

Business Ownership Dynamics and Aggregate Labor Market Fluidity

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- Any opinions and conclusions expressed herein are those of the author(s) and do not necessarily represent the views of the U.S. Census Bureau.

- All results have been reviewed to ensure that no confidential information is disclosed.

Hire and Separation Rates

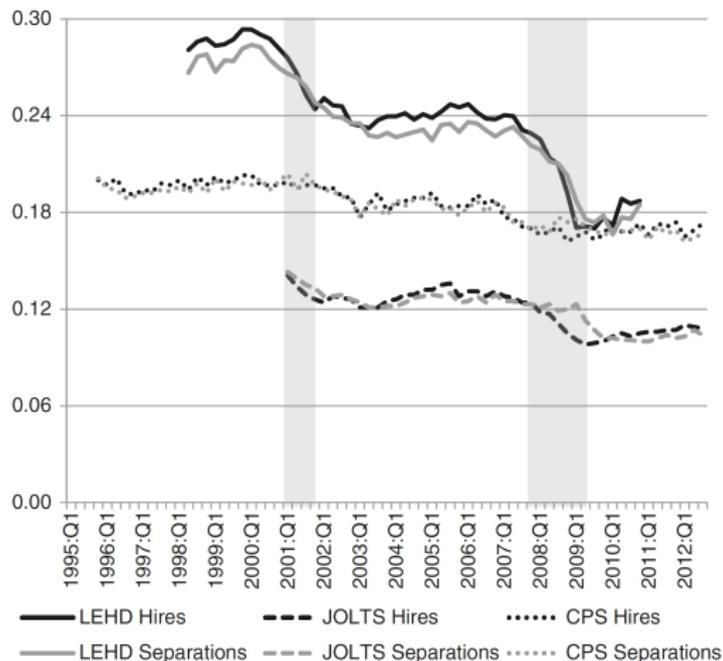


Figure 1 Hires and Separations 1995:Q4 – 2012:Q3, LEHD, JOLTS, and CPS Quarterly Data. LEHD data for 30 states were downloaded from the Cornell Virtual RDC. JOLTS national monthly data were downloaded from the BLS website and converted to a quarterly frequency. CPS national monthly data were downloaded from the Federal Reserve website and converted to a quarterly frequency. All data are seasonally adjusted.

Source: Hyatt and Spletzer (2013), page 5.

Changes in Labor Market Fluidity

- Declines noted in many series from late 1990s to the present
 - Hires, separations, employer-to-employer transitions, job creation, job destruction, job tenure, interstate migration
 - Quarterly Workforce Indicators (QWI), Job-to-Job Flows (J2J), Job Openings and Labor Turnover Survey (JOLTS), Business Employment Dynamics (BED), Business Dynamics Statistics (BDS), Current Population Survey (CPS)
 - Davis, Feberman, and Haltiwanger (2012), Hyatt and Spletzer (2013, 2016, 2017), Cairo (2014), Davis and Haltiwanger (2014), Decker, Haltiwanger, Jarmin, and Miranda (2014a, 2014b, 2016a, 2016b, 2017), Molloy, Smith, and Wozniak (2014, 2017), Moscarini and Postel-Vinay (2015), Cairo and Cajner (2016), Molloy, Smith, Trezzi, and Wozniak (2016), De Loecker, Eeckhout, and Unger (2018), Hyatt, McEntarfer, Ueda, and Zhang (2018), Pugsley and Şahin (2019)

Hires and Separations CPS Linked W-2 Data



Notes: Authors' calculations of hires and separations using CPS-ASEC respondents matched with administrative records for wage and salary (WS) earnings from W-2 records. The denominator is the average of employment at the beginning and end of the year.

▶ [Universe-Level W-2s](#)

▶ [Quarterly Workforce Indicators](#)

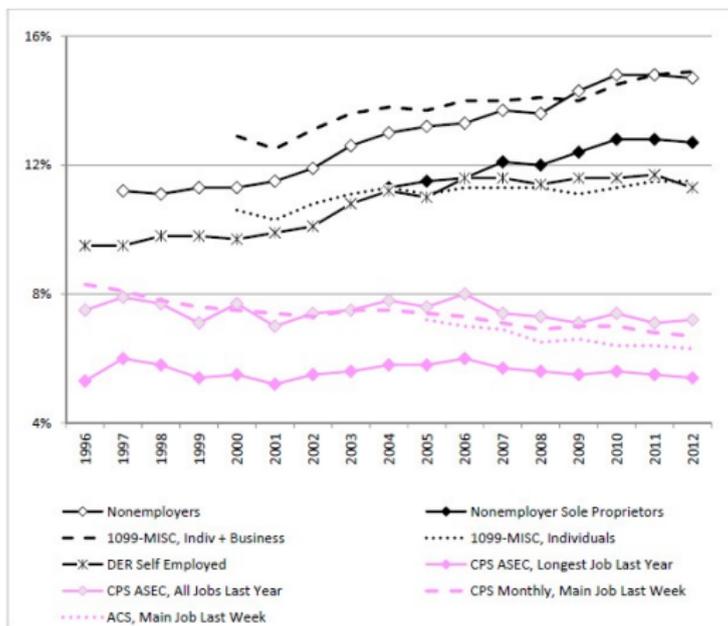
▶ [Definitions](#)

But We Forgot About the Self-Employed

- Published series on labor reallocation (mostly) omit the self-employed and business owners
- We use two new data sources to assess this omission:
 - Current Population Survey (CPS) Annual Social and Economic Supplement (ASEC) respondents 1991-2016 linked with administrative records
 - W-2 records of wage & salary income
 - Schedule SE filings of sole proprietor and partnership income
 - Universe-level administrative records
 - W-2 records of wage & salary income from 2005-2014
 - Schedule C sole proprietor income for 2007-2014
 - K-1 filings of partnership and S corporation income for 2007-2015

Rising Self-Employment in Administrative Records Data

Figure 1: Household Survey and Administrative Data Self-employment Rates, 1996-2012



Source: "CPS Monthly, Main Job Last Week" is downloaded from the BLS website.
 "ACS, Main Job Last Week" is downloaded from the Census Bureau website.
 "CPS ASEC, All Jobs Last Year" is authors' calculations from integrated CPS and DER data.
 "CPS ASEC, Longest Job Last Year" is authors' calculations from integrated CPS and DER data.
 "Nonemployers" is downloaded from the Census Bureau website.
 "Nonemployer Sole Proprietors" is downloaded from the Census Bureau website.
 "1099-MISC, Indiv + Business" is from U.S. Department of Treasury (2015).
 "1099-MISC, Individuals" is from U.S. Department of Treasury (2015).
 "DER Self Employed" is authors' calculations from integrated CPS and DER data.

Source: Abraham, Haltiwanger, Sandusky, and Spletzer (2016)

Composition

When are the Self-Employed Counted?

Table: Frequency with which Owners Receive Wage & Salary Payments

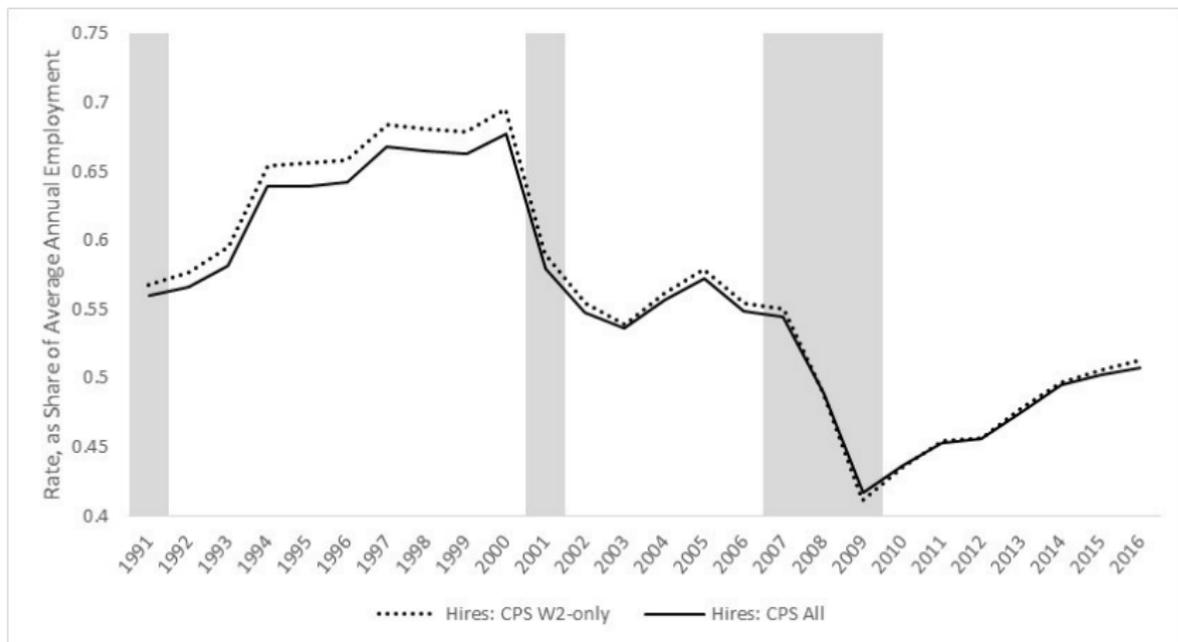
	Sole Props.	Partnerships	S Corps.
Owners of EIN firms in W-2	5.7%	1.0%	41.0%
Owners of Employer firms in W-2	6.6%	10.7%	71.5%
Owners of Employer firms, top 3	5.4%	7.6%	60.8%

Notes: Authors' calculation of the frequency which businesses owners receive a W-2 record of the wage and salary income from the businesses that they own. Numbers are averages over time of annual averages from 2007-2014. "Top 3" indicates that the owner is among the top 3 highest earners at that employer.

▶ [Helpful Quotes from the IRS Website](#)

▶ [Robustness](#)

Hires: W-2 Only vs. Including Self-Employed



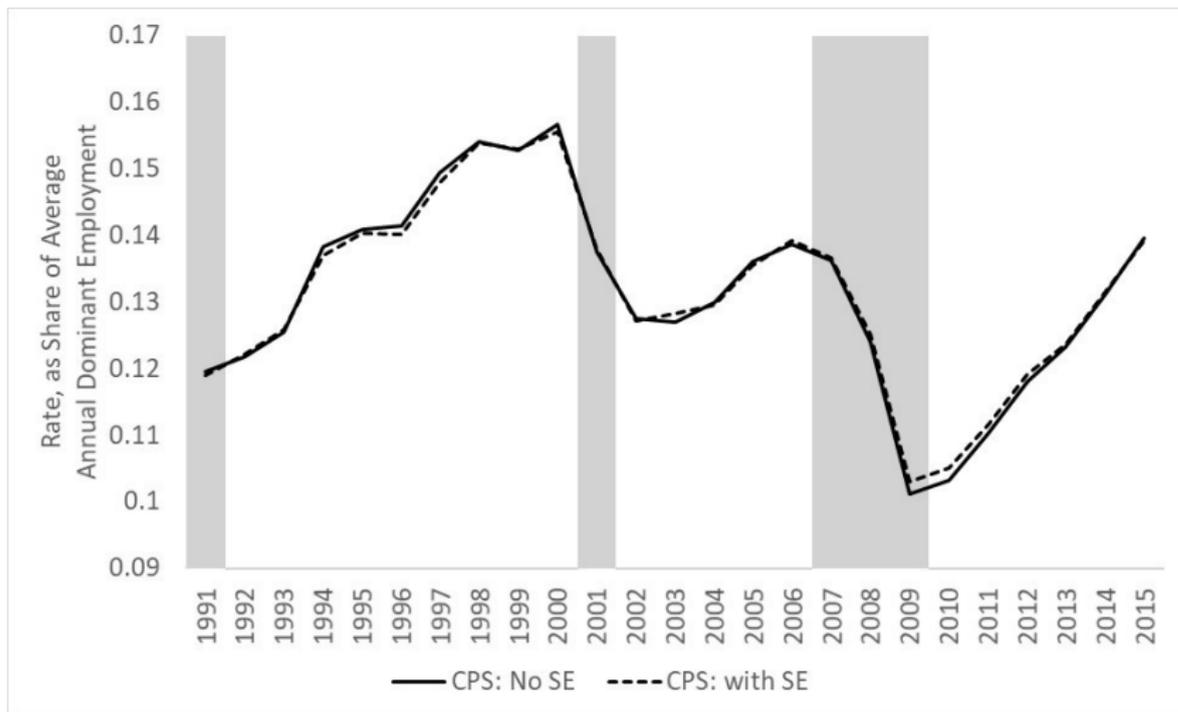
Notes: Authors' calculations of administrative records data for the CPS matched with administrative records for wage and salary earnings from W-2 records, along with business ownership information on sole proprietors, partnerships, and S corporations. For business owners, hiring rates indicate exit from business ownership.

[▶ Universe-Level Administrative Records](#)

[▶ Separations](#)

[▶ Definitions](#)

Employer-to-Employer Transitions

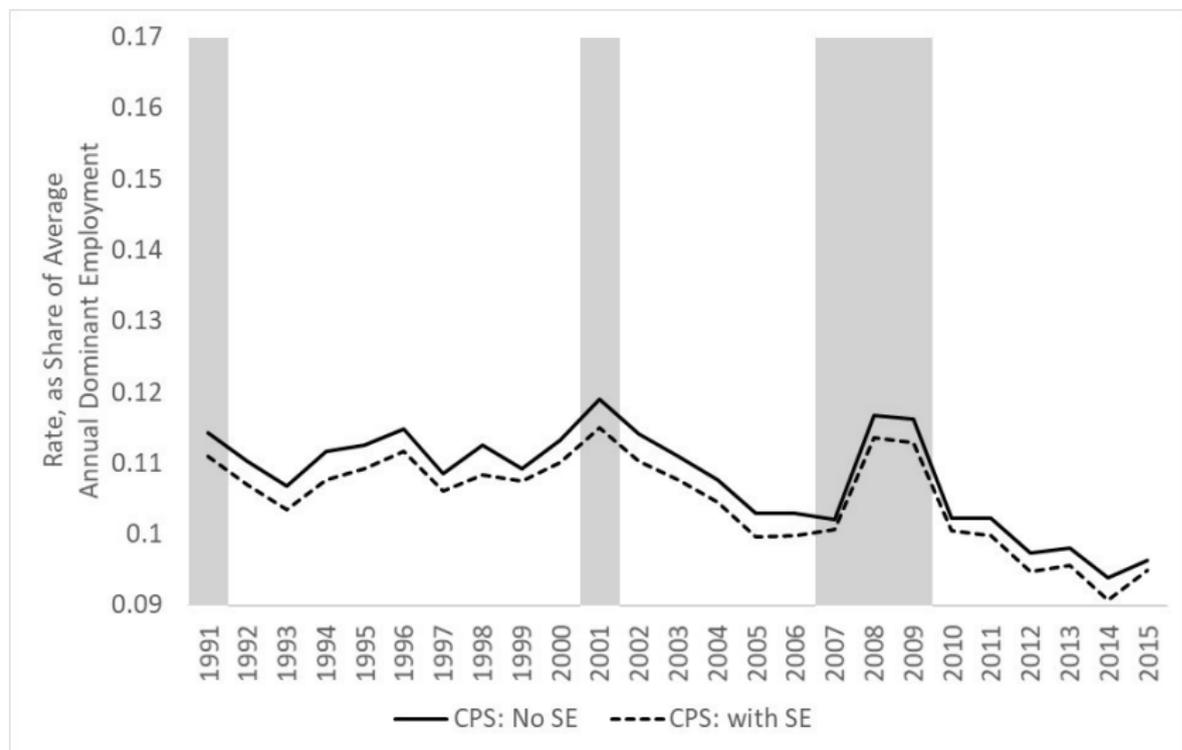


Notes: Authors' calculations of administrative records data for the CPS matched with administrative records for wage and salary earnings from W-2 records, along with business ownership information on sole proprietors, partnerships, and S corporations.

[▶ Universe-Level Administrative Records](#)

[▶ Definitions](#)

Employment-to-Nonemployment Transitions



Notes: Authors' calculations of administrative records data for the CPS matched with administrative records for wage and salary earnings from W-2 records.

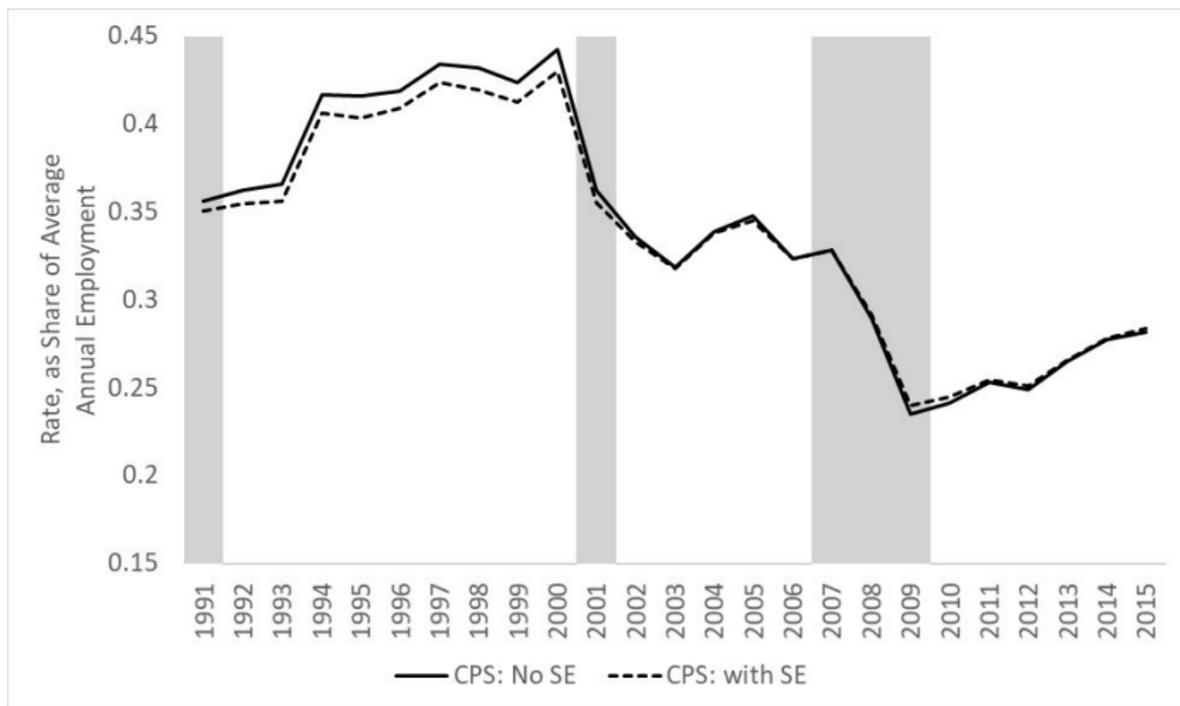
► Universe-Level Administrative Records

► Nonemployment-to-Employment

► Definitions



Hires: Secondary/Short Duration Jobs



Notes: Authors' calculations of administrative records data for the CPS matched with administrative records for wage and salary earnings from W-2 records, along with business ownership information on sole proprietors, partnerships, and S corporations.

▶ Universe-Level Administrative Records

▶ Separations: Secondary/Short Duration Jobs

▶ Definitions

Taking Stock

The measured decline 1994-2014, including business ownership and self-employment changes the measured decline (in percentage points) from...

Reallocation Measure	Decline in W-2	Decline in W-2 & SE	Difference	Percent Offset
Hires	15.7	14.4	1.3	8.3%
Separations	16.1	14.7	1.4	8.7%
Emp.-to-Emp.	0.72	0.55	0.17	23.8%
Emp.-to-Nonemp.	1.8	1.7	0.1	4.1%
Nonemp.-to-Emp.	1.3	1.1	0.2	15.6%
2 nd /Short Hires	13.9	12.8	1.1	7.4%
2 nd /Short Seps.	13.8	12.6	1.2	8.9%

▶ Other Offsetting/Explanatory Factors

Does Self-Employment Hide Volatility?

- We have accounted for business entry/exit as one hire and separation
- Potential problem: many different types of work can appear as the same self-employment “business”
 - Example: work via ridesharing platform and clerical services platform
- We regress number of jobs held on self-employment
 - Within-person variation via fixed-effects regression
 - Indicator variable for self-employment as dominant form of income
- Is there evidence that self-employment spells replace more than one wage & salary job?

Conclusion

- Most self-employed/business owners do not receive wage/salary payments
- Self-employment is:
 - Increasing over time
 - Somewhat more stable and much less cyclical than wage and salary employment
- Including self-employment and business ownership has a small offsetting effect on hire and separation rates, employer-to-employer transitions, and nonemployment transitions
- An additional self-employment job offsets about one wage & salary job when the dominant source of earnings

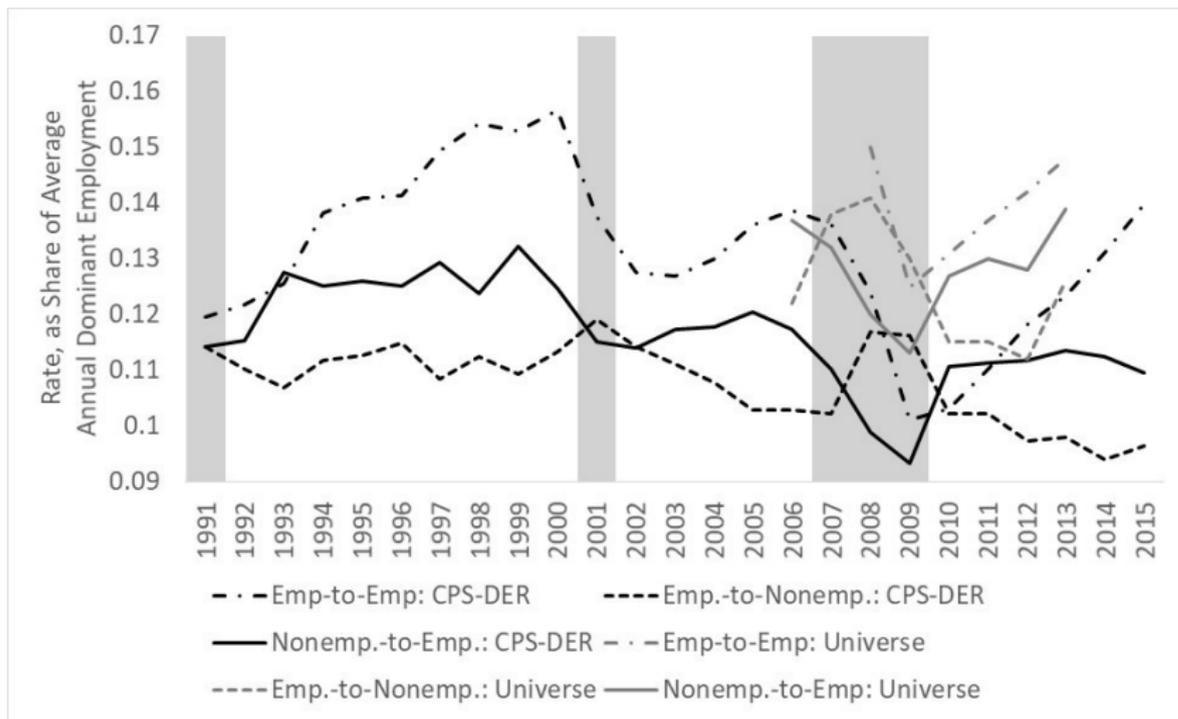
Hires and Separations in W-2 Data



Notes: Authors' calculations of hires and separations using i) CPS-ASEC respondents matched with administrative records for wage and salary (WS) earnings from W-2 records, and ii) universe-level W-2 records. The denominator is the average of employment at the beginning and end of the year.

← CPS-DER Only

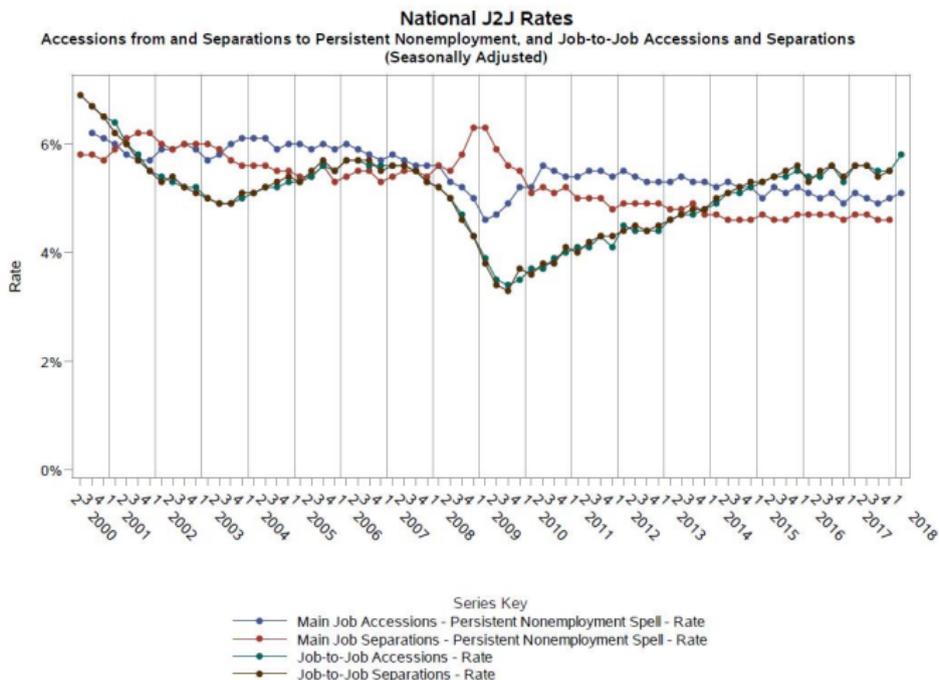
Emp.-to-Emp. & Nonemp. Flows in W-2 Data



Notes: Authors' calculations of hires and separations using CPS-ASEC respondents matched with administrative records for wage and salary (WS) earnings from W-2 records. The denominator is the average of employment at the beginning and end of the year.

← CPS-DER

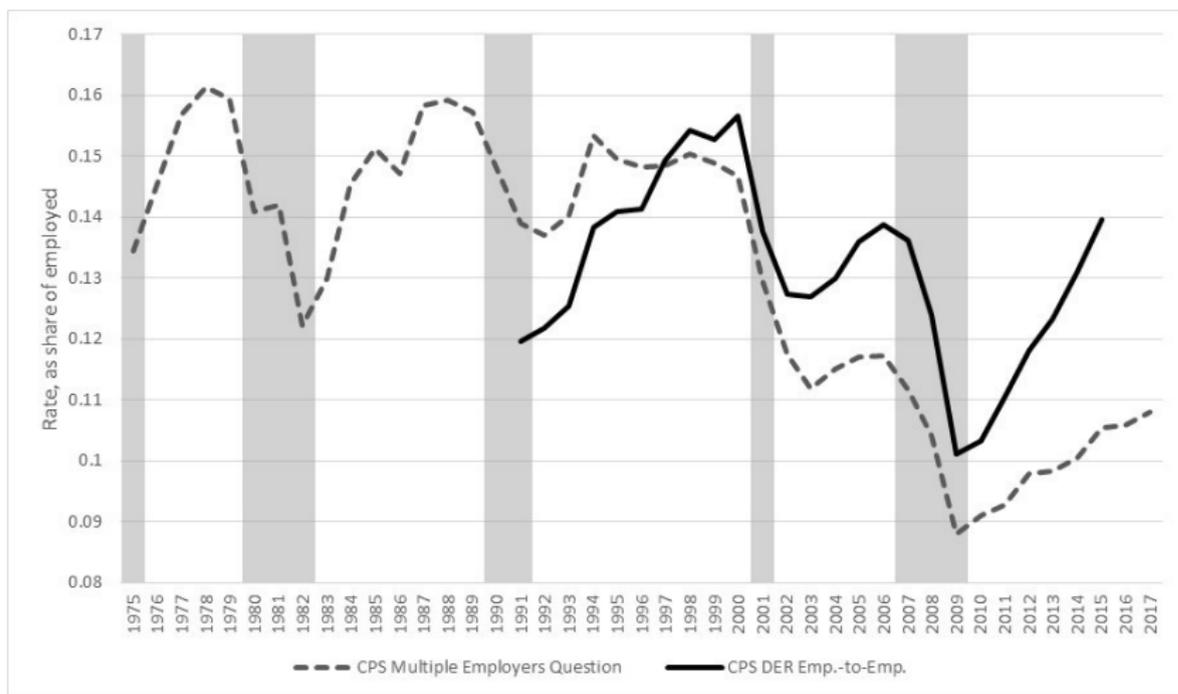
Emp.-to-Emp. & Nonemp.: Job-to-Job Flows



Source: United States Census Bureau, Job-to-Job Flow Statistics, Release R2019Q1 (Beta)

Notes: Page 2 of https://lehd.ces.census.gov/data/j2j/latest_release/us/j2jr/graphs_adj_national_totals.pdf
(last accessed: May 13, 2019).

CPS-ASEC Multiple Employers Question



Notes: Authors' calculations of hires and separations using CPS-ASEC respondents who report multiple non-overlapping jobs in the prior year, as well as CPS-ASEC respondents matched with administrative records for wage and salary (WS) earnings from W-2 records. For the CPS-ASEC responses, the denominator is those who were employed at the time of the CPS ASEC. For the employer-to-employer transition rate derived from administrative records, the denominator is the average of employment at the beginning and end of the year.

Measuring Self-Employment Composition

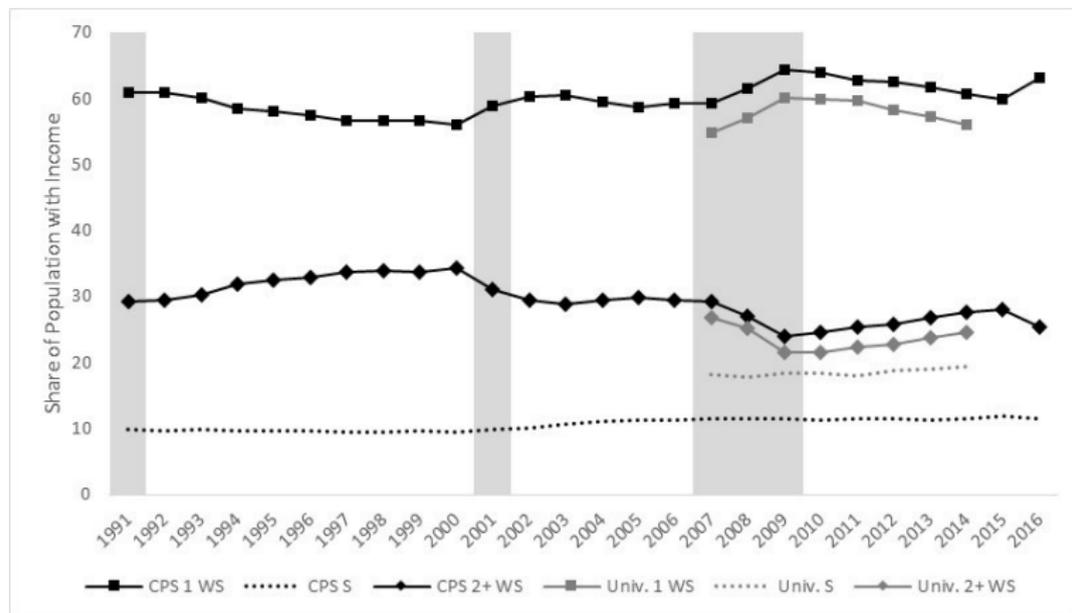
Income sources in a given calendar year

We create three categories:

- Income from self-employment (S)
- No income from self-employment and:
 - 1 wage and salary employer (1 WS)
 - 2+ wage and salary employers (2+ WS)
 - Indicates multiple jobholding, job-to-job transitions, etc.
 - Most measured volatility is found among this group

◀ Self-Employment in Administrative Records

Self-Employment Composition Over Time



Notes: Authors' calculations of the CPS linked with administrative records, as well as universe-level W-2 wage and salary records, and business income information for sole proprietors, partnerships, and S corporations. 1 WS indicates wage and salary income from 1 wage & salary employer and no self-employment income, 2+ WS indicates income from 2 or more wage & salary employers and no self-employment income, and S indicates any self-employment income.

Self-Employment in Administrative Records

Hires and Separations

A hire is dated to year t when earnings first appears at that employer. Formally,

$$h_{ijt} = \begin{cases} 1, & \text{if } w_{ijt-1} = 0 \text{ and } w_{ijt} > 0 \\ 0, & \text{otherwise.} \end{cases}$$

Similarly, an individual separates from an employer in year t if it is the last year that an employee is observed at an employer. Formally,

$$s_{ijt} = \begin{cases} 1, & \text{if } w_{ijt+1} = 0 \text{ and } w_{ijt} > 0 \\ 0, & \text{otherwise.} \end{cases}$$

Denominator: average of consecutive year employment.

Job-to-Job Flows: Definitions

$$j2j_{ijkt} = \begin{cases} 1, & \text{if } domb_{ijt} = 1 \text{ and } domb_{ikt+1} = 1 \\ & \text{and } j \neq k \\ 0, & \text{otherwise,} \end{cases}$$

$$en_{ijt} = \begin{cases} 1, & \text{if } domb_{ijt} = 1 \\ & \text{and } domb_{ilt+1} \neq 1 \forall l \\ 0, & \text{otherwise,} \end{cases}$$

$$ne_{ikt} = \begin{cases} 1, & \text{if } domb_{ikt+1} = 1 \\ & \text{and } domb_{ilt} \neq 1 \forall l \\ 0, & \text{otherwise.} \end{cases}$$

◀ Employer-to-Employer and Nonemployment

◀ Employer-to-Employer

◀ Employment-to-Nonemployment

◀ Nonemployment-to-Employment



Consecutive Quarter & Dominance Definitions

A worker is employed at the beginning of year t when

$$b_{ijt} = \begin{cases} 1, & \text{if } w_{ij,t-1} > 0 \text{ and } w_{ijt} > 0 \\ 0, & \text{otherwise.} \end{cases}$$

For any two-year pair, we consider jobs that are maximal earning among all jobs a worker holds at the beginning of year t , as follows:

$$domb_{ijt} = \begin{cases} 1, & \text{if } b_{ijt} = 1 \text{ and} \\ & w_{ijt} + w_{ij,t-1} > w_{ikt} + w_{ikt-1} \forall k \\ & \text{s.t. } b_{ikt} = 1 \text{ and } j \neq k \\ 0, & \text{otherwise.} \end{cases}$$

The set of jobs defined in $domb_{ijt}$ are unique at the person-year level.

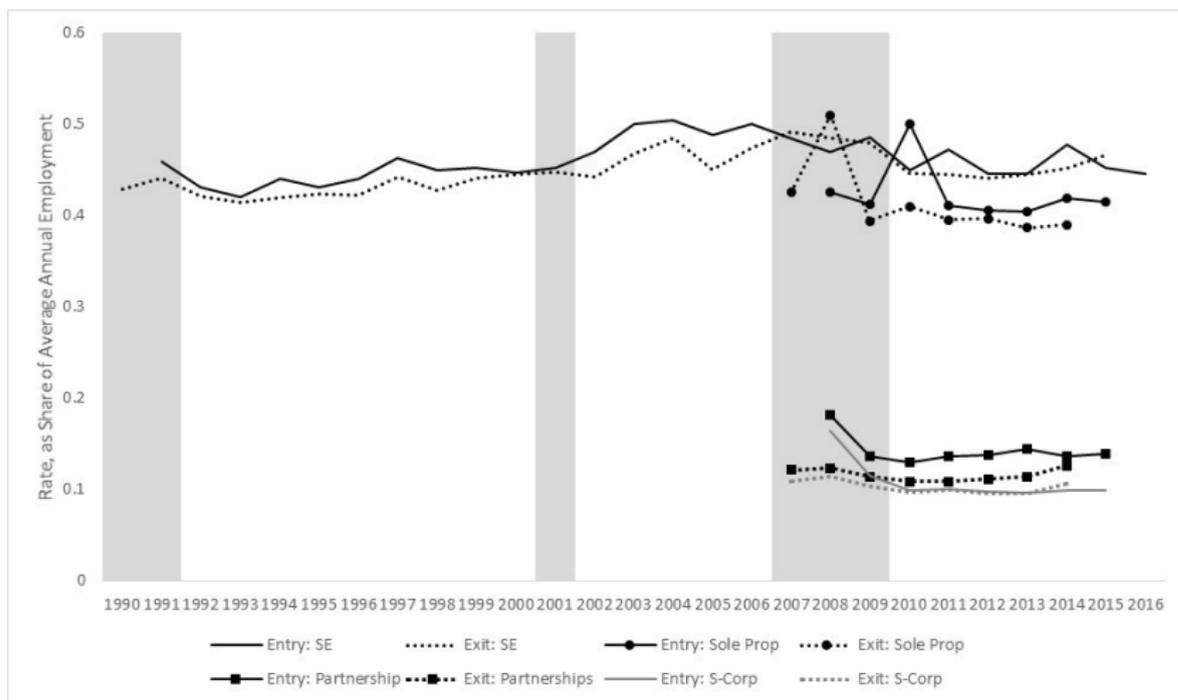
Accounting for Secondary and Short-Duration Jobs

$$\text{Hires} = \text{Emp.-to-Emp.} + \text{Nonemp.-to-Emp.} + \text{Secondary/Short Duration Hires}$$

$$\text{Separations} = \text{Emp.-to-Emp.} + \text{Emp.-to-Nonemp.} + \text{Secondary/Short Duration Separations}$$

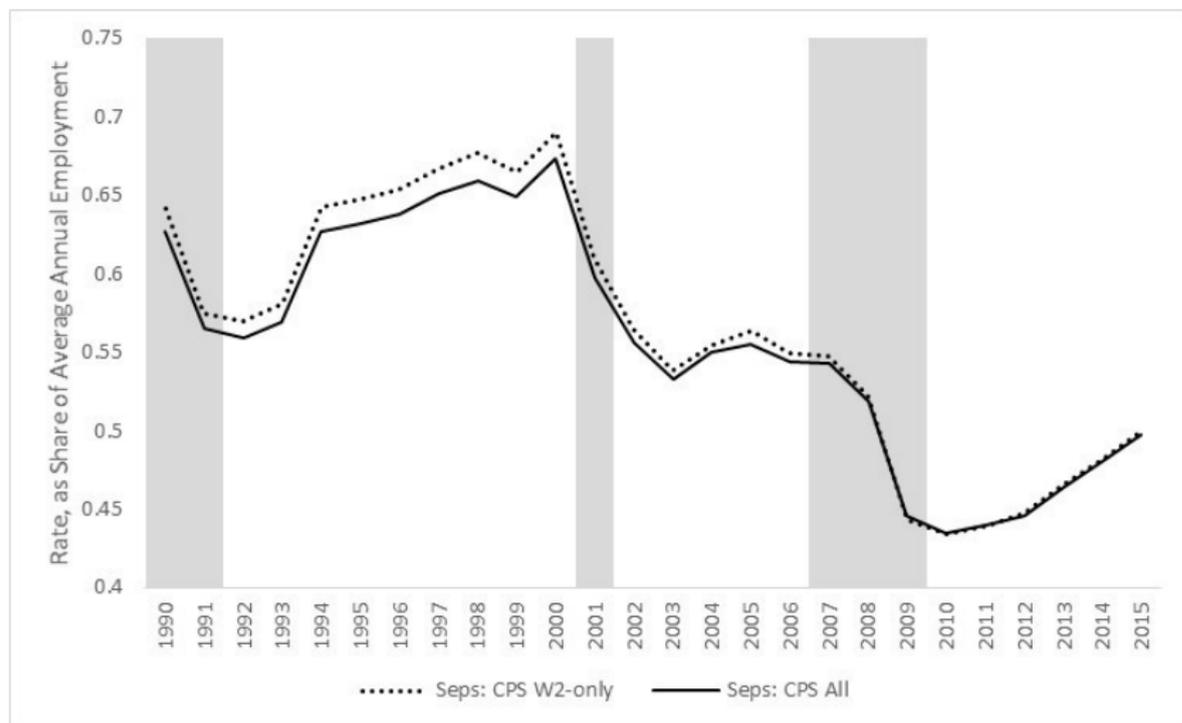
- Denominator for hires and separations are total jobs (consecutive-quarter employer-employee combinations)
- Denominator for emp.-to-emp., nonemp.-to-emp., and emp.-to-nonemp. is total workers
 - Multiply these by the ratio of the denominators to express secondary/short duration hires and separations in terms of total jobs

Self-Employment Entry and Exit Over Time



Notes: Authors' calculations of business ownership entry and exit using i) CPS-ASEC respondents matched with administrative records reporting positive Schedule SE earnings, and ii) universe-level administrative self-employment tax filings with positive earnings from sole proprietor, partnership, or S corporation business entities. Entry includes any business owners who begin receiving earnings from the owned business in the given year. Exits include any business owners where the current year is the last year with earnings from the owned business. Rates in this figure have as denominators the average of total number of owners of the given entity type at the beginning and end of the year.

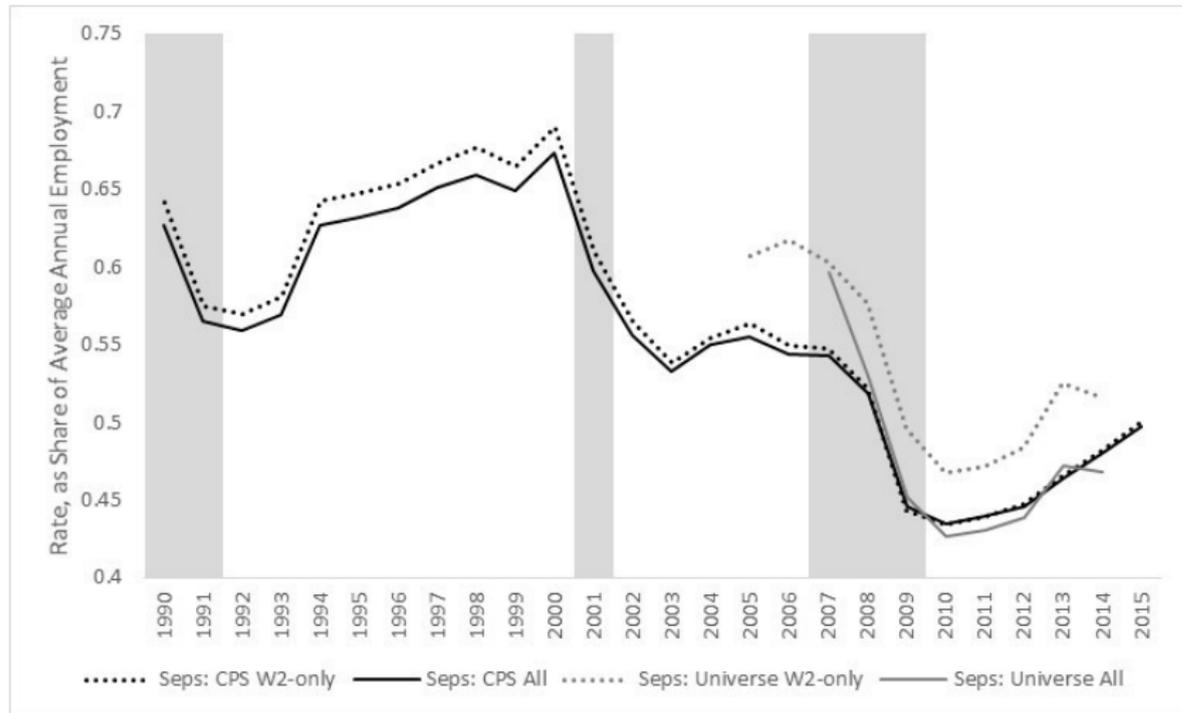
Separations: W-2 Only vs. Including Self-Employed



Notes: Shaded areas indicate recessions. Authors' calculations of administrative records data for the CPS matched with administrative records for wage and salary earnings from W-2 records. For business owners, separation rates indicate exit from business ownership.

[Universe-Level Administrative Records](#) [Hires](#) [Definitions](#)

Seps.: W-2 Only vs. Including Self-Employed (Universe)



Notes: Shaded areas indicate recessions. Authors' calculations of administrative records data for the CPS matched with administrative records for wage and salary earnings from W-2 records, along with business ownership information on sole proprietors, partnerships, and S corporations. For business owners, separation rates indicate exit from business ownership.

← CPS-DER

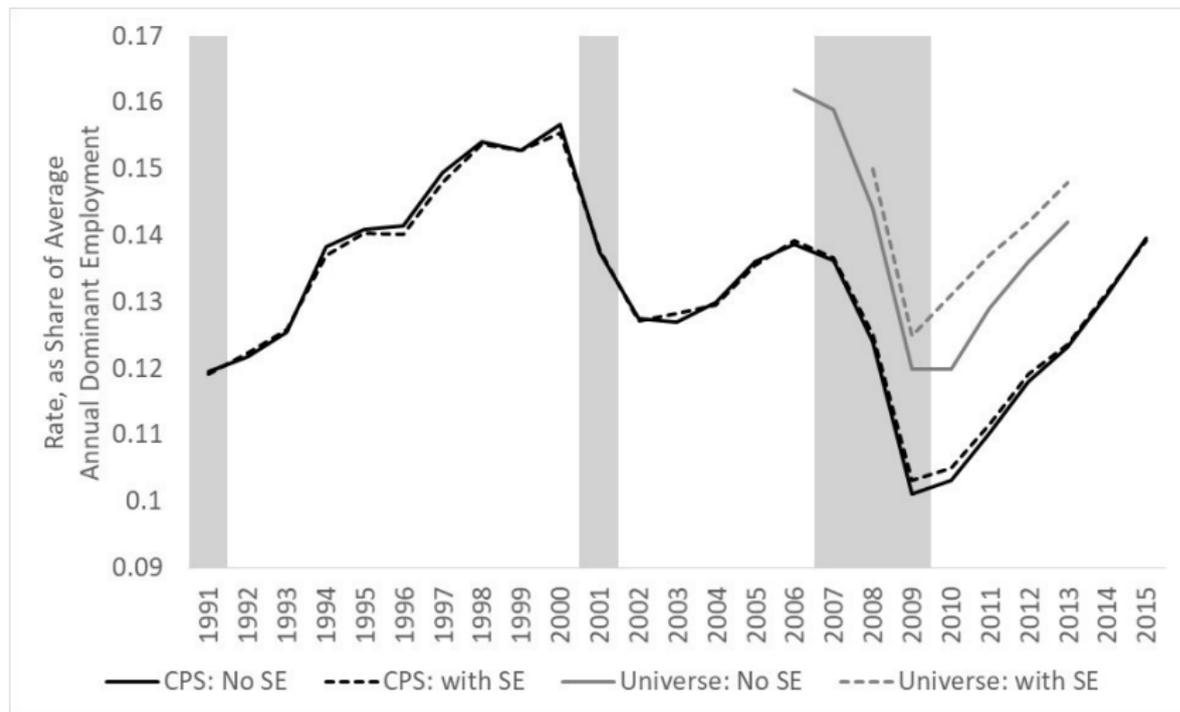
Hires: W-2 Only vs. Including Self-Employed (Universe)



Notes: Authors' calculations of administrative records data for the CPS matched with administrative records for wage and salary earnings from W-2 records, along with business ownership information on sole proprietors, partnerships, and S corporations. For business owners, hiring rates indicate exit from business ownership.

▶ CPS-DER

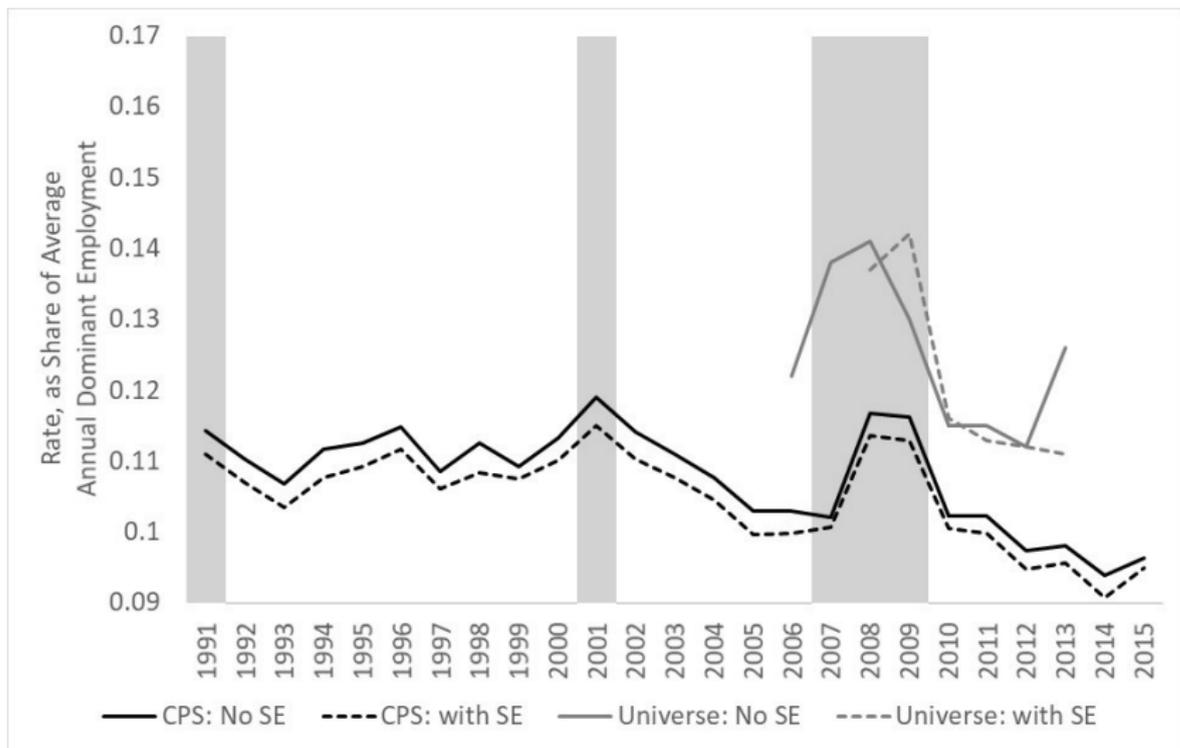
Employer-to-Employer Transitions (Universe)



Notes: Authors' calculations of administrative records data for the CPS matched with administrative records for wage and salary earnings from W-2 records, along with business ownership information on sole proprietors, partnerships, and S corporations.

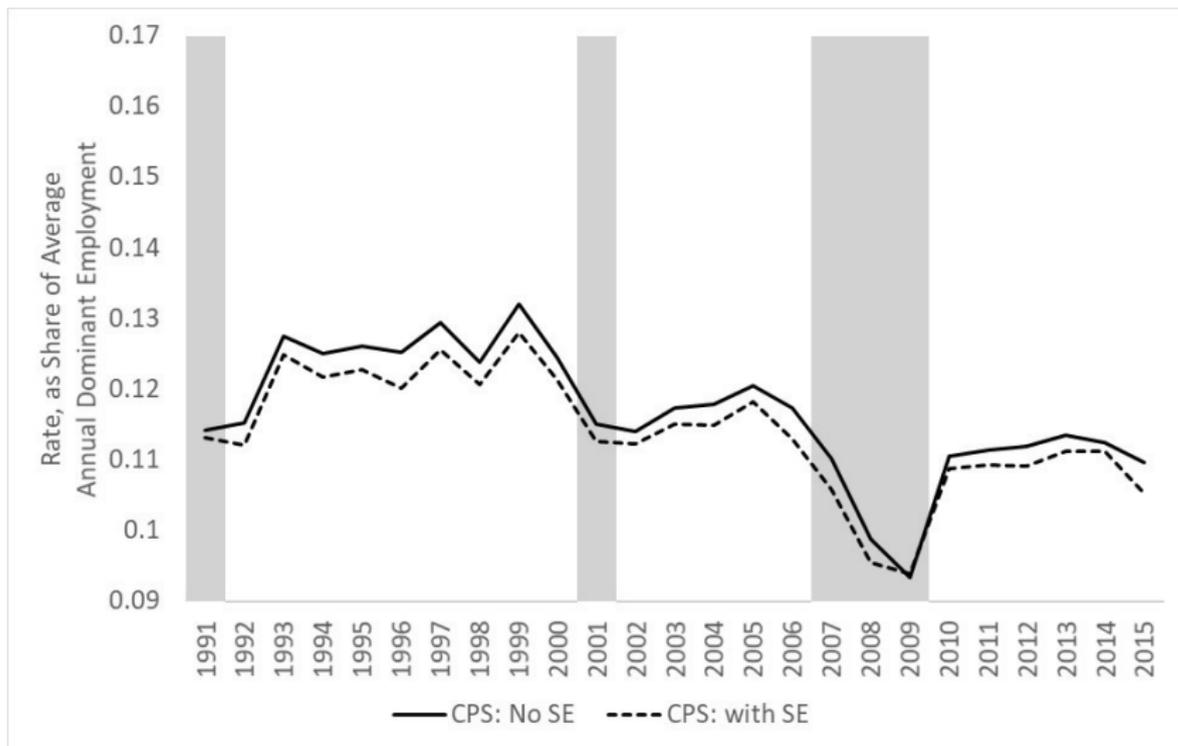
◀ CPS-DER

Employment-to-Nonemployment Transitions (Universe)



Notes: Authors' calculations of administrative records data for the CPS matched with administrative records for wage and salary earnings from W-2 records, along with business ownership information on sole proprietors, partnerships, and S corporations.

Nonemployment-Employment Transitions



Notes: Authors' calculations of administrative records data for the CPS matched with administrative records for wage and salary earnings from W-2 records.

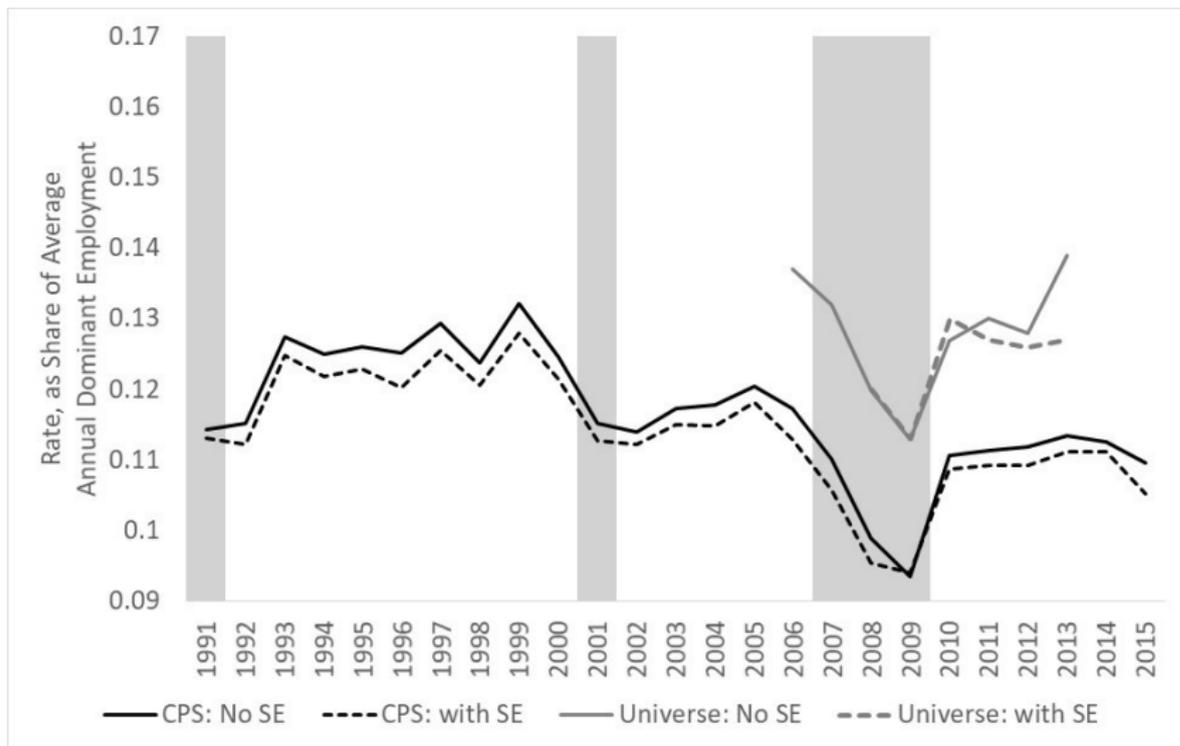
▶ Universe-Level Administrative Records

◀ Employment-to-Nonemployment

▶ Definitions



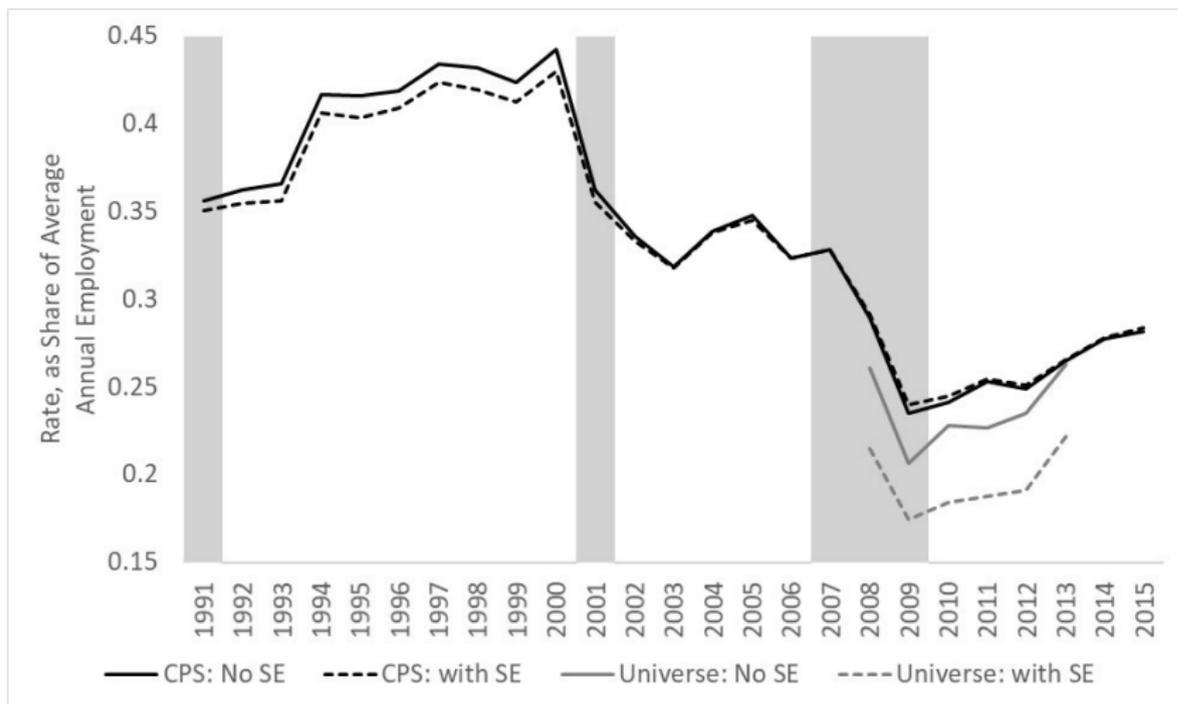
Nonemployment-Employment Transitions (Universe)



Notes: Authors' calculations of administrative records data for the CPS matched with administrative records for wage and salary earnings from W-2 records, along with business ownership information on sole proprietors, partnerships, and S corporations.

← CPS-DER

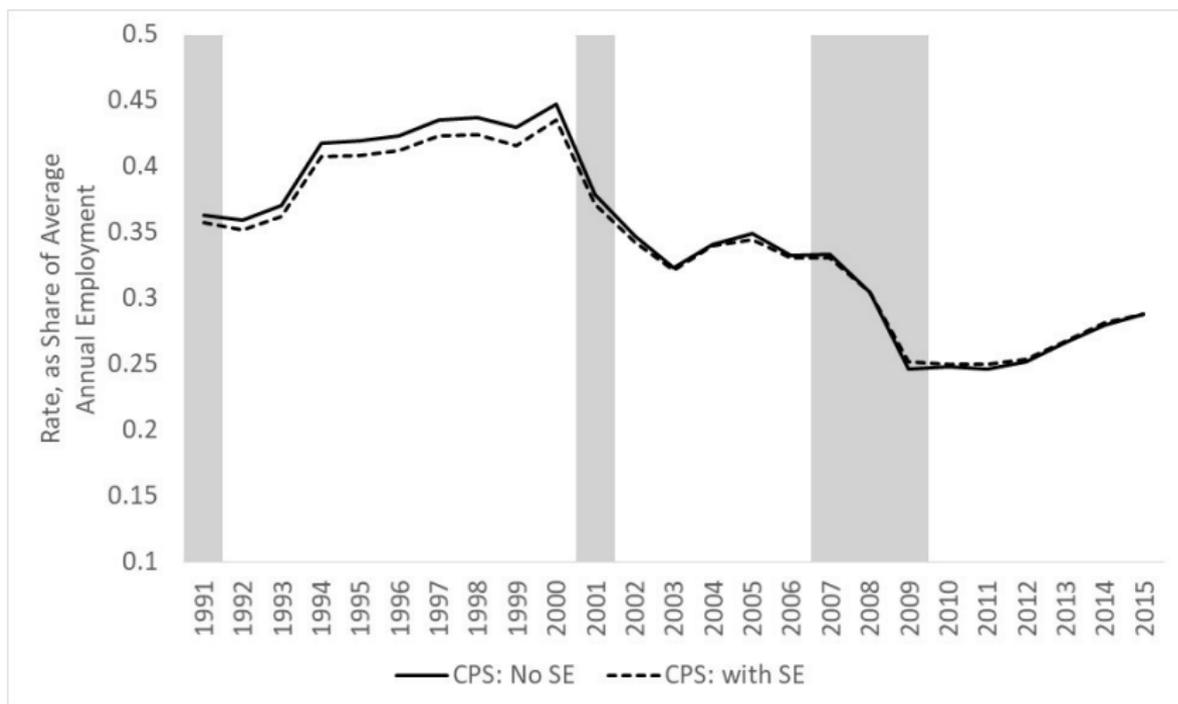
Hires: Secondary/Short Duration Jobs (Universe)



Notes: Authors' calculations of administrative records data for the CPS matched with administrative records for wage and salary earnings from W-2 records, along with business ownership information on sole proprietors, partnerships, and S corporations.

◀ CPS-DER

Separations: Secondary/Short Duration Jobs

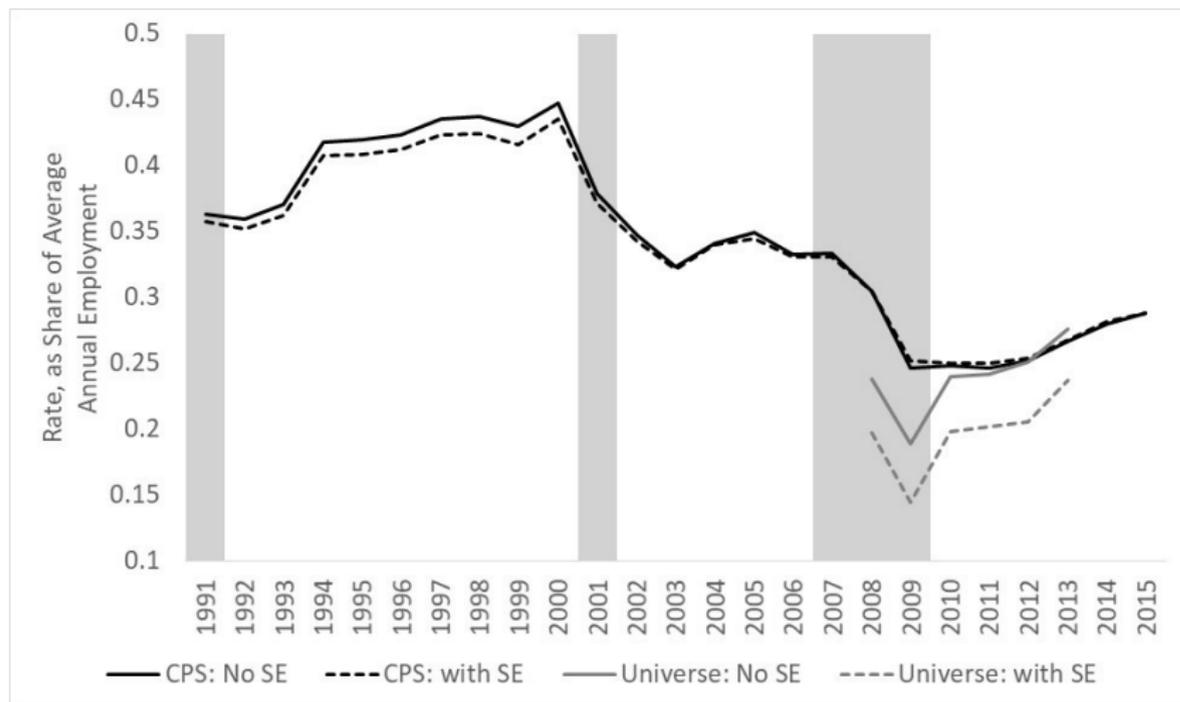


Notes: Authors' calculations of administrative records data for the CPS matched with administrative records for wage and salary earnings from W-2 records, along with business ownership information on sole proprietors and partnerships from Schedule SE filings

▶ Universe-Level Administrative Records

◀ Hires: Secondary/Short Duration Jobs

Seps.: Secondary/Short Duration Jobs (Universe)



Notes: Authors' calculations of administrative records data for the CPS matched with administrative records for wage and salary earnings from W-2 records, along with business ownership information on sole proprietors, partnerships, and S corporations.

← CPS-DER

Comparison to Hyatt and Spletzer (2013)

Table 2 Hires and separations decomposition by individual and business characteristics 2001:Q1 – 2010:Q4, LEHD, JOLTS, and CPS quarterly data

	LEHD Hires	LEHD Separations	JOLTS Hires	JOLTS Separations	CPS Hires	CPS Separations
2001:Q1	.276	.266	.141	.143	.199	.204
2010:Q4	.187	.185	.106	.101	.173	.172
Change	-.089	-.081	-.035	-.042	-.026	-.032
% of decline explained by						
Worker age	12.6%	11.2%			23.3%	15.0%
Gender	0.2%	0.2%			-0.3%	-0.3%
Race - ethnicity	-1.8%	-1.7%				
Education	-0.4%	-0.4%			23.2%	25.4%
Industry	-6.3%	-5.8%	-2.6%	-1.4%	-4.4%	-3.5%
Firm size	2.4%	2.3%				
Estab size			-0.7%	-0.7%		
Firm age	8.4%	7.5%				

Notes: LEHD data for 30 states were downloaded from the Cornell Virtual RDC. JOLTS national monthly data by industry were downloaded from the BLS website and converted to a quarterly frequency. JOLTS national monthly data by establishment size are available upon request from BLS. CPS national monthly data were downloaded from the Federal Reserve website and converted to a quarterly frequency. CPS data by demographic and business characteristics were provided by Bruce Fallick. All data are seasonally adjusted.

Number of Wage & Salary Jobs

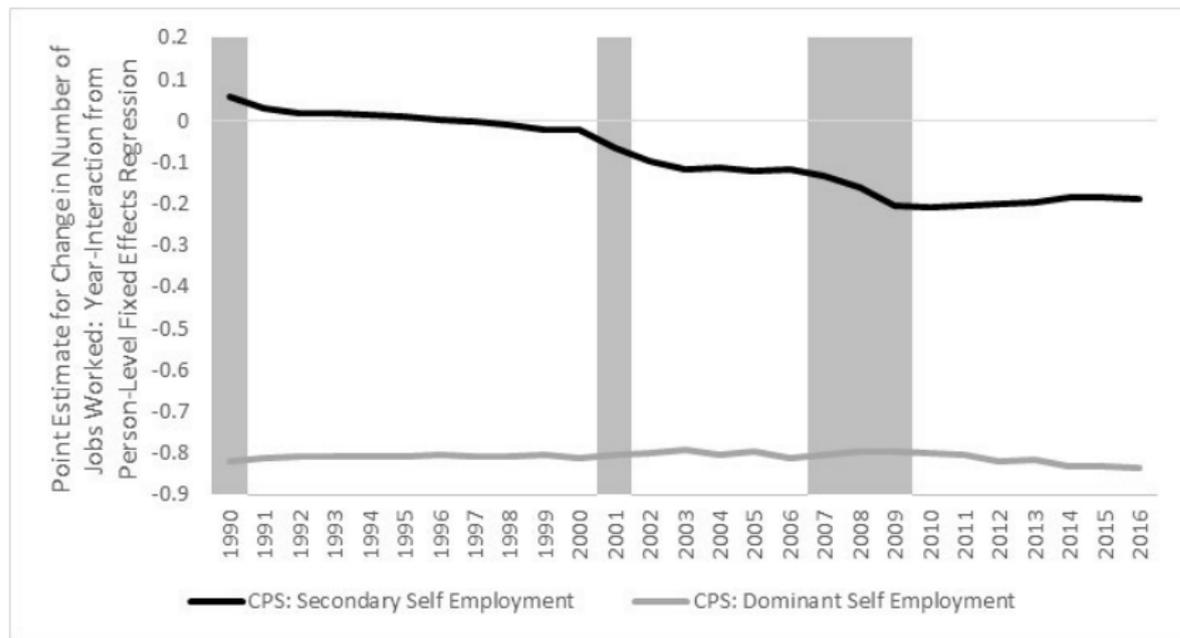
Table: Regression of Number of Jobs Worked on Self-Employment

	CPS	Universe	CPS	Universe
Intercept	1.533*** (0.000)	1.490*** (0.001)		
Is SE	-0.901*** (0.001)	-0.757*** (0.002)	-0.574*** (0.001)	-0.313*** (0.001)
Worker FE	N	N	Y	Y
R^2	0.153	0.146	0.448	0.618

Notes: Authors' calculations of the CPS linked with W-2 data and Schedule SE earnings.

◀ Regression Results

Wage & Salary Replacement: Point Estimates Over Time



Notes: Shaded areas indicate recessions. Point estimates from a single regression, where calendar year is interacted with self-employment ("Secondary") and self-employment interacted with an indicator variable for its being the person's dominant source of income ("Dominant").

[← Regression Results](#)

Why Nearly All Owners of Sole Proprietor and Partnership Employer Businesses are Missing from Matched Employer-Employee Data

Partners are not employees and should not be issued a Form W-2 in lieu of Form 1065, Schedule K-1, for distributions or guaranteed payments from the partnership.

You cannot deduct the sole proprietor's own salary or any personal withdrawals made from the business.

Source: <https://www.irs.gov/businesses/small-businesses-self-employed/paying-yourself> (last accessed: July 13, 2018)

◀ Owner Wage & Salary Payments

Why Many Owners of Employer S Corporations are Missing from Matched Employer-Employee Data (1)

Who's an employee of the corporation?

Generally, an officer of a corporation is an employee of the corporation. The fact that an officer is also a shareholder does not change the requirement that payments to the corporate officer be treated as wages. Courts have consistently held that S corporation officer/shareholders who provide more than minor services to their corporation and receive or are entitled to receive payment are employees whose compensation is subject to federal employment taxes.

The Treasury Regulations provide an exception for an officer of a corporation who does not perform any services or performs only minor services and who neither receives nor is entitled to receive, directly or indirectly, any remuneration. Such an officer would not be considered an employee.

Source: <https://www.irs.gov/pub/irs-news/fs-08-25.pdf> (last accessed: May 15, 2019).

◀ Owner Wage & Salary Payments

Why Many Owners of Employer S Corporations are Missing from Matched Employer-Employee Data (2)

Form 1125-E (Rev. October 2016) Department of the Treasury Internal Revenue Service	<h2>Compensation of Officers</h2> <p>▶ Attach to Form 1120, 1120-C, 1120-F, 1120-REIT, 1120-RIC, or 1120S. ▶ Information about Form 1125-E and its separate instructions is at www.irs.gov/form1125e.</p>	OMB No. 1545-0123
Name		Employer identification number

Note: Complete Form 1125-E only if total receipts are \$500,000 or more. See instructions for definition of total receipts.

(a) Name of officer	(b) Social security number (see instructions)	(c) Percent of time devoted to business	Percent of stock owned		(f) Amount of compensation
			(d) Common	(e) Preferred	
1		%	%	%	
		%	%	%	
		%	%	%	
		%	%	%	
		%	%	%	

Source: https://www.irs.gov/pub/irs-access/f1125e_accessible.pdf (last accessed: May 15, 2019).

◀ Owner Wage & Salary Payments

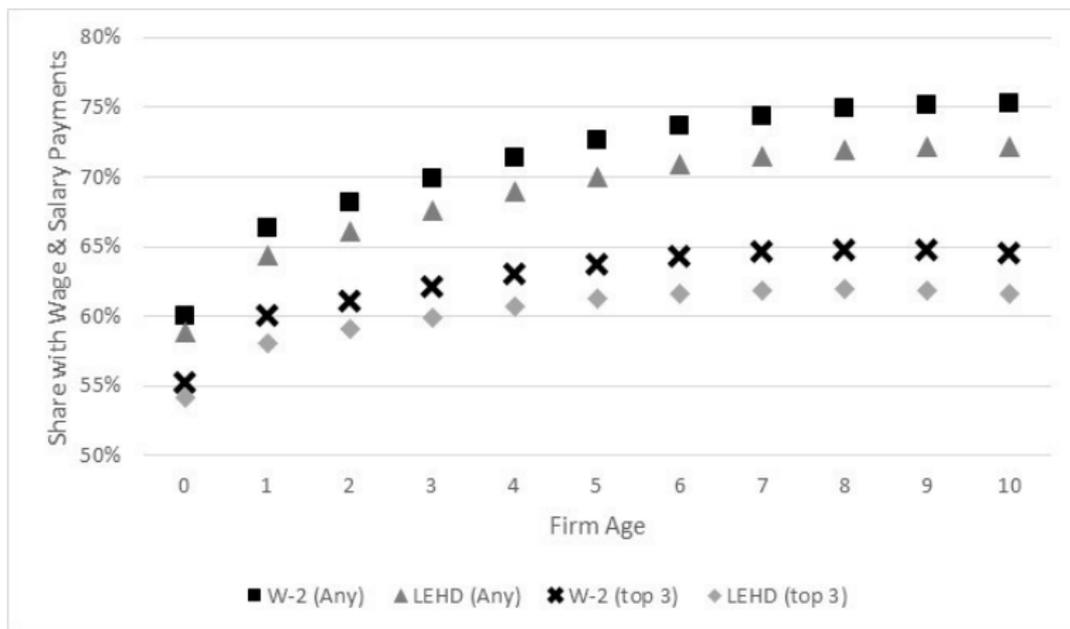
But what if you...?

Table: Owners Receive Wage & Salary Payments: First Year, Single Establishment

	Sole Props.	Partnerships	S Corps.
<i>W-2 Data</i>			
Owners of Employer firms in W-2	10.5%	14.1%	60.0%
Owners of Employer firms, top 3	9.1%	11.3%	55.3%
<i>LEHD Data</i>			
Owners of Employer firms in UI	10.7%	14.0%	58.9%
Owners of Employer firms, top 3	9.0%	11.1%	54.2%

Notes: Authors' calculation of the frequency which businesses owners receive a W-2 or LEHD UI record of the wage and salary income from the businesses that they own. Numbers are averages over time of annual averages from 2007-2014 for firms in their first year as employers that consist of a single establishment. "Top 3" indicates that the owner is among the top 3 highest earners at that employer.

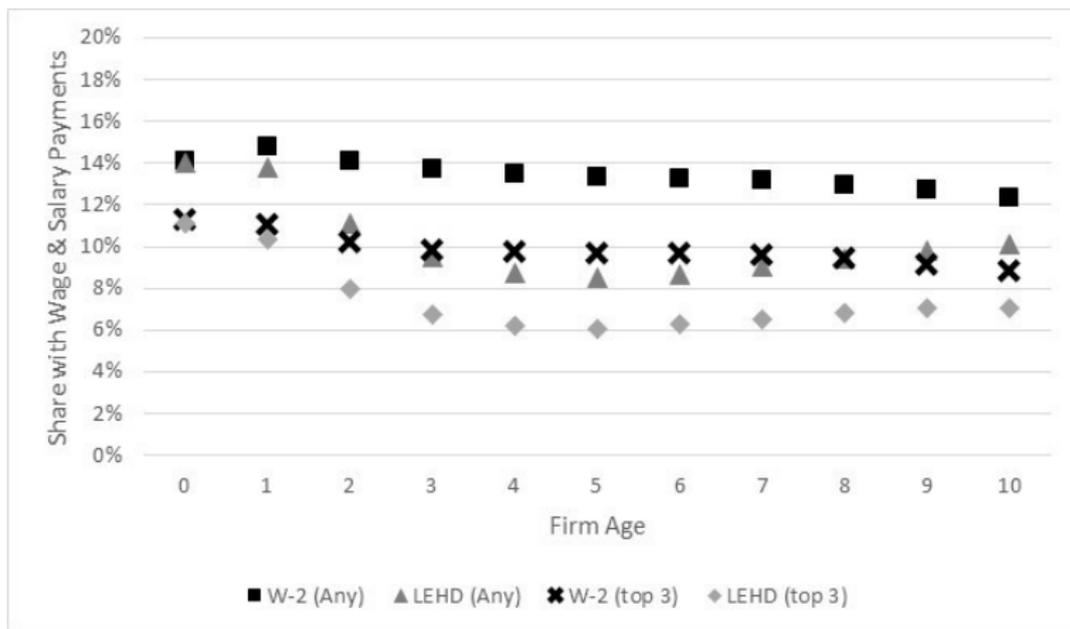
Owners of S Corporations



Notes: Authors' calculation of the frequency which businesses owners receive a W-2 or LEHD UI record of the wage and salary income from the businesses that they own. "Firm Age" indicates the number of years since at least one person received wage salary payments from a firm. Age greater than zero presented as a seventh-order polynomial approximation. "Top 3" indicates that the owner is among the top 3 highest earners at that employer.

◀ Owner Wage & Salary Payments

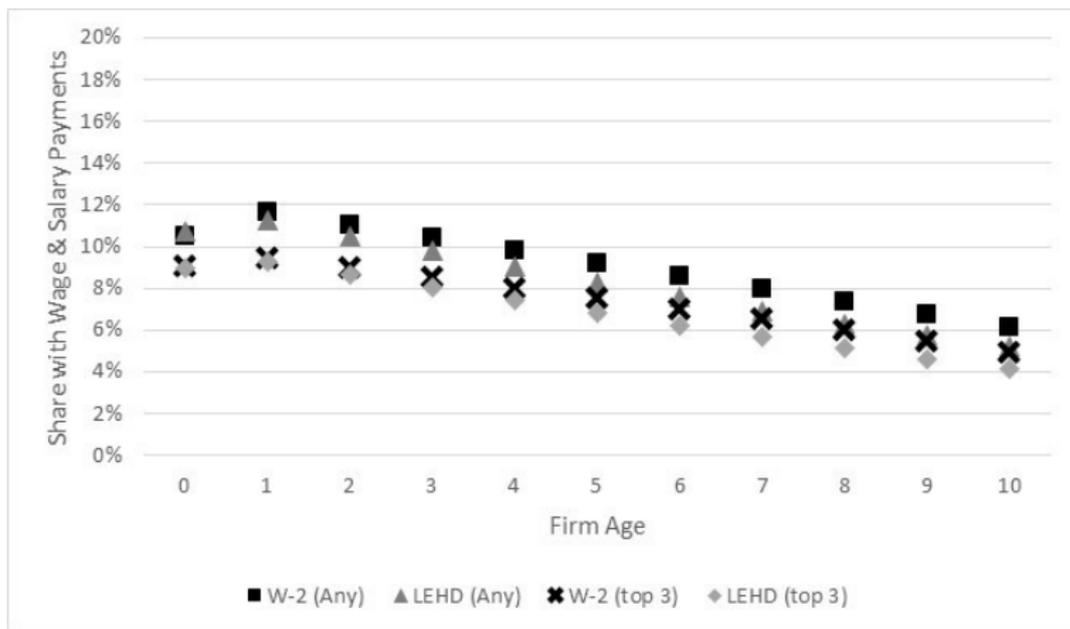
Owners of Partnerships



Notes: Authors' calculation of the frequency which businesses owners receive a W-2 or LEHD UI record of the wage and salary income from the businesses that they own. "Firm Age" indicates the number of years since at least one person received wage salary payments from a firm. Age greater than zero presented as a seventh-order polynomial approximation. "Top 3" indicates that the owner is among the top 3 highest earners at that employer.

◀ Owner Wage & Salary Payments

Sole Proprietor Owners



Notes: Authors' calculation of the frequency which businesses owners receive a W-2 or LEHD UI record of the wage and salary income from the businesses that they own. "Firm Age" indicates the number of years since at least one person received wage salary payments from a firm. Age greater than zero presented as a seventh-order polynomial approximation. "Top 3" indicates that the owner is among the top 3 highest earners at that employer.

◀ Owner Wage & Salary Payments