1% Inc. in Ten. Prob.	**0.56%**	**0.64%**	**0.47%**	**0.53%**

Robust SE clustered by-dept. *p*-values: */**/***: 10/5/1. Dem. & Risk Controls: Has / # of children, gender insignificant.

Job Choice Factors, Mobility, and Family

Cross-Sec. Binomial Logit: =1 if owns.	(1)	(2)	(3)
Tenure Prob. (%)	**0.031****	**0.028****	**0.034*****
	(0.014)	**(0.014)**	**(0.012)**
Good fit with department	-1.71**		
	(0.67)		
Spouse can find work nearby	0.85*		
	(0.51)		
Spouse's job is immobile (0/1)		-0.82	
		(0.60)	
I could find acceptable work nearby (0/1)		-0.36	
		(0.58)	
Family nearby (0/1)			1.31**
			(0.64)
Spouse lives in different city (0/1)			-2.75***
			(0.74)
Clock, Income, Housing, Dem. Controls	YES	YES	YES
Other Job Choice Controls	YES		
Observations	133	133	133
Pseudo R^2	0.41	0.35	0.42
Marg. Effect of 1% Inc. in Ten. Prob.	**0.55%**	**0.55%**	**0.65%**

Logit: =1 if owns. Robust SE clustered by-dept. p-values: */**/***: 10/5/1. Other Job Choice Controls: Dept. Rank, Compensation, Geo. Preferences insignificant.

Roadmap

Macroeconomic Implications

Monthly Layoff Rate, 2001 - 2010
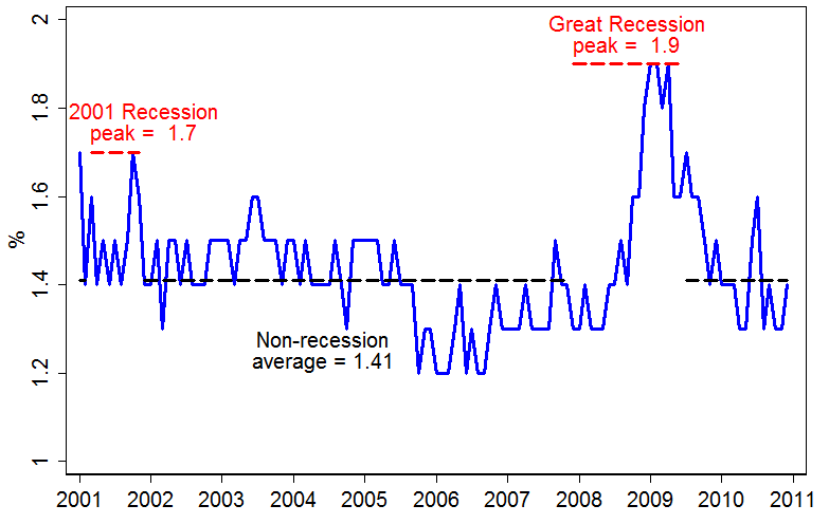
Source: BLS Job Openings and Labor Turnover Survey (JOLTS)

Macroeconomic Implications

- Layoff rate **0.5% above average** at height of Great Recession.

- Assuming layoff rate Poisson, during Great Recession, 5-year survival rate of **32%, down from 43% average**.

- Assuming a **1/2% marginal effect**[4], extra separation risk during the Great Recession should have caused the home purchase rate to decrease by,

$$P(\text{Buy}) \text{ decreased by } 1/2 \ \% \ \times (43 - 32) = \textbf{5.5\%}.$$

- In fact, the % households owning fell **5.4%** over 2006-2016.[5]

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[4]Low end survey $(1/2\% - 2/3\%)$, higher than public records $(\approx 1/3\%)$.

[5]From 31.2% to 36.6%. http://www.pewresearch.org/fact-tank/2017/07/19/more-u-s-households-are-renting-than-at-any-point-in-50-years/