

## **SETH MURRAY**

University of Maryland  
Department of Economics  
College Park, MD 20742  
Phone: (650) 714-6340  
Email: murrase@umd.edu

Website: <http://econweb.umd.edu/~murray/>

### **Placement Directors**

Prof. Guido Kuersteiner	<a href="mailto:gkuerste@umd.edu">gkuerste@umd.edu</a>	(301) 405-3493
Prof. Katharine Abraham	<a href="mailto:kabraham@umd.edu">kabraham@umd.edu</a>	(301) 405-3489
Prof. Nolan Pope	<a href="mailto:npope@umd.edu">npope@umd.edu</a>	(801) 995-9184

### **Education**

Ph.D. Economics, University of Maryland at College Park, expected May 2020  
B.A. Mathematics and Economics, Swarthmore College, 1998

### **Fields of Specialization**

Primary: Macroeconomics  
Secondary: Labor Economics

### **Dissertation**

“Essays on Wages and Employment”

Committee: Prof. John Haltiwanger (Chair), Prof. Boragan Aruoba, Prof. Judith Hellerstein,  
Dr. Henry Hyatt

### **Working Papers**

“[Downward Nominal Wage Rigidity and Job Destruction](#)” (Job Market Paper)

Whether downward nominal wage rigidity causes firms to destroy jobs affects both optimal monetary policy and the asymmetry of employment fluctuations over the business cycle. This paper provides quasi-experimental evidence that downward nominal wage rigidity causes firms to destroy jobs and that this effect is empirically relevant for the macroeconomy. Given the unanticipated nature of the financial collapse in Q3 of 2008, differences across firms in their patterns of seasonal nominal wage adjustment generated heterogeneity in firms' exposure to downward nominal wage rigidity in Q4 of 2008. To identify these seasonal patterns, I develop a set of machine learning tools that I apply to longitudinal data on individual U.S. firms. I find that exposure to downward nominal wage rigidity generated by firms' seasonal wage adjustment patterns accounts for 23% of the spike in aggregate job destruction that occurred in Q4 of 2008. Since this empirical finding runs counter to the assumption in many macro models that downward wage rigidity does not cause job destruction, I present a model wherein downward nominal wage rigidity causes inefficient job destruction, while ensuring, à la Barro (1977), that workers and firms realize mutually beneficial nominal wage cuts.

“[Cyclical Labor Market Sorting](#),” 2019, invited submission at the *Journal of Econometrics*, with Leland Crane and Henry Hyatt

We consider sorting in the labor market, that is, whether high or low productivity workers and firms tend to match with each other, and how this varies over time using U.S. linked employer-employee data. Composition changes of workers and firms move in opposite directions over the business cycle. During and after recessions, low-rank workers are less likely to work, while the employment share of low-rank firms increases. The agreement between worker and firm ranks increases in the early stages of labor market downturns. We consider these results in the context of a model of cyclical labor market sorting.

[“Retirements, Vacancy Chains, and the Decline in Employer-to-Employer Transitions,”](#) 2019

The pace of worker reallocation in the U.S., measured by employer-to-employer (EE) transitions, has been declining since the early 1990's. This paper explores the impact of older workers' decisions to delay their retirement from the labor force on the pace of worker reallocation. Using variation in the age composition of firms' workforces and shifts in workers' retirement rates caused by two Social Security rule changes, I measure the effect of a worker's voluntary separation on a firm's replacement hiring rate. After documenting that the average worker retires almost two years later for cohorts reaching early retirement age in 2008 versus 1990, I use a vacancy chain framework to evaluate the effect of workers' delayed retirements on the overall pace of worker reallocation. A retiring worker may generate a chain of vacancies (and EE transitions) if the employer replaces the retiring worker with an already employed worker. This new hire must then quit their old job, thus creating a new vacancies and perpetuating the vacancy chain. I find that approximately 30% of the secular decline in the rate of EE transitions from 1990 to 2015 can be explained by the delaying of retirement by older workers.

[“Business Income Dynamics and Labor Market Fluidity,”](#) 2019, with Henry Hyatt and Kristin Sandusky

Recent studies on the long-run decline in U.S. labor market fluidity have focused on employees and excluded most of the rapidly growing population of the self-employed and business owners. In this paper, we use administrative records data to show that including business income recipients reduces the measured decline in the rate of hires and separations from 1994 to the early 2014 by 1.3 to 1.4 percentage points (about 8.3% to 8.7%). This offsetting effect of including business income recipients is driven by jobs that are secondary sources of income, or short in duration. We also explore the relationship between self-employment income and the total number of jobs held. Self-employment displaces about one job when it is a person's primary source of income, but only up to a tenth of a job when it is a secondary source of income.

## **Work in Progress**

### **“An Empirical Evaluation of Theories of Wage Adjustment”**

Wage rigidity is a key feature of many modern macroeconomic models. Various studies have shown that the exact forms of wage rigidity affect the persistence, symmetry, and magnitude of the economy's response to shocks in these models. In this paper, I examine the empirical fit of the predictions of a broad set of wage rigidity models, including Calvo-style random arrival of wage adjustments, Taylor-style staggered wage adjustments, menu costs which inhibit wage changes, fair wage efficiency wages that discourage downward wage changes, and information frictions that affect firms' perception of the current state of economy. I also evaluate the predictions of different efficiency wage models regarding the factors that affect the optimal wage change. I find that workers' wage changes are coordinated within firms to typically occur at an annual frequency, but wage changes are not coordinated across firms. Furthermore the frequency of wage adjustment is affected by the current state in a fashion that is consistent with the gift exchange efficiency wage and information frictions models. Lastly, I find that wages exhibit downward nominal rigidity, but not downward real rigidity.

### **“A Microfoundation for Taylor-Style Annual Nominal Wage Adjustment Patterns”**

This paper presents a model of optimizing firm behavior that endogenously generates Taylor-style (1980) annual nominal wage raise schedules that are synchronized across workers within the firm. Using employer-employee linked data, I show that approximately 80% of U.S. workers are employed by firms that follow a pattern of synchronized annual nominal wage raises. The model combines downward nominal wage rigidity with costly evaluation of employees' time-varying productivity to endogenously generate three related phenomenon. One, workers' nominal wages follow a regular annual raise schedule. Two, these raise schedules are coordinated among workers within the same firm. And three, workers' nominal wages are rarely indexed to inflation.

Seth Murray

### **Teaching Experience**

Instructor, Econometrics II (undergraduate), University of Maryland, Summer 2019

### **Research and Relevant Work Experience**

Research Assistant, Center for Economic Studies, The U.S. Census Bureau, Fall 2016 - present

Research Assistant, Prof. Will Dobbie, Princeton University, Summer 2015 - Summer 2016

Founder and President, various technology startups, Winter 2000 - Summer 2013

Economic Consultant, Ernst & Young, Boston, Summer 1998 - Winter 2000

### **Grants and Awards**

Roger and Alicia Betancourt Fellowship in Applied Economics, Fall 2019

Retirement Dissertation Fellowship, Center for Retirement Research, Boston College, 2018

High Honors in Economics and Mathematics, Swarthmore College 1998

Adam's Prize for Best Senior Thesis, Economics Department, Swarthmore College, 1998

### **Conference and Seminar Presentations**

2019: U.S. Bureau of Labor Statistics, U.S. Census Bureau

2018: Econometrics Society North American Summer Meeting, Western Economics Association Meeting, Bates College, U.S. Census Bureau, NBER Summer Institute (coauthor presented), American Economic Association meeting (coauthor presented)

2017: U.S. Census Bureau, NBER Summer Institute (coauthor presented)

### **Patents and Patent Applications**

"Generating topic-specific language models," 2018, US Patent 9,892,730

"Ranking search results," 2012 and 2016, US Patents 8,176,043 and 9,348,915

"System and method for personalized search of television content using a reduced keypad," 2006, US Patent Application 11/270,023

### **References**

Prof. John Haltiwanger	University of Maryland	<a href="mailto:halt@umd.edu">halt@umd.edu</a>	(301) 405-3504
Prof. Boragan Aruoba	University of Maryland	<a href="mailto:aruoba@umd.edu">aruoba@umd.edu</a>	(301) 405-3508
Prof. Judith Hellerstein	University of Maryland	<a href="mailto:hellerst@umd.edu">hellerst@umd.edu</a>	(301) 405-3545

### **Other Information**

Citizenship: United States