

Proceedings of the LERA 2017 Meetings

LERA@ASSA Meeting
January 6-8, 2017
Chicago, Illinois

LERA 69th Annual Meeting
June 1-4, 2017
Anaheim, California

OFFICERS OF LERA FOR 2016–2017

PRESIDENT:

Janice Bellace, University of Pennsylvania

PRESIDENT ELECT:

Harry C. Katz, Cornell University

PAST PRESIDENT:

Bonnie Castrey, Dispute Resolution Services

SECRETARY-TREASURER:

Craig Olson, University of Illinois at Urbana-Champaign

EDITOR-IN-CHIEF:

Ariel C. Avgar, Cornell University

CHAPTER ADVISORY CHAIR:

William Canak, Middle Tennessee State University

EXECUTIVE DIRECTOR:

Emily Smith, University of Illinois at Urbana-Champaign

EXECUTIVE BOARD MEMBERS:

John Budd, University of Minnesota
Annette Bernhardt, University of California, Berkeley
Dennis Dabney, Kaiser Permanente
Jonathan Donehower, Kaiser Permanente
Eric Fidoten, Campbell Soup
Rebecca Givan, Rutgers University
Owen Herrnstadt, IAMAW
Charles Jeszeck, Government Accountability Office
Patrice Mareschal, Rutgers University
Daniel Marschall, Working for America Institute
Kris Rondeau, New England Organizing Projects
Saul Rubinstein, Rutgers University
Beth Schindler, Federal Mediation and Conciliation Service
Jeffrey Wheeler, Department of Labor

LEGAL COUNSEL:

Steven B. Rynecki, von Briesen, Purtell & Roper, S.C.

PAST PRESIDENTS OF LERA

1948—Edwin E. Witte	1968—George P. Shultz	1986—Lloyd Ulman	2006—David B. Lipsky
1949—Sumner H. Slichter	1969—Frederick Harbison	1987—Michael H. Moskow	2007—Eileen B. Hoffman
1950—George W. Taylor	1970—Douglass V. Brown	1988—Phyllis A. Wallace	2008—Anthony Oliver, Jr.
1951—William Leiserson	1971—George Hildebrand	1989—Joyce D. Miller	2009—Joel Cutcher-
1952—J. Douglas Brown	1972—Benjamin Aaron	1990—Robert B. McKersie	Gershenfeld
1953—Ewan Clague	1973—Douglas H. Soutar	1991—James L. Stern	2010—Eileen Appelbaum
1954—Clark Kerr	1974—Nathaniel	1992—Ernest J. Savoie	2011—Gordon Pavy
1955—Lloyd G. Reynolds	Goldfinger	1993—George Strauss	2012/13—David Lewin
1956—Richard A. Lester	1975—Gerald G. Somers	1994—Lynn R. Williams	2013/14—Lisa Lynch
1957—Dale Yoder	1976—Irving Bernstein	1995—Walter Gershenfeld	2014/15 – Martin Mulloy
1958—E. Wight Bakke	1977—F. Ray Marshall	1996—Hoyt N. Wheeler	2015/16—Bonnie Castrey
1959—William Haber	1978—Charles C.	1997—Francine D. Blau	
1960—John T. Dunlop	Killingsworth	1998—F. Donal O'Brien	
1961—Philip Taft	1979—Jerome M. Rosow	1999—Thomas A. Kochan	
1962—Charles A. Myers	1980—Jack Barbash	2000—Sheldon Friedman	
1963—William F. Whyte	1981—Rudolph A. Oswald	2001—Magdalena Jacobsen	
1964—Solomon Barkin	1982—Milton Derber	2002—John F. Burton, Jr.	
1965—Edwin Young	1983—Jack Stieber	2003—Paula B. Voos	
1966—Arthur M. Ross	1984—Wayne L. Horvitz	2004—Marlene Heyser	
1967—Neil Chamberlain	1985—Everett Kassalow	2005—Stephen R. Sleight	

**LABOR AND EMPLOYMENT RELATIONS
ASSOCIATION SERIES**

Proceedings of the LERA 2017 Meetings

**LERA@ASSA Meeting
January 6–8, 2017, Chicago, IL
(in conjunction with ASSA/AEA)**

and

**LERA 69th Annual Meeting,
June 1–4, 2017, Anaheim, CA**

Ariel Avgar, Editor-in-Chief

PROCEEDINGS OF THE LERA 2017 MEETINGS

Copyright © 2017 by Labor and Employment Relations Association. (Formerly the Industrial Relations Research Association.) Printed in the United States of America. No part of the book may be used without written permission, except in the case of brief quotations embodied in critical articles and reviews.

First Edition
ISBN 978-0-913447-15-4

LABOR AND EMPLOYMENT RELATIONS ASSOCIATION SERIES
(Formerly the Industrial Relations Research Association)

Proceedings of the Annual Meeting

Annual Research Volume

Perspectives on Work Magazine

Inquiries and other communications regarding membership, meetings, publications, and general affairs of the Association, as well as notice of address changes, should be addressed to the LERA office.

LABOR AND EMPLOYMENT RELATIONS ASSOCIATION
University of Illinois at Urbana-Champaign School of Labor and Employment Relations
121 Labor and Employment Relations Building, MC-504
504 East Armory Avenue, Champaign, IL 61820
Telephone: 217/333-0072 Fax: 217/265-5130 E-mail: LERAoffice@illinois.edu
Website: <http://lera.memberclicks.net> EPRN: <http://www.employmentpolicy.org/>

CONTENTS

LERA 69TH ANNUAL MEETING, JUNE 1–4, 2017, ANAHEIM, CA

I.

PRESIDENTIAL ADDRESS

Jobs, Opportunity, and Equality in the New World of Work: A Path Forward Janice Bellace 1

II.

AILR/LERA BEST PAPERS

David Lewin and Paul J. Gollan, Presiding

Workforce Training for Older Workers: Toward a Better Understanding of Older Worker Needs
After the Great Recession Ting Zhang 9

III.

LERA BEST POSTERS

J. Ryan Lamare, Presiding

Institutional Change in the Apprenticeship Systems of England and Germany
Maisie Aufderhorst-Roberts 35

“It All Revolved Around Numbers”: Greater Commodification of Work and Culture with
Outsourcing Jacqueline M. Zalewski 35

IV.

LERA COMPETITIVE PAPERS II

Steven E. Abraham, Presiding

Unpacking Job Satisfaction and Union Participation: The Role of Fit
Justin Wiegand and Robert Bruno“” 37

V.

LERA BEST PAPERS: UNIONS AND EMPLOYEE VOICE I

Clifford B. Donn, Presiding

Building Internal Organisational Capacity to Respond Strategically to Neoliberalism:
Insights from a Teacher Union in Australia Mihajla Gavin 55

VI.

WORK ORGANIZATION AND PUBLIC POLICY I

Danielle van Jaarsveld, Presiding

Agglomeration Economy and Competition Improve Productivity and Employment in
Local Service Industries Sachiko Kazekami 73

VII.
2017 LERA LIFETIME ACHIEVEMENT AWARD

Lifetime Achievement Award	John F. Burton Jr., Awardee	89
Lifetime Achievement Award	Sir Peter Carr, Awardee	93

LERA@ASSA MEETING, JANUARY 6-8, 2017, CHICAGO, IL

VIII.
**DYNAMICS OF LOW-WAGE LABOR MARKETS:
IMPLICATION FOR MINIMUM WAGE POLICY**

Larry Mishel, Presiding

When Hours Decline: Tides of Change in Low-Wage Labor Markets	Wendy Rayack	97
---	--------------	----

IX.
TOWARD A SECURE RETIREMENT: CHALLENGES AND SOLUTIONS

Charlie Jeszeck, Presiding

Retirement Income Is Inadequate for Most Americans	Heather Grob	113
--	--------------	-----

X.
**RETHINKING PENSION FUND ACTIVISM FOR
EMPLOYMENT EQUITY AND CAPITAL STEWARDSHIP**

Teresa Ghilarducci, Presiding

Mortgage Fraud, the Great Recession, and Pension Fund Activism	Thomas Herndon	115
--	----------------	-----

XI.
THE ECONOMICS OF PREVAILING WAGE LAWS

Kevin Duncan, Presiding

Prevailing Wage Laws, School Construction Costs, and Side-By-Side Bids	Kevin Duncan	127
--	--------------	-----

XII.
LERA ANNUAL REPORTS

Executive Board Meeting in Chicago, IL, January 8, 2017	143
Executive Board Meeting in Anaheim, CA, June 2, 2017	147
General Membership Meeting in Anaheim, CA, June 3, 2017	151
Audit Report for 2016	153
Sustaining Sponsors and Organizational Members	175
Alphabetical List of Authors	176

I. 2017 Presidential Address

Jobs, Opportunity, and Equality in the New World of Work: A Path Forward

JANICE BELLACE

The Wharton School at the University of Pennsylvania

For many of us, the world has changed since we were together in Minneapolis a year ago. I suppose those watching TV on election night had a sinking feeling throughout the evening. I don't know as I was in Jakarta twelve hours ahead of New York. On the morning of Tuesday, November 8, I got up and turned on the TV to CNN and immediately recognized the place—Independence Hall, in Philadelphia, my home city. It was Monday night in the United States, and Hillary Clinton was at her last campaign rally. Bon Jovi was singing, Hillary and Bill were there, and Michele and Barack Obama, and then Bruce Springsteen. There was a feeling of elation swelling up from the thousands of people on Independence Mall. With the beautiful scene of Independence Hall lit up, I switched off the TV to get to the airport. When I was in the airport in Singapore it was now morning in America and people were going to the polls. Then I got on the plane for the 13-hour flight to London. The flight got in at 6 am, 1 am in New York. I got my bags and went out to meet my driver, and asked Abdul “is there any news yet about the American election?” And he said, “The man won.” I said, “What??” And he said, “Trump. He won. How could America have done this?”

Was I shocked? Not really. Surprised, yes. But not shocked. Not shocked because undertones of what was going to come were sounded months earlier. In July, when I was on vacation with very good friends from college, there had been an article in the Financial Times, “Trump’s message shines in faded steel city,”¹ days after Trump had visited the town. It was about Monessen, Pennsylvania, a place most of you probably have never heard of. A steel town where the mill had closed, which caused the tax base to drop dramatically, which led to abandoned homes and blight, where, as the FT noted, there was “nowhere near enough jobs to support the population.” But we knew Monessen, a steel mill town between the West Virginia border and Pittsburgh. We knew because one of us, Larry, came from Monessen. His father had worked at Wheeling Pitt, and at the point it went bankrupt around 2000, Larry’s father had a major heart incident and needed hospitalization but the workers had been stripped of their health insurance. As the FT article observed, this town had always voted Democratic but people kept telling their reporter “no one is listening to us.”

Just before the election, the Financial Times reporter went back to Monessen and talked to the 78-year old mayor, a lifelong Democrat talked about the people who felt they had been taken for granted, and how the Clinton and Obama had never even responded to letter he sent.² Noting the town’s desperate economic plight, he said: “If ISIS was to come to Monessen, they’d keep on going. They’d say someone already bombed the goddamn place.”

What was the 2016 election about? Rage. Anger. Despair. With Trump the vessel expressing this for those not heard, those taken for granted.

Rage Against Job Losses

There was rage against job losses, often expressed as opposition to free trade agreements. But it was liberalized international trade, not FTAs *per se*, that was the cause. Compared to the 1990s, by 2016 there was widespread recognition that trade creates winners and losers—with manufacturing workers in the higher

Author’s address: Wharton School, 672 Jon M. Huntsman Hall, 3730 Walnut Street, Philadelphia, PA 19104

wage country often losing. There is more than one reason for the job losses in manufacturing over the past 25 years, but it is undeniable that international trade is one major reason. As David Autor and his colleagues have found in a study of communities competing with China on specific products, "... rising imports cause higher unemployment, lower labor force participation, and reduced wages in local labor markets that house import competing manufacturing industries" which in turn led to "a steep drop in the average earnings of households."³

What was expressed was rage against job losses. Lost because workers abroad could do the work so much more cheaply. Lost because the job has been eliminated by some technological advance. And, most importantly, because the workers had no new good jobs to go to.

Today there is widespread realization that raising skill levels of workers will take substantial time, and that most workers over 50 who lose jobs will never be able to regain their place in the labor force. Moreover, over the past 50 years, an era of deindustrialization, the United States has not demonstrated an ability to re-skill workers who lose their job due to offshoring of production or technological innovation. The result? As Angus Deaton and Anne Case found rising mortality;⁴ in other words, "Death by Despair" (in the more memorable words of the magazine article that reported on these findings⁵). The increase in mortality for middle-aged (45-54) white males is shocking for another reason: the United States is the only advanced country that has experienced rising mortality for majority group, prime age males.⁶

But the outlook is even worse. Even if higher wage countries raise the skill level of workers, higher tech industries employ fewer persons. There is anxiety today that the supply of educated persons may be higher than current demand in high wage service industries. Rather we have what I call "the barista with a bachelor's degree" syndrome.

We have seen anger, rage, despair, and sometimes resignation. Even when emotions are not this high, we know that there is a very high level of anxiety in the country about our future.

Who Can Make America Great Again?

What has gone wrong? Who can fix it? Who can make America great again? Such questions should make us ask another—*when* was America great?

Do we think of the 1950s? For those of you who have seen the recent film, "Hidden Figures" (about three brilliant African-American women who worked at NASA when John Glenn became the first man to go into orbit), maybe you will answer 1962—when we were not polarized but united as a nation.

Why Was America Great?

The United States has a very large domestic market, and it is blessed with many natural resources. It might also be that in the late 1950s most of our competition was rebuilding after a devastating war.

But ask, was our labor relations system sound and sustainable? We think back to an era with a high rate of unionization—35%; an era when management and labor more or less cooperated; and with real gains in wages and benefit levels.

But What Was the Basis of This Apparent Stability in Labor Relations?

- Lack of a perceived need on the part of managers to compete on labor costs
- Lack of much competition

When did it change? And why?

On various metrics, the change begins in the 1970s. Look at percent unionized, real wages, amount invested in education;⁷ amount (as a percentage of income) saved in pension funds. The line moving upwards flattens in the 1970s or started to go downwards. I noticed this when writing an overview article.⁸ I took the

view that the oil crises of the 1970s, and the resulting stagflation, caused this. But did it? Now I think I got it wrong. The oil crises and stagflation were not the primary cause.

Other countries, such as the Scandinavian countries, Germany, faced the same oil crises. But they did not experience what we experienced. Why? Because they responded differently.

Changing View of the Purpose of the Corporation

Consider the prevailing view prior to the 1970s. Throughout the 1950s and 1960s, federal expenditures were growing at a quick pace in the areas of national defense, social welfare, and infrastructure. Both major parties, Democratic and Republican, supported increased spending in different ways. This reflected the acceptance of Keynesian economics. But then, a change occurred. The early signs came in 1962, when Milton Friedman published “Capitalism and Freedom.”

In 1970, Milton Friedman authored a very influential article that was published in the *New York Times* Sunday magazine, “The Social Responsibility of Business is to Increase Profits.” He bluntly stated that the business of corporate managers is to make money for the shareholders, and not for other purposes unless required by law. The message was clear: other stakeholders don’t count—only shareholders.

Related to this, in a more practical fashion, was the 1976 paper by Michael Jensen and William Meckling in the *Journal of Financial Economics* that established shareholder value; that is, they argued that the shareholders were the principal and management was the agent, and that the ultimate measure of a company’s success is the extent to which it enriches shareholders.⁹

This was theory. To apply theory to practice, one had to consider how managers behave. This led to articles examining how to align the interests of managers with those of shareholders; in other words how to incentivize executives to maximize shareholder value. The obvious way to incentivize executives is to make their compensation dependent on maximizing shareholder value, euphemistically expressed as “aligning executive compensation with shareholder interests.”

Recall that in 1970 stock-based compensation represented less than 1% of CEO remuneration. Then look back to the 1980s, a decade of stock repurchases, corporate restructuring, and green mail—all designed to maximize the value of shares.

How did the top management of companies respond? They felt compelled to cut costs. How?

So many costs were out of the control of management. The easiest and fastest way to cut costs was to cut labor costs.

How was this achieved? Even before the 1980s, it was evident that one way to cut labor costs was to move production to nonunion, lower wage areas. In the 1950s, the garment industry moved shops from the North to the South (the runaway shop cases). By the 1970s, the garment industry, the most labor-intensive industry, started leaving the country. Even before free trade agreements, the wage difference between Asia and the U.S. was so great that despite tariffs it was still cheaper to manufacture abroad. (I know—in 1975 the men’s clothing factory where my father had worked for 30 years closed as it was so much cheaper, with the same low level of technology, to make men’s trousers in Asia.)

Then this strategy extended to other industries. Recall the “Southern Strategy” of the major auto companies; namely, open plants in the nonunion South and stop investing in the heavily unionized North and Midwest.

Other strategies for lowering labor costs were utilized, such as

- break unions
- “hard bargaining” (a union victory but no first contract)
- decertification
- undermine pattern bargaining (e.g., airlines)
- concession bargaining

If we look back at the titles of papers and sessions at IRRRA meetings in the 1980s, all of these pop up.

The Weakness of American Labor Law

In the late 1970s/1980s, the weakness of American labor law became depressingly apparent. One only has to recall the most basic labor economics reality to understand why.

John R. Commons once observed that a union must organize the length and breadth of the market. That is, a union that has *organized all the workers* producing the *same product for the same market* can seek to raise wages. Since employers compete with each other, for one employer to remain competitive with others in the same industry (producing the same product), that employer has to keep its costs in line with its competitors. The basic economic fact is that a union must take labor out of competition in order to impose higher labor costs.

In line with John R. Commons' observation, it is clear that a union should seek industry-wide bargaining. In Europe, in many countries, industry-wide bargaining was the norm. In tough times, those unions could rely on that to retain their ability to bargain, as companies competing in the same industry with each other were all bargaining together. This is why German and Swedish and Danish unions were able to withstand the tough economic times of the 1970s.

In the United States, it was not that the oil crises of the 1970s radically increased the cost of production that *caused* American unions to decline (if so the result would have been the same in Germany). It was that American management was now under pressure to increase shareholder value *and at the same time*, costs that management could not control were going up sharply. Thus, the management of companies was under pressure to cut costs where they could—labor. And there was no bulwark against this.

American labor law never had supported *industry-wide* bargaining, but worse, American labor law contemplated bargaining at a lower level (the “employer”—the company). Even worse, judicial decisions from the 1950s–1970s effectively pushed the level even lower by permitting employers to insist on an election even in the absence of any good faith doubt. To win an election, a union must have 50% plus one in a unit. We all know how difficult it is to organize a multi-site company all at the same time and to go to an election on the same date. Thus, elections were taking place in parts of a company, not the entire company (let alone an industry). The result—companies in negotiations could simply play one plant off another (if you want to keep the work here, agree to these concessions).

The Need to Rely on Strikes

The other fundamental weakness of American labor law relates to the fact that it is totally dependent on strikes. Unlike other countries, there are no works councils, no rights to information and consultation. In other words, workers have the right to engage in collective bargaining, but their ability to bargaining collectively to beneficial effect is 100% reliant on strike power. Yet, American labor law has *never* protected strikers.¹⁰

In the 1970s, when employers began to engage in hard bargaining, and workers had to strike to hold on to what they had, they faced grim possibilities:

- Strike—and perhaps be permanently replaced
- Strike—and see the strike fail, and come back having gained nothing and lost money
- Strike—and get a new contract but see that over time no new investment is made in the plant and work is going to new nonunion plants

It is no wonder that workers who were interested in unions (as surveys repeatedly revealed) declined to vote for unionization (after having been repeatedly reminded by the employer that the only way a union forces the company to give more than it intended is to strike, and that strikes could have dire consequences for the workers).

Can labor law be reformed? Twice, under Democratic presidents (Carter and Clinton), this has been tried. It has failed. There simply was not enough support in Congress.

A Limited Statute Now Outdated

But even those labor-law reform efforts, if successful, would not have produced the desired result because the NLRA is a fundamentally flawed statute, designed to fix the problem of the moment, and not helped by the fact that the courts have interpreted it in a very narrow fashion.

Thirty years ago, I presented a paper at the 1987 IRRA annual meeting entitled: “Mandatory Consultation: The Untraveled Road in American Labor Law.” In the paper, I argued that the NLRA did not mandate that adversarial bargaining on a limited number of subjects was the only protected right. I pointed out that it was not until 1958 that the Supreme Court, in *Borg-Warner*,¹¹ created three categories of bargaining (mandatory, permissive and illegal subjects). I argued that something was left out: mandatory subjects of consultation.

I argued that even under the *Borg-Warner* construct, there were Items on which employees could not strike but that they were entitled by virtue of their Section 7 rights to receive information and to engage in consultation (such as the company’s plans to invest in the plant).

I recall the reaction of a colleague after hearing this presentation. He said:

Janice, why make this proposal? Who would support such a change? Employers like the NLRA—they know they can beat unions. And unions don’t want this—they’re afraid it will give workers some other option for voice and that will be enough to satisfy them.

I recall that at the meeting itself, someone in the room voiced this last sentiment, and I said, “Union membership is down to 18%. How much lower do you want it to fall?”

In 2016, there were 14.6 million members in the U.S.—down from 17.7 million in 1983.

The percentage of workers belonging to a union was 10.7%, compared to 20.1% in 1983.

And these figures somewhat disguises the extent of the decline (because of changes in the relative proportion of private to public sector unionism, the size and composition of the labor force, etc.). Today, in the public sector, 34.4% are unionized—more than five times higher than in the private sector. Union membership in the private sector has fallen to 6.4 %—levels not seen since 1932. A figure that even more starkly points to the decline is the fact that there are now more undocumented workers in the U.S. than unionized private sector workers. It is difficult to conceive of a revival under our current labor laws. With the decline of manufacturing, with the rise of automated service sector work, how many workers have strike power and are willing to take the risk of going on strike?

I have painted a gloomy picture. So where do we go from here? Are there any hopeful signs? I think there are.

It may be in the growing and now widespread realization that over the past 40 years, gains have not been shared. The popular slogan is “the 1 %.” The point is that many people in America today realize that shareholders have walked off with the lion’s share of the gains.

Another hopeful sign is the emerging reappraisal of shareholder value theory because an awareness of how this theory has affected society might lead to a demand that other management consider other stakeholders, such as those who invest their human capital in the firm.

A signed article in 2011 in *Forbes* had the catchy title “The Dumbest Idea in the World: Maximizing Shareholder Value.”¹² This view was echoed by Lynn Stout, of Cornell Law, in her 2012 book, *The Shareholder Value Myth: How Putting Shareholders First Harms Investors, Corporations and the Public*. Most encouraging is Duff McDonald’s book, which was published in April, entitled *The Golden Passport: Harvard Business School—The Limits of Capitalism and the Moral Failure of the MBA Elite*.¹³ I say “most encouraging” because McDonald directly confronts the public policy issue; namely, is it moral for shareholders and top executives to capture the lion’s share of the gains many have worked to create.

In a surprisingly favorable long book review published in the *Wall Street Journal*¹⁴ that supported McDonald's critique of shareholder value, McDonald is congratulated for producing a "guidebook" and a "deliciously iconoclastic history of the Harvard Business School" for those who "sift through the wreckage of a civilization that bestowed its highest rewards on individuals trained to ignore its deepest problems."

There is another hopeful sign. People are recognizing that for a society to be healthy, gains must be shared. But there is absolutely no consensus on what this means, nor how it can be accomplished. And at present, we cannot look to Washington.

A Path Forward

If there are hopeful signs, I must also point out some dark clouds.

Our economy is at the point of a paradigm shift. Industrialization is over. Models from the Industrial Age are likely obsolete. We are firmly at the beginning of the Digital Age. We saw the early signs and now we see a huge sign.

Consider the changes in the nature of work since the 1970s.

- **1974:** Intel 8080 microprocessor factories CAD/CAM—jobs disappear
- **1974:** Barcode scanner first used—"tracking" jobs disappear (retail stores, deliveries)
- **1993:** World Wide Web—routine office jobs disappear (clerical, counting)
- **2020:** Artificial intelligence—*from* many people doing rote tasks (manual or mental) *to* fewer people using their minds

This huge movement into a radically new economy has re-surfaced patterns from a century ago—that capital used labor, not paying for more than it needs.

- **Crowdsourcing**
 - 19th century: workers swarming down to the docks when a ship came in
 - 21st century: workers logging on to the platform, bidding to work
- **The gig economy**
 - 19th century: musical performers, day laborers
 - 21st century: TaskRabbit, Amazon Mechanical Turk
- **Matching demand for labor with supply of labor**
 - 19th century: labor supply broker owner's agent
 - 21st century: technology platform (e.g., Uber, Lyft)

At this particular point in time, in this political climate, it is not realistic to call for labor-law reform, to propose policies that would call for substantial government funding (more for education, be it pre-school or college).

It is possible to consider approaches that worked over a century ago—mobilizing workers with a focus on issues and pressing for change. What is one of the most successful, most broad based associations in the United States that is not a political party? The AARP—the American Association of Retired Persons. Maybe we need the *AAWP—the American Association of Working Persons*. The AAWP

- would propose and rally support for changes
- would not be based on traditional "employment"
- would be linked to individuals and 'units' of work

The AAWP would focus on issues that concern working persons such as

- Support for higher education/training
- Home ownership plans

- Long-term savings for retirement
- Insurance for sickness, disability

Are these labor organizations? Not the way we have known them.

Nor are they labor organizations within the meaning of the NLRA because they are not linked to one employer or even many employers in one industry. Moreover, they are not seeking to bargain collectively with an employer.

A year ago, before the Democratic and Republican national conventions chose their candidates, I chose the theme of this annual meeting: Jobs, Opportunity and Equality in the New World of Work. As the popular response to the film “Hidden Figures” demonstrates, a film where people worked hard and merited the job, people in 1962 and people today want jobs, they want opportunity, and they want equality—an equal chance at the jobs available.

What I propose is not a union. Not the way we have known it in the Industrial Age.

But today’s unions should support the AAWP because by mobilizing working persons to support policies that aim to benefit those who work in America and their families, we will be on the path to moving forward to achieve *Jobs, Opportunity and Equality in the New World of Work*.

Endnotes

¹ Subtitle: “Formerly Democratic Monessen is won over by insurgent Republican,” by Demetri Sevastopulo. July 1, 2016. <http://on.ft.com/2k6xfTg>

² “How Trump gave a voice to unheard America” by Demetri Sevastopulo. *Financial Times*, October 27, 2016. <http://on.ft.com/2k6k5W6>

³ David H. Autor, David Dorn, and Gordon H. Hanson, “The China Syndrome: Local Labor Market Effects of Import Competition in the United States.” *American Economic Review* 103:6 (2013) 2121-2168. <http://bit.ly/2k6c97i>

⁴ Anne Case and Angus Deaton, “Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21 century.” Proceedings of the National Academy of Sciences. Sept. 17, 2015. <http://bit.ly/2k6yYrG>. See also, Anne Case and Sir Angus Deaton, “Mortality and morbidity in the 21 century,” Brookings Papers on Economic Activity, Spring 2017. <http://brook.gs/2k6zhTm>

⁵ Olga Khazan, “Middle-Aged White Americans are Dying of Despair,” *The Atlantic*, Nov. 4, 2015. <http://theatlantic.com/2k9fUJx>

⁶ Ibid. A chart showing this in reproduced in the *Atlantic* article, with the chart taken from Case and Deaton’s article in the PNAS (see endnote 4).

⁷ Claudia Goldin and Lawrence F. Katz, *The Race between Education and Technology*. Cambridge: Belknap Press of Harvard University Press (2008).

⁸ Janice R. Bellace, “American Unions and the Economy: The Unheard Voice of a Shrinking Sector,” *Singapore Economic Review*, 59:4 (Sept 2014) 1120. <http://bit.ly/2k6cMha>

⁹ Michael C. Jensen and William H. Meckling, “Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure,” *Journal of Financial Economics*, 3:4 (1976) 305-360. <http://bit.ly/2k8fcvN>

¹⁰ *NLRB v. Mackay Radio & Telegraph Co.*, 304 U.S. 333 (1938). One year after the National Labor Relations Act was held constitutional, the Supreme Court in a 7-0 decision held that workers who strike remain employees but observed that they may be permanently replaced without any requirement that the employer demonstrate any need to do so.

¹¹ *NLRB v. Wooster Div. of Borg-Warner Corp.*, 356 U.S. 342 (1958).

¹² Steve Denning. *Forbes*. Nov. 28, 2011. <http://bit.ly/2k7gV4N>

PROCEEDINGS OF THE LERA 2017 MEETINGS

¹³ Published by Harper Collins, April 2017. 657 pages.

¹⁴ Matthew Steward, “The Business-School Boondoggle,” *Wall Street Journal*, April 21, 2017. <http://on.wsj.com/2k6FZIV>

II. AILR/LERA BEST PAPERS

Workforce Training for Older Workers: Toward a Better Understanding of Older Worker Needs After the Great Recession

TING ZHANG

University of Baltimore

Facing the aging workforce but older workers' vulnerability in the labor market, this paper empirically explores factors and policy implications to enhance older workers' employment propensity, measured by the entered employment rates (EER), after exiting the national workforce program. After reviewing older workers' attributes and the unique methods to train them, the paper examines effects of program attributes and local labor market cyclical changes on older workers' EER, controlling for individual workers' demographic and socioeconomic characteristics. The paper relies on three types of empirical models including simple logistic regression, mixed-effects regression, and multilevel mixed-effects logistic regression models for robust estimates. The models are conducted separately among older dislocated workers and among older adults. Longitudinal 2013-2015 Workforce Investment Act Standardized Record Data (WIASRD) and Bureau of Labor Statistics unemployment data are used. Some WIOA training and related service combinations are identified to contribute to older adults and older dislocated workers' EER and to inform strategic decision-making about future allocations of funds and policy efforts to serve older workers. For example, on-the-job training greatly enhances both older dislocated workers' and older adults' EER. While skill upgrading training and supportive services only enhance older dislocated workers' EER, participating in mechanical, transportation, and military skill trainings only enhances older adults' EER. While older adults' EER are affected by local economic downturns, it is not the case for older dislocated workers. The study concludes with policy implications and future study directions.

Introduction

Older workers are vulnerable in the labor market because they are often “pushed” out of the traditional employees' market, particularly in the Great Recession (Lavarreda, Snyder, and Brown 2013). One “push” factor is limited training and promotion opportunities, in addition to factors like age discriminatory practices in recruitment, a lack of attractive employment options, deteriorating health issues, and care responsibilities (Porcellato et al. 2010). Older workers are generally perceived to be subject to skill obsolescence (Crown and Longino 2000). For older workers who have not looked for a job for a long time, lacking job-hunting techniques is another structural disincentive for boomers (Hooymann and Kiyak 2005). However, older workers' valuable experiences, work ethic, mentoring, and language skills are also recognized (Collison 2003). Continue working can provide older workers with an additional income in retirement while they remain economically active with flexibility and independence (Weber and Shaper 2004; Kautonen et al. 2008; Zhang 2008, 2014, 2015; Zhang and Carr 2014). It is therefore critical to deliver an appropriate level and mix of workforce services for older workers who need training to continue working or to return to work.

Author's address: Department of Finance and Economics, Merrick School of Business, University of Baltimore, 1420 North Charles Street, BC-383, Baltimore, MD 21201-5779

Older workers' demand for training to remain or regain labor market competitiveness is certain to increase. This has policy implications for the Workforce Innovation and Opportunity Act (WIOA) planning. This research uses the most updated data and multilevel mixed-effects modeling to examine and help inform investments in future workforce services for older worker training. Relying on the Workforce Investment Act Standardized Record Data (WIASRD) 2013-2015 quarterly microdata and Bureau of Labor Statistics (BLS) unemployment data, this paper empirically examine the impacts of unemployment rates and various workforce services on older workers' entered employment rate (EER),¹ controlling for older workers' demographic and socioeconomic conditions. Some WIOA training and related service combinations are identified to inform strategic decision-making about future allocations of WIOA funds to serve older workers. Following the finding interpretation and discussions, this paper concludes with policy implications.

Literature Review

Older workers' share in the labor force is rising quickly. According to the Bureau of Labor Statistics (BLS) (2017a) data, currently 23% of the US total employment are from those who aged 55 and above, based on calculation. In 2014, the 21.7% of the labor is for ages 55 and above, up from 11.9% in 1994, 15.6% in 2004; this number is projected to increase to 24.8% in 2024 (BLS 2017b). The actual number of older labor force participants could be even greater than official projections suggest (Rix 2006). Concerned about the aging labor force, prior studies have addressed older workers' vulnerability and assets, potential training methods for older audiences, and available resources related to the training.

Older Workers' Vulnerability

Older workers are particularly vulnerable in the economy. Compared to younger workers, older workers are increasingly more likely to be laid off, are less likely overall to find another job, take longer to find a new job, and tend to earn less income after finding a job (Heidkamp 2009).

Many employers are concerned about the higher costs and lower productivity of hiring older employees. The higher cost concern include concerns about higher health insurance and benefit costs (Collison 2003). Even the "Seniority Principle" (Thurow 1975) which increases salary with experience tends to discourage hiring seniors. For the lower productivity concern, older workers are generally perceived to be more vulnerable to skill obsolescence and tend to be at odds with technological innovations that are associated with increased training needs (Crown and Longino 2000). For those older people who have not been searching for a job for a while, lacking job-hunting techniques is another structural disincentive for older people (Hooymann and Kiyak 2005).

There is also general doubt about older workers' trainability as well as employability. Many cognitive abilities such as working memory, the capacity to pay attention, and spatial cognition decline with age, especially when a task is complex or represents an unfamiliar knowledge/skill area (Charness and Czaja 2006). In addition, older workers have a shorter work life left to recoup the costs of training.

Older Does Not Mean Less Productive

Older workers may have more difficulty than younger ones for learning new knowledge, but it does not necessarily mean they are less productive. People's intelligence is composed of crystallized intelligence and fluid intelligence. Crystallized intelligence is a form of acquired knowledge and is usually stable until very late life; fluid intelligence refers to ability to quickly solve novel problems and shows declines from the 20s or 30s (Schulz and Salthouse 1999). Although older workers may have a disadvantage in fluid intelligence, they may not have a disadvantage in crystallized intelligence. For example, older workers tend to have better language skills.

Actually, various studies show that age is a poor indicator of work performance and that variations in performance within the same cohorts far exceed the average differences between cohorts (Sterns and McDaniel 1994; Human Resources Development Canada 1999). Using data on U.S. General Motor employees, the Florida State University Psychology Department and the Pepper Institute on Aging and Public Policy also found that older workers were not less productive or valuable in the workplace, despite their longer learning processes (Charness 2004).

Even for new skills related to high technology, research also shows that older people's deficiencies in computer skills, for example, are really a function of socially driven motivation (Friedberg 2003; Resnick et al. 2004). Social factors may be more important in modulating motivation to train (Colquitt et al. 2000; Maurer et al. 2003).

Although marketing and training for new information and communication technologies has focused mainly on younger people, some studies (such as Resnick et al. 2004) demonstrated that older adults could learn to use the Internet, and that Web use could improve their quality of life. A number of other studies (e.g., Elias et al. 1987; Gist et al. 1988; Czaja et al. 1989; Charness et al. 1992; Morrell et al. 1995; Mead et al. 1997) have examined the ability of older adults to learn to use a variety of computer applications with perspective training strategies. Based on those studies, there were no discernable differences in performance for different age groups at the end of training, and performance was often better among older novices than that achieved by younger novices, though the older group requires more time.

Older Workers' Valuable Assets

On the other hand, older workers can bring many unique qualities to the workplace. The wisdom of older people is typically represented by experience, guidance, leadership, and comfort (Peterson 1999) and older workers typically bring maturity, dependability, and years of relevant experience to the workplace (Eyster et al. 2008). As identified by the 2003 SHRM/NOWCC/CED² Older Workers Survey, older workers have invaluable experience, established business ties, a strong work ethic, loyalty to their company, diversity of thoughts and approaches, and can provide additional support to younger workers through mentoring (Collison 2003).

Older workers possess unique skills that younger workers might not have. Older workers can also be effectively trained. Facing aging and pending workforce shortage,³ job training that helps older workers obtain and succeed in a job could play a necessary and pivotal role in workforce development and economic growth.

Methods to Train Older Workers

Understanding older workers' vulnerability and values would help to understand training methods that are suitable for older workers. Previous literature addresses some clues on how to train older workers. Generally, what is best for young adults works for older adults; however, specific approaches could be particularly helpful for seniors.

Previous knowledge has been found to be a strong and positive predictor of learning performance both for in-class instruction and homework learning activities (Beier and Ackerman 2005). This mirrors Schmidt and Hunter's (2004) research that indicated experience as a better predictor of job performance than intellectual abilities. Therefore, training based on their previous job experience and skills could be effective.

Certain physical or other accommodations can be made to enhance older workers' productivity. With seniors' decreasing vision, high contrast settings for print or computer screens can effectively stimulate their vision; similarly important includes setting adjustments for audio equipment (see Fisk et al. 2004). Previous literature also found that there were greater gains for older adults when performing procedural (action or hands-on) activities, compared to conceptual training using automated teller machines (Mead and Fisk 1998). A similar differential advantage was shown on training to search the Internet (Mead et al. 1997). Moreover, matching the instructional technique and medium (e.g., text, voice, animation) to the type of material that is being presented might be helpful. Older adults might have greater difficulty ignoring irrelevant information than younger adults based on basic experimental work on attention spans (Carlson et al. 1995); though Schneider, et al. (2000) disagree.

Seniors are typically slower to acquire skills than younger adults, though some of the slowing in learning may be explained by older adults' preference for accuracy over speed, with the reverse holding true for younger adults. Charness and Czaja (2006) indicated the importance to allow extra time to train an older adult (1.5 to 2 times the training time expected for a young adult).

In addition, many older workers lack job-hunting techniques (Hooyman and Kiyak 2005). Therefore training on job searching, hunting, and interviewing skills could be useful as well.

Older Workers’ Training Resources

Publicly funded training programs have been serving older workers for decades. The Workforce Investment Act (WIA), the federally funded employment and training program, provided skill upgrades to workers regardless of age, and allowed states and local areas to give priority to special populations, such as older workers, for training funds allocation. Some states began to focus on older workers’ training needs and to tailor some services and funding to serve older workers. Programs funded through WIA served a growing number of older workers.

On July 1, 2015, Workforce Innovation and Opportunity Act (WIOA) took effect. Written into law on July 22, 2014, WIOA supersedes the WIA of 1998 and is designed to help job seekers access employment, education, training, and support services to succeed in the labor market and to match employers with the skilled workers they need to compete in the global economy (Employment and Training Administration [ETA] 2017a).

Shown in Table 1, according to the Workforce Investment Act Standardized Record Data (WIASRD) Data Book, comparing across Program Years (PY) 2013-2015,⁴ among all WIA/WIOA program exiters, adult workers aged 55 and above⁵ increased from 14.8% in 2013 to 15.2% in 2014 and to 15.8% in 2015; and dislocated workers⁶ are aged 55 and above increased from 21.5% in 2013 to 21.3% in 2014 and to 22% in 2015 (ETA 2017b). As the population ages and with the elevated financial pressure from the Great Recession, the use of WIOA-funded training by older workers will likely continue to grow.

TABLE 1
Percentage of Older Workers (55+) Among all WIA/WIOA Program Exiters, PY 2013-2015

WIA/WIOA Exiter	Program Year		
	2013	2014	2015 (4/1/15–3/30/2016)
Older Adults	14.8	15.2	15.8
Older Dislocated Workers	21.5	21.3	22

Data sources: ETA (2017a).

In addition to the WIOA (or previously WIA) funding, the U.S. Department of Labor (DOL) funds Senior Community Service Employment Program (SCSEP) sites, a dedicated employment and training program offering job search assistance, training and work experience to lower-income seniors. SCSEP provides many grants to state governments and national nonprofit organizations to train older workers (ETA 2017c). Some community colleges are also leading efforts to develop job-training opportunities for older workers to meet local labor market needs.

Research Hypotheses

With a rising share of older workers enrolled in the federally funded WIOA programs, what level and mix of the WIOA employment and training programs will be needed to serve older workers? When investigating EER, it is also necessary to determine if the WIOA program effectiveness is sensitive to cyclical changes in labor market conditions considering the heterogeneity of demographics, socioeconomic background, location, time of enrollment and even occupational preferences.

While prior literature on this investigation is thin, this study addresses these above questions and test the following two hypotheses:

- Some WIOA training and related service combinations can be identified to inform strategic decision-making about future allocations of WIOA funds to serve older workers.

- WIOA program success with older workers is sensitive to cyclical changes in labor market conditions.

The following sections introduce the methodology adopted in this study and then present observations based on descriptive statistics and empirical models. Findings are discussed and policy implications are indicated where appropriate.

Methodology and Data Sources

This paper adopts simple logistic regression, mixed-effects regression, and multilevel mixed-effects logistic regression models to test the impacts of unemployment rates and various WIOA program attributes on older workers' EER. WIASRD 2013-2015 data and BLS unemployment data series are used. This research starts with descriptive statistics.

The WIASRD 2013-2015 data are used as a longitudinal dataset. The temporal unit of analysis is the WIOA program exiting date for each participant in a state. For the multilevel hierarchical modeling, the two higher levels' units of analysis include Workforce Investment Board (WIB) areas (also called Workforce Investment Areas) for the middle level and state for the highest level. Post-estimation regression diagnostics is conducted to address the model fit and specifications. Older workers in this study are defined as workers age 50 and above. This age divide is often used as a definition for older workers and represents the front edge of an older worker cohort with employment problems that are generally regarded to be particularly acute (Zhang 2014). Compared to another often-used age definition for older adults, 55, starting with the age of 50 could include many more older workers and include more candidates who can benefit from the older worker workforce program designs. The range of 50-55 years old is an important age span for workforce program participation that prepares for older workers' continued working life.

Dependent Variable

The dependent variable is **Enter Employment Rate** (EER), consistent with the common measure EER of the WIOA program performance measure. For the WIOA adult program, of those who are not employed at registration, EER is defined as the number of adults who have entered employment by the end of the first quarter after the exit quarter divided by the number of adults who exit during the quarter. For the WIOA dislocated worker program, EER is defined as the number of dislocated workers who have entered employment by the end of the first quarter after the exit quarter divided by the number of dislocated workers who exit during the quarter.

The WIASRD data are extracted to measure the EER for an **individual (*i*)** and for a **specific program exit date (*t*)**. Since we use the individual-level microdata, this measure is a binary variable, the logarithm of which actually measures the entered employment propensity. This reflects the WIOA program common measure EER at an aggregate geographic area level. If the individual participant found a job during the 3 months after exiting the program, the value of *EER* is 1; otherwise, it is 0. Although using EER as a measure for WIA/WIOA program performance is not perfect,⁷ EER is still a legitimate and best available direct measure when this research is conducted. This one-quarter lagged value allows a quarter's time for workers to find a job after exiting WIA/WIOA programs and services; this also avoids simultaneous causation and endogeneity issues in statistical inference. In this study, the WIASRD data used for the regression models covered exit dates ranging from April 1, 2011 through June 30, 2016.

Independent Variables

The first set of independent variables include program types, training types, and occupational categories of training. Those variables are used to test the first hypothesis and observe what program, training, and occupational category mix works the best for older workers. Those variables are binary variables with 1 for the referred categories and 0 otherwise. The **program types (*P*)** include the following: *Supportive Services (except needs-related payments)*, *Needs-Related payments*, the *National Emergency Grant* program, *Pell grants*. The **training types (*T*)** include *On-the-Job Training*, *Skill Upgrading and Retraining*, *Entrepreneurial Training*, *Adult Basic Education (ABE) or English as a Second Language (ESL) in Combination with Training*, *Customized Training*, and *Other*

Occupational Skills Training. The **occupational categories of training (O)** include (1) *Agricultural, forestry, fishing and related workers, construction and extractive workers*, (2) *Managerial, administrative, professional or technical*, (3) *Sales, clerical and administrative support*, (4) *Service workers*, and (5) *Mechanics, installers, repairers, precision workers, machine setters, set-up operators, operators, tenders, assemblers, hand workers, transportation and related workers, and military*. The information for these variables is extracted from the WIASRD data.

Another independent variable is state level monthly **unemployment rate (U)**. It captures impacts of regional cyclical labor market conditions and tests the second hypothesis. This is a continuous variable. The BLS non-seasonally adjusted unemployment rate data are used for this variable. Considering the limited sample size from the Current Population Survey, the BLS Local Area Unemployment Statistics (LAUS) unemployment rate information is more reliable at the more aggregate state level instead of at the county level. This paper adopts monthly unemployment rates at the state level to observe the business cycle impact. It is impossible and unnecessary to monitor unemployment rates daily.

Control Variables

The WIASRD data also offer older information on workers' background, including demographic, socioeconomic, and other program participation information details of older workers who have participated in WIA/WIOA programs. The **demographic** and **socioeconomic** information includes gender, age, disability, education attainment, veteran status, homeless status, whether the participant had limited English skills, and whether the participant received services or assistance from the Temporary Assistance to Needy Families (TANF) program, the Supplemental Nutrition Assistance Program (SNAP) program, and/or the Supplemental Security Income (SSI)/Social Security Disability Insurance (SSDI) under Title XVI of the Social Security Act. English skills are often needed at work. The homeless status and participation into the TANF, SNAP, SSI, and SSDI programs are often associated with poverty for different reasons.

The **WIA/WIOA program participation information** includes whether the participant received financial services/assistance under the Wagner-Peyser Act, the Local Veterans Employment Representative (LVER) Program and Disabled Veterans Outreach Program (DVOP), the Older Americans Act of 1998, or the Carl D. Perkins Vocational and Applied Technology Education Act, or received training or received services through distance learning, supportive services, SNAP Employment Training program (SNAP E&T), a Pell Grant, Trade Adjustment Assistance (TAA) programs, the American Recovery and Reinvestment Act (ARRA) of 2009, needs-related payments, apprentice training, other basic skill training, or a National Emergency Grant (NEG).

With program participation date and exit date, this paper computes **program participation length (L)**, to capture how long it took a participant to finish the program. The program participation length is determined by the program design as well as individual motivations, efforts, and access. This variable is believed to affect an individual's EER.

Please note that the WIASRD data are informative, but using such data for statistical tests is not without participation bias. The WIASRD data offer only the information related to or reported by the participants. This situation results in possible participation bias of the data. It is therefore necessary to be cautious about the statistical inference based on these data.

Unit of Analysis

As noted above, the base unit of analysis for the study is individual program participants in a WIB⁸ area in a state sorted by exit dates. Considering that the effects of WIA/WIOA programs are examined in this study, WIB areas are the natural base geographic level units, or the middle level of the study. Considering the fact that each state operates the federal government-funded WIA/WIOA programs in its own way, states are natural administrative geographic units that serve as the highest-level units for our hierarchical multilevel analysis. Workforce program participants might register in a local office in one county but find a job in another county, more likely than in another state. WIB areas are not necessarily labor market areas, residential areas, or legislative districts. Employment dynamics may occur across borders of WIB areas, but mostly remain within a state legislative boundary.

The Serial Autocorrelation Concern

The longitudinal WIASRD dataset makes serial autocorrelation a natural concern for the temporal dynamics affecting statistical estimates. Therefore, tests for serial correlation in the idiosyncratic errors of a linear panel-data model discussed by Wooldridge (2002) and Drukker (2003) are conducted. If serial autocorrelation were detected, the nature of the serial autocorrelation would be investigated to adopt appropriate temporal variables and model specific adjustments. In this study, no evident serial autocorrelation is detected. A reason is that the temporal unit is an older worker's exit date from the WIA/WIOA programs and services, which are not necessarily continuous, but discrete with gaps, in many cases. Also, a few days' exiting date difference does not necessarily result in an EER change. Therefore, the panel specific (by individual participant) serial autocorrelation concern was eliminated after the tests.

The Multilevel Mixed-Effects Regression Models

Three different types of regression models are used to test the hypotheses and test the robustness of the estimates. We started with simple logistic regression models estimated by the maximum likelihood methods, considering the binary nature of the dependent variables. Then considering the hierarchical nature of the data, we estimated mixed-effects regression models with linear probability estimate for the dependent variables. In the end, to integrate the advantage of logistic regression for binary dependent variables and the complexity of hierarchical nature of the data, a set of multilevel mixed-effects logistic regression models are estimated to capture the log of odds to be employed for our dependent variable (i.e., logit) and to control for the correlations at the WIB areas and at the policy structure level across states. The multilevel mixed-effects logistic regression models incorporates both fixed effects and random effects. We want to observe not only variations across specific individuals (fixed individual effects) but also variations across local WIB areas and across states (random WIB area and state effects). We want to observe both fixed and random effects on the binomial entered employment propensity (i.e., EER, as discussed above) across individuals who are living in different WIB areas or states—thus, our choice of multilevel mixed-effects logistic regressions.

Multilevel mixed-effects logistic regressions have been used extensively in various social science studies, such as Ng, Carpenter, Goldstein, and Rasbash (2006), which analyzed a Bangladeshi fertility survey; and Rabe-Hesketh and Skrondal (2012), which analyzed school data from Scotland. Rabe-Hesketh, Skrondal, and Pickles (2005) provide an excellent econometric survey on multilevel models with binary outcomes. As StataCorp (2015) notes, log-likelihood calculations for fitting any generalized mixed-effects model require integrating out the random effects.

The following equation briefly exhibits the multilevel mixed-effects model. Please note that the left hand side of the model is measuring older workers' EER. The right side of the equation measures program attributes, unemployment rates, and demographic-socioeconomic-program participation attributes:

$$EER_{itws} = \beta_0 + \beta_1 P_{itws} + \beta_2 U_{itws} + \gamma DS_{itws} + f(t-k) + \epsilon_{itws} + \mu_{itws} + \delta_{itws} + \zeta_{itws},$$

where

EER measures the entered employment probability, or log of odds in the logistic regression models, of entered employment (EE, a binary variable) during the first 3 months after an individual participant exited the program on the exiting date *t*.

P represents the WIA/WIOA program characteristics, including the aforementioned program types, training types, or occupational categories.

U is the unemployment rate level measure.

DS represents participants' individual characteristics, including aforementioned demographic, socioeconomic, and other workers' individual background information.

f(t) is a vector to capture the time effect, if there is any. In this case, it includes all the program year dummy variables to capture the time-varying unobserved factors.

Subscripts *i*, *t*, *w*, and *s* respectively specify individual workers, the exiting date, WIB areas, and state.

$\beta_0, \beta_1, \beta_2, \gamma,$ and f are the regression parameters.

$\varepsilon, \mu, \delta,$ and ζ are the error terms.

Dislocated Workers vs. Adults

The WIA/WIOA program have two different target population groups: *adults* and *dislocated workers*. Compared to dislocated workers, adults include all adults who are age 18 and above; the adult program is targeted to enhance adult workers' entered employment rate, employment retention, earnings and occupational skills, quality of the workforce, and reduced dependency on government-funded welfare and assistance programs. The priority for intensive and training services are given to low-income individuals and individuals receiving government assistance and with limited resources (ETA 2017d).

Dislocated workers instead refer to individuals who have been or to be terminated or laid off (particularly for business closures or structural unemployment reasons), who are eligible for or have exhausted unemployment insurance, who are unlikely to return to a previous industry or occupation, or who are displaced homemakers who are no longer supported by other family members (ETA 2017d). For them, job placement assistance and skill assessments and counseling could be helpful.

Dislocated workers are often better attached to the labor market than adults and could differ from adult workers in many perspectives, such as wage levels, skill levels, and prior attachment to the labor market. The study therefore model them separately. Two separate and independent datasets with unrelated attributes between dislocated worker participants and adult participants in the WIA/WIOA programs are drawn. They are estimated separately.⁹

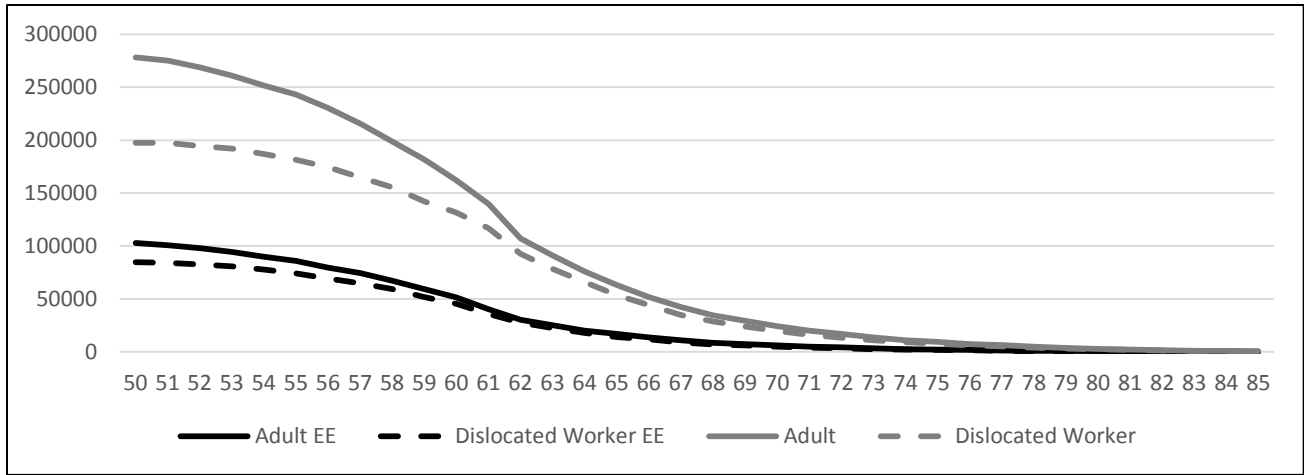
Older Workers' Workforce Program Participation: Descriptive Statistics

This section describes characteristics of the observed workers. Figure 1 (next page) first exhibits older workers' overall demographic composition by age in the WIA/WIOA program. According to the WIASRD data, among those older worker participants who exited WIA/WIOA programs in 2011 through 2016, there were more older adult participants than older dislocated worker participants.¹⁰ As a result, this dataset also shows that the number of older adults' entered employment is higher than that of older dislocated workers, though it does not mean older adults have a higher EER than older dislocated workers. In fact, as Table 2 (next page) shows, the EER among older dislocated workers is slightly higher (55%) than that among older adults (54%).

As *age* increases, program participation sharply decreases. There could be several reasons. First, as age increases and health conditions decline, older workers are less likely to participate in the labor market and less likely to seek training for a potential future job or job change. BLS (2017c) shows clearly that older individuals' labor force participation decreases with age. Second, as age increases, accessibility becomes a rising concern for some seniors to physically access local Workforce Investment Board offices, one-stop centers, and other facilities for training. Third, the WIA/WIOA program was in place for only about 15 years at the time the data were collected. This could result in limited awareness of training options among older workers. This limited awareness could be even more limited for older workers as age increases.

Table 2 exhibits the summary statistics for key variables we observe, with more details in the Appendix Table A1. The older workers in this study has a mean age at 57, are mostly (53%) male and white (68%), with limited representation in disabilities (7%), veterans (13%), offenders (4%), or limited English skills (1%). Poverty is an issue among those older workers. Despite limited representation in the TANF program (1%), homeless (2%), or receiving SSI or SSDI (2%), 16% received other public assistance, and 30% were low-income individuals.

FIGURE 1
Older WIA/WIOA Program Exiters, Adults vs. Dislocated Workers Overview by Age



Data Source: WIASRD 2013-2015 Data

TABLE 2
Selected Participants and Participation Attributes

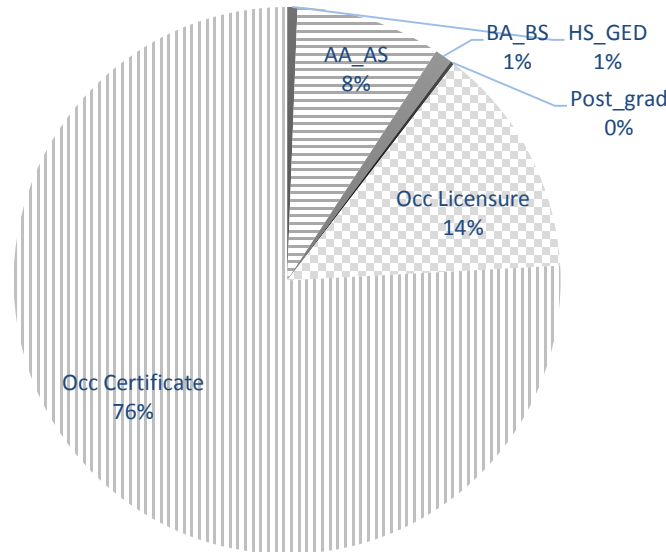
Variable	Obs	Mean	Std. Dev.	Min	Max
Adult EER	1,537,063	0.5397	0.50	0	1
Disl. Worker EER	1,272,513	0.5540	0.50	0	1
Adult	3,700,241	0.7078	0.45	0	1
Dislocated worker	3,700,241	0.5419	0.50	0	1
Demographics					
age	3,700,096	57.08	5.80	50	99
male	3,658,684	0.5298	0.50	0	1
Socioeconomic Status					
disabled	3,364,060	0.0663	0.25	0	1
veteran	3,699,555	0.1263	0.33	0	1
low income	3,001,450	0.3027	0.46	0	1
TANF	702,211	0.0089	0.09	0	1
SSDI	2,954,313	0.0207	0.14	0	1
other Public Assis	715,082	0.1582	0.36	0	1
homeless	706,194	0.0228	0.15	0	1
offender	718,534	0.0440	0.21	0	1
limited English	3,060,640	0.0119	0.11	0	1
Program Participation Information					
Wagner-Peyser Act	3,700,241	0.9139	0.28	0	1
Veterans program	393,025	0.3937	0.49	0	1
Received training	3,700,241	0.0977	0.30	0	1
Supportive scvs	3,700,241	0.0525	0.22	0	1
participation length	3,700,241	175.07	267	0	5481

For the program participation status, unsurprisingly, almost all participants (91%) received financial assistance services under the Wagner-Peyser Act, but only 10% received training and 5% received supportive services. While 39% received financial assistance services by both the LVER¹¹ Program and DVOP,¹² few received financial assistance services from other programs.

The mean program participation duration¹³ is 175 days, but the standard deviation is almost 9 months. The longest participation duration last for 15 years. Many occurrence of long training lengths were from the youngest cohorts among senior WIA/WIOA participants.

Figure 2 shows education and credential information for the older workers. Almost half of them (43%) have gained occupational skills through certificates and 8% through licensure. However, only 5% reported having an associate’s degree, 1% a bachelor’s degree, and less than 1% had other educational attainment levels (high school or post-graduate degrees).

FIGURE 2
Education Attainments and Credentials



Data Source: WIASRD 2013-2015 Data

For the program participation, Figure 3 (next page) shows most older workers (67%) received other occupational skill training, 16% for skill upgrade training, 11% for on-the-job training, 5% accepted customized training, and few received adult and basic education or English as a second language training, or Entrepreneurial Training. For the occupational categories of training (Figure 4, next page), over 1/3 (38%) accepted management, administrative, professional and technical job skill training, 29% for mechanical transportation and military job trainings, 17% were in sales, clerk and administrative support job skill trainings, 13% were in service work trainings, and 3% in agricultural, construction and extraction job trainings.

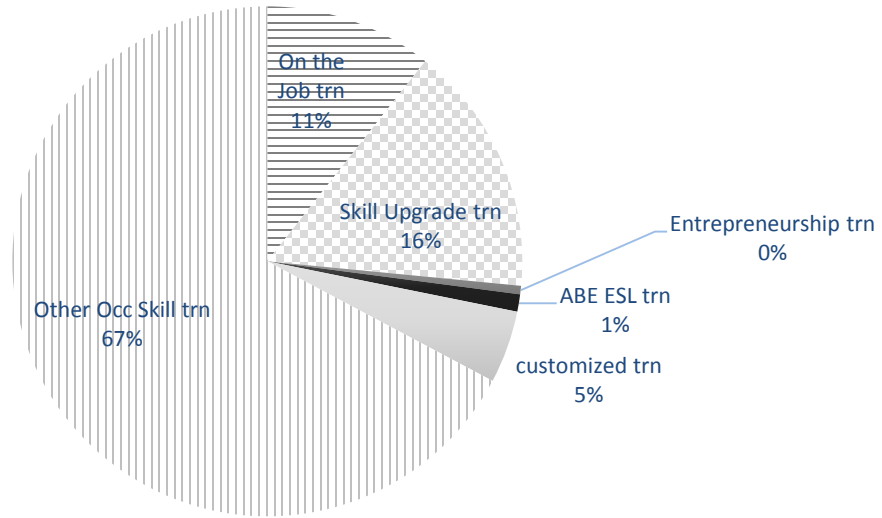
Older Adults vs. Older Dislocated Workers

As expected, dislocated workers are typically more attached to the labor market, has better and more knowledge-based skills, and therefore better off. Table 3 (two pages hence) exhibits the summary statistics for the t-tests, with more details provided in the appendix (Table A2). Compared to older adults, older dislocated workers were slightly older, with a slightly lower proportion of males and higher education attainment and occupation certificates but slightly lower occupation licensure; were more likely to be Hispanic, non-Hispanic Asian, or Caucasian; less likely to be non-Hispanic African American, Hawaiian, Pacific islanders, or American Indian; and less likely to be disabled, homeless, offenders, veterans, low-income, or receive SSDI or other public assistance, but slightly more likely to have limited English and a longer average program participation duration.

In terms of program participation attributes, compared to older adults, older dislocated workers are more likely to receive financial assistance services under the Wagner-Peyser Act, more likely to receive

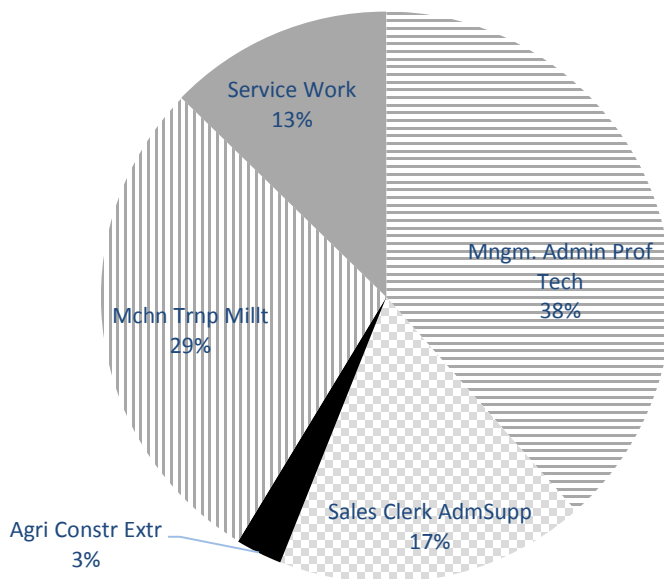
supportive services or trainings, more likely to receive services from veterans programs, TAA or NEG, and less likely to receive services from SNAP E&T and Pell grant.

FIGURE 3
Proportions Participating in Different Training Types



Data Source: WIASRD 2013-2015 Data

FIGURE 4
Proportion of Different Occupational Categories of Training



Data Source: WIASRD 2013-2015 Data

PROCEEDINGS OF THE LERA 2017 MEETINGS

Compared to older adults, older dislocated workers tend to have better skills and participate in more high skill concentrated or knowledge-based occupation trainings. As Table 3 (next page) shows, older dislocated workers are also more likely to participate in management, administrative, professional, technical, or sales, clerk, and administrative support job trainings and less likely to participate in agricultural, construction, extraction, mechanical, transportation, military, and service work trainings.

TABLE 3
Participants and Participation Attributes Comparison, Older Dislocated Workers vs. Older Adults

Variable	Dislocated Worker			Adult			Sig
	Obs	Mean	SD	Obs	Mean	SD	
Demographics							
age	2,005,297	57.3	5.86	2,618,857	57.0	5.77	***
male	1,983,535	0.517	0.50	2,597,596	0.540	0.50	***
Socioeconomic Status							
Education attainment							
HS_GED	241,241	0.004	0.07	156,573	0.003	0.06	insig.
AA_AS	241,241	0.059	0.24	156,573	0.035	0.19	***
Post_grad	241,241	0.002	0.05	156,573	0.001	0.04	***
Occ Licensure	241,241	0.071	0.26	156,573	0.081	0.27	***
Occ Certificate	241,241	0.419	0.49	156,573	0.399	0.49	***
Race/Ethnicity							
Hispanic	1,892,186	0.095	0.29	2,501,712	0.079	0.27	***
Non-Hispanic Asian	1,892,186	0.034	0.18	2,501,712	0.021	0.14	***
Non-Hispanic African American	1,892,186	0.131	0.34	2,501,712	0.167	0.37	***
Non-Hispanic American Indian	1,892,186	0.007	0.08	2,501,712	0.012	0.11	***
Non-Hispanic White	1,892,186	0.712	0.45	2,501,712	0.698	0.46	***
disabled	1,778,818	0.049	0.22	2,363,156	0.076	0.26	***
veteran	2,004,878	0.116	0.32	2,618,742	0.140	0.35	***
low income	1,634,797	0.275	0.45	2,285,271	0.348	0.48	***
SSDI	1,575,988	0.013	0.11	2,242,502	0.025	0.16	***
other Public Assis	167,391	0.111	0.31	702,120	0.161	0.37	*
limited English	1,697,145	0.013	0.11	2,242,708	0.010	0.10	***
participation duration	2,005,327	205	291	2,618,993	146	239	***
Program Participation Information							
Wagner-Peyser Act	2,005,327	0.924	0.27	2,618,993	0.918	0.27	***
SNAP E&T	1,787,404	0.001	0.03	2,168,917	0.003	0.06	***
Pell Grant	244,973	0.037	0.19	157,542	0.045	0.21	**
Supportive scvs	2,005,327	0.059	0.23	2,618,993	0.036	0.19	***
Received training	2,005,327	0.122	0.33	2,618,993	0.060	0.24	***
Veterans program	177,967	0.423	0.49	297,089	0.352	0.48	***
TAA_NAFTA	1,922,584	0.032	0.18	2,448,283	0.007	0.09	***
NEG	2,005,327	0.004	0.07	2,618,993	0.001	0.03	***
Training Type							
On-the-Job trn	2,005,327	0.013	0.11	2,618,993	0.007	0.08	***
Skill Upgrade trn	2,005,327	0.020	0.14	2,618,993	0.009	0.10	***
Entrepreneurship trn	2,005,327	0.001	0.03	2,618,993	0.000	0.02	***
customized trn	2,005,327	0.001	0.04	2,618,993	0.005	0.07	***
Other Occ Skill trn	2,005,327	0.085	0.28	2,618,993	0.037	0.19	***
Occupational Categories of Training							
Mngm. Admin Prof Tech	216,815	0.410	0.49	138,181	0.336	0.47	***
Sales Clerk AdmSupp	216,815	0.189	0.39	138,181	0.160	0.37	***
Agri Constr Extr	216,815	0.025	0.16	138,181	0.030	0.17	***
Mchn Trnp Millt	216,815	0.265	0.44	138,181	0.323	0.47	***
Service Work	216,815	0.110	0.31	138,181	0.152	0.36	***

Empirical Findings: Regression Model Estimates

This section focuses on testing which factors affect older workers' entered employment (EE) probability after exiting the WIA/WIOA programs. When aggregating EE probability for a group of exiters, it becomes EER. We therefore use EER in the rest of the text to simplify the description. Table 4 (next page) displays the model estimates for older dislocated workers, and Table 5 (two pages hence) for older adults.¹⁴ Each table presents estimates for the three different types of models: simple logistic regression model, mixed-effects logistic regression model, and multilevel mixed-effects logistic regression model. Please note that the coefficients presented for the former two model types are odds ratios, differing from the last model. Overall, across both sets of models, our estimates are highly similar and consistent. This reflects statistical rigor.

As shown in Table 4, overall the three models testing on older dislocated workers show consistent estimates. After dropping observation with missing values across all variables, only around 860 observations retained. Although the log-likelihood ratio test for multilevel models did not show statistical difference for the estimates compared to the simple logistic regression models, the variance controlled at the WIB Area levels shows statistical significance. The pseudo r-squared showed that the simple logistic regression estimates roughly explain 16% variability in older dislocated workers' EER.

Our findings in Table 4 supports our Hypothesis 1 among older dislocated workers. For program participation attributes, receiving financial assistance services under the Wagner-Peyser Act reduced EER, and this is consistent across all three models. The Wagner-Peyser Act of 1933, known as the Employment Service, established a nationwide system of public employment offices and went through amendments in 1998 as part of the one-stop delivery system under the WIA and in 2014 to align performance accountability indicators with other federal workforce programs under the WIOA (ETA 2017e). Employment services provided with Wagner-Peyser Act funding are available to all job seekers and employers (O'Leary and Ebert 2008). Many of the participants under Wagner-Peyser use either self-assisted services or staff-assisted services. This limited intensity of service, compared to intensive training, is unsurprisingly associated with lower EER.

Supportive service contributed to higher EER, according to the logistic regression and the multilevel mixed-effects model, though with limited statistical significance ($p=0.1$). The supportive services include, but are not limited to, assistance with transportation, child care, dependent care, and housing that are necessary to enable the individual to participate in activities authorized under WIA/WIOA Title IB. For those older workers who have accessibility issues or with responsibility for children, this could be helpful.

For different training types, on-the-job training, skill upgrade training, and adult basic education and English as a second language training are shown to be highly effective to enhance EER among older dislocated workers. This is particularly so for on-the-job training. Participating in on-the-job training increased the EER by 22 folds according to the mixed-effects logistic regression model and by 19 folds according to the simple logistic regression model, by 54% according to the multilevel mixed-effects regression model, holding all other variables constant. On-the-job training connects workers directly with job skills needed in the market and may also equip trainees with the necessary network. This could greatly enhance job placement odds. The skill upgrade training, and adult basic education and English as a second language training are also highly effective, though the effects are not as strong as the on-the-job training. Since dislocated workers are often structurally unemployed workers, skill upgrading, updating, and retraining could be beneficial to find a new job.

To test the Hypothesis 2 among older dislocated workers, the monthly state unemployment rate did not have statistically significant effect (at $p=0.1$) on EER. Compared to adults or other participants, dislocated workers are relatively better off and therefore are less vulnerable to business cycle changes. The study focus on the post-recession economic recovery period. The slight downturns during the recovery might not have a strong enough consistent impact on dislocated workers. However, this effect could be more sensitive among older adults.

TABLE 4
Regression Estimates for Older Dislocated Workers

	Mixed-Effects Logistic Regression	Simple Logistic Regression	Multilevel Mixed-Effects Regression
	Odds Ratio	Odds Ratio	Coef.
Unemployment Rate	1.02	1.00	0.00
Demographics			
age	0.92 ***	0.92 ***	-0.02 ***
male	0.70	0.74	-0.07
Race/Ethnicity			
Asian_nonH	0.09 *	0.10 *	-0.50 **
American Indian nonH	0.11	0.10	-0.39 *
Other race/ethnic variables that are insignificant: Hispanic, non-Hispanic African Americans, non-Hispanic Hawaiian Pacific Islanders, and non-Hispanic White.			
Socioeconomic Status			
Education attainment			
HS_GED	4.50	4.38	0.29
AA_AS	0.41 **	0.46 **	-0.17 ***
BA_BS	1.71	1.43	0.10
Occ_Licensure	1.71 *	1.73 *	0.09 *
Occ_Certificate	1.02	1.02	0.00
homeless	0.27 *	0.30 *	-0.23 *
limited English	1.00	1.00	0.41 *
<i>Other socioeconomic variables that have insignificant effects:</i> disabled, veteran, low income, TANF, SSDI, Other_PubAssis, offender, participation duration.			
Program Participation Information			
Wagner-Peyser Act	0.21 ***	0.21 ***	-0.22 ***
Supportive svcs	1.45	1.49 *	0.07 *
Needs-Related Payments	1.00	1.00	0.00
<i>Other program participation information with insignificant effects:</i> Pell Grant, distance learning, Received training, Veterans program, TAA/NAFTA, ARRA, apprentice training, other basic skill Training, NEG, and Older American Act 1998.			
Training Type			
On-the-Job training	22.65 ***	20.23 ***	0.54 ***
Skill Upgrading training	9.17 **	8.34 **	0.47 **
Entrepreneurship training	1.00	1.00	0.00
ABE ESL training	19.28 *	18.38 *	0.58 **
Customized training	4.50	4.16	0.33
Other Occ Skill training	4.77	4.52	0.33 *
<i>Occupational categories of training:</i> Insignificant occupational categories of training: Management Admin Professional Technician, Sales Clerk Admin support, Service Work, Mechanics Transportation Military			
Year dummies for year 2011 (***, +), 2012, 2013 (***, -), 2014, 2015			
Constant	929 ***	1039 ***	2 ***
State			
var(_cons) or SD	4E-37 .		1E-10 10
# of groups, # obs per group	8, 107		8, 9
State>WIB area			
var(_cons) or SD	0.08 **		0.05 **
# of groups, # obs per group	91, 9		91, 10
sd(Residual)			0.42 **
LR test vs. logistic (or linear) model	0.7		0.74
# of Obs	856	856	863
Integration method, Integration Point	Mvaghermite, 7		
Wald chi2(47)	119.09 ***		196.35 ***
Log likelihood =	-451	-451	-477
LR chi2(48)		173 ***	
Pseudo R2		0.16	

TABLE 5
Regression Estimates for Older Adults

	Mixed-Effects Logistic Regression	Simple Logistic Regression	Multilevel Mixed-Effects Regression
EER	Odds Ratio	Odds Ratio	Coef.
Unemployment Rate	0.81 **	0.78 ***	-0.04 **
Demographics			
age	0.93 ***	0.94 ***	-0.01 ***
male	0.85	0.84	-0.03
Race/Ethnicity			
Non-Hispanic Asian	0.14 **	0.16 *	-0.41 **
<i>Other race/ethnic variables that are insignificant:</i> Hispanic, Non-Hispanic African American, Non-Hispanic Hawaiian Pacific Islander., Non-Hispanic American Indian, Non-Hispanic White			
Socioeconomic Status			
Education attainment			
HS_GED	1.00	1.00	0.43 *
AA_AS	0.86	0.89	-0.03
BA_BS	2.08	1.84	0.16
Occ_Licensure	2.20 ***	2.33 ***	0.14 ***
Occ_Certificate	1.15	1.21 *	0.03
disabled	0.71 **	0.71 **	-0.07 **
veteran	2.27	2.69 *	0.15
TANF	2.94	2.97	0.20 *
Other Public Assistance	0.72 **	0.71 **	-0.07 **
homeless	0.61 *	0.58 **	-0.10 **
participation duration	0.9995 ***	0.9995 ***	-0.0001 ***
<i>Other socioeconomic variables that have insignificant effects:</i> SSDI, low income, offender, limited English			
Program Participation Information			
Needs-Related Payments	0.05 **	0.05 **	-0.56 ***
<i>Other program participation information with insignificant effects:</i> Pell Grant, distance learning, Received training, Veterans program, TAA/NAFTA, ARRA, apprentice training, other basic skill Training, NEG, Wagner-Peyser Act, Older American Act 1998, Supportive svcs.			
Training Type			
On-the-Job training	13.59 ***	9.53 **	0.49 ***
<i>Other insignificant training type variables:</i> Skill Upgrading training, Entrepreneurship training, ABE ESL training, customized train, Other Occupational Skill training			
Occupational Categories of Training			
Training Mechanic Transportation			
Military	1.54 *	1.53 *	0.08 *
<i>Other insignificant occupational categories of training:</i> Management Admin Professional Technician, Sales Clerk Admin Support, Service Work			
Year dummies for year 2011 (***, +), 2012, 2013 (***, -), 2014, 2015			
Constant	42 **	58 ***	1 ***
State			
var(_cons) or SD	2E-03 **		3E-06 **
# of groups, # obs per group	9, 264		9, 265
State>WIB area			
var(_cons) or SD	0.13		0.07 **
# of groups, # obs per group	145, 16		145, 17
sd(Residual)			0.44 **
LR test vs. logistic (or linear) model:	17.08 ***		17.7 ***
# of Obs	2380	2380	2387
Integration method, Integration Point	Mvaghermite, 7		
Wald chi2(47)	226.88 ***		302.06 ***
Log likelihood =	-1361	-1369	-1434
LR chi2(48)		301 ***	
Pseudo R2		0.10	

For demographic control variables, older ages are associated with a lower entered employment (EE) probability, controlling for all other variables. In the mixed-effects logistic regression and simple logistic regression, both show that being one year older reduced the odds of being employed during the first quarter after exiting the program by 8%; consistently, in the multilevel mixed-effects regression model, older age is related to a lower EE probability. Gender does not display an effect on older dislocated workers' EER. Compared to mixed races, being non-Hispanic Asian reduced the EER; being non-Hispanic American Indian reduced the EER only for the multilevel mixed-effect regression mode (at $p=0.1$). Zhang (2011) found that African American older workers were the most vulnerable group in terms of EER, using WIASRD 2007 data; however, this is not the case anymore. This could be related to the recent years' effective policy implementation to empower African Americans. Although Asians' limited EER could be associated with a longer search period for better-fit jobs or could be associated with cultural and language adaptation if they were immigrants, certain policy attention and investigation of Asian older workers could be useful.

The socioeconomic control variable effects are consistent across all the three models. Education and credentials are important to employment. While having attained an associate's degree reduced the EE odds, having occupational licensure increased the EE odds. Homeless older dislocated workers have lower EER.

Table 5 presents the estimates for older adults. Overall, the three models testing on older dislocated workers again show consistent and highly similar estimates. About 2380 or 2387 observations are retained for the model estimates across all variables. The log-likelihood ratio test for the multilevel model estimates this time showed clear statistical difference, compared to the simple logistic regression models; the variance controlled at both the state and the WIB area levels also showed statistical significance. Therefore, multilevel modeling displays advantage over simple logistic model among older adults. The pseudo r -squared showed that the simple logistic regression estimates roughly explain 10% variability in older dislocated workers' EER.

Our Hypothesis 1 is again supported among older adults, though with the mechanism somewhat different from that among older dislocated workers. Consistent with the findings among older dislocated workers, on-the-job training is highly effective in enhancing older adults' EER as well. Participating in on-the-job training enhances older adults' EER by 9 or 13 folds, according to respectively the simple logistic regression and the mixed-effects logistic regression models, or by 49%, according to the multilevel mixed-effects regression estimate. On-the-job training connects skills better with job contents, markets, and network, which could benefit job hunting. Differing from the findings among older dislocated workers, none of the other training types matter to the older adults' EER. While skill upgrading could help dislocated workers who typically have better skills to be upgraded upon, skill upgrading does not seem to work well among older adults.

Although none of the occupation categories of training matters to older dislocated workers, participating in mechanical, transportation, and military skill training enhances older adults' EER. Older adults are less driven by the knowledge-based economic skills, as our descriptive statistics showed earlier; however, training them with skills that are more physical could help them place a job.

While receiving need-related payments does not matter to older dislocated workers, older adults receiving need-related payments have lower EER. This is a particularly vulnerable subgroup among older adults and particularly need assistance in financial, human, and social capitals.

Among older adults, those who participated in the program for a longer time period tend to have a reduced EER. This effect is highly significant (at $p<0.01$). The magnitude seems very small—for the odds ratio; it is almost 1, which means no effect; for the multilevel mixed-effect regression, it is close to 0. However, the magnitude is relatively to a day's change. If changing the participation duration scale to a month or a year, the magnitude would become much larger.

Among older adults, the cyclical effects in our Hypothesis 2 is evident, different from the aforementioned findings among older dislocated workers. Older adults' EER were impacted by the monthly state unemployment rate, controlling for other variables. As mentioned earlier, adults are socioeconomically worse off than dislocated workers, less attached to the labor market, and therefore are typically more vulnerable to labor market changes.

For the demographic control variable effects, the findings were the same among older dislocated workers: older age and being non-Hispanic Asians again are both associated with lower EER among older adults. For education and credentials, compared to older dislocated workers, academic degrees do not matter as much among

older adults. As indicated earlier, older adults are typically less-educated than older dislocated workers. Among older adults, having a high school or equivalent degree seems to be associated with better EER only in the multilevel mixed-effects regression model with limited statistical significance (at $p=0.1$), but this is insignificant for mixed-effect logistic regression or simple logistic regression models. However, occupation licensure again shows a strong positive effect in enhancing EER. Having occupational licensure increases the EER by 1.2 to 1.3 fold, according to the simple and mixed-effects logistic regression models and increase the probability by 14% according to the multilevel mixed-effect regression model. Among older adults, occupational certificate also display a potential positive effect on EER in the simple logistic regression, though with limited statistical significance ($p=0.1$).

Since adults are socioeconomically worse off than dislocated workers, the most vulnerable include the disabled, veterans, TANF recipients, the homeless, and those receiving other public assistance programs and receiving needs-related payments. They therefore had a lower EER. Those vulnerable subpopulation groups deserve more policy support.

Conclusion

This paper relies on the WIASRD 2013-2015 data and BLS unemployment data and adopts three types of logistic regression models to identify factors associated with older workers' EER after exiting WIA/WIOA programs. The three models are respectively simple logistic regression, mixed-effects regression, and multilevel mixed-effects logistic regression models. The three model types are estimated separately for older dislocated workers and older adults.

Main Findings

Findings across the simple logistic regression, mixed-effects regression, and multilevel mixed-effects logistic regression models are highly similar and consistent. This demonstrates statistical rigor of our data and modeling. Multilevel mixed-effects modeling shows some advantage in either log-likelihood ratio tests or in controlling variance at a higher analysis level (either at the WIB area level or at the state level). Although pseudo r-squared is not super high, it stays at 10% or 16% for the simple logistic regression; for an individual-level study with a high level of unobserved heterogeneity across individual participants, this is acceptable.

Our findings support our first hypothesis among both older dislocated workers and older adults, but support our second hypothesis only among older adults. For the findings on Hypothesis 1, on-the-job training is particularly effective for a better EER. Participating in the on-the-job training greatly increases an older participant's EER by up to 22 folds. On-the-job training directly connect trainees to job skills in demand and related social networkd, which turns out to be highly effective. Our models also show that supportive services, skill upgrade training, and adult basic education and English as a second language training are not helpful to older adults, but they are effective in enhancing older dislocated workers' EER. Older dislocated workers are socioeconomically better off, and they have different needs from older adults. With adequate skills for jobs, offering supportive services, such as transportation assistance or childcare, or even care for other family members, could relieve older dislocated workers from barriers to go to work. Skill upgrade training helps dislocated worker who are typically structurally unemployed to upgrade and update their skills. Adult basic education and English training could help older immigrants or older workers who have strong learning desire and capability to advance well. Those programs, located often either at workforce training centers or community colleges, could be relatively small but effective.

Since older adults are more likely to concentrate on less knowledge-based jobs, targeting funds for their needs should orient them more toward the skills they have historical background in. For example, our models shows that participating in mechanical, transportation, and military skill trainings evidently help older adults to have a higher EER. Training funds for older adults can be more oriented toward those occupational categories of training.

For the program participation duration, although older dislocated workers have a longer average participation duration, long participation duration among dislocated workers did not affect their EER. However, long participation duration among older adult workers affected their EER. This implies the importance of monitoring participation duration particularly among older adults to limit repeating services and redundant programs to the same individuals. Also, follow-up and monitoring using Big Data tools can help identify the people who have multiple spells and whether the multiple spells are for the different services and whether that is necessary.

For findings on Hypothesis 2, our models show that a higher unemployment rate reduces older adults EER, while older dislocated workers are not sensitive to the monthly state unemployment rate change. Older adults are particularly vulnerable in the post-recession labor market cyclical changes. Older adults are more socioeconomically vulnerable and therefore could be more affected in an economic downturn. They are also more likely than older dislocated workers to have mobility limitation. Local state labor market conditions could be more important to them. Therefore, equipping older adults with better job information flow could help expose them to more job opportunities and make them less vulnerable to local job conditions.

Policy Implications

The empirical tests identify policy implications. The findings suggest a need to draw policy attentions in several specific directions. For older adults, on-the-job training and trainings on mechanical, transportation and military skills can help them most effectively. Following up and monitoring older adults program participation duration using Big Data or other methods and try to reduce unnecessary redundant services could help enhance the cost effectiveness of the program.

For older dislocated workers, on-the-job training, skill upgrade training, adult basic education, and English as a second language training are the most effective training methods. Focusing on supportive services is important to help remove their barriers to employment.

Consistent with expectations, our data show that older adults are socioeconomically more vulnerable than older dislocated workers. Particularly older adults who are disabled, veterans, recipients of TANF, needs-related payments, or other public assistance are the one with a lower EER; they need more policy support. Those who are older, homeless and non-Hispanic Asian were found in this study with lower EER and therefore deserve policy attention for better assistance. Those who with occupational licensure or participated in on-the-job training were found to have a higher EER. Occupation oriented licensure are very effective in the job market among older Americans.

Implications on Training Methods

Our literature review suggests implications on training methods for older workers. Due to path dependency, trainings based on previous job experience and skills could be more effective. With older workers' decreasing vision and hearing, high contrast settings for print or computer screens or audio setting can help stimulate visual and audio learning. Also as Fisk et al. (2004) suggested, matching the instructional technique and medium would help; performing more action based hand-on procedural training, instead of conceptual could not only be more interesting to trainees, but useful to enhance training effectiveness for older trainees. Allowing extra time, such as 1.5 to 2 times of the training time expected for younger adults, to process information is suggested by Charness and Czaja (2006). Also, considering the fact that many older workers have not looked for a job in recent years, job search and interview skills training would be useful as well.

Future Research Directions

Further exploration on other potential factors, such as industry details, more occupational details, and spatial effects, could be helpful to add more nuances. Different industry and occupational setting may require different training mechanisms to be the most effective. An analysis detailed down to industry and occupational level may reveal important implications.

While the Web technically advances fast, often the hands-on trainings only occur locally. Also, the local labor market might have a spatial spillover effect that results in a certain level of spatial autocorrelation. People search jobs across states or metropolitan areas. Therefore, a follow-up study with focus on the spatial effects and with spatial controls could add value to understand what helps make workforce programs better.

Exploring temporal changes across the years, particularly after the WIOA started, could be another interesting extension. This study captures the beginning period of WIOA era, but is mostly still under WIA. In a few years when data on WIOA program participation are available, an investigation on the policy change from WIA to WIOA could be another avenue of value-added research for further policy and practice implications.

Appendix

TABLE A1
Description of Variables for Older WIA/WIOA Program Participants Who Are Dislocated Workers

Variable	Obs	Mean	Std. Dev.	Min	Max
Adult EER	1,537,063	0.54	0.50	0	1
Disl. Worker EER	1,272,513	0.55	0.50	0	1
adult	3,700,241	0.71	0.45	0	1
Dislocated worker	3,700,241	0.54	0.50	0	1
Demographics					
age	3,700,096	57.08	5.80	50	99
male	3,658,684	0.53	0.50	0	1
Socioeconomic Status					
Education attainment					
HS/GED	357,022	0.00	0.07	0	8
AA/AS	357,022	0.05	0.22	0	8
BA/BS	357,022	0.01	0.08	0	8
Post-grad	357,022	0.00	0.05	0	8
Occ Licensure	357,022	0.08	0.27	0	8
Occ Certificate	357,022	0.43	0.50	0	8
Race/Ethnicity					
Hispanic	3,505,214	0.09	0.29	0	1
Non-Hispanic Asian	3,505,214	0.03	0.17	0	1
Non-Hispanic Black	3,505,214	0.17	0.37	0	1
Non-Hispanic Hawaiian & Pacific Islander	3,505,214	0.00	0.05	0	1
Non-Hispanic American Indian	3,505,214	0.01	0.10	0	1
Non-Hispanic White	3,505,214	0.68	0.47	0	1
disabled	3,364,060	0.07	0.25	0	1
veteran	3,699,555	0.13	0.33	0	1
low income	3,001,450	0.30	0.46	0	1
TANF	702,211	0.01	0.09	0	1
other Public Assis	715,082	0.16	0.36	0	1
homeless	706,194	0.02	0.15	0	1
offender	718,534	0.04	0.21	0	1
limited English	3,060,640	0.01	0.11	0	1
Program Participation Information					
vocational educ	3,015,535	0.00	0.01	0	1
Wagner-Peyser Act	3,700,241	0.91	0.28	0	1
Older American Act 1998	2,985,897	0.00	0.01	0	1
SNAP E&T	3,050,422	0.00	0.05	0	1
Pell Grant	361,357	0.04	0.19	0	1
distance learning	361,357	0.00	0.06	0	1
Supportive service	3,700,241	0.05	0.22	0	1
Need based service	1,276,196	0.00	0.06	0	1
Receiving Training	3,700,241	0.10	0.30	0	1
SSDI	2,954,313	0.02	0.14	0	1
Veterans program	393,025	0.39	0.49	0	1
TAA_NAFTA	3,491,786	0.02	0.14	0	1
Vocational Rehabilitation	2,995,448	0.00	0.02	0	1
ARRA	3,700,241	0.04	0.19	0	1
Other Program	3,700,241	0.01	0.09	0	1
apprentice training	3,700,241	0.00	0.00	0	1
other basic skill training	3,700,241	0.00	0.00	0	1
NEG	3,700,241	0.00	0.05	0	1

Table A1 continues, next page

PROCEEDINGS OF THE LERA 2017 MEETINGS

Variable	Obs	Mean	Std. Dev.	Min	Max
Training Type					
On-the-Job Training	3,700,241	0.01	0.10	0	1
Skill Upgrade Training	3,700,241	0.02	0.12	0	1
Entrepreneurship Training	3,700,241	0.00	0.02	0	1
ABE ESL Training	3,700,241	0.00	0.03	0	1
customized Training	3,700,241	0.00	0.07	0	1
Other Occupational Skill Training	3,700,241	0.06	0.25	0	1
Occupational Categories of Training					
Management Admin Prof Tech	319,302	0.38	0.49	0	1
Sales Clerk Admin Support	319,302	0.18	0.38	0	1
Agricultural Construction Extraction	319,302	0.03	0.16	0	1
Mechanics Transportation Military	319,302	0.29	0.45	0	1
Service Work	319,302	0.13	0.33	0	1
Participation. length	3,700,241	175	267	0	5481

TABLE A2
Participants and Participation Attributes Comparison, Older Dislocated Workers vs. Older Adults

Variable	Dislocated Worker			Adult			Sig
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	
Adult EER	568,555	0.552	0.50	1,537,063	0.540	0.50	
Disl. Worker EER	1,272,513	0.554	0.50	568,555	0.552	0.50	
Adult	2,005,327	0.461	0.50	2,618,993	1.000	0.00	
Dislocated worker	2,005,327	1.000	0.00	2,618,993	0.353	0.48	
Demographics							
age	2,005,297	57.3	5.86	2,618,857	57.0	5.77	***
male	1,983,535	0.517	0.50	2,597,596	0.540	0.50	***
Socioeconomic Status							
Education attainment							
HS_GED	241,241	0.004	0.07	156,573	0.003	0.06	insig.
AA_AS	241,241	0.059	0.24	156,573	0.035	0.19	***
BA_BS	241,241	0.007	0.09	156,573	0.004	0.07	insig.
Post_grad	241,241	0.002	0.05	156,573	0.001	0.04	***
Occ Licensure	241,241	0.071	0.26	156,573	0.081	0.27	***
Occ Certificate	241,241	0.419	0.49	156,573	0.399	0.49	***
Race/Ethnicity							
Hispanic	1,892,186	0.095	0.29	2,501,712	0.079	0.27	***
Non-Hispanic Asian	1,892,186	0.034	0.18	2,501,712	0.021	0.14	***
Non-Hispanic African American	1,892,186	0.131	0.34	2,501,712	0.167	0.37	***
Non-Hispanic Hawaiian Pac Isl.	1,892,186	0.002	0.05	2,501,712	0.003	0.05	insig.
Non-Hispanic American Indian	1,892,186	0.007	0.08	2,501,712	0.012	0.11	***
Non-Hispanic White	1,892,186	0.712	0.45	2,501,712	0.698	0.46	***
disabled	1,778,818	0.049	0.22	2,363,156	0.076	0.26	***
veteran	2,004,878	0.116	0.32	2,618,742	0.140	0.35	***
low income	1,634,797	0.275	0.45	2,285,271	0.348	0.48	***
TANF	166,324	0.006	0.07	689,460	0.009	0.09	insig.
SSDI	1,575,988	0.013	0.11	2,242,502	0.025	0.16	***
other Public Assis	167,391	0.111	0.31	702,120	0.161	0.37	*
homeless	169,624	0.015	0.12	690,250	0.023	0.15	insig.
offender	170,456	0.027	0.16	702,533	0.045	0.21	insig.
limited English	1,697,145	0.013	0.11	2,242,708	0.010	0.10	***
participation duration	2,005,327	205	291	2,618,993	146	239	***

Table A2 continues, next page

Variable	Dislocated Worker			Adults			Sig
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	
Program Participation Information							
vocational educ	1,774,228	0.000	0.01	2,145,330	0.000	0.01	insig.
Wagner Pyser Act	2,005,327	0.924	0.27	2,618,993	0.918	0.27	***
Older American Act 1998	1,757,660	0.000	0.01	2,132,913	0.000	0.01	insig.
SNAP E&T	1,787,404	0.001	0.03	2,168,917	0.003	0.06	***
Pell Grant	244,973	0.037	0.19	157,542	0.045	0.21	**
distance learning	244,973	0.004	0.06	157,542	0.002	0.04	insig.
Supportive scvs	2,005,327	0.059	0.23	2,618,993	0.036	0.19	***
Needs-Related Payments	728,089	0.004	0.06	702,564	0.002	0.04	insig.
Received training	2,005,327	0.122	0.33	2,618,993	0.060	0.24	***
Veterans program	177,967	0.423	0.49	297,089	0.352	0.48	***
TAA_NAFTA	1,922,584	0.032	0.18	2,448,283	0.007	0.09	***
ARRA	2,005,327	0.036	0.19	2,618,993	0.039	0.19	insig.
apprentice training	2,005,327	0.000	0.00	2,618,993	0.000	0.00	insig.
other basic skill Training	2,005,327	0.000	0.00	2,618,993	0.000	0.00	insig.
NEG	2,005,327	0.004	0.07	2,618,993	0.001	0.03	***
Training Type							
On-the-Job trn	2,005,327	0.013	0.11	2,618,993	0.007	0.08	***
Skill Upgrade trn	2,005,327	0.020	0.14	2,618,993	0.009	0.10	***
Entrepreneurship trn	2,005,327	0.001	0.03	2,618,993	0.000	0.02	***
ABE ESL trn	2,005,327	0.001	0.03	2,618,993	0.001	0.03	insig.
customized trn	2,005,327	0.001	0.04	2,618,993	0.005	0.07	***
Other Occ Skill trn	2,005,327	0.085	0.28	2,618,993	0.037	0.19	***
Occupational Categories of Training							
Mngm. Admin Prof Tech	216,815	0.410	0.49	138,181	0.336	0.47	***
Sales Clerk AdmSupp	216,815	0.189	0.39	138,181	0.160	0.37	***
Agri Constr Extr	216,815	0.025	0.16	138,181	0.030	0.17	***
Mchn Trnp Millt	216,815	0.265	0.44	138,181	0.323	0.47	***
Service Work	216,815	0.110	0.31	138,181	0.152	0.36	***

References

- Beier, M. E., and Ackerman, P. L. (2005). "Age, Ability, and the Role of Prior Knowledge on the Acquisition of New Domain Knowledge: Promising Results in a Real-World Learning Environment." *Psychology and Aging*, 20, 341-355.
- Brown, S. K. (2003). "Staying Ahead of the Curve 2003: The AARP Working in Retirement Study." *AARP Knowledge Management*: Washington DC.
- Bureau of Labor Statistics (BLS) (2017a). *Labor Force Statistics from the Current Population Survey*. <http://bit.ly/2mOxftr>
- Bureau of Labor Statistics (BLS) (2017b). *Employment Projections: Civilian labor force by detailed age, gender, race, and ethnicity*, <http://bit.ly/2mMHwnW>
- Bureau of Labor Statistics (BLS) (2017c). *Employment Projections: Civilian labor force participation rate by age, gender, race, and ethnicity*. <http://bit.ly/2mOKQiC>
- Carlson, M. C., Hasher, L., Zacks, R. T., and Connelly, S. L. (1995). "Aging, Distraction, and the Benefits of Predictable Location." *Psychology and Aging*, 10, 427-436.

- Charness, N. (2004). "The Age-Ability-Productivity Paradox." Wharton Impact Conference Proceedings, *Maximizing Your Labor Force: Employees Over 50 In Today's Global Economy*. Nov. 10, 2004. University of Pennsylvania and AARP Global Aging Program.
- Charness, N. and Czaja, S. J. (2006), "Older Worker Training: What We Know and Don't Know," AARP working paper #2006-22.
- Charness, N., Schumann, C. E., and Boritz, G. A. (1992). "Training Older Adults in Word Processing: Effects of Age, Training Technique and Computer Anxiety." *International Journal of Aging and Technology*, 5, 79-106.
- Collison, J. (2003). (program manager). "Older Workers Survey." SHRM research, June 2003. Society for Human Resource Management (SHRM), National Older Worker Career Center (NOWCC) and Committee for Economic Development (CED).
- Colquitt, J. A., LePine, J. A., and Noe, R. A. (2000). "Toward an Integrative Theory of Training Motivation: A Meta-Analytic Path Analysis of 20 Years of Research." *Journal of Applied Psychology*, 85, 678-707.
- Crown, W. H. and Longino, C. F., Jr. (2000). "Labor Force Trends and Aging Policy." E. W. Markson and L. A. Hollis-Sawyer (Eds.). *Intersections of aging: Readings in social gerontology*. Los Angeles: Roxbury.
- Czaja, S. J., Hammond, K., Blascovich, J., and Swede, H. (1989). "Age-Related Differences in Learning to Use a Text-Editing System." *Behavior and Information Technology* 8, 309-319.
- Drukker, D. M. 2003. Testing for serial correlation in linear panel-data models. *Stata Journal* (3)2: 168-177.
- Elias, P. K., Elias, M. F., Robbins, M. A., and Gage, P. (1987). "Acquisition of Word- Processing Skills by Younger, Middle-Aged, and Older Adults." *Psychology and Aging*, 2, 340-348. *Psychology*, 85, 678-707.
- Employment and Training Administration (ETA) (2017a). *WIOA Overview*. <http://bit.ly/2Dqi2Ix>
- Employment and Training Administration (ETA) (2017b). *PY 2015 WLASRD Data Book*, <http://bit.ly/2DmQJi9>
- Employment and Training Administration (ETA) (2017c). *Senior Community Service Employment Program*. <http://bit.ly/2DmhgvO>
- Employment and Training Administration (ETA) (2017d). *Workforce Investment Act -- Adults and Dislocated Workers Program*. <http://bit.ly/2DrthjO>
- Employment and Training Administration (ETA) (2017e). *Wagner-Peyser Act Employment Service*. <http://bit.ly/2DrtL9C>
- Eyster, L., Johnson, R. W., and Toder, E. (2008), "Current Strategies to Employ and Retain Older Workers," Urban Institute Report to the Department of Labor, Employment and Training Administration. <http://urbn.is/2DmTqjD>
- Friedberg, L. (2003). "The Impact Of Technological Change On Older Workers: Evidence from Data on Computer Use," *Industrial and Labor Relations Review*, v56 (3, Apr), 511-529.
- Fisk, A. D., Rogers, W. A., Charness, N., Czaja, S. J., and Sharit, J. (2004). *Designing for Older Adults: Principles and Creative Human Factors Approaches*. Boca Raton, Florida: CRC Press.
- Gist, M., Rosen, B., and Schwoerer, C. (1988). "The Influence of Training Method and Trainee Age on the Acquisition of Computer Skills." *Personal Psychology*, 41, 255-265.
- Heidkamp, M. (2009), "Older and Out of Work: Trends in Older Worker Displacement," SCSEP Senate Briefing, Rutgers University. <http://bit.ly/2DpCpWb>
- Hooymann, N. R. and Kiyak, H. A. (2005). *Social Gerontology: A multidisciplinary Perspective*. Boston: Allyn and Bacon. Chapter 1, 8, 9, 12, 14, 16.
- Human Resources Development Canada, (1999). "Older Worker Adjustment Programs Lessons Learned (Final Report): Evaluation and Data Development Strategic Policy." Human Resources Development Canada, Government of Canada: SP-AH093-12-99E. <http://bit.ly/2Dp0axv>
- Kautonen T, Down S, and South L (2008) Enterprise support for boomer entrepreneurs: The case of PRIME in the UK. *International Journal of Entrepreneurial Behaviour and Research* 14(2): 85–101.
- Office of Technology Assessment. Worker Training: Competing in the New International Economy. Washington, DC: OTA, September 1990. (ED 326 622).

- Lavarreda, S. A., Snyder, S., and Brown, E. R. (2013). The effects of the great recession on health insurance: Changes in the uninsured population from 2007 to 2009. *UCLA Center for Health Policy Research, Health Policy Brief, July 2013*.
- Maurer, T., Weiss, M., and Barbeite, F. (2003). "A Model of Involvement in Work-Related Learning and Development Activity: The Effects of Individual, Situational, Motivational and Age Variables." *Journal of Applied Psychology, 88*, 707-724.
- Mead, S., and Fisk, A. D. (1998). "Measuring skill acquisition and retention with an ATM simulator: The need for age-specific training." *Human Factors, 40*, 516-523.
- Mead, S. E., Spaulding, V. A., Sit, R. A., Meyer, B., and Walker, N. (1997). "Effects of Age and Training on World Wide Web Navigation Strategies." *Proceedings of the Human Factors and Ergonomics Society 41st Annual Meeting*, 152-156. Santa Monica, California: Human Factors and Ergonomics Society.
- Morrell, R. W., Park, D. C., Mayhorn, C. B., and Echt, K. V. (1995). *Older Adults and Electronic Communication Networks: Learning to Use ELDERCOMM*. Paper presented at the 103rd Annual Convention of the American Psychological Association. New York.
- Munnell, A., Muldoon D., and Sass, S. A., (2009). *Recessions & Older Workers*, IB#9-2, Chestnut Hill, MA: Center for Retirement Research at Boston College, 10 pp. <http://crr.bc.edu>.
- Ng, E. S.-W., Carpenter, J. R., Goldstein, H., and Rasbash, J. (2006). Estimation in generalized linear mixed models with binary outcomes by simulated maximum likelihood. *Statistical Modelling, 6*, 23-42.
- O'Leary, C. and Eberts, R. W., (2008) The Wagner-Peyser Act and U.S. Employment Service: Seventy-Five Years of Matching Job Seekers and Employers. W.E. Upjohn Institute for Employment Research, <http://bit.ly/2DpCEk3>
- Peterson, P. G., 1999. *Gray Dawn: How the Coming Age Wave Will Transform America—and the World*. Times Books, Random House: New York.
- Porcellato L, Carmichael F, Hulme C, Ingham B, and Prashar A (2010) "Giving older workers a voice: Constraints on the employment of boomers in the North West of England." *Work, Employment and Society 24*(1): 85–103.
- Rabe-Hesketh, S., Skrondal, A., and Pickles, A. (2005). Maximum likelihood estimation of limited and discrete dependent variable models with nested random effects. *Journal of Econometrics, 128*, 301-323.
- Rabe-Hesketh, S., and Skrondal, A. (2012). *Multilevel and longitudinal modeling using stata* (3rd ed.). College Station, TX: Stata Press.
- Resnick, B., Mills, M. E., and Nahm, E. (2004). "Web Use Can Improve Quality of Life for Elders," *Maximizing Human Potential*, Vol. 11, No. 3 (Winter 2004). pp. 4, 6.
- Rix, S. (2006). "Foreword," in Charness, N. and Czaja, S. J. "Older Worker Training: What We Know and Don't Know," AARP working paper #2006-22.
- Schmidt, F. L., and Hunter, J. (2004). "General Mental Ability in the World of Work: Occupational Attainment and Job Performance." *Journal of Personality and Social Psychology, 86*, 162-173.
- Schneider, B. A., Daneman, M., Murphy, D. R., and Kwong See, S. (2000). "Listening to Discourse in Distracting Settings: The Effects of Aging." *Psychology and Aging, 15*, 110-125.
- Schulz, R. and T. A. Salthouse. (1999). *Adult development and aging: Myths and emerging realities* (3rd Edition). Upper Saddle River, New Jersey: Prentice Hall.
- StataCorp. (2015). *Stata: Release 14* [statistical software]. College Station, TX: Author.
- Sterns, H. L. and McDaniel, M. A. (1994). "Job Performance and the Older Worker." In Sara E. Rix (Editor), *Older Workers: How Do They Measure Up?* Washington, DC: AARP.
- Thurow, L.C. (1975). *Generating Inequality*, New York: Basic Books.
- U. S. Department of Labor, Bureau of Labor Statistics. (2005). *Tomorrow's Jobs*. Washington, D.C.: U.S. Department of Labor.
- U.S. Department of Labor, Employment and Training Administration. (2007a). "PY 2005 WIASRD Data Book." Washington, DC: U.S. Department of Labor, Employment and Training Administration. <http://bit.ly/2mMuBT4>

- U.S. Department of Labor, Employment and Training Administration. (2007b). “Senior Community Service Employment Program (SCSEP).” <http://bit.ly/2DmhgvO>
- U.S. Department of Labor, Employment and Training Administration. (2008a). “PY 2006 WIASRD Data Book,” Washington, DC: U.S., Department of Labor, Employment and Training Administration. <http://bit.ly/2mM12RG>
- U.S. Department of Labor, Employment and Training Administration. (2008b). “PY 2007 WIASRD Data Book,” Washington, DC: U.S. Department of Labor, Employment and Training Administration. <http://bit.ly/2mOEXSn>
- U.S. Department of Labor, Employment and Training Administration. (2009). “The WIA National Summary of Annual Performance Data,” Washington, DC: U.S. Department of Labor, Employment and Training Administration. <http://bit.ly/2mNal3X>
- Weber P, Schaper M (2004) Understanding the grey entrepreneur. *Journal of Enterprising Culture* 12(2): 147–164.
- Wooldridge, J. M. 2002. *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press.
- Zellner, Arnold (1962). “An efficient method of estimating seemingly unrelated regression equations and tests for aggregation bias.” *Journal of the American Statistical Association* 57: 348–368. doi:10.2307/2281644.
- Zhang, T., (2008). *Elderly Entrepreneurship for an Aging U.S. Economy: It’s Never Too Late*, London, New Jersey, Singapore: World Scientific.
- Zhang, T. (2011), “Workforce Investment Act Training for Older Workers: Toward a Better Understanding of Older Worker Needs during the Economic Recovery,” *US Department of Labor Employment and Training Administration Research & Publication*, No. ETAOP 2011-10.
- Zhang, T. and Carr, D. (2014) “Does Working for Oneself, not Others, Improve Older Adults’ Health? An Investigation on Health Impact of Self-Employment,” *American Journal of Entrepreneurship*. Volume 7(1). Page 142–180. June 2014.
- Zhang, T. (2014). “The Retired, the Resigned, or the Laid-off? Who Are the Urban Self-employed?” *Global Journal of Management and Business Research*, Volume 14 Issue 4. Page 7-14. May 2014.
- Zhang, T. (2015) “What Drives Post-Retirement Age Self-Employment? An Investigation of Social, Policy and Individual Factors,” in N. Sappleton and F. Lourenço (ed). *Entrepreneurship, Self-Employment and Retirement*, Hampshire, UK: Palgrave MacMillan. ISBN: 978-1-137-39837-6. April 2015.

Endnotes

¹ For WIA/WIOA adult programs, of those who are not employed at registration, it is defined as the number of adults who have entered employment by the end of the first three months after the exit quarter divided by the number of adults who exit during the quarter. For WIA/WIOA dislocated worker program, it is defined as the number of dislocated workers who have entered employment by the end of the first three months after the exit quarter divided by the number of dislocated workers who exit during the quarter.

² This survey is a combination of a team effort between the Society for Human Resource Management (SHRM), the National Older Worker Career Center (NOWCC), and the Committee for Economic Development (CED). A sample of HR professionals was randomly selected from SHRM’s membership database, which consists of more than 170,000 members. In November 2002, 2,500 randomly selected SHRM members received an e-mail invitation containing a link that directed them to the online survey. Of these, 2,143 e-mails were successfully delivered to respondents, and 428 HR professionals responded, yielding a response rate of 20%.

³ The aging workforce is projected to result in potential labor force shortages, Social Security fund bankruptcy and other related fiscal pressure, under the current economic and technological conditions. Older individuals’ participation in the labor force can be a possible solution to those above socioeconomic problems (Zhang 2008). The Great Recession and decimated retirement assets in it are also pushing seniors to remain or return to the labor force. Retaining seniors in the labor force becomes a necessity for both older individuals and the economy.

⁴ The Program Years span respectively from April 2013 to March 2014, April 2014 to March 2015, and April 2015 to March 2016.

⁵ In this table calculated by the (ETA (2017a), older workers are defined as workers age 55 and above. However, the study described in this paper defines older workers as age 50 and above, to include more older workers.

⁶ Adults include all adults who are age 18 and above. The priority for intensive and training services are given to low-income individuals and individuals receiving government assistance and with limited resources (ETA 2017d). Dislocated workers instead refer to individuals who have been or to be terminated or laid off (particularly for business closures or structural unemployment reasons), who are eligible for or have exhausted unemployment insurance, who are unlikely to return to a previous industry or occupation, or who are displaced homemakers who are no longer supported by other family members (ETA 2017d). For them, job placement assistance and skill assessments and counseling could be helpful.

⁷ Using entered employment rate to measure performance may cause some concerns. First, the measure is based on program exit. Focusing exclusively on exiters could introduce selection bias. One suggestion could be to focus on program entry as an alternative measure. However, using entry as a measure offers no clue on when exit occurs and cannot measure participants' post-program employment outcomes. However, with an appropriate measure of program participation length as a variable, future sensitive study comparing using entry and exit as a measure for performance could be interesting. Second, the outcome measure, EER, is measured only one-quarter after program exit. Many workers might not find jobs until several quarters after program entry/exit and the program effect might not show up until then. However, at the moment, the one-quarter lag for the performance measure, EER, is still a commonly used measure for WIOA services, reflected in the WIASRD data. Again, future investigation on the optimal length of observing lags could be a possible extension of the research.

⁸ WIB refers to Workforce Investment Board.

⁹ The author initially considered using Seemingly Unrelated Regression model (SUR) developed by Arnold Zellner (1962). SUR is a technique for analyzing a system of multiple equations with cross-equation parameter restrictions and correlated error terms. In this study, the model contains two independent equations. Each of those two equations used a different and unrelated dataset, due to the very different attributes between dislocated worker participants and adult participants in the WIA programs. For example, participants in the adult program have extremely low wages and very little prior attachment to the labor market, while participants in the dislocated worker program have had strong attachment to the labor market and relatively high wages. These two participants groups do not have necessary relationships. In this case, the SUR assumption that error structures of the two models are similar does not necessarily hold. There is no need to estimate SUR; instead, the models for adults and dislocated workers are estimated separately.

⁰ Please note that total numbers of older dislocated workers and older adults are not the same as the number of observations shown later in the regression models because not all worker information is reported for all variables used in the regression models.

¹ Local Veterans Employment Representative.

² Disabled Veterans Outreach Program.

³ Please note that the service participation length does not mean a participant's total participation in a specific WIA program. Instead, it is calculated as the time span from the participation of the first service to the exit from the last service. This would therefore result in some significant program participation length because of returning participants for the same or different services over the years. Based on preliminary analysis on training length, it was associated with the nature of service/training and other personal factors like the participants' education attainment.

⁴ Please also note that many older workers reported in the WIASRD data did not offer occupational information. Therefore, when estimating our models incorporating occupational categories, many observations were dropped. However, this situation happened not just to this variable; a few other variables faced the challenge of

missing values as well. This occupational training variable is one of the key observing variables and it is an important control variable due to different nature of occupational trainings. Even with dropped observation, it is still necessary to be included.

III. LERA Best Posters

Institutional Change in the Apprenticeship Systems of England and Germany

MAISIE AUFDERHORST-ROBERTS¹

Leeds University Business School

The English and German apprenticeship systems face change, yet the underlying causes and future implications of recent developments remain unclear. Conventional wisdom views the English and German systems as polar opposites. The “dual” and corporatist German system provides highly structured training whilst England’s employer-led system prioritizes the market-led flexibility of the economy. Despite this, recent developments highlight convergence, with higher investment in apprenticeships forecast in England compared to an increasing provision of higher education in Germany. However, empirical evidence indicates that the systems are not converging. Instead, adopting an institutional perspective is essential to understanding current and future policy developments.

“It All Revolved Around Numbers”: Greater Commodification of Work and Culture with Outsourcing

Jacqueline M. Zalewski²

West Chester University

Private sector unions are in decline. Their future is dependent on engaging workers to the point of active participation. Previous research has demonstrated that such participation is preceded by the development of some level of member loyalty. Our study examines key antecedents to union loyalty and identifies a key mechanism through which these factors work. Specifically, we find pro-union attitudes and union instrumentality to be significant predictors of union member loyalty. Additionally, procedural justice perceptions mediate the relationship between antecedents and loyalty. Thus, our findings reflect the view that union socialization may be important in developing member loyalty.

¹ Leeds University Business School, Maurice Keyworth Building, The University of Leeds, Leeds, LS2 9JT, United Kingdom

² Department of Anthropology and Sociology, West Chester University, 700 South High Street, West Chester, PA 19383

IV. LERA Competitive Papers II

Unpacking Job Satisfaction and Union Participation: The Role of Fit

JUSTIN P. WIEGAND
ROBERT BRUNO

University of Illinois at Urbana-Champaign

Job satisfaction's role as an antecedent to union participation has often been proposed—generally as a negative relationship—but empirical support is lacking. To clarify boundary conditions of this relationship, we turn to the exit-voice tradeoff, the attraction-selection-attrition framework, and the frustration-aggression hypothesis. We suggest a negative job satisfaction-union participation relationship exists only among workers lacking fit with their colleagues (“person-workgroup fit”). We employed a distance-based measure of person-workgroup fit to analyze data from 777 workers across three unions (90% public-sector) located in a large Midwestern city. Results indicate fit's moderating role—high-fit workers participate in union activities irrespective of their job satisfaction, but workers with low fit participate more when dissatisfied with their jobs. Our findings inform theory on antecedents of union participation and the strategic choices unions face in organizing and reinvigorating lay activism.

It's a long struggle to change an engrained practice where people don't participate, and don't expect to participate, and don't expect their participation to make a difference.

—Union officer quoted in Hickey (2005, p. 290)

This article empirically examines the relationship between union members' job satisfaction and union participation conditional on one's similarity, or fit, with their workgroup. Although job satisfaction's role as an antecedent to union participation has been well studied, important questions remain unanswered. Lay participation is essential to unions' viability and growth, yet as noted in the opening quote, increasing participation is hard fought. Understanding all antecedents of union participation is thus important to both unions and labor scholars. Job satisfaction's specific relationship to union participation has generally been thought to be negative, but this proposition lacks empirical support. Although Bamberger, Kluger, and Suchard (1999) established a meta-analytic corrected correlation (ρ) of union participation and job satisfaction of $-.16$ ($p < .05$, $k = 17$), correlations became more disparate as the literature expanded. Monnot, Wagner, and Beehr's (2011) updated meta-analysis ($k = 31$) ultimately found a nonsignificant relationship between the two variables ($\rho = -.04$).

Although Monnot and colleagues' finding suggests moving away from viewing job satisfaction as a union participation antecedent, simple correlational models may not accurately capture the job satisfaction-union participation relationship. Understanding if, when, and how a negative job satisfaction-union participation relationship exists would inform union organizing efforts and models of participation. Indeed, rank-and-file participation and voluntary activism serve as the “very fabric of unions” (Gordon, Beauvais, and Ladd, 1984, p. 480). Knowing workers most likely to require encouragement to participate in union activities

Corresponding author's address: Justin Wiegand, School of Labor and Employment Relations, University of Illinois at Urbana-Champaign, 504 E. Armory Avenue, Champaign, IL 61820

helps to focus union outreach and theoretically-derived moderators of the job satisfaction-union participation relationship are worth consideration. Naturally, if certain members participate more when they are less satisfied, unions should consider how to engage these workers and seek to understand why dissatisfied workers are generally their greatest participants. To this end, we believe accounting for “misfits,” those who do not share the interests and values of their workgroup, stands to determine whether a negative relationship exists between job satisfaction and union participation.

We suggest that workers most similar to their colleagues experience “natural” solidarity and stay involved in their union regardless of job satisfaction. Consider one union operating engineer who told a study author that working with “like-minded union brothers” provided a sense of belonging and pride motivating his union involvement (personal communication, September 10, 2016). Misfits who do not share the interests of their workgroup might still participate in their union, but for additional reasons. Specifically, job satisfaction stands to meaningfully relate to union participation for these individuals. Consider a union teacher who had not immediately connected with her union brothers and sisters but was driven to participate to “protect [her] profession” from being treated as “cogs in a wheel” (personal communication, April 4, 2013). Thus, although high-fit union members may participate regardless of their satisfaction, misfits are different. Those not satisfied at work are likely to either leave or participate in their union as an alternative to exit. In other words, dissatisfied misfits persisting with an employer are likely to participate well with their union. Satisfied misfits represent a unique subgroup. Neither fit nor dissatisfaction motivate misfits’ participation leading us to predict that they less likely to participate in union activities as a group. In the remainder of this article, we develop these ideas in view of the exit-voice tradeoff, the attraction-selection-attrition framework, and the frustration-aggression hypothesis.

We used primary data from members of three unions (90% public-sector) operating in a large, Midwestern city, to evaluate how members’ fit with their workgroup determines when a negative relationship exists between job satisfaction and union participation. This moderation analysis was performed using a distance-based measure of interest fit to compare both individual union members’ interests and the general interests characterizing their workgroups. We found a negative relationship between job satisfaction and union participation when fit was low, but no relationship when fit was high. Instead, participation remained relatively high for high-fit individuals regardless of their level of job satisfaction. Our accounting of fit suggests a critical boundary condition for the job satisfaction-union participation relationship and offers an explanation for prior inconclusive findings. Our findings also inform the strategic choices unions face in reinvigorating participation and lay activism.

Theory, Literature, and Hypotheses

Antecedents of union participation have been studied extensively by labor scholars culminating in two meta-analyses on the subject (Bamberger et al., 1999; Monnot et al., 2011) that found positive relationships with pro-union attitudes, union instrumentality perceptions, union commitment, and organizational commitment. Other antecedents have been proposed and substantiated thereafter (e.g., perceived behavioral control; Fiorito, Padavic, and Russell, 2014). Job satisfaction’s role as an antecedent to union participation has often been proposed and evaluated as well. Yet, as reviewed previously, consistent empirical support is lacking.

Theoretical backing for a negative job satisfaction-union participation relationship follows from several theoretical developments including the frustration-aggression hypothesis, exit-voice trade off and the attraction-selection-attrition framework. The frustration-aggression hypothesis (Klandermans, 1986; Wheeler, 1985) considers union participation to be “a reaction to frustration, dissatisfaction, or alienation in the work situation” (Klandermans, 1986, p. 190). Indeed, those lacking job mobility, perceiving their wages as low, and generally feeling inequality with their employer have been demonstrated to be more likely to participate in their unions (Huszczko, 1983; Kolchin and Hyclak, 1984). Yet, beyond single studies, lacking meta-analytic evidence and wide job satisfaction-union participation credibility intervals (−0.28 to 0.19; Monnot et al., 2011) suggest a more nuanced model is needed to explain job satisfaction’s relationship with union participation.

The exit-voice tradeoff extends the proposed negative relationship between job satisfaction and union participation (i.e., voice) to include exit. The exit-voice tradeoff suggests workers respond to discrepancies between desired and actual environmental circumstances by either exiting the undesirable situations or by

expressing dissatisfaction through “voice.” This offered an explanation for lower mean job satisfaction among union workers compared to non-union workers (Borjas, 1979; Freeman, 1980). In line with the present study, the exit-voice tradeoff has been extended to union-only samples by evaluating the relationship between an individuals’ job satisfaction and the extent to which they participate in their union (e.g., Iverson and Currivan, 2003).

Schneider’s (1987) attraction-selection-attrition (ASA) framework provides additional insight on when workers persist in or exit firms. The ASA framework suggests people are attracted to and select themselves into and out of organizations. People who select into and persist in an organization “make the place” by normalizing organizational culture and function. As a whole, the ASA framework suggests individuals with interests and values similar to those held by members of an organization are more likely to select into and persist in that given organization. The ASA framework can be extended to workgroups as well, such that individuals are more likely to select into and persist in workgroups that match their own interests and values.

Taken together, we suggest person-workgroup (PW) fit determines whether job satisfaction and union participation are negatively related. PW fit refers to the similarity of a worker’s interests to the interests generally held by his or her colleagues, specifically those working in similar occupations within a given organization. This follows Holland’s (1966) idea that environments reflect the people in them. In his words, “the *dominant* features of an environment are dependent upon the *typical* characteristics of its members” (p. 53, emphasis in original). Holland (1997) eventually operationalized occupational environments as the distribution of personality types in a given occupation, an idea we extend to workgroups.

Theories of person-environment (PE) fit, including the ASA framework and Holland’s conceptualization of interest fit, describe individuals as preferring and seeking out environments compatible with personal characteristics (Kristof-Brown, Zimmerman, and Johnson, 2005; Schneider, 1987). Individuals in compatible environments usually exhibit desired personal and organizational outcomes, including reduced stress, higher job satisfaction and performance, and lower turnover (Kristof-Brown et al., 2005; Nye, Su, Rounds, and Drasgow, 2012).

PW fit provides a natural application for considering PE fit in unionized settings. A worker’s unionized colleagues provide an immediate, day-to-day connection to his or her union. Thus, when workers share the interests and values of their workgroup (i.e., experience high PW fit) they have reason to involve themselves in their union apart from their level of job satisfaction. Union participation provides connection and camaraderie; solidarity can form organically. However, as a whole, PW misfits do not enjoy the same connection to their colleagues as those with high fit. Camaraderie does not develop as easily and solidarity does not follow so naturally. Thus, to the degree misfits find satisfaction in their work, they are less likely to participate in their union absent intentional union efforts to engage and include them.

To fully understand our propositions, consider the experiences of workers high and low on both PW fit and job satisfaction. Individuals with high fit, but low satisfaction are relatively likely to participate in their union. High fit suggests they have similar interests as their colleagues and are likely to find their work engaging and interesting, but low satisfaction indicates there may be circumstances and stressors related to their work that they want to see change. Union participation provides a means to promote change to move their unsatisfying work toward a place of satisfaction. Participating in their union affords them voice to achieve this end while connecting with the colleagues they fit so well with.

Individuals with high fit *and* high job satisfaction are also relatively likely to participate in their union. As before, high fit again suggests they have similar interests to their colleagues and are likely to find their work engaging and interesting. Their high job satisfaction indicates agreeable work circumstances. Participation with their fellow union members follows high fit with their workgroup and enjoyment of the work itself. Following the ASA framework, those with similar interests as their workgroup most naturally select into and persist in the workgroup—solidarity forms naturally and is stoked by union participation.

Taken together, union participation for high-fit individuals should remain relatively high regardless of union members’ job satisfaction. Similarity to their workgroup promotes solidarity and union involvement at all levels of job satisfaction. Individuals can participate in their union to promote change, or simply to connect with like-minded colleagues, a byproduct of sharing the dominant vocational interests of their workgroup. Thus:

Hypothesis 1: There is little relationship between job satisfaction and union participation for high PW fit union members

Following the exit-voice tradeoff and the ASA framework, low-fit workers with low job satisfaction are likely to leave their employer unless they can change their work or working conditions. Participating in their union provides them the voice alternative to exit the rather grim circumstance they find themselves in—poor fit and dissatisfying work. The reality of both poor fit and low satisfaction suggests these individuals who persist with their employer will be especially motivated to participate in their union to promote change, regardless of their misfit status among colleagues. The exit-voice tradeoff describes low-fit, low-job satisfaction individuals well. Although neither fit nor satisfaction compels them to stay in their job, voice (i.e., union participation) can empower them to stay.

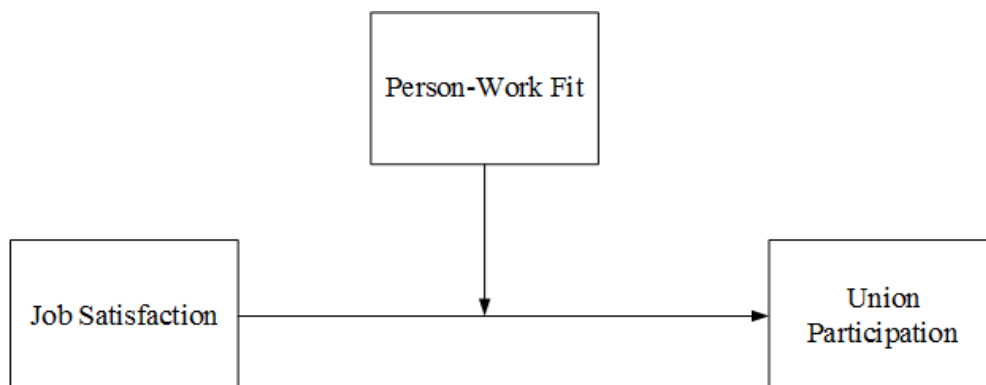
On the other hand, individuals with low fit, but high job satisfaction are less likely to participate in their union than their colleagues. Although generally satisfied with their work, their low fit suggests a relative disconnect from colleagues holding the dominant vocational interests of their workgroup. The reality that their job satisfaction remains high suggests these workers see little need for change at work. Since camaraderie and solidarity are also not expected to occur as naturally, union participation should be relatively low for satisfied misfits.

When both low-fit scenarios are taken together, it becomes clear that a negative job satisfaction-union participation relationship should be observed for low-fit workers. The exit-voice tradeoff is descriptive of low-fit individuals who are not satisfied with their work. These workers are the most likely to either leave their firm or participate in their union. Thus, low-fit workers with low job satisfaction who remain with their employers should participate at higher than average levels with their union. On the other hand, union participation from low-fit workers with high job satisfaction should be low—solidarity comes less naturally for misfits and they have less motivation to seek workplace change via union participation since they are already satisfied with their work. Thus:

Hypothesis 2: The relationship between job satisfaction and union participation is negative for low PW fit union members

Figure 1 depicts the path analysis underlying our hypotheses. To summarize, our conceptualization of the job satisfaction-union participation relationship follows relevant developments on the antecedents of union participation and are grounded in Schneider’s (1987) attraction-selection-attrition (ASA) framework and the within-union application of the exit-voice tradeoff (e.g., Iverson and Currivan, 2003). We suggest that PW fit moderates the job satisfaction-union participation relationship. Those who fit with their workgroup have reason to participate in their union regardless of their level of job satisfaction, but low-fit union members who are not satisfied are less likely to participate. To the degree such cases exist, they represent opportunities for unions. At a time when union membership and lay activism are waning and hard fought, unions should double-down in their efforts to identify and engage disenfranchised workers.

FIGURE 1
Hypothesized Path Model Distinguishing Exit-Voice Tradeoff in Union Samples



As an example of fit's moderating role of the job satisfaction-union participation relationship, consider teachers (the largest workgroup in our sample). Misfit K – 12 teachers may include teachers hired through the Teach for America (TFA) program. TFA teachers are drawn from non-educational academic backgrounds and have not undergone teaching preparatory programs (“Is TFA for You?,” 2016). Most of the TFA recruits have non-educational career interests and are pursuing degrees in applied fields. Unlike teachers from undergraduate educational programs, TFA “corps” members enter short two-year teaching commitments and most then move on to their preferred vocational path. Leadership is a strongly sought after characteristic of TFA recruits and most descriptive of individuals high on Holland's (1997) enterprising interest, an interest not typically highest for teachers. If such misfits are ultimately satisfied with their work as teachers, their vocational disconnect from other union members might preclude them from participating fully in their union.

Data and Analysis

In 2015, we invited leaders of seven unions located in a large Midwestern city to ask members of their respective unions to participate in our study. Leaders from five unions representing several industries and both the private and public sectors, agreed to participate. These unions' members were emailed directly by their respective leadership with an invitation to complete our study's linked online survey. Two of the five unions only yielded a single response and were excluded from the sample. The three unions making up our sample include one public- and two private-sector unions providing 1,232 respondents.

All respondents were located in a Midwestern, free collective bargaining (i.e., non-right-to-work) state. The clear majority of individuals in the final sample (90%) were members of the public-sector union. This union represents employees in a large, metropolitan school district. Noted differences exist between private and public unions, including the inability of many public-sector unions to strike. In the present case however, the public-sector union was in a strike-permissive state. Indeed, the studied union struck in a previous bargaining period and passed a strike-vote in the most recent bargaining period, narrowly avoiding a strike occurrence. All considered, our results hold relevance for both public-sector unions in strike-permissive states and private-sector union members. Furthermore, our results were robust to public-/private-sector controls.

Measures

Vocational Interests

Holland's (1959, 1997) model of interests provides an operational basis for the person and environment components of PW fit. Holland described six interests, realistic, investigative, artistic, social, enterprising, and conventional, which are often referred to by their acronym, RIASEC. Table 1 describes work preferences and occupations characteristic of each interest. The interrelatedness of RIASEC interests is often depicted using a hexagon (see Figure 2; e.g., Holland, 1997; Tracey and Rounds, 1993): adjacent interests (e.g., realistic and conventional) are more related than alternate interests (e.g., realistic and enterprising), which are more related than opposite interests (e.g., realistic and social).

Person interests were measured using the Department of Labor's public-domain Occupational Information Network (O*NET) Interest Profiler Short Form (Rounds, Su, Lewis, and Rivkin, 2010). The form is a 60-item measure with ten items corresponding to each RIASEC interest. Respondents were asked to decide the degree to which they would like or dislike doing a type of work regardless of whether they had education or training to do the work, how it was related to their current job, or how much money they would make doing the work. Responses ranged from -3 (“Dislike very much”) to 3 (“Like very much”) with a neutral midpoint (0 = “Neither like nor dislike”). “Lay brick or tile” represents a realistic item and “perform rehabilitation therapy” a social item. Scale scores were formed by taking the mean of all scale items. Reliabilities (Cronbach's α) ranged from .82 (social) to .92 (investigative) for RIASEC scale scores.

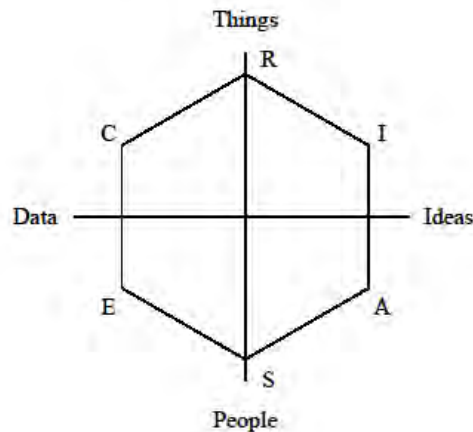
We evaluated the environmental interests characteristic of the following occupation groups: teachers, clinicians, and paraprofessionals within a metropolitan teachers union, operators from a local operating engineers union, and wiremen from an electrical workers local. The teachers' group included kindergarten to twelfth grade teachers, including special education faculty. Clinicians included counselors, social workers, physical and occupational therapists, and speech pathologists. Technicians, assistants, clerks, and secretarial

staff made up the paraprofessionals group. Heavy equipment operators and mechanics made up the group of operators and apprentice and journey wiremen and electricians comprise the group of wiremen.

TABLE 1
Holland's (1997) RIASEC Interests and Example Occupations

Interest	Individuals with this interest seek and prefer...	Occupations
Realistic	Activities involving the “manipulation of objects, tools, machines, and animals” (p. 43).	Bricklayer, electrician, plumber
Investigative	The “creative investigation of physical, biological, or cultural phenomena” (p. 44).	Chemist, psychologist, biologist
Artistic	“Ambiguous, free, unsystematized activities and competencies to create art forms or products” (p. 45).	Graphic designer, actor, craft artist
Social	“Inform[ing], train[ing], develop[ing], cur[ing], or enlighten[ing]” others (p. 46).	Nurse, teacher, clergy
Enterprising	“Attain[ing] organizational or self-interest goals” (p. 46).	Retail salesperson, Lawyer, CEO
Conventional	The “systematic manipulation of data such as keeping records, filing [and reproducing] materials, organizing written and numerical data according to a prescribed plan, [and] operating business and data processing equipment” (p. 47).	Accountant, librarian, editor

FIGURE 2
Holland's RIASEC Model of Interests with Prediger's People/Things and Data/Ideas Dimensions



Occupational interest profiles were formed from the mean RIASEC scores of all respondents within a given occupational group. As in previous studies of interest fit (e.g., Su, 2012), occupational interest profiles for each individual were formed from the mean of all RIASEC scores except the individual's own so as not to inflate the subsequent evaluation of fit. This leave-one-out aggregation technique provides slightly different environmental interest profiles for each individual within a given occupational group. By evaluating person and environment separately, and with an aggregated environment, we are able to calculate an indirect, objective measure of fit (Kristof-Brown and Guay, 2011) reducing common method bias in our results (Podsakoff, MacKenzie, Lee, and Podsakoff, 2003).

Person-Workgroup Fit

Since Holland (1963) first recommended comparing first letters of person and environment RIASEC profiles for agreement, numerous indices have been introduced to measure RIASEC fit. Camp and Chartrand (1992) and Brown and Gore (1994) offer reviews of many RIASEC-specific fit indices. Unfortunately, most of the RIASEC fit indices developed fail to consider entire RIASEC profiles. Zener and Schnuelle (1976) eventually expanded fit indices to consider the first three letters of person and environment RIASEC interest scores, but subsequent indices generally failed to move past this three letter comparison threshold. Profile correlations allow for a comparison of all six scores, but fail to directly account for scale-level differences between person and environment. In other words, so long as person and environment scores correlate with each other, fit scores are high, regardless of the similarity or difference of relative strengths of each component measure. Calculating the Euclidean distance between person and environment scores based on all RIASEC interests accounts for scale-level differences by comparing the distance between all person and environment scores. We operationalized fit as the Euclidean distance between person and environment scores due to this superior property and the parsimony of a single fit metric.

Euclidean distance calculations of person and workgroup RIASEC scores followed Tracey, Allen, and Robbins' (2012) calculations. First, complete person and environment RIASEC profiles were transformed to points in Prediger's (1982) two-dimensional People-Things (PT) and Data-Ideas (DI) space. This space represents a parsimonious conception of Holland's hexagon by transforming the six RIASEC interests into a single point on these two dimensions. The two dimensions can be directly overlaid on the RIASEC hexagon (note their axes in Figure 2).

The PT dimension was calculated as $2*R + I - A - 2*S - E + C$ such that positive values represent Things interest and negative values represent People interest (letters in the equation represent the first letter of each interest). The DI dimension was calculated as $1.73*E + 1.73*C - 1.73*I - 1.73*A$ such that positive values represent Data interest and negative values represent Ideas interest. Euclidean distance was then calculated as:

$$distance = \sqrt{(PT_{person} - PT_{environment})^2 + (DI_{person} - DI_{environment})^2}$$

Very high raw distance values represent low fit (i.e., the person and workgroup scores are far apart) and very low raw values (i.e., approaching zero) represent high fit (i.e., the person and workgroup scores are close together). To aid in interpretability, we multiplied the raw Euclidean distance calculations by -1 and mean centered the results. Thus, negative values represent below average fit in the study sample and positive values represent above average fit.

Job Satisfaction

Although job satisfaction can be evaluated at a facet-level (Judge, Hulin, and Dalal, 2012; Locke, 1969; Spector, 1997), studies evaluating overall job satisfaction generally use either Brayfield and Rothe's (1951) five-item scale or the Job in General Scale (Ironson, Smith, Brannick, Gibson, and Paul, 1989) and its abridged version (Russell et al., 2004). In all cases however, these scales were not created with union environments expressly in view. In the present study, we desired a union-specific measure of overall job satisfaction—a measure that would account for overall job satisfaction including the unique concerns of unionized workers.

We developed job satisfaction items that assess the concerns of union workers in their vernacular. These items were reviewed and refined with feedback from union members and labor studies faculty before being administered. Respondents were asked to evaluate their agreement with items (sample item: "Since starting my job, I have less time to do the job I was hired to do") using a seven-point scale (-3 = "Strongly Disagree," 3 = "Strongly Agree") with a neutral midpoint (0 = "Neither Agree nor Disagree"). Scale items are provided in the appendix.

As a comparison point, Brayfield and Rothe's (1951) scale was also administered in the present study. Our new scale correlated .60 with Brayfield and Rothe's measure (using the same seven-point scaling), suggesting we are measuring a similar, but not identical, job satisfaction construct. Scale reliability (Cronbach's α) for our union-specific measure was .88.

Union Participation

Scholars differ on the dimensionality of union participation. Some use a single factor (e.g., Anderson, 1979) and others suggest multidimensional models (e.g., McShane, 1986; Monnot et al., 2011; Parks, Gallagher, and Fullagar, 1995). A distinction is most often made between nonmilitant participation, which involves activities that do not require direct interference with work (e.g., helping with union organizing activities), and militant participation, which involves high-intensity activities interfering with one's work (e.g., striking). As both types of participation are relevant to the current study, we sought a parsimonious measure with items addressing both militant and nonmilitant participation.

Existing scales of both militant (e.g., Martin, 1986) and nonmilitant (e.g., McShane, 1986) union participation use a mix of Likert, dichotomous, and open-ended numeric items (e.g., "number of union meetings attended"). The mix of scaling within and between instruments makes scale-level interpretation difficult. Instead of combining such items, we began with the existing scales and again drew on the experience of labor studies faculty and union members to create a Likert scale assessing overall union participation. Nine items comprised our scale of overall union participation; they are provided in the appendix. Two items (marked with asterisks) were adapted directly from Martin's (1986) Militancy scale.

Our scale covered general participation in union activities and service along with militant actions, both legal and those involving acts of civil disobedience or illegal work stoppages. Respondents were asked to evaluate their agreement with four items (e.g., "I would never engage in violence during a strike"; reverse-coded) using a seven-point scale (-3 = "Strongly Disagree", 3 = "Strongly Agree") with a neutral midpoint (0 = "Neither Agree nor Disagree") and their participation relative other employees in their union with five items (e.g., "I help with union organizing efforts"), also using a seven-point scale (-3 = "Extremely Below Average", 3 = "Extremely Above Average") with a neutral midpoint (0 = "An Average Amount"). Scale reliability (Cronbach's α) was .82.

Controls

We controlled for differences individuals' employment sector, status as a racial minority, and level of education. The public-private sector control provides guidance on whether our findings generalize beyond the public-sector union comprising much of our sample. The racial majority control (1 = racial majority) informs whether fit and misfit with the racial in-group should be considered in our fit conceptualization. Finally, the ordinal accounting of education level (1 = "some high school" to 7 = "doctorate") seeks to account for education and education-related status differences in union participation.

Analysis

We estimated the effect of job satisfaction on union participation conditional on fit using SAS 9.4 (SAS, 2012). The full equation can be written as:

$$Participation = b_0 + b_1(JS) + b_2(Fit) + b_3(JS \times Fit) + b_4(RM) + b_5(Edu) + b_6(Sec) + e$$

Participation = where "JS" represents job satisfaction, "RM" is a racial majority group dummy, "Edu" represents education level, "Sec" is a public-sector employment dummy, and "e" represents the error term. Simple slopes of union participation at plus and minus one standard deviation of fit and job satisfaction were calculated and plotted along with their 95% confidence intervals following Aiken and West (1991). A significant interaction between job satisfaction and fit (b_3) and a negative simple slope estimate of job satisfaction and union participation only when fit is low would support our hypotheses.

Empirical Findings

Table 2 provides descriptive statistics and correlations of our study variables. Fit is mean centered, and job satisfaction and union participation are both centered on their neutral scale midpoint to aid in interpretability. Respondents who correctly answered at least four of five randomly placed quality control items (e.g., “Please select ‘Strongly Agree.’”) in our survey comprised our final sample of 777 union members (70% female and 30% racial minorities). Ninety percent held a bachelor’s degree or higher and 71% held a master’s degree or higher. Respondents’ mean age and organizational tenure was 43.46 ($SD = 11.11$) and 11.93 ($SD = 8.70$) respectively. Mean job tenure and current union tenure was 9.63 ($SD = 8.60$) and 13.22 ($SD = 9.35$) respectively. Consistent with the job satisfaction-fit literature, individuals’ job satisfaction positively related with their PW fit ($r = .09, p < .05$). Multidimensional scaling (Borg and Groenen, 2005) performed in SAS 9.4 (SAS, 2012) verified the structure of RIASEC interests for individuals. As shown in Figure 3, the ordering of the RIASEC scales followed the circular ordering of Holland’s hexagon.

Overall, the characteristic interests of workgroups followed expectations. RIASEC means and People-Things/Data-Ideas calculations for each of the five workgroups are shown in Table 3. Following O*NET interest profiles of occupations underlying our workgroups (Peterson, Mumford, Borman, Jeanneret, and Fleishman, 1999), we expected teachers, clinicians, and paraprofessionals to all be high on social interest. Indeed, the mean score for social interest was highest for these workgroups and exhibited the least variability (S.D.) across individuals in those workgroups.

TABLE 2
Descriptive Statistics and Correlation Matrix of Study Variables

Variable	Mean	S.D.	Range	1	2	3	4
1. Job Satisfaction	-0.80	1.45	-3 – 3	.88			
2. Realistic	-0.61	1.37	-3 – 3	.07*	.90		
3. Investigative	0.32	1.48	-3 – 3	-.02	.57*	.92	
4. Artistic	0.84	1.29	-3 – 3	-.05	.21*	.35*	.88
5. Social	1.36	0.99	-3 – 3	-.05	.08*	.25*	.38*
6. Enterprising	-0.14	1.22	-3 – 3	.00	.28*	.30*	.29*
7. Conventional	-0.44	1.34	-3 – 3	.02	.41*	.30*	.10*
8. PW Fit	-0.01	2.82	-11.16 – 5.23	.09*	.04	.07	.04
9. Union Participation	-0.27	1.06	-3 – 3	-.09*	.22*	.16*	.08*
10. Racial majority ^a	0.70	.46	0 – 1	-.03	.07	-.01	-.08*
11. Level of education	5.59	.84	1 – 7	-.30*	-.24*	-.03	.12*
12. Public sector ^a	0.90	.31	0 – 1	-.23*	-.31*	-.07	.15*

Note. $N = 759 - 777$. PW = Person-Workgroup. Reliabilities (Cronbach’s α) are provided on the diagonal when applicable.

^a1 = Yes.

* $p < .05$.

FIGURE 3
Two-Dimensional Scaling of Person RIASEC Interests
(the first letter of each point corresponds to the first letter of a respective RIASEC interest)

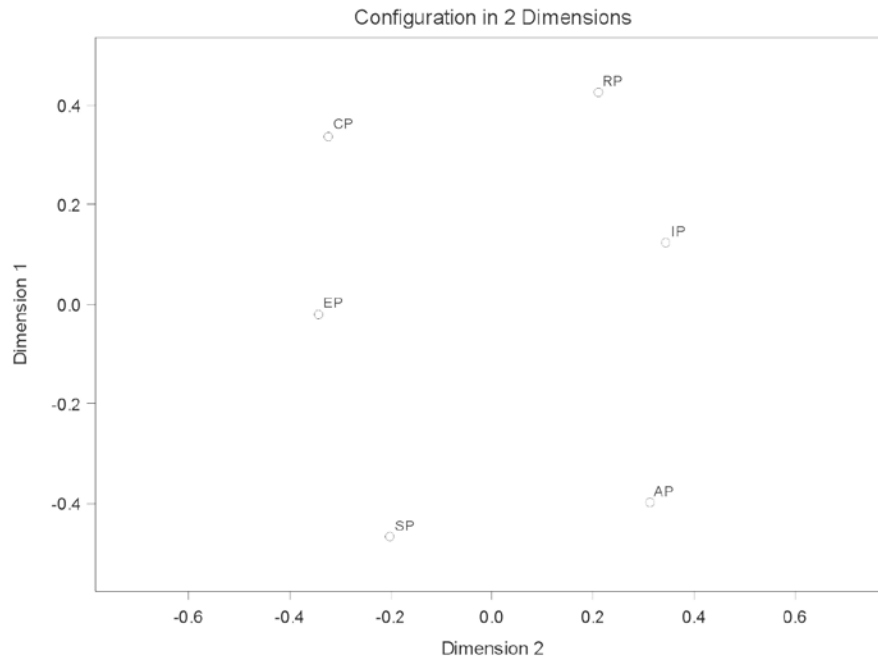


TABLE 3
Workgroup Interest Profiles

	Teachers	Clinicians	Paraprofessionals	Operators	Wiremen
Realistic	-0.73	-1.27	-0.44	0.31	0.81
Investigative	0.29	0.07	0.60	0.17	0.85
Artistic	0.90	0.69	1.51	0.23	0.27
Social	1.43	1.76	1.64	0.47	0.50
Enterprising	-0.18	-0.06	0.73	-0.29	-0.08
Conventional	-0.47	-0.63	0.89	-0.89	-0.28
People-Things ^a	-5.22	-7.25	-4.91	-0.98	1.00
Data-Ideas ^b	-3.18	-2.51	-0.85	-2.73	-2.56
N	621	51	24	27	54

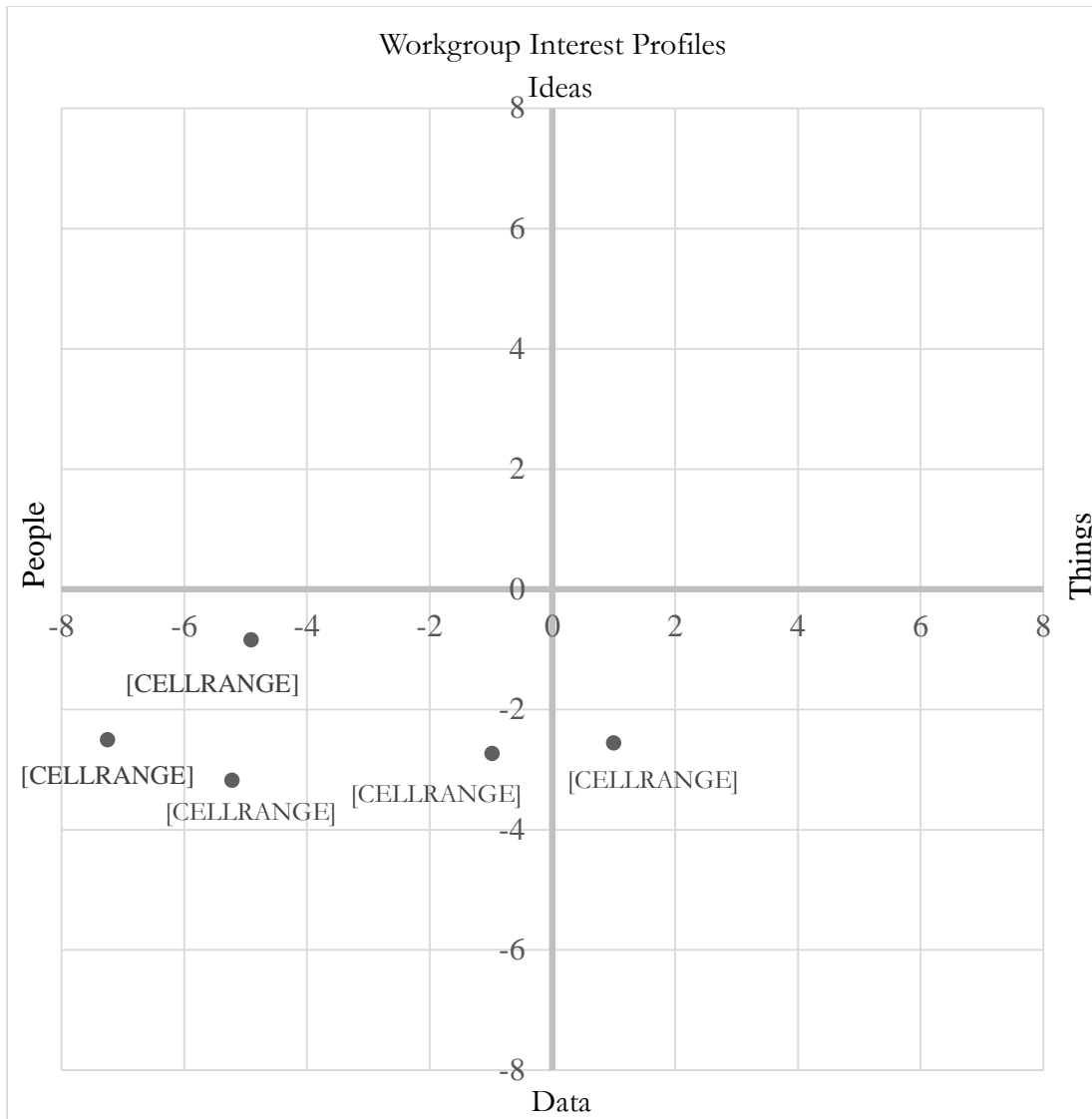
Note. People-Things and Data-Ideas calculations are provided in the text.

^aPositive values represent Things.

^bPositive values represent Data.

Wiremen and operators were both expected to be high on realistic interest and were. Compared to the teacher's union groups, whose average realistic scores represented a "slight dislike," wiremen and operators both exhibited positive mean realistic scores representing a degree of liking. The mean score for investigative interest was slightly higher than realistic interest for wiremen, but the practical significance of this difference was trivial (.04 scale points). For operators, the mean score for social interest was slightly higher than realistic, but again, the practical significance of this difference was very small (.16 scale points). Figure 4 plots each of the workgroups in Prediger's (1982) two-dimensional People-Things/Data-Ideas space. Workgroups' People-Things/Data-Ideas scores followed expectation as teachers, clinicians, and paraprofessionals all exhibited stronger People scores than operators and wiremen.

FIGURE 4
Workgroup Interest Profiles on People-Things, Data-Ideas Dimensions



Moderation results supported our hypotheses. Table 4 provides results of the regression analysis with and without controls. In both cases, the job satisfaction-PW fit interaction was significant as well as the negative simple slope of job satisfaction and union participation when fit was low (-1 S.D.). The relationship between job satisfaction and union participation when fit was high (1 S.D.) was not significant. Table 5 provides the effects of these simple slope results and Figure 5 displays a plot of the slopes and 95% confidence intervals for job satisfaction and fit without controls. Low- and high-fit regions are significantly different for all positive job satisfaction scores. Notably, our job satisfaction scale explained 71% more variation of the data in our hypothesis tests (R^2) than the Brayfield and Rothe measure. The increase in explained variance suggests an improvement in the criterion-related validity of job satisfaction in union samples.

TABLE 4
Determinants of Union Participation

	Without Controls		With Controls		
	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	-0.33* (.04)	-0.34* (.04)	-0.14 (.29)	0.07 (.29)	0.02 (.29)
Job Satisfaction	-0.07* (.03)	-0.07* (.03)		-0.11* (.03)	-0.11* (.03)
PW Fit	0.02 (.01)	0.05* (.02)		0.02 (.01)	0.03* (.02)
JS x PW Fit		0.02* (.01)			0.02* (.01)
Racial majority (1 = yes)			0.03 (.08)	0.02 (.08)	0.02 (.08)
Level of education			0.12 (.07)	0.06 (.07)	0.06 (.07)
Public sector (1 = yes)			-0.89* (.19)	-0.88* (.19)	-0.88* (.19)
<i>F</i>	5.36*	5.68*	10.56*	9.74*	8.87*
R^2	.01*	.02*	.04*	.06*	.07*
ΔR^2		.01*		.02*	.01*

Note. $N = 763$ without controls; 743 with controls. PW = Person-Workgroup. JS = Job Satisfaction. Unstandardized coefficients are reported. Standard errors are in parentheses.

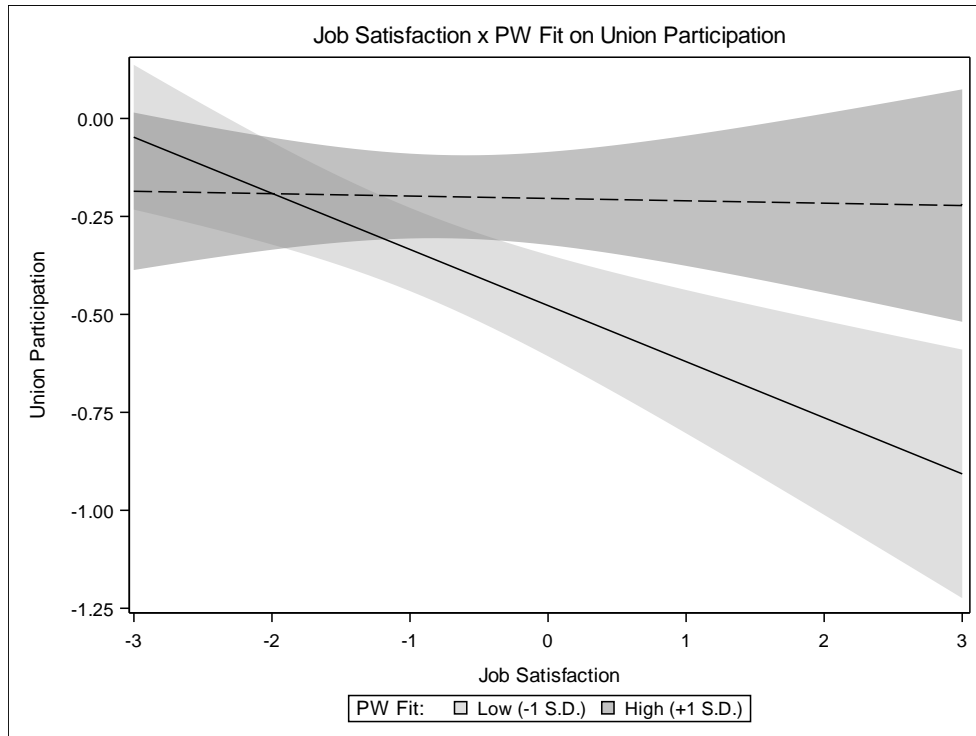
* $p < .05$.

TABLE 5
Slope Estimates of Job Satisfaction on Union Participation at Low and High Levels of PW Fit

	Without Controls	With Controls
Low PW Fit (-1 SD)	-0.14* (.04)	-0.16* (.04)
High PW Fit (+1 SD)	-0.01 (.04)	-0.05 (.04)

Note. See notes for Table 4.

FIGURE 5
Job Satisfaction by Person-Workgroup Fit on Union Participation (shading represents 95% confidence intervals)



Discussion and Conclusions

Across five different workgroups in three labor unions covering both public and private sectors, results support fit's moderating role of job satisfaction and union participation. Specifically, a negative job satisfaction-union participation relationship exists only among low-fit workers. Job satisfaction and union

participation's nonsignificant meta-analytic corrected correlation and wide credibility interval provided empirical impetus to unpack the oft-suggested relationship between the two variables. Our hypotheses followed consideration of the exit-voice tradeoff's application to union-only samples and the role of person-environment fit's relationship with participation. Following the attraction-selection-attrition framework, we proposed that high-fit individuals participate in unions regardless of job satisfaction because camaraderie and solidarity form more naturally than among poor fit workers. On the other hand, low-fit workers that do not experience satisfaction are relatively likely to either leave their employer or exercise voice by participating in their union to promote change. Low-fit individuals who are satisfied, but have no natural link to their coworkers stand out as a group less likely to participate—they have neither dissatisfaction nor workgroup fit to drive their participation.

Our results inform model development of union participation antecedents. Failing to account for moderators of the job satisfaction-union participation relationship can lead to erroneous conclusions. For example, if we had only evaluated job satisfaction and union participation broadly, we would have observed a degree of support for the exit-voice tradeoff based on the negative correlation between job satisfaction and union participation ($r = -.11, p < .05$). Yet, conditioning this relationship on fit rendered the relationship insignificant when fit was high and stronger when fit was low ($r = -.16, p < .05$). Thus, as evidenced by past meta-analyses, a negative job satisfaction-union participation relationship does not appear descriptive of all unionized workers. The bounds of job satisfaction's role as an antecedent to participation should be reconsidered conditioning on workgroup fit.

Unions may benefit from focusing organizing efforts on reaching workers with low fit and low job satisfaction. Our finding supports the idea that unions offer a direct "voice" alternative to leaving an employer on account of low job satisfaction *and* poor work fit. This corresponds with and extends Borjas's (1979) original union application of the exit-voice tradeoff. He suggested discrepancies between desired and actual work circumstances effectively activate the exit-voice tradeoff. High-fit individuals lack these person-environment discrepancies, but low-fit individuals do not.

The lack of a negative job satisfaction-union participation relationship for high-fit individuals sheds a positive light on union participation. If a negative job satisfaction-union participation relationship universally existed for workers, as suggested by the exit-voice tradeoff, the role of unions appears rather bleak: individuals who would otherwise leave their employer due to dissatisfaction can instead stay due to the voice their participation affords them, but their satisfaction remains low. Our findings, however, suggest such universal application of the exit-voice tradeoff is overly broad. Indeed, high-fit individuals participate with their union at relatively high levels *without* feeling dissatisfaction. Indeed, identifiable conditions exist where members are both satisfied with their work and engaged with their union. Unions and labor scholars should account for such boundary conditions.

Our study is not without limitations. Our sample is largely made up of public-sector union members, which may limit the generalizability of results. Nevertheless, since the public-sector union members were in a strike-permissive state, they arguably share means of participation more common to private-sector unions than public-sector unions in states not permitting strikes. We also controlled for the public- and private-sector distinction, and our findings are consistent with and without these controls. All considered, we suggest our results hold relevance for both public-sector unions in strike-permissive states and private-sector union members.

We are also limited in our ability to make causal claims regarding the effect of job satisfaction or fit on union participation due to the cross-sectional nature of our sample. Future studies might examine our hypotheses using longitudinal data. A more systematic examination of fit's moderation of the exit-voice tradeoff would include attrition data as well. An event history analysis similar to that of Iverson and Currihan (2003) that accounts for fit would thereby better serve to further clarify fit's role in the exit-voice tradeoff.

Future studies would also do well to examine the job satisfaction-fit interaction alongside other antecedents of union participation. Past model development benefited from the strong statistical power characteristic of meta-analyses (e.g., Bamberger et al., 1999; Monnot et al., 2011), but examinations of union participation and fit are rare and not likely to benefit from meta-analysis until more studies occur. Finally, future studies should consider whether fit distinguishes between job satisfaction differences in union and non-union samples. It may be that low-fit workers enabled by unions to stay on the job fully account for mean differences in job satisfaction between these groups. If this were the case, job satisfaction for high-fit

workers would be the same for union and non-union workers—again providing a more hopeful take on the role unions play in the lives of their members.

In conclusion, this article expanded and linked two literatures not often studied together—labor relations and PE fit. Considering both led to proposing fit’s moderating role of job satisfaction and union participation, which we examined using a primary sample of three diverse metropolitan unions. Our findings established boundary conditions to a relationship generally assumed negative. Our study helps guide the development of union participation models in future studies and informs the strategic choices unions face in organizing and reinvigorating lay activism. Unions stand to increase participation and lay activism by engaging low-fit, satisfied workers. Unions should also take heart in the distinction high fit affords—participation can occur alongside members’ satisfaction just as easily as their dissatisfaction.

Acknowledgments

The authors gratefully acknowledge Fritz Drasgow and Ryan Lamare for their helpful reviews of earlier drafts of this article. Any remaining errors are our own.

Appendix: Developed Scales

Job Satisfaction in Union Settings Scale (α .88)

Indicate agreement with the following statements (1 = “Strongly Disagree” to 7 = “Strongly Agree,” with “Neither Agree Nor Disagree” at Midpoint):

- My job allows and encourages me to be creative and innovative.
- Since starting my job, I have less time to do the job I was hired to do. (R)
- Since being hired, my employer has made it easier for me to do my job.
- I have become more fearful of maintaining my job. (R)
- Since being hired, my employer has made my job more stressful. (R)
- Given the way that my job is changing, I am confident that I will want to do this job for a long time.
- While I want to keep doing this job, I am unhappy with the changes that my employer has implemented. (R)

$N = 773$; (R) = Reverse-coded item.

Overall Union Participation Scale (α .82)

Indicate participation relative to other employees in your union (1 = “Extremely Below Average” to 7 = “Extremely Above Average,” with “An Average Amount” as midpoint):

- I help with union organizing efforts.
- I participate in union activities.
- I have been/would be involved in strike support.
- I have/would participate in picketing.
- I volunteer for union service.

Indicate agreement with the following statements (1 = “Strongly Disagree” to 7 = “Strongly Agree,” with “Neither Agree Nor Disagree” at Midpoint):

- I would never engage in violence during a strike.* (R)
- Picket line violence would not be justified even if factory management uses outside employees (scabs) to break a strike.* (R)
- I would be willing to participate in an act of nonviolent civil disobedience in support of fellow workers, even if it meant that I could be arrested.
- Under no circumstances would I support a work stoppage that was potentially illegal. (R)

$N = 760$; (R) = Reverse-coded item; *Original Militancy items from Martin (1986).

References

- Aiken, L. S., and West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: SAGE Publications.
- Anderson, J. C. (1979). Local union participation: A re-examination. *Industrial Relations*, 18(1), 18–31.
- Bamberger, P. A., Kluger, A. N., and Suchard, R. (1999). The antecedents and consequences of union commitment: A meta-analysis. *The Academy of Management Journal*, 42(3), 304–318. <https://doi.org/10.2307/256921>
- Borg, I., and Groenen, P. J. F. (2005). *Modern multidimensional scaling: Theory and applications* (2nd ed.). New York, NY: Springer.
- Borjas, G. J. (1979). Job satisfaction, wages, and unions. *The Journal of Human Resources*, 14(1), 21–40. <https://doi.org/10.2307/145536>
- Brayfield, A. H., and Rothe, H. F. (1951). An index of job satisfaction. *Journal of Applied Psychology*, 35(5), 307–311. <https://doi.org/10.1037/h0055617>
- Brown, S. D., and Gore, P. A. (1994). An evaluation of interest congruence indices: Distribution characteristics and measurement properties. *Journal of Vocational Behavior*, 45(3), 310–327. <https://doi.org/10.1006/jvbe.1994.1038>
- Camp, C. C., and Chartrand, J. M. (1992). A comparison and evaluation of interest congruence indices. *Journal of Vocational Behavior*, 41(2), 162–182. [https://doi.org/10.1016/0001-8791\(92\)90018-U](https://doi.org/10.1016/0001-8791(92)90018-U)
- Fiorito, J., Padavic, I., and Russell, Z. A. (2014). Union beliefs and activism: A research note. *Journal of Labor Research*, 35(4), 346–357. <https://doi.org/10.1007/s12122-014-9186-4>
- Freeman, R. B. (1980). The exit-voice tradeoff in the labor market: Unionism, job tenure, quits, and separations. *Quarterly Journal of Economics*, 94(4), 643–673.
- Gordon, M. E., Beauvais, L. L., and Ladd, R. T. (1984). The job satisfaction and union commitment of unionized engineers. *Industrial and Labor Relations Review*, 37(3), 359–370. <https://doi.org/10.2307/2523731>
- Hickey, R. (2005). Running your local. In J. Slaughter (Ed.), *A troublemaker's handbook 2* (pp. 290–305). Detroit, MI: Labor Notes.
- Holland, J. L. (1959). A theory of vocational choice. *Journal of Counseling Psychology*, 6(1), 35–45. <https://doi.org/10.1037/h0040767>
- Holland, J. L. (1963). Explorations of a theory of vocational choice and achievement: A four-year prediction study. *Psychological Reports*, 12(2), 547–594. <https://doi.org/10.2466/pr0.1963.12.2.547>
- Holland, J. L. (1966). *The psychology of vocational choice*. Waltham, MA: Blaisdell Publishing Company.
- Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments* (3rd ed.). Odessa, FL: Psychological Assessment Resources.
- Huszczo, G. E. (1983). Attitudinal and behavioral variables related to participation in union activities. *Journal of Labor Research*, 4(3), 289–297.
- Ironson, G. H., Smith, P. C., Brannick, M. T., Gibson, W. M., and Paul, K. B. (1989). Construction of a Job in General Scale: a comparison of global, composite, and specific measures. *Journal of Applied Psychology*, 74(2), 193.
- Is TFA for you? (2016, July 18). <http://bit.ly/2mRY3qH>
- Iverson, R. D., and Currihan, D. B. (2003). Union participation, job satisfaction, and employee turnover: An event-history analysis of the exit-voice hypothesis. *Industrial Relations: A Journal of Economy and Society*, 42(1), 101–105. <https://doi.org/10.1111/1468-232X.00279>
- Judge, T. A., Hulin, C. L., and Dalal, R. S. (2012). Job satisfaction and job affect. In S. W. J. Kozlowski (Ed.), *The Oxford handbook of organizational psychology* (1st ed., Vol. 1). New York, NY: Oxford University Press.
- Klandermans, B. (1986). Psychology and trade union participation: Joining, acting, quitting. *Journal of Occupational Psychology*, 59(3), 189–204. <https://doi.org/10.1111/j.2044-8325.1986.tb00224.x>

- Kolchin, M. G., and Hyclak, T. (1984). Participation of union activities: a multivariate analysis. *Journal of Labor Research*, 5(3), 255–262.
- Kristof-Brown, A. L., and Guay, R. P. (2011). Person–environment fit. In S. Zedeck (Ed.), *APA Handbook of Industrial and Organizational Psychology* (Vol. 3, pp. 3–50). Washington, DC: American Psychological Association.
- Kristof-Brown, A. L., Zimmerman, R. D., and Johnson, E. C. (2005). Consequences of individuals' fit at work: A meta-analysis of person–job, person–organization, person–group, and person–supervisor fit. *Personnel Psychology*, 58(2), 281–342. <https://doi.org/10.1111/j.1744-6570.2005.00672.x>
- Locke, E. A. (1969). What is job satisfaction? *Organizational Behavior and Human Performance*, 4(4), 309–336. [https://doi.org/10.1016/0030-5073\(69\)90013-0](https://doi.org/10.1016/0030-5073(69)90013-0)
- Martin, J. E. (1986). Predictors of individual propensity to strike. *Industrial and Labor Relations Review*, 39(2), 214–227. <https://doi.org/10.2307/2523460>
- McShane, S. L. (1986). The multidimensionality of union participation. *Journal of Occupational Psychology*, 59(3), 177–187. <https://doi.org/10.1111/j.2044-8325.1986.tb00223.x>
- Monnot, M. J., Wagner, S., and Beehr, T. A. (2011). A contingency model of union commitment and participation: Meta-analysis of the antecedents of militant and nonmilitant activities. *Journal of Organizational Behavior*, 32(8), 1127–1146. <https://doi.org/10.1002/job.736>
- Nye, C. D., Su, R., Rounds, J., and Drasgow, F. (2012). Vocational interests and performance: A quantitative summary of over 60 years of research. *Perspectives on Psychological Science*, 7(4), 384–403. <https://doi.org/10.1177/1745691612449021>
- Parks, J. M., Gallagher, D. G., and Fullagar, C. J. A. (1995). Operationalizing the outcomes of union commitment: The dimensionality of participation. *Journal of Organizational Behavior*, 16(7), 533–555.
- Peterson, N. G., Mumford, M. D., Borman, W. C., Jeanneret, P. R., and Fleishman, E. A. (Eds.). (1999). *An occupational information system for the 21st century: The development of O*NET*. Washington, DC: American Psychological Association. <http://bit.ly/2mNcjAK>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., and Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Prediger, D. J. (1982). Dimensions underlying Holland's hexagon: Missing link between interests and occupations? *Journal of Vocational Behavior*, 21(3), 259–287. [https://doi.org/10.1016/0001-8791\(82\)90036-7](https://doi.org/10.1016/0001-8791(82)90036-7)
- Rounds, J., Su, R., Lewis, P., and Rivkin, D. (2010). *O*NET interest profiler short form psychometric characteristics: Summary*. Washington, DC: The National Center for O*NET Development.
- Russell, S. S., Spitzmüller, C., Lin, L. F., Stanton, J. M., Smith, P. C., and Ironson, G. H. (2004). Shorter can also be better: The Abridged Job in General Scale. *Educational and Psychological Measurement*, 64(5), 878–893. <https://doi.org/10.1177/0013164404264841>
- SAS. (2012). (Version 9.4) [Windows]. Cary, NC: SAS Institute Inc.
- Schneider, B. (1987). The people make the place. *Personnel Psychology*, 40(3), 437–453.
- Spector, P. E. (1997). *Job satisfaction: Application, assessment, causes, and consequences*. Thousand Oaks, CA: SAGE Publications.
- Su, R. (2012). *The power of vocational interests and interest congruence in predicting career success* (Dissertation). University of Illinois, Urbana-Champaign. <http://hdl.handle.net/2142/34329>
- Tracey, T. J. G., Allen, J., and Robbins, S. B. (2012). Moderation of the relation between person–environment congruence and academic success: Environmental constraint, personal flexibility and method. *Journal of Vocational Behavior*, 80(1), 38–49. <https://doi.org/10.1016/j.jvb.2011.03.005>
- Tracey, T. J. G., and Rounds, J. B. (1993). Evaluating Holland's and Gati's vocational-interest models: A structural meta-analysis. *Psychological Bulletin*, 113(2), 229–246. <https://doi.org/10.1037/0033-2909.113.2.229>

PROCEEDINGS OF THE LERA 2017 MEETINGS

Wheeler, H. N. (1985). *Industrial conflict: An integrative theory*. Columbia, S.C.: University of South Carolina Press.

Zener, T. B., and Schnuelle, L. (1976). Effects of the self-directed search on high school students. *Journal of Counseling Psychology*, 23(4), 353–359. <https://doi.org/10.1037/0022-0167.23.4.353>

V. LERA Best Papers: Unions and Employee Voice I

Building Internal Organisational Capacity to Respond Strategically to Neoliberalism: Insights from a Teacher Union in Australia

MIHAJLA GAVIN

The University of Sydney Business School

This paper examines how one teacher union in the state of New South Wales, Australia, the New South Wales Teachers' Federation (NSWTF), has built organisational capacity across its organisational, financial and governance structures since the 1980s to respond to neoliberal reform affecting collective organisation and the teaching profession. A qualitative research methodology is used with data drawn from union documents and interviews with 61 NSWTF officers and rank-and-file activists. Through applying David Weil's (2005) model of union strategic choice and decision-making, this study finds that renewal and revitalisation of historically and culturally embedded internal practices and structures in the NSWTF is critical to ensure the union adapts to present and future neoliberal challenges, that members can continue to engage in active, participatory democracy and decision-making at a grassroots level, and that credibility of the union is maintained in the eyes of the membership. This research contributes to debates and understandings of how teacher unions may deploy tactics and strategies to respond to neoliberal education reform and contemporary challenges facing unions.

Introduction

Since the early 1980s, neoliberal governments across Western democracies have sought to inject neoliberal and market ideologies into education policy in an effort to foster more competitive and productive national economies, which has subsequently transformed the work and conditions of teachers at a national as well as global level (see Connell 2013). Simultaneously, neoliberal governments have also endeavoured to undermine the strength and influence of the collective organisations that represent workers in the teaching profession—teacher trade unions—in a climate of general hostility towards the labour movement. Interestingly, despite declining trade union membership levels across unions on an international scale, teacher unions have been effective in retaining a comparative degree of strength and influence as measured by levels of union membership and density (Carter, Stevenson, and Passy 2010). Despite this phenomenon, little is known in existing literature about contemporary efforts being made by teacher unions to challenge or resist neoliberal education reform in order to assert the interests of their members and the teaching profession overall (Carter, Stevenson, and Passy 2010; Bangs and MacBeath 2012). Moreover, literature on union renewal and revitalisation has emphasised that unions within this climate need to consider how they can transform their internal structures and external activities to effectively adapt to contemporary challenges facing the labour movement.

This paper investigates the efforts of one teacher union in the state of New South Wales (NSW), Australia—the New South Wales Teachers' Federation (NSWTF)—to respond to neoliberal challenges affecting unionism and the teaching profession. The NSWTF is an industrial and professional union that represents the interests of teachers employed in the public education sector in NSW. In the face of neoliberal

challenges, the NSWTF has been effective in surviving as an industrial organisation that can influence education policy and in retaining a high level of union membership and density. In particular, this paper will examine whether and how the NSWTF has built internal organisational capacity in a climate of neoliberal reform since the 1980s to adapt and revitalise its internal structures and processes in a way that, at its core, provides the necessary foundations to simultaneously resist neoliberal agendas whilst advancing the interests of its membership.

To achieve this end, this paper applies David Weil's (2005) model of strategic choice and decision-making to understand how the NSWTF has built organisational capacity across its organisational, financial and governance structures since the 1980s to respond to neoliberal challenges. It utilises a qualitative research methodology incorporating a case study approach with data sourced from internal and external union documents and 61 interviews with current and former NSWTF officers and rank-and-file activists. It will interrogate issues including whether and how the NSWTF has built strong internal foundations that facilitate membership-driven decision-making around the strategic direction and positioning of the union, how union renewal may be achieved across its organisational, financial and governance structures, and the extent to which teacher unions can overall "push back" and resist within a climate of hostility towards unionism.

Literature Review

This section will provide a brief overview of how neoliberal and marketised agendas have transformed education and teaching, the place of teacher unions within this context, and how teacher unions can strategically position themselves to respond to these agendas. It will also present the case study organisation used in this research.

Global Education Reform Through a Neoliberal Agenda

Education reform policies underscored by neoliberal and marketised agendas have transformed education systems and the work and conditions of teachers since the early 1980s. Neoliberalism is an economic philosophy and theory that advocates for economic and social transformation where domestic and global economic relations are restructured around market principles in the belief that such agendas will improve human well-being by encouraging individual choice and freedom (Olssen and Peters 2005). Neoliberalism represents a shift away from Keynesian concerns for social welfare and instead favours deregulating markets, liberalising trade, privatising sectors of the economy, creating "smaller" governments and promoting anti-union, "flexible" labour policies (Peetz and Bailey 2011).

Such ideas were popularised by right-wing economic and political theorists in the US and Europe and developed further through public choice theories adopted by the Thatcher and Reagan Governments in the 1980s (Edwards, Cahill, and Stilwell 2012). Across Western democracies, the reform of education has gained traction in the belief that restructuring schooling will generate economic success (Helsby 1999). Under neoliberal and marketised agendas, education policies have been reoriented from a liberal-humanist tradition where education is viewed as having intrinsic value to the individual and society to an instrumental approach where education is commodified as an untapped economic resource (Helsby 1999). The free market underpins neoliberal education reform discourse, with the idea that expanding parental choice will increase competition amongst schools, squeeze "poorer" schools out of the market, and improve the quality of education and student learning outcomes (Helsby 1999). In conjunction, the drive for greater competition has seen the rise of high-stakes testing and strict accountability practices led at both national and international levels (Rizvi and Lingard 2010).

Within this climate, the work and conditions of teachers have been restructured with significant consequences for teaching practice, professionalism, identity and collegial relations. Standardised testing has produced a narrowing of the curriculum and an emphasis on "teaching to the test," which has reduced choice and professional autonomy for teachers (Au 2011). Neoliberalism has also fostered a "technical-managerial" identity where the technical and instrumental aspects of teaching are advanced (Angus 2013) and "contrived collegiality" has seen a depersonalisation and humanisation of the student-teacher relationship (Hargreaves 1994).

Neoliberal Effects on Unions and Capacity to Respond

Along with neoliberalism affecting education and the work and conditions of teachers, neoliberalism has also affected the collective organisations representing the teaching profession. Neoliberal forces have encouraged growing employer and governmental assault on trade unions through legislative and regulatory changes that restrict traditional union rights and place threats on the wages and conditions of the workers represented by such unions (Hurd 2003). Public sector unions, such as teacher unions, have faced threats of privatisation, the expanded power of right-wing politics, restrictions on traditional union activity such as strikes, and limitations in negotiating with fiscally conservative governments (Hurd 2003).

Teacher unions have also been viewed as “standing in the way” of achieving flexibilities in the employment conditions and organisation of teachers’ labour (Robertson 2000). Debate exists around the extent to which unions can “push back” against neoliberal forces and exert influence in a climate of declining union strength and influence. Two schools of thought exist on this issue. One side of this debate argues that unions are rarely compelled to act proactively and will only respond during a crisis (Stratton Devine and Reshef 1996) and may even ignore long-term threats in favour of short-term “satisficing” to maintain membership support (Ross and Martin 2006). The alternative side of the debate argues that union leaders should and often do respond proactively to changes in their external environment, but even this is carried out only in times when a union is not significantly constrained by external factors (Stratton Devine and Reshef 1996).

Strength of Teacher Unions

In considering how teacher unions have built organisational capacity within a climate of threats to unionism and education, it should be acknowledged that teacher unions have retained a considerable degree of strength and influence in representing the industrial and professional interests of their members. Compared with unions in the private sector, public sector unions (and particularly teacher unions) have retained high levels of membership and density. In Australia in the mid-1970s, over 50% of the workforce belonged to a trade union in their main paid jobs, dropping to 40% in the early 1990s and 30% by the mid-1990s (Sadler and Fagan 2004: 31). Latest figures from August 2013 show only 17% of all employees across Australia are union members in their main job (ABS 2013).

By comparison, teachers on a global level have remained a highly unionised sector of workers despite neoliberal forces threatening collective organisation (Carter, Stevenson, and Passy 2010). Teachers are the largest group of knowledge workers associated with collective labour (Kerchner, Koppich, and Weeres 1997) as reflected by statistics which show that in Australia, employees in the education and training industry had the highest proportion of union membership based on latest data from 2013 (ABS 2013). This trend is also reflected in other Western democracies where the education industry had the second highest rate of union membership in 2015 in the US (Bureau of Labor Statistics 2016) and the highest rate in 2014 in the UK (Department for Business Innovation and Skills 2015).

Union Strategy and Building Organisational Capacity

Although teacher unions have retained a comparative degree of strength within a climate of threats to unionism, it is important to consider whether and how teacher unions have attempted to respond strategically and engage in practices of renewal and revitalisation to survive and thrive as collective organisations. In a time of declining union membership, diminishing power resources and declining capacities to mobilise, labour movements have begun to confront some of these issues by revitalising and renewing their internal and external operations and activities in order to remain relevant and influential within a turbulent environment facing union (Cornfield and McCammon 2003; Frege and Kelly 2003; Hyman 2007). This study will consider ways that teacher unions have reorganised their internal practices and processes in order to build the foundations for active, engaged and participative forms of unionism (Fairbrother 2000).

In conjunction with understanding how teacher unions have engaged in internal renewal and revitalisation practices, it is important to consider whether and how unions have engaged in such practices strategically. While the term “strategy” has been defined in many and varied ways, most definitions consider strategy as a deliberate and conscious set of guidelines that determine decisions into the future (Mintzberg

1979). Strategy does not occur in singular forums but manifests in the ongoing internal matters of an organisation and as part of a union's general activities which mutually reinforce to shape its direction (Weil 2005). While Kochan, Katz and McKersie's seminal text of 1986 introduced the concept of strategic choice to the industrial relations literature, since this time, the conceptualisation of union strategic management and choice in the literature has generally been slow (Frege and Kelly 2003) with little insight into whether and how unions have used strategy to address and combat key challenges (Stratton Devine and Reshef 1996). Given the numerous environmental challenges facing unions today, unions need to effectively adapt and display proficiency making strategic decisions (Stratton Devine and Reshef 1996).

David Weil's model of strategic choice and planning provides a systematic framework that unions can use to make strategic choices that adapt to challenges in their environmental context (Weil 2005). Weil argues that the strategic situation facing a union can be considered along two dimensions: strategic level and organisational capacity (Weil 2005). "Strategic leverage" reflects the external environment in which unions operate including labour market challenges, technological factors, work organisation, and legislative and policy frameworks. "Organisational capacity" considers the union's internal organisational, financial, and governance structures (Weil 2005). A union generally has greater ability to affect its organisational capacity than its strategic leverage by translating key strategic decisions into activities that are undertaken by the union in the desired places (Weil 2005). By developing both strategic leverage and organisational capacity, unions can adapt to external challenges and increase the likelihood achieving long-term objectives (Weil 2005). Each element of "organisational capacity" is considered below.

Organisational Structure

Unions can build organisational capacity by adjusting their organisational structure. A union's organisational structure includes the formal organisation such as the size of the union, different levels and divisions and authority figures, and also the people working within that structure including elected officers and appointed staff (Weil 1994). It also consists of the human resource system which consists of methods for recruiting, selecting, training, promoting and compensating staff, the overall culture of the union such as the organisational mission, management and leadership style, and how information is shared within the union (Weil 1994). However, while unions may adopt new strategies, progressing these strategies is often hindered by old structures and organisational legacies (Bramble 2001; Weil 2005). Unions are typically viewed as 'path dependent' and will not threaten shared ideals and habits to which they have long been accustomed (Hyman 2007). Moreover, as unions grow they inevitably develop bureaucratic, centralised structures and experience an ongoing tension between hierarchical control and democratic decision-making (Boxall and Haynes 1991). According to Hyman (2007), union organisational structures should be considered a 'process' where established routines and assumptions can be 'unlearned' when they are no longer effective.

Financial Structure

A union's 'fiscal health' can greatly affect the strategic choices available. 'Fiscal health' is determined by sources of revenue, size of expenses relative to revenue, and the surplus or debt that accumulates over time (Weil 1994). 'Fiscal health' is maintained when a union can forecast levels of expenditure and sustain chosen strategies despite changes in external conditions (Weil 1994). A union should also consider how "dues-dependent" it is and move towards a position of establishing a stable financial base that is less reliant on member dues (Weil 1994). Additionally, unions need to consider how money is collected and distributed within the union, who authorises expenditure, and decision-making processes around allocating financial resources (Weil 1994).

Governance Structure

The governance structure of a union is generally established by its constitution and articulates the democratic practice around how decisions are made and policy is formed and implemented (Weil 1994). A union's governance structure includes its formal structure, people and culture. The formal governance structure determines where major policy issues develop and who has authority for implementing those policies. A union typically comprises of a large decision-making body consisting of representation from local union

branches which acts as the highest policy-making body, as well as smaller governance bodies that meet more regularly to consider the implementation of policies (Weil 1994). The degree of centralisation or decentralisation in a union's governance structure is usually determined by the union's constitution (Weil 1994). Unions should also consider the culture of decision-making, which can be strongly influenced by the union's leadership (Weil 1994). In line with literature on union renewal, unions need to consider how to rebuild workplace strength through encouraging greater rank-and-file involvement in decision-making (Cornfield and McCammon 2003). Additionally, as unions grow, emphasis should be placed on decentralising governance structures and increasing activities at the local branch level to minimise concerns of unions becoming too large or unwieldy (Spaull and Hince 1986).

Case Study of the New South Wales Teachers' Federation

This study explores strategic decisions around the organisational capacity of one teacher union, the New South Wales Teachers' Federation. The NSWTF is the trade union in the state of New South Wales, Australia, representing teachers in the public school system. It represents teachers employed in pre-school, infants, primary and secondary schools, as well as teachers working in vocational education and training and corrective service centres (NSWTF Annual Report 2015: i). The NSW education system comprises a mix of public (government), Catholic and private (non-government) schools with 65.1% of students attending public schools in NSW (ABS 2015). Compared to other states and territories, NSW also teaches the largest number of students (ABS 2015). The NSWTF formed in 1918 and is the largest industrial union in NSW with a total membership in 2015 of approximately 73% of all full-time, permanent teachers across the state (NSWTF Annual Report 2015: 86).

At present, the NSWTF employs 46 full-time union officers in various senior leadership and professional roles such as industrial/research, welfare support, field organisers as well as specialised coordinator positions overseeing areas including Aboriginal issues, women and multiculturalism. The NSWTF considers itself as both an industrial and a professional union concerned with the industrial interests and working conditions of its members and in seeking improvements for public education more generally (Zadkovich 1999; Fitzgerald 2011). At the NSWTF's core is a focus on democracy and participation of members in its decision-making processes. The union's relationship with its members and its strong internal culture are considered key reasons for the union's "survival" in a climate of hostility towards unionism and public education in NSW (Fitzgerald 2011).

Methodology

A qualitative research methodology utilising a case study approach has been used to understand how the NSWTF has built organisational capacity. Constructionist and interpretivist methods are suitable when conducting exploratory research which can lead to hypothesis building and explanations (Ghauri and Gronhaug 2010). This study has sought to investigate how the NSWTF has built organisational capacity to support union renewal and build collective strength. The time period for this study spans the mid-1980s to present, reflecting consensus in the literature around the time of emerging neoliberal agendas. A single case study approach has been adopted to identify factors involved in the functioning and behaviour of the NSWTF (Ghauri and Gronhaug 2010). Although the number of observations from a single case study may be low and reduce capacity for generalisability, the emphasis in qualitative research is to better understand and examine the social world as interpreted by its participants. Providing "thick description" enables understanding of the particularities and complexities of the subject under investigation (Geertz 1973; Ghauri and Gronhaug 2010).

Data was collected through document analysis and semi-structured interviews. Documents of the NSWTF that were analysed include annual reports, decisions at annual conference meetings, minutes, decisions at council and executive meetings, and articles from the union's journal. Documents can provide historical insight about the organisation and enhances validity as there is less researcher obtrusiveness and reactivity (Bowen 2009).

To complement insights from document analysis, 61 interviews were conducted with current and former union officials and activists of the NSWTF, comprising 30 women and 31 men. As this research spans a 30

PROCEEDINGS OF THE LERA 2017 MEETINGS

year period, it was necessary to capture the perspectives of participants who were both currently active (20 participants) and formerly active (41 participants) within the NSWTF across a diverse range of leadership and grassroots positions. To preserve participant confidentiality, the researcher has not specified current or former engagement. As this research concerned understanding internal processes of the NSWTF, most participants are union officials who can provide deep insights into these processes. However, insights were also garnered from long-serving rank-and-file activists who could reflect on the NSWTF’s decision-making processes. In many cases, the interviewed activists also held roles as councillors or as members of the executive. Semi-structured interviews were used to deeply investigate phenomena and “probe” answers to questions (Yin 2011), which is important when gauging the perceptions, experiences and thoughts of participants (Saunders, Lewis, and Thornhill 2007).

Table 1 outlines the positions held by participants at the time of interviewing. To preserve anonymity, the age, sex, or whether the position is currently or formerly held has been omitted.

TABLE 1
Positions Held By Participants at Time of Interview

Position	Total	Identifier
President	5	President (P) 1; P2; P3; P4; P5
Deputy President	5	Deputy President (DP) 1; DP2; DP3; DP4; DP5
Senior Vice-President	2	Senior Vice-President (Senior VP) 1; Senior VP 2
General Secretary	7	General Secretary (GS) 1; GS2; GS3; GS4; GS5; GS6; GS7
Deputy Secretary/Assistant General Secretary	5	DP/AGS 1; DP/AGS 2; DP/AGS 3; DP/AGS 4; DP/AGS 5
City Organiser	7	City Organiser (CI) 1; CI2, CI3, CI4, CI5, CI6, CI7
Country Organiser	9	Country Organiser (CO) 1; CO2; CO3; CO4; CO5; CO6; CO7; CO8; CO9
Other Organiser	1	Other Organiser 1
Women’s Coordinator	3	Women’s Coordinator (WC) 1; WC2; WC3
Research/Industrial Officer	3	R/I Officer (R/I) 1; R/I Officer 2; R/I Officer 3
Professional Support Officer	3	PS Officer (PS) 1; PS Officer 2; PS Officer 3
NSWTF Journal Editor	1	Editor 1
Trade Union Training Officer	1	Training Officer 1
Activist and/or Executive Member/Councillor	9	Activist 1; Activist 2; Activist 3; Activist 4; Activist 5; Activist 6; Activist 7; Activist 8; Activist 9

Documents were first analysed by searching out underlying themes and organising information into categories related to the central question of understanding the NSWTF’s organisational capacity (Bowen 2009). Interview questions were developed from the themes arising out of document analysis and through discussions with key informants and a comprehensive review of the relevant literature. An interview schedule and questions were developed which explored themes and issues around the NSWTF’s organisational, financial and governance structure as informed by Weil’s framework on union strategy. Interview data and documents were coded and analysed using qualitative data analysis software NVivo around themes and sub-themes emerging from interview responses and analysis of documents (Glaser and Strauss 1967).

Findings

Organisational Structure

This section will examine three key components of the NSWTF's organisational structure over the last 30 years—how officers are hired, succession and training for officers, and officer tenure—and will consider where organisational capacity has and can be built in order to strengthen the union within a climate of threats to unionism and the education industry.

Hiring Officers—Elections, Officer Background, Skills, and Expertise

Senior officers of the NSWTF are elected by the membership every 2 years and all other officers are elected every 3 years and subject to re-election by ballot of the council (NSWTF Annual Report 2013: 11). This practice of election is also observable in other parts of the NSWTF's structure including election of delegates to the council and annual conference by associations, election of executive members by councillors, and election of the local union representative in each school (Other Organiser 1; PS3; CO2). The process of electing officers for positions by the rank-and-file membership rather than appointment by application was viewed as a highly democratic practice that created a “sense of ownership” (Other Organiser 1) and authenticity (DP/AGS2; CO4; CO2; PS3; Activist 4).

Some criticisms, however, did exist around this process. Participants commented that being reasonably well-known was essential to be elected, typically meaning that nominees would “pander to the electorate” (Other Organiser 1; R/I2). There was also a view that councillors would avoid voting for an officer who was “totally ideologically out of step” (Other Organiser 1) or thought “outside the box” (DP4), sometimes creating a perception that the union was a “closed shop” (Activist 9), which challenged notions of democracy and the ability to bring different perspectives or ideas into the union (Other Organiser 1; R/I2; PS2). Criticism also surrounded the fact that in recent years fewer officers were losing their positions through challenge by other candidates, and officers (particularly senior officers) were often elected unopposed, potentially due to lack of interest in standing (Other Organiser 1; R/I2; CO2; CO8).

The NSWTF also has a strong tradition of only electing officers from within the teaching profession. This practice was a “sacred cow” (CO3) and a measure of strength and credibility for the union where officers came from within the profession and were represented by rank-and-file teachers (GS3; CO5; CO7; CI5; CI7; Other Organiser 1; R/I3; WC3). This practice allowed officers to understand the experience of “being at the chalkface” (WC3) when engaging with members and having currency of experience positively influenced interactions with members (GS3; CI1; CI3; CI5; CO4; CO8; R/I2). Additionally, there is a view that since officers are elected from within the profession, decision-makers would actively consider impacts on students and public education in their decision-making (Senior VP1; CI3; CI5; CO7). This style of hiring was also favoured in comparison to the vast majority of other unions that hire professional union officers who may not have prior practical experience in the relevant industry (Senior VP1; CO7; CO8; Other Organiser 1; R/I2; R/I3; WC3).

However, some participants also expressed that while officers have experience in teaching, there were no other skills, competencies or expertise required of candidates to stand for nomination, and hiring decisions were exclusively based on popular election (DP/AGS2; R/I2). Some participants also expressed concern that it was not a requirement to have experience in leadership or management or training in managing budgets, which were critical skills for senior leadership positions (GS1; PS2). In this vein, the NSWTF was criticised as a “closed” organisation that did not seek external advice or expertise in hesitation that such practices may “open the flood gates” to more of this practice (DP/AGS2; CI1; CO3; Activist 7; Activist 9). Some also questioned the level of experience officers had in their teaching career prior to becoming an officer. There was a view that the NSWTF was unfavourably developing a culture where officers have only a few years of teaching experience prior to becoming an officer (CI2; CI7; CO1; CO7; R/I2). Participants felt that officers needed to first establish themselves as teachers and gain credibility and experience across different types of employment in order to speak to members with a level of authority (CO3; R/I1).

Succession Planning and Training

Participants held different views about how succession planning and promotion occurred in the NSWTF. There was general consensus that formalised succession planning was “anathema to [union’s] culture” (P5) and was driven by the “politics of the [internal] factions” (DP/AGS1) where senior officers would encourage “like-minded people” and “their own favoured candidates” (P5) during elections (GS5; R/I1; PS2). However, a view was also shared that although promotion of officers could be faction-driven, that over time, leadership in the union had come from different factional strands (P5) and that individuals who were “exemplary” (R/I1) would generally be mentored and supported in the formation of the next cohort of experienced officers (P5; GS1; GS5; DP/AGS2).

Participants also held differing views about the extent and quality of induction and ongoing training for officers. Most observed that training generally lacked rigor and formalisation. In more recent years, new officers were able to attend a three-day training course run by the Australian Education Union (the national teachers’ union in Australia) (CI3; CO4) and also participate in training provided by other unions such as the Australian Council of Trade Unions (peak body for trade unions in Australia) or other universities or regulatory bodies (CI3; Training Officer 1; R/I1). The provision of a budget for training also provided some support for officers with identified areas of development (Training Officer 1).

Generally, training that was available for officers was ad hoc and informal. An important informal training platform was provided when officers would meet at Federation’s Head Office prior to council meetings and have the opportunity to discuss different issues with the general secretary (P5; GS1; CI6; Training Officer 1). It was also common for officers to receive training from their colleagues or via on-the-job experience, which was assisted by enhancements in technology that facilitated improved communications between officers and a strong internal culture that fostered good collegial support (GS5; DP/AGS4; CI1; CI2; CI4; CI5; CO9; R/I2). This was particularly critical for organisers who are geographically dispersed across the state (DP/AGS4; CI6). Officers could also use some of their prior skills and knowledge as a teacher activist or local union representative when taking up an officer position (GS5; CI7; CO4; R/I2) or have the opportunity to engage in temporary relief work when an officer in their substantive position was on leave (CO5; CO9).

Many participants were quite critical about the lack of formalised training that was available to new officers. Many highlighted how the union’s belief in a “common sense” approach to training (P5; CI5; CI7; R/I2) based on “assumed knowledge” (CI4) and “prior skills” (DP/AGS1) made officers feel they were being “thrown in” to the organisation (CI5; CO4) without proper induction or mentoring (GS1; CO5; CO4; CO 5; CI3; CI7) and expected to “sink or swim” (DP/AGS2; R/I2; R/I3). As expressed by one officer: “[lack of training] has significant pitfalls because you go from, at best, you’re a Fed Rep [local union representative] at a school, to going out there and people ringing you up on such serious matters” (CI4).

Officer Tenure

Participants were sharply divided about whether limited tenure for officers should be introduced. Whilst this concept was floated as early as 1986, a policy around limited tenure has not been introduced by the union (NSWTF 1986 “Review of Federation Structure”). Participants in favour of limited tenure for officers observed how there were fewer officers returning to teaching after completing their 3 year elected term, which had seen a rise of long-term professional officers who had built a career in the union (CI5). To be a “good officer” and an effective activist, participants believed that it was essential for officers to understand the daily experiences of teachers at the classroom level and have currency of teaching experience (P4; CO5; WC2; PS3; Activist 2). In senior leadership positions, limited tenure was viewed, particularly by activists who were interviewed, as essential as greater time out of the teaching profession could mean “los[ing] some perspective on the day-to-day dealings” (CI2; R/I1; Activist 4; Activist 6; Activist 9). Problematically, the union is also currently in a position where many long-serving senior officers will soon be retiring, threatening retention of corporate and cultural knowledge of the organisation (GS1).

By contrast, many participants rejected notions of limited tenure. Some participants commented that, to a considerable extent, officers were not actually union officials but rather “deployed teachers working for the union” (P5) on a temporary basis who are subject to re-election and only provided with 6 years of leave from

their employer (the NSW Department of Education) to undertake external activities (DP2; CO5; R/I3). Some felt that particular positions in the union, such as organiser or welfare roles, allowed officers to still be in “tuned in to local issues” (CI5; R/I3; PS3; Activist 5). Limited tenure was also not favourable given that the complexity of the industrial and political environment meant that officers were still learning about the external environment (DP/AGS1; CO2; Other Organiser 1). Over time, officers also built up considerable knowledge and diverse skills of value to the union (GS6; DP/AGS2; CO3; CO9), particularly in senior leadership roles where knowledge, expertise and political astuteness was crafted over decades of working for the union (CI2; CO1; CO5; CO9; Activist 4; Activist 6).

Participants generally favoured establishing a process that enabled officers to return to the classroom regularly in order to maintain a connection to the grassroots level. Although practicalities in establishing this process were acknowledged, allowing officers to regularly return to the classroom would provide officers with new perspectives and a greater connection with students and teachers, as well as foster improved trust, credibility and respect amongst the membership (CI1; CO1; CO7; R/I1; PS2; Activist 8). Some current officers even described how being out of the teaching profession for a long time made them feel “deskilled” as a teacher (GS6; CI4; R/I2).

Financial Structure

This section examines the financial processes and practices of the NSWTF and considers areas where the union has built organisational capacity in its financial management and decision-making in recent decades and further areas for consideration if the NSWTF is to continue operating with a sound financial base.

Revenue Sources and Income

In a climate of declining union membership and threats to trade unionism, the NSWTF has needed to consider its various revenue sources. Pertinent to this issue is the question of the extent to which the NSWTF is “dues-dependent.” According to Weil’s framework, most unions depend substantially on member dues for revenue and while some dependence is inevitable, the relative level of dependency can affect the strategic position of the union (Weil 1994). Weil suggests that unions should move towards a position of establishing a stable financial base where they are less “dues-dependent” and focus more on other revenue sources (Weil 1994). For the NSWTF, its “lifeline” has been membership fees (Senior VP1). During the 1980s and 1990s, membership fees accounted for close to 90% of the NSWTF’s income, however, since this time has consistently exceeded 90% (Senior VP1; GS1; GS2; G4; GS6; DP/AGS3; PS3; CI1; Activist 4; NSWTF 2015 Annual Report: 28; AEU NSWTF 2016: 7).

To a lesser degree, the NSWTF also operates other income streams. During the 1990s, the union considered it important to begin diversifying its income stream to avoid “[putting] all our eyes in one basket” (DP2; GS6; GS7). This saw the union purchase and lease other floors and neighbouring retail and commercial businesses of NSWTF’s Head Office building to secure rental income (DP2; GS5; GS6; GS7). However, while such income supplies several million dollars annually, it is exclusively viewed as “icing on the cake” (GS1). Another important income stream is the Public Education Fund Levy established in the late 1990s, where a percentage of membership fees are allocated to an exclusive campaign fund (CO8; DP/AGS3). The campaign fund can be spent to fund campaigns centred on public education issues, which has given the NSWTF the capacity to “lead the debate” (CI4) when it comes to issues facing students’ interests and public education more broadly (CI4; GS5).

There were differing perspectives amongst participants around whether or not membership fees being the main source of income was considered problematic. Although some participants acknowledged membership fees was a critical source of income for the NSWTF, others noted that it could be problematic if this was the *only* source of income and potential fluctuations in membership levels could affect the union’s service offerings (GS6; PS2; CI9; CO6; Activist 7). However, by and large, this source of income was viewed as critical to the NSWTF’s “independence” (DP2) and “strength” (CI4). Participants agreed that if the union began to rely on other non-union related sources of income that it could challenge this independence and incur a “political cost” (DP2; CI4). Reliance on membership fees for income not only represented a “monetary measure” but also a “symbolic measure” of the level of member engagement in and commitment

to the union's campaigns and commitment (CI4). Incidentally, there was an obvious need for the NSWTF to maintain its high membership level and ensure that recruitment was an active activity engaged in by organisers and councillors in their interactions with teachers (GS1; CO9). This is particularly critical given challenges currently being faced by the NSWTF in the changing demographic profile and employment structures of the teaching profession, notably the retirement of significant numbers of "baby boomer" teachers and the increased casualisation of the teaching workforce in NSW (DP/AGS4; CI5; CO3; CO4; CO5; R/I2; PS2; Activist 6; NSWTF Annual Conference Decisions 2004: 13; NSWTF 2009 "Everyone's a winner with a strong union": 11).

Financial Management and Reporting

Key processes have been implemented in the NSWTF to ensure effective financial management and reporting of finances. The NSWTF operates a Finance Committee consisting of executive members, a senior officer, and the NSWTF's Accountant, which meets at least monthly to discuss finances in consultation with the general secretary (GS1; GS2; GS4; GS5; CI7). Various forums exist where the NSWTF's General Secretary is required to report on the state of the union's finances (GS4) including publication of accounts from the previous year at the annual conference and a detailed reporting of the union's proposed budget for the forthcoming year to the council (GS5; GS6; DP/AGS3). Since the early 1980s, the NSWTF has also employed a full-time accountant to work alongside the general secretary (GS2; GS6). While employing an accountant sparked a "hot debate" given the NSWTF's long-standing culture of only employing staff from the teaching profession, as the size of the union grew it became necessary to employ that particular skills set within the union (P4).

The NSWTF also prided itself on having a thorough attitude towards the transparency and accountability of its finances and considered itself as a leader for other unions in this area. Participants acknowledged that particularly in the last decade, the NSWTF had become "very strict about money" (GS6) so as to avoid attracting criticism over its financial activities (DP3; GS6). Having "checks and balances" over financial decisions, such as ensuring dual agreement over financial decisions, was considered imperative to avoid potential allegations of financial corruption (GS6; CI7; CO7). Advances in technology had also enabled the NSWTF to confidently "track every cent" of money coming into and out of the union (GS6). The NSWTF also saw itself as a financially conservative organisation. As to be explained below, whilst the NSWTF experienced previous financial difficulties, attitudes adopted by its general secretaries during the mid-1990s and 2000s saw the NSWTF adopt a more conservative attitude towards spending (DP1; GS5; GS6). Through being parsimonious in its spending, the NSWTF has been able to enjoy financial security and stability in recent decades (DP3; GS5; DP/AGS3).

Learning from Financial Difficulties

Some practices of NSWTF's financial management have improved in light of previous financial difficulties faced by the union. Many participants reflected on times in the union's recent history where deductions of member fees at source was halted by the NSW Department of Education. Traditionally, fees were deducted from members' salaries by the employer and paid to the union via cheque (P4; DP1; GS4; GS6; GS7). However, in 1974 and 1994, the respective NSW governments of the day withdrew this service following industrial disputes (P4; Senior VP1; GS1; GS7; CO2; CO3), resulting in a "financial crisis" (P4; CO3) which "nearly crippled" the union (J. Dixon) on both occasions. However, the shift away from deductions at source has been a slow process. It was not until 2006 that the NSWTF took proactive steps to initiate an ongoing campaign of encouraging members to deposit fee money via direct debit (GS1; DP1; DP3; Senior VP1; CO8; Activist 4). Currently, approximately 80% of members now use the direct debit method (GS1). The NSWTF's General Secretary has commented that such practice has attracted the attention of other teacher unions in the US that are experiencing similar challenges in the deduction of fees (GS1). In addition to encouraging members to change their method of payment, the NSWTF also established a special fund where a percentage of membership fees was allocated for "rainy day" emergency situations (GS6) in the event that the NSW government decided again to stop deductions in source, ensuring that the NSWTF had sufficient operating funds for a number of months (GS2; GS6; DP/AGS3; CO3; CO8).

Allocation of Finances and Budgetary Decision-Making

Budgets are set in the NSWTF by the general secretary seeking submissions from various sections, drawing up the budget, and presenting it to the union’s Finance Committee and the executive for review, and finally to the council as a recommendation for debate and endorsement (P1; GS4; GS5). Regarding the allocation of finances, while the annual conference sets the broad categories of expenditure, participants noted that the general secretary and senior officers hold supreme decision-making power in terms of budgetary decisions, as informed by the recommendations and decisions of the council and the executive. For the NSWTF, the biggest area of financial expenditure was officer and staff salaries, accounting for over 50% of spending (GS5; GS6; NSWTF 1995 :How Federation spends your fees”) with the remainder typically spent on campaign activities, travel expenses to attend various decision-making forums, and other legal, administrative, and affiliation fees (GS5; CO6; CO8; NSWTF 1995 “How Federation spends your fees”). It was important for the NSWTF to track spending on salaries given the significant financial outlay and consider where flexibilities could be achieved in the replacement of retiring staff (GS6; CO3).

As stated, the NSWTF generally considers itself to be a financially conservative organisation and a view was held that the union should consistently have at the forefront of its decision-making thinking that spending of union money was spending of members’ money (GS5). When allocating money to campaigns, there was an understanding that the union needed to work within its resources and be “realistic” (CO4; Activist 4) about financial decisions given there wasn’t a “bottomless pit” of financial resources (GS6; DP/AGS3; CO4; PS3; Activist 4). General Secretary’s commented that the union would not go into a campaign that was not pre-funded and having a balanced budget was critical in the event of falling membership levels (GS2; GS6). There was also capacity, however, for the NSWTF to re-allocate money within the budget to invest more in campaign activities if a campaign intensified or a new campaign emerged (GS5; GS6; CI7). Given that the NSWTF had been running campaigns for so long, there was a view that the union confidently knew how much certain activities would cost and could therefore allocate funds appropriately, and had also adopted more sophisticated decision-making in understanding what activities would be most cost-effective when engaging in campaigns (CO4; Activist 4).

Governance Structure

This section will examine the governance structures that have allowed the NSWTF to be a union founded on democratic decision-making and will consider avenues to build further organisational capacity into the future to ensure that the membership continues to drive decision-making and steer the union through its present challenges.

Decision-Making Bodies

Three main decision-making bodies guide decision-making in the NSWTF—the annual conference, the council, and the executive. The NSWTF’s annual conference brings together some 600 rank-and-file members each year to debate the union’s policy positions and determine campaigns for the forthcoming year (DP4; DP/AG2). Decisions set at the annual conference automatically override council and executive decisions (DP/AG2; CI3). Tactics and strategies decided in this forum are then workshopped by the council in meetings held eight times per year attended by 300 rank-and-file teacher activists (known as councillors) (DP3; GS4; DP/AGS3; DP/AGS4; CO1; CO4; R/I1; Activist 1; Activist 4; Fitzgerald 2011). The council is one of the NSWTF’s most important and active forums and its level of representation is higher than many other governmental bodies in Australia (DP/AGS4; CO1; CO4). Councillors from different teaching backgrounds and geographical areas can come together to discuss issues (GS6; CO3) and also directly pose questions to the union’s senior officers (DP/AGS3). Ideas presented by senior officers require the endorsement of the council to proceed (GS6; NSWTF 1994 Council Minutes) and are then reported back to schools and associations by councillors or organisers (GS3; GS6; DP/AGS3; CI5).

The third major tier of decision-making is the executive, which comprises the union’s senior officers and 15 practising classroom teachers who meet on a fortnightly basis to discuss tactics and issues arising between council meetings (Fitzgerald 2011). The executive can challenge recommendations from senior officers as well as propose recommendations for the council and can also be convened quickly in the event that critical

interim decisions need to be made (GS3; CO1; CO4). The NSWTF also operates geographically situated associations where monthly meetings are held to discuss local issues facing teachers and schools.

Areas of Change and Resistance to Altering the Decision-Making Bodies

Participants considered the degree to which the NSWTF's main decision-making bodies had changed since the 1980s to meet the evolving needs of the union. A notable example was reducing the size of the union's annual conference in the late 1980s from over 1000 delegates to around 600-700 delegates. This action was taken following views from the membership at the time that such a large forum hindered its effectiveness as a decision-making body because it was becoming unwieldy and extremely costly to operate (DP4; GS5; Other Organiser 1; CO3; PS3). The number of council meetings held annually was also reduced to eight per year for cost-effectiveness (GS5; CI1; CO3; NSWTF 1990 Executive Minutes). A suggestion to reduce the number of councils further in the mid-2000s was narrowly defeated (DP2; GS6; CI2; CI4; NSWTF 2005 "Facing the future in a hostile environment") and similarly, the proposal to have a bi-annual instead of annual conference was also defeated (DP/AGS2). Participants generally felt that such decisions were necessary to improve the cost-effective running of the NSWTF and did not appear to diminish the level of democracy and ability for members to participate in union decision-making.

Whilst there have been some notable changes to the size of the NSWTF's decision-making bodies, by and large these structures have remained much the same since their establishment in the 1950s (DP/AGS5; CI2; R/I2; NSWTF Annual Conference Decisions 1999). Most participants saw these governance structures as working effectively and as delivering democratic decision-making, and whilst from time-to-time there have been discussions around potential further changes, no serious conversations have occurred to this effect. To a lesser extent, there has been active resistance and reluctance to change these structures (CO3; Activist 8). It is interesting to note also that the NSWTF opted against continually transforming its structure in comparison to the employer, the NSW Department of Education, which seemingly has been undertaking a constant process of internal restructuring (DP5; NSWTF Executive Minutes 1991).

Capacity for Member Voice in Decision-Making Bodies

This study investigated the extent to which these main decision-making forums provide a genuine opportunity for members to participate in and shape the strategic direction of the union. The council was considered by many participants to be "one of the most powerful debating chambers in the country" (Senior VP1) where robust debates saw no single view being shared and where decision-making was not confined to a small group of people (DP1; CI3; CO3; CO9). If dissatisfied, councillors had the capacity to vote down recommendations from the senior officers or executive (Senior VP1; GS3; CO1), which helped to "keep [the senior officers] on our toes" and "not be complacent" (GS3). This level of debate and capacity to put forward well thought out arguments and reasoning also meant that ideas and strategies were thoroughly "tested almost to destruction by 20 other people trying to attack it, as opposed to simply saying this is the president's view, rubber-stamp it." (DP1; Senior VP1; CI6; CO9). However, some participants also felt that in comparison to council debates of the 1970s and 1980s, there was less intensity of debate nowadays and there was more "guided democracy" (Senior VP1; GS6; R/I2; PS2). Additionally, given that recommendations brought by senior officers were generally comprehensive meant that, to a large degree, some "rubber stamping" of recommendations still occurred (GS3; GS6; R/I2).

In addition, this research also considered the degree to which decision-making was driven more by the leadership or membership of the union. The majority of participants stated that decision-making was driven both top-down and bottom-up depending on what issue required decision-making (P1; P4; GS4; GS7; Senior VP1; CI1; CO1; CO6; CO7; Activist 1; Activist 4). Many participants shared the view that the role of the senior officers was to provide analysis to the membership who can then provide input into implementation of strategy. Whilst the strategic direction of campaigns was generally established by the leadership, members had considerable involvement at the grassroots levels and from their associations in being able to implement decisions on the ground appropriate for their area and circumstances (P1; DP3 DP4; GS7; CO4; CO5; Activist 2). There was a view that a sign of good democracy in the union was senior officers not readily getting out of step with membership sentiments, typically meaning that leadership needed to play close attention to the views of the membership (DP4; CO1; Activist 5).

Some participants were more critical in expressing that decision-making was generally driven “top-down” by senior officers who play a significant role in determining what campaigns will be run and how they will play out (DP1; DP4; CI3; CI5; CI7; CO8; PS2; Activist 4; Activist 8). At the grassroots level, there was also some pressure felt by the council to accept the decisions made by senior officers (Activist 7). Participants also observed some issues that could affect the level of representation and democracy at council meetings. Regarding the composition of members elected to attend the council forum, more awareness needed to be fostered by the union in the late 1990s and early 2000s to ensure that the composition of its decision-making forums was keeping pace with changes in the demographic profile of the teaching profession in NSW. Union literature in the early 2000s discussed how with the average age of teachers in NSW reaching their late 40s, the NSWTF’s decision-making forums had begun to reflect this ageing process (NSWTF 2000 “New activists encouraged”). Therefore, more consciousness needed to be built in ensuring that the council is representative in all sections of its membership, including younger teachers and women (NSWTF 1999 Annual Conference Decisions).

Discussion and Conclusion

An analysis of the NSWTF’s organisational capacity and ways the NSWTF has built capacity since the 1980s demonstrates that the union has established strong foundations to ensure that the collective voice of the teaching profession is being represented, that members can drive decision-making to positively affect the strategic positioning of the NSWTF in a context of threats to collective organisation and struggles in advancing the interests of teachers amidst neoliberal education reform, and that a strong financial structure can support its campaign activities into the future. However, in line with the literature on renewal and revitalisation, there are several key areas where the NSWTF can potentially challenge some historically and culturally embedded internal practices in order to adapt to changing external conditions and ensure that it is consistently engaging with its members at a grassroots level, encouraging informed decision-making, and maintaining credibility in the eyes of its members.

Although there are limitations in generalising from a single case study, there is capacity from these findings to reveal insights for other teacher unions of the specific practices that have successfully served the NSWTF as a long-standing and influential union in NSW, and contributed to the overall favourable strategic positioning of teacher unions within the current labour movement. The findings do not intend to imply a direct cause-and-effect between how the organisational capacity of the NSWTF has measurably impacted its effectiveness as a union or comment on its external activities, but rather have sought to convey the perceptions of informed respondents about the internal practices and processes that have, and can be, adopted to remain a strong and influential union in a climate of threats by neoliberal agendas affecting unionism and education.

Regarding the NSWTF’s organisational structure, the NSWTF had well-established hiring practices to ensure that officers of the union were effectively representing the teaching profession on behalf of their peers. However, for the union to effectively represent its members, the findings reveal that officers needed to have credibility in the eyes of the membership and be better equipped in various ways to maintain that credibility. In some cases, the “organisational legacies” of the NSWTF hindered officers from being able to establish true credibility in the eyes of members (Bramble 2001; Weil 2005).

Having officers elected by the rank-and-file membership and hiring officers only from within the teaching profession represented hallmarks of the strength and credibility of the NSWTF. However, given that officers generally were elected based on their aligned views and attitudes of the organisation, which potentially created complacency in members standing for election, there may be opportunity for the union to consider, where relevant, engaging external consultants or experts from the education field on a short-term basis to provide advice and expertise on education-related issues to ensure other voices of authority can positively shape the strategic direction of the union, while maintaining credibility in the eyes of the membership by having an officer core derived from the teaching profession.

Additionally, while participants overwhelmingly commented that having teachers elected from within the profession was important for the sake of representation and ensuring that officers understood issues facing teachers when making decisions, rules around officer tenure meant there was less opportunity for officers to

return to the classroom and understand the daily issues facing teachers “at the chalkface.” Participants observed that officers needed to have currency of experience in order to speak to members with credibility and authority. Whilst implementing rules around tenure and number of years’ experience before standing as an officer would be unlikely and unfavourable, there is potential for the union to facilitate a process of officers re-engaging with teachers at the classroom level at more regular periods, particularly officers whom may have limited daily contact with teachers in their roles. While implementing tenure rules for senior officers would be particularly unfavourable given their breadth of expertise and corporate knowledge, as senior officers readily shape the strategic direction of the union, facilitating a process of re-engagement would be critical at this level.

Although having a formalised succession planning process was not favoured by the union and was generally incongruent with the election process, there was a critical need for more formal and rigorous training for officers. Although in recent years, new officers were able to engage in some formal induction training, overwhelmingly, officers felt that more formalised and regular training was needed at the introductory officer level and when advancing into more senior roles, given the unique skills set required of an officer and the complexity of member issues being handled. This was particularly important given that no specific skills or competencies, particularly around leadership or financial management, were required for prospective officers.

Analysis of the NSWTF’s financial structure since the 1980s showed that the NSWTF has adopted more financial savviness over the decades in understanding how and where its money is spent and in taking proactive steps to safeguard the flow of money into the union. However, further safeguards are also required if the NSWTF is to remain a financially sound union into the future. While Weil’s framework emphasises that unions should move towards a position of establishing a stable financial base where they are less dues-dependent (Weil 1994), overwhelmingly, participants in this study viewed members’ dues being the main source of income as an important marker of the NSWTF’s strength and independence, which was unlikely to change. It is important, however, in light of changing external conditions such as the shifting demographic profile and employment structures of the teaching profession in NSW, that the NSWTF continues to consider how recruitment can be embedded into the daily work of its officers and activists if it desires to remain an organisation in good “fiscal health” (Weil 1994).

Regarding its formal financial structure, participants reflected positively on the centralised and decentralised ways in which it was determined how money was collected and distributed within the union (Weil 1994). Although senior officers generally had supreme decision-making over the allocation of finances, financial decision-making was also informed by the views of members at council and executive meetings (Weil 1994). Having open and transparent processes for financial management allowed the NSWTF to avoid “mystique,” typically observed in the literature, around internal union accounting whereby financial data is often the sole domain of accounts either subcontracted by the union or working in siloed finance departments (Weil 1994).

It was clear from participants that sophisticated and transparent processes had been adopted by the union’s leaders over time to consistently and rigorously analyse resource allocation and ensure that members also had oversight of financial decisions about the allocation of resources during a budget period (Weil 1994; Weil 2005). As reflected in Weil’s model, the NSWTF demonstrated proficiency in being able to sustain campaign strategies despite changes in external conditions as well as gauge and forecast its level of expenditure for a fiscal period in order to establish plans within the context of those expected expenses (Weil 1994). The NSWTF also effectively considered resources in its decision-making processes around allocating money for campaign activities and favoured adopting a financially conservative approach to spending members’ money and managing the size of its expenses relative to revenue in order to maintain good “fiscal health” (Weil 1994). Evidence of being able to strategically re-evaluate how member fees were collected by the union following several financial crises (whilst somewhat reactive) was also demonstrated by the NSWTF, showing ability for the union to adapt entrenched financial practices and systems in order to meet changing external conditions (Weil 1994).

The governance structures in place in the NSWTF allowed the membership to drive the strategic direction of union decision-making. Various layers of decision-making in the union reflected consideration of how decisions are made and policy is formed and implemented (Weil 1994). Consideration was also given to

the degree to which decision-making is centralised or decentralised (Weil 1994). It was clear that a decentralised governance structure was in place whereby senior officers could not unilaterally make decisions removed from the membership and needed to secure the endorsement of members around decisions on policy direction and implementation. It was also clear that it was practising teachers embedded in the daily experience of teachers at large who were informing the strategic direction of the union.

Although some change had occurred in the size of the union's decision-making structures, the overall governance structure continued to facilitate representation and input of members and it was not seen that democracy was lost through this process. Only moderate observations were made of resistance to changing the structures to which the union had long been accustomed (Hyman 2007). This conveys some evidence of the governance structure in the NSWTF being a "process" and not a rigid structure, where there was potential to adapt to changing needs and circumstances of the union (Hyman 2007).

Further, there did not appear to be overt tensions between hierarchical control and democratic decision-making in the NSWTF (Boxall and Haynes 1991). Generally, decision-making was driven equally by the leadership and membership, depending on the issue, and officers and activists acknowledged the important role played by senior officers in setting the strategic direction of the union and ensuring members had input into guiding that strategic direction through the governance structure. There was only some suggestion that decision-making was driven more top-down by senior officers. Additionally, there was moderate criticism that although the council was a vigorous debating forum where ideas could be tested and good policy was formed, in more recent years the council appeared less active and rigorous. In light of these observations, it is important that teacher unions, such as the NSWTF, encourage open, active, participatory debating forums where dissenting views of members can be expressed and there is a balance of centralised and decentralised decision-making to ensure that members continue to guide decision-making in the union. This is important for union renewal in considerations of how unions can encourage greater rank-and-file involvement in decision-making (Cornfield and McCammon 2003).

Similarly, as part of the union renewal process, there is evidence that changes in the demographic profile of the NSWTF's membership necessitate the union to consider how to ensure the full cross-section of its membership is being represented and can access participatory forums. With an ageing teaching profession in NSW and fewer young teachers attending the NSWTF's decision-making forums, there was evidence of disproportionate representation at council meetings, which can potentially affect the union's workplace strength and democracy if full representation is not achieved (Cornfield and McCammon 2005). There is therefore potential for the NSWTF to further consider how it might engage newer members in its decision-making forums to ensure full representation and input into decisions as well as a strategic direction shapes by the needs and concerns of contemporary teachers.

In conclusion, this study has found that whilst teacher unions, such as the NSWTF, have established historically strong internal foundations for members to drive democratic decision-making within the union and have core input into the strategic direction of the union, elements of these historically and culturally embedded internal structures may similarly constrain teacher unions from renewing and revitalising in the face of neoliberal challenges to unionism and the teaching profession. It is important that within a climate of continuing hostility towards unionism that teacher unions act proactively in considering where there is scope and potential to adapt their organisational, financial, and governance structures to ensure that members continue to shape the strategic direction and positioning of the union, credibility of the union is maintained in the eyes of the membership, and that the union retains solid yet flexible foundations on which to advocate for the interests of the teaching profession.

References

- Australian Bureau of Statistics. (ABS) 2013. *Employee Earnings, Benefits and Trade Union Membership*, Australia, 6310.0, August 2013.
- Australian Bureau of Statistics. (ABS) (2015) *Schools*, Australia, 2014. Cat. no. 4221.0. ABS, Canberra, ACT.
- Australian Education Union New South Wales Teachers Federation Branch (AEU NSWTF). 2016. *Financial Statements*, 31 December 2016.

- Angus, Lawrence. 2013. "Teacher Identity and the Neoliberal Condition: Asserting a Participative-Professional, Socially Democratic Teacher Imaginary in Technical-Managerial Times." *Journal of Educational and Social Research*, Vol. 3, no. 7, pp. 170-177.
- Au, Wayne. 2011. "Teaching under the new Taylorism: high-stakes testing and the standardization of the 21st century curriculum." *Journal of Curriculum Studies*, Vol. 43, no. 1, pp. 25-45.
- Ball, Stephen J. 2003. "The teacher's soul and the terrors of performativity." *Journal of Educational Policy*, Vol. 18, no. 2, pp. 215-228.
- Bangs, John., and John MacBeath. 2012. "Collective leadership: the role of teacher unions in encouraging teachers to take the lead in their own learning and in teacher policy." *Professional Development in Education*, Vol. 38, no. 2, pp. 331-343.
- Boxall, Peter., and Peter Haynes. 1997. "Strategy and Trade Union Effectiveness in a Neo-liberal Environment." *British Journal of Industrial Relations*, Vol. 35, iss. 4, pp. 567-591.
- Bowen, Glenn A. 2009. "Document Analysis as a Qualitative Research Method." *Qualitative Research Journal*, Vol. 9, no. 2, pp. 27-40.
- Bramble, Tom. 2001. "Australian Union Strategies since 1945." *Labour & Industry*, Vol. 11, no. 3, pp. 1-25.
- Bureau of Labor Statistics. 2016. *Union Members Summary*, United State Department of Labor, USDL-16-0158, 28 January, 2016.
- Carter, Bob., Stevenson, H., and Rowena Passy. 2010. *Industrial Relations in Education: Transforming the School Workforce*. New York: Routledge.
- Connell, Raewyn. 2013. "The neoliberal cascade and education: an essay on the market agenda and its consequences." *Critical Studies in Education*, Vol. 54, no. 2, pp. 99-112.
- Cornfield, Daniel B., and Holly J. McCammon. 2003. "Revitalizing Labor: Global Perspectives and a Research Agenda." In Daniel B. Cornfield and Holly J. McCammon, *Labor Revitalization: Global Perspectives and New Initiatives*. Oxford: Elsevier Ltd, pp. 1-20.
- Department for Business Innovation and Skills. 2015. *Trade Union Membership 2014: Statistical Bulletin*, BIS/15/300, June 2015.
- Edwards, Lindy., Cahill, Damien., and Frank Stilwell. 2012. "Introduction: understanding neoliberalism beyond the free market." In Lindy Edwards, Damien Cahill and Frank Stilwell, *Neoliberalism: Beyond the Free Market*. Massachusetts: Edward Elgar, pp. 1-12.
- Fairbrother, P. 2000. *Trade Unions at the Crossroads*. London: Mansell Publishing.
- Fitzgerald, Denis. 2011. *Teachers and Their Times: History and the Teachers Federation*. Sydney: University of NSW.
- Frege, Carola M., and John Kelly. 2003. "Union Revitalization Strategies in Comparative Perspective." *European Journal of Industrial Relations*, Vol. 9, no. 1, pp. 7-24.
- Gardner, Margaret. 1989. "Union Strategy: A Gap in Union Theory." In Bill Ford and David Plowman eds., *Australian Unions 2nd edn*. South Melbourne: MacMillan, pp. 49-72.
- Geertz, Clifford. 1973. "Thick Descriptive: Toward an Interpretive Theory of Culture." In Clifford Geertz ed., *The Interpretation of Cultures: Selected Essays*. New York: Basic Books, pp. 3-30.
- Ghauri, Pervez, and Kjell Gronhaug. 2010. *Research Methods in Business Studies, 4th edn*. England: Pearson.
- Glaser, Barney G., and Anselm L. Strauss. 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research*. Chicago: Aldine Publishing Company.
- Hargreaves, Andy. 1994. *Changing Teachers, Changing Times: Teachers' Work and Culture in the Postmodern Age*. London: Cassell.
- Helsby, Gill. 1999. *Changing Teachers' Work*. Philadelphia: Open University Press.
- Hurd, Richard W. 2003. "In Defense of Public Service: Union Strategy in Transition." *Working USA*, Vol. 7, no. 1, pp. 6-25.
- Hyman, Richard. 2007. "How can trade unions act strategically?" *Transfer*, Vol. 13, no. 2, pp. 193-210.

- Kerchner, Charles T., Koppich, Julia E., and Joseph G. Weeres. 1997. *United Mind Workers: Unions and Teaching in the Knowledge Society*. San Francisco: Jossey-Bass Inc.
- Kochan, Thomas A., Katz, Harry C., and Robert B. McKersie. 1986. *The Transformation of American Industrial Relations*. New York: Basic Books Inc.
- Minzberg, Henry. 1979. "Patterns in Strategy Formation." *International Studies of Management and Organizations*, Vol. 9, no. 3, pp. 67-86.
- New South Wales Teachers' Federation (NSWTF). 1986. "Review of Federation Structure." *Education*. 30 June, p. 16. NSW: NSWTF.
- New South Wales Teachers' Federation (NSWTF). 1990. *1990 Executive Minutes*, "Reducing the Size of Annual Conference and Council," 13 February. NSWTF.
- New South Wales Teachers' Federation (NSWTF). 1991. *1991 Executive Minutes*, "Federation Structures," 25 June. NSWTF.
- New South Wales Teachers' Federation (NSWTF). 1994. *1994 Council Minutes*, "Powers and Duties of Council," 28 May. NSWTF.
- New South Wales Teachers' Federation (NSWTF). 1995. "How Federation spends your fees." *Education*. 22 May. NSW: NSWTF.
- New South Wales Teachers' Federation (NSWTF). 1999. *1999 Annual Conference Decisions*, "Challenges facing Teacher Unionism in Its Organisation." NSWTF.
- New South Wales Teachers' Federation (NSWTF). 2000. "New activists encourages." *Education*. 10 April. NSW: NSWTF.
- New South Wales Teachers' Federation (NSWTF). 2004. *2004 Annual Conference Decisions*, "Recruitment and activism and the future of the union." NSWTF.
- New South Wales Teachers' Federation (NSWTF). 2005. "Facing the future in a hostile environment." *Education*. 7 March. NSW: NSWTF.
- New South Wales Teachers' Federation (NSWTF). 2009. "Everyone's a winner with a strong union." *Education*. 6 April. NSW: NSWTF.
- New South Wales Teachers' Federation (NSWTF). 2013. *2013 Annual Report*. Marrickville, NSW: NSWTF.
- New South Wales Teachers' Federation (NSWTF). 2015. *2015 Annual Report*. Thornleigh, NSW: NSWTF.
- Olssen, Mark., and Michael A. Peters. 2005. "Neoliberalism, higher education and the knowledge economy: from the free market to knowledge capitalism." *Journal of Education Policy*, Vol. 20, no. 3, pp. 313-345.
- Peetz, David., and Janis Bailey. 2011. "Neoliberal Evolution and Union Responses in Australia." In Gregor Gall, Adrian Wilkinson and Richard Hurd eds., *International Handbook on Labour Unions: Responses to Neoliberalism*. Cheltenham: Edward, Elgar, pp. 62-81.
- Rizvi, Fazal., and Bob Lingard. 2010. *Globalizing Education Policy*. Oxon: Routledge.
- Robertson, Susan L. 2000. *A Class Act: Changing Teachers' Work, Globalisation and the State*. New York: Falmer Press.
- Ross, George., and Andrew Martin. 2006. "European Unions Face the Millennium." In Andrew Martin and George Ross eds., *The Brave New World of European Labor: European Trade Unions at the Millennium*. USA: Berghahn Books, pp. 1-25.
- Sadler, David., and Bob Fagan. 2004. "Australian Trade Unions and the Politics of Scale: Reconstructing the Spatiality of Industrial Relations." *Economic Geography*, Vol. 80, no. 1, pp. 23-43.
- Saunders, Mark., Lewis, Philip., and Adrian Thornhill. 2007. *Research Methods for Business Students*, 4th edn. England: Pearson.
- Spaull, Andrew., and Kevin Hince. 1986. *Industrial Relations and State Education in Australia*. Blackburn: Australasian Education Press Pty Ltd.
- Stratton Devine, Kay., and Yonatan Reshef. 1996. "Union planning: a framework and research agenda." *Industrial Relations*, Vol. 51, no. 3, pp. 506-523.

PROCEEDINGS OF THE LERA 2017 MEETINGS

- Voss, Kim., and Rachel Sherman. 2000. "Breaking the Iron Law of Oligarchy: Union Revitalization in the American Labor Movement." *American Journal of Sociology*, Vol. 106, no. 2, pp. 303-349.
- Weil, David. 1994. *Turning the Tide: Strategic Planning for Labor Unions*. New York: Lexington Books.
- Weil, David. 2005. "A Strategic Choice Framework for Union Decision Making." *WorkingUSA: The Journal of Labor and Society*, Vol. 8, no. 3, pp. 327-347.
- Yin, Robert K. 2011. *Qualitative Research from Start to Finish*. New York: The Guilford Press.
- Zadkovich, Gary. 1999. To Deliver Us Our Future: Developing Strategy for Difficult Times. NSW Teachers' Federation, Eric Pearson Report.

VI. Work Organization and Public Policy I

Agglomeration Economy and Competition Improve Productivity and Employment in Local Service Industries

SACHIKO KAZEKAMI

Chukyo University

I demonstrate that 1) the density of establishments in retail trade, wholesale, the narrowly defined service industries, and moreover, manufacturing increases the total factor productivity (TFP) in each service industry, 2) the agglomeration economy improves the TFP of retail trade; and 3) competition improves the TFP of wholesale and the narrowly defined service industries. As the Japanese society has been facing a decline in population, especially in the rural areas, I focus on rural municipalities and find that they have lower productivity in the service sector. However, the agglomeration economy improves the TFP of the service sector in these municipalities.

Introduction

Improving the productivity of the service sector is important for Japan as well as other developed countries because it accounts for a large share of their economies. In Japan, the value added by the service sector accounted for 72.9% of the GDP in 2015. If we limit the service sector to retail trade, wholesale, eating and drinking services, hotel, service professionals, technology and business services, education, health and welfare, and other services (i.e., the non-tradable service industries), the value added by these sectors accounted for 38.5% of the GDP, while the manufacturing sector accounted for 20.4% of the GDP. In Japan, employment in the service sector accounted for 72.3% of all workers in 2015. Employment in the limited service sectors described above accounted for 55.4% of all workers. Therefore, improving productivity is necessary for economic growth. Furthermore, it is necessary for increasing wages because productivity positively correlates with wages in most cases (Morikawa 2016).

Previous studies have sought the factors that improve the productivity of service sectors in competition, the externality effect of human resources, high operating rate, and rational production plan due to large demand, and management know-how of the manufacturing sector. Syverson (2004, 2011) argues that competition induces Darwinian selection or the improvement in efficiency within firms. Darwinian selection implies that competition transfers market share towards more efficient producers, reducing the number of relatively high cost firms/plants by forcing their exit at times and opening up room for more efficient producers. Heightened competition can also induce firms to undertake costly productivity-raising actions that they may otherwise avoid, leading to an increase in efficiency within plants or firms.

Syverson (2004) investigates the connection between competition and productivity in a case study of the ready-mixed concrete industry. He finds that the productivity distribution of ready-mixed concrete plants is truncated from below as the demand density rises. Markets with denser construction activities have higher lower-bound productivity levels, higher average productivity, and lesser productivity dispersion. In another study, Foster, Haltiwanger, and Krizan (2006) find that aggregate productivity growth in the U.S. retail sector is almost exclusively because of the exit of less efficient single-store firms and their replacement with more efficient national chain store affiliates.

Lucas (1988), Rauch (1991), and Moretti (2004) discuss the externality effect of human resources. Moretti (2004) estimates plant-level production functions using a unique firm-worker matched data set. He demonstrates that the spillovers in two industries located in the same city and are economically close are larger than the spillovers in two industries located in the same city, but are economically distant. Morikawa (2014) notes that the scale economy, high

Author's address: Department of Economics, Chukyo University, 101-2 Yagoto Honmachi, Showa-ku, Nagoya-shi, 466-866, Japan

operating rate, and rational production plan due to large demand are factors that can improve the productivity level in addition to the above factors. Morikawa (2014) uses a survey of selected service industries and chooses specific industries, i.e., cinemas, golf courses, tennis clubs, fitness centers, bowling alleys, golf driving ranges, cultural centers, matrimonial agencies and wedding ceremony hall brokers, and aesthetic salon services, and finds that a doubled population density increases productivity in the service sector by 7-15%. Previous studies analyze the effect in the same service industries. Moreover, previous empirical studies examine specific service industries or limited service industries. I shed light on not only the effect of the service sector, but also on other sectors such as the manufacturing sector. I examine the non-tradable service industries that account for a large part of the GDP and employment, discussed in more detail below

Beyond academic studies, Japan Revitalization Strategy (2016), which is the plan that improved the productivity of the service sector in Japan, proposes methods such as using the know-how of the manufacturing sector in the service sector, consulting local financial institutions, making an information center for IT knowledge, listing the specialists who know new services, visualizing the quality of service, and certifying services.

There are company-related factors such as management know-how and market environment-related factors such as competition that can affect the productivity of the service industries. However, as policy-makers should consider the market environment-related factors, I analyze it in this study. Among market environment-related factors, I consider the agglomeration economy and competition.

The agglomeration economy yields a knowledge spillover effect, a skill spillover effect, and benefits from sharing labor and intermediate inputs markets. Furthermore, I consider two types of spillover effects, that is, the spillover effect within an industry and that from other industries. As described above, competition induces Darwinian selection or the improvement of efficiency within firms. I roughly analyze the mechanism at work after finding out the positive effects of competition on productivity.

In particular, I examine the municipalities that specialize in the health and nursing sector and analyze the effect of an agglomeration economy of the service and manufacturing sectors on the productivity of the service sector. There is a decrease in population in Japan and many municipalities do not expect a high density of establishments. The health and nursing care industry is the main source of job opportunities in some rural municipalities of Japan. However, it is a non-tradable service industry. Therefore, my analysis is focused on those municipalities.

The service sector consists of a variety of industries. I focus on the retail trade industry, wholesale industry, and the narrowly defined service industries (service professionals, technology and business services, education, health and welfare, and other services)¹ because a typical characteristic feature of the service sector is the non-tradable industry, and this induces a typical issue of the service sector. A non-tradable industry is one in which demand is limited by the size of the local economy (e.g., volume of value added, residents' income level, and population size). Employment in wholesale and retail sales, which are representative non-tradable service industries, accounts for the largest share, 24%, of the total employment (10.54 million employees) in the service sector of Japan. Employment in the medical and welfare industry, which are the other representative non-tradable service industries, accounts for 17% of the total employment in the service sector. It is also the fastest growing industry in Japan. I measure productivity through total factor productivity (TFP) and labor productivity.

In the next section, I explain the empirical approach used in the study. In section 3, I describe the data. I present the estimation results in section 4. Finally, I discuss and conclude the paper in section 5.

Empirical Approach

First, I investigate the factors that improve the level of productivity in the service sector using the following equation:

$$Productivity_{jt} = \beta_0 + \beta_1 X_{jt} + \beta_2 Cont_{jt} + \beta_3 Year\ dummy_t + \mu_{jt} \quad (1)$$

$Productivity_{jt}$ denotes the log of TFP or the log of labor productivity. X_{jt} denotes the factors in municipality j in year t that improve the productivity of the service sector. I use the density of establishments in retail trade, wholesale, and the narrowly defined service industries, its square, and the log of the number of establishments in the service sectors to investigate the spillover effect in the same industries. I also use the density of

establishments in manufacturing and the log of the number of establishments in the manufacturing sector to investigate their spillover effect. The density of establishments in the service sector and the log of the number of establishments in the service sector do not allow distinguishing between the effects of an agglomeration economy and competition. Therefore, I use the modified Ellison-Glaeser measure (Ellison and Glaeser 1997) for an agglomeration economy and the Herfindahl-Hirschman Index for competition. The Ellison-Glaeser measure is the standard measure of proxies for the presence of knowledge spillover, labor market pooling, input sharing, and so on (Pe'er, Vertinsky, and Keil 2016). I do not include the share of employment in each firm. Therefore, I use the following measure:

$$EG_{jt} = (X_{jt} - I_{jt})^2 \quad (2)$$

X_{jt} denotes municipality j 's share of total employment in all industries and I_{jt} denotes municipality j 's share of employment in the retail trade, wholesale, or the narrowly defined service industries in year t . I obtain the aggregate data on employment in retail trade and wholesale industries. The Herfindahl-Hirschman Index is calculated using the following equation:

$$C_{jt} = \sum_k S_{kjt}^2 \quad (3)$$

S_{kjt} denotes the share of sales of firm k in retail trade, wholesale, or the narrowly defined service industries in year t . I estimate Equation 1 by using the fixed effect model, and cluster them according to municipality. I control economic change over time with the year dummy. Additionally, I control for the differences in educational level and the demography by region with $Cont_{jt}$. I use the ratio of people who graduate college/university or graduate school by prefecture level, and the ratio of people older than 65 years old in the residence by municipality. Moreover, I examine Equation 1 with and without income per resident or sales of each service industry per resident. Income per resident or sales per resident capture the (potential) level of demand. Income per resident is not income per worker, which indicates the level of productivity in the old theory. Income per worker may capture the part of effect of an agglomeration economy because it increases the productivity of workers. However, I capture the effect of an agglomeration economy by the variable X , rather than by income per worker.

To estimate the TFP, I estimate the production function using Levinsohn and Petrin's (2003) model, which is as follows:

$$y_{it} = \beta_0 + \beta_l l_{it} + \beta_k k_{it} + \beta_m m_{it} + \omega_{it} + e_{it} \quad (4)$$

y_{it} denotes the log of output (sales) of firm i in year t , l_{it} denotes the log of number of workers in firm i in year t , k_{it} denotes the log of capital of firm i in year t , m_{it} denotes intermediate inputs of firm i in year t , and ω_{it} denotes unobservable productivity shocks. All firms are from retail trade, wholesale, or the narrowly defined service industries. The demand function for intermediate input is given as:

$$m_{it} = m_t(\omega_{it}, k_{it})$$

It must be monotonic in ω_{it} for all k_{it} to qualify as a valid proxy. I estimate this function by a two-step estimation method. From this production function, I calculate the log of TFP of firm i in year t , TFP_{it} . Then, I calculate the average log of TFP in city j and the average log of TFP during two years. To estimate the log of labor productivity, I divide sales in the retail trade and wholesale industries by the aggregate number of workers in retail trade and wholesales as I obtain only that data. Furthermore, I estimate the effect on the number of workers by using the number of workers as the dependent variable instead of productivity in Model 1.

Second, I investigate whether Darwinian selection or efficiency improvement works. I calculate the ratio of establishments that enter or exit the market to total establishments in each municipality.

Third, I focus on the municipalities where the health and nursing is the main industry because of the lack of other industries in some rural municipalities. I demonstrate that the level of productivity in the municipalities that specialize in health and nursing is lower than that in other municipalities. However, (1) the agglomeration of retail trade, wholesale, or the narrowly defined service industries, and (2) the agglomeration of manufacturing increases the productivity of the service industries. First, I estimate the following model:

$$\begin{aligned}
 \text{Productivity}_{jt} &= \alpha_0 + \alpha_1 \text{Health}_{jt} + \alpha_2 \text{density}_{jt} + \alpha_3 \text{density}_{jt}^2 + \alpha_4 \text{density}_{jt} \times \\
 &\text{Health}_{jt} + \alpha_5 \text{density}_{jt}^2 \times \text{Health}_{jt} + \alpha_6 \text{Cont}_{jt} + \varepsilon_{jt}
 \end{aligned} \tag{5}$$

Health_{jt} denotes the health and nursing dummy in municipality j in year t ; the health and nursing dummy is equal to one if a municipality has a specialized index² greater than one in the health and nursing industry, otherwise zero. density_{jt} and density_{jt}^2 are the density of establishments and their squares, respectively, in retail trade, wholesale, or the narrowly defined service industries. $\text{density}_{jt} \times \text{Health}_{jt}$ and $\text{density}_{jt}^2 \times \text{Health}_{jt}$ are cross-terms between the health and nursing dummy and the density or its square. Cont_{jt} is the difference in educational level and the demography of a region. I analyze whether α_1 is negative and α_4 is positive.

Second, I simply divide the municipalities into those with a specialized index greater than one and those without a specialized index greater than one in the health and nursing industry. Moreover, I divide the sample by the number of manufacturing industries that have a specialized index greater than one is one to six, or not. I demonstrate the evidence using the distribution chart. I analyze this evidence using econometric method too. The results are available upon request.

Additionally, I limit the sample to metropolitans and analyze the above estimations for robustness. Moreover, I estimate the whole sample for commuting zones instead of municipalities for robustness. The reason is that economic activity often integrates across municipal borders. However, I do not include these robustness results because of a space constraint. The results are almost similar to the main results. These results are available upon request.

Data

I analyze the model using data from 1995, 2000, 2005, and 2010 as some data are not available for 2015. As for TFP, I use two years and calculate the average, of the years 1995, 1996, 2000, 2001, 2005, 2006, 2010, and 2011. I obtain data on sales, value added, tangible fixed assets, intermediate inputs (cost plus sales and general administration cost minus payroll, depreciation, welfare, rent, and tax) and employment from the Basic Survey of Japanese Business Structure and Activities conducted by the Ministry of Economy, Trade and Industry for the period from 1995 to 2011. The survey is administered to enterprises with 50 or more employees that have excess capital or investment funds valued at over 30 million yen. This survey collects data by each firm. Therefore, I use the Establishment and Enterprise Census to incorporate the information detailing the locations of the establishments in the Basic Survey of Japanese Business Structure and Activities.

The Establishment and Enterprise Census is conducted for all establishments in Japan by the Ministry of Internal Affairs and Communications. I divide the data in the Basic Survey of Japanese Business Structure and Activities by the number of establishments and aggregate the data by municipality. As the municipalities are sometimes merged during the estimation periods, I adjust those cases. The Basic Survey of Japanese Business Structure and Activities does not cover small firms, which is one of its limitations. However, I demonstrate that the productivity of local service industries differs by competition or an agglomeration economy even though non-small firms have a possibility of a scale economy.

I also obtain the data on sales of retail trade, wholesale, output of manufacturing and the number of residents from the visible data of the Cabinet Office, Government of Japan; the data on employment by industry from the population census; the data on population by educational level and prefecture from the Employment Status Survey; and the data on elderly people from the Basic Resident Registration. Table 1 presents the detailed descriptive statistics (note: because of their sizes, all tables are found at the end of this paper).

Estimation Results

Factors That Affect the Productivity of the Service Sectors

Effect on Total Factor Productivity

Column 1 of Table 2 indicates that the high demand of retail trade per resident increases the TFP of the retail trade industry. The large demand in retail trade might induce an intense agglomeration economy. In fact, column 9 indicates that the agglomeration economy increases the TFP of the retail trade industry. However, high income per resident does not directly increase the TFP. High density of establishments in retail trade increases the TFP of the retail trade industry, as indicated in columns 3 and 4. The thick markets of labor and inputs and the spillover effect from other establishments in the same industry increase the TFP. The square of density of establishments in retail trade is significant and negative, as indicated in column 4. Overcrowded establishments decrease the TFP.

The agglomeration of the manufacturing sector increases the TFP of the retail trade industry, as indicated in columns 5 and 6. High density of establishments in the manufacturing sector might increase the demand in retail trade, and high demand in retail trade increases its TFP. However, the spillover effect from manufacturing sectors might affect the retail trade industry. In fact, column 12 indicates that the magnitude of density of establishment in manufacturing is smaller when the demand of retail trade per resident (i.e. sales of retail trade per resident) is controlled. However, the coefficient of density of establishments in manufacturing is still significant. Therefore, manufacturing sectors improve the TFP of the retail trade industry by the spillover effect and increase in demand in retail trade.

Table 3 indicates similar results for the TFP of the wholesale industry. Remarkably, the intense competition indicates the significant and positive effect on TFP in the wholesale industry. The effect of demand (i.e., sales per resident) in the wholesale industry is weaker than that in the retail trade industry (the coefficient is smaller, and columns 11 and 12 indicate insignificant coefficients). It might be the case that most customers in the wholesale industry are not households, but firms. Therefore, sales per resident do not affect TFP of the wholesale industry. The effect of density of establishments in the wholesale industry on its TFP is larger (e.g., the coefficient of the density of establishment in the retail trade industry in column 4 of Table 2 is 0.215, whereas, the coefficient of the density of establishment in the wholesale industry in column 4 of Table 3 is 0.605). Agglomeration economy also affects TFP of the wholesale industry, as indicated in columns 9 and 13. There are wholesale streets in Japan. It may be an expression of the effect from the agglomeration of the wholesale industry.

Table 4 indicates that in contrast to the above results, the density of establishments in both the narrowly defined service industries and manufacturing sector does not improve the TFP of the former. However, the agglomeration economy and competition improve its TFP. The high density of establishments does not increase the TFP, but the agglomeration of employment, regardless of workers working at the same place, improves the TFP. In Table 4, the ratio of elderly population is significant and negative while it has the opposite sign in Table 2 and 3. The narrowly defined service sector includes education, cinema, golf, amusement facilities, and temp service. Aging people may have a lower demand of these sectors; hence, it does not induce high competition and increase the TFP. I do not have data on the sales of narrowly defined service per resident.

Effect on Labor Productivity

Table 5 indicates that the square of the density of retail trade and the square of the density of manufacturing increases labor productivity. It implies that a certain density of manufacturing or retail trade improve labor productivity. The agglomeration economy has a negative impact on labor productivity. The TFP is increased by the agglomeration of establishments, and not the agglomeration of employment.

Effect on the Number of Workers

Table 6 indicates that the TFP has an insignificant impact on the change in the number of workers. However, labor productivity decreases the percentage change in the number of workers. It means that increase in labor productivity implies labor-saving progress. However, Morikawa (2016) argues that the flexibility of hiring

workers corresponding to the demand in the service sector is one of the factors that improve its productivity. I do not determine whether new technology, improvement in production efficiency, management know-how, and other reasons increase the TFP and then the number of workers. Table 6 presents the relationship between productivity and the change in the number of workers.

Establishments That Enter or Exit the Market

Table 7 indicates that the high density of establishment in the retail trade and wholesale industries increase the percentage of entry to the market. However, the increase in the TFP of the retail trade industry decreases the percentage of entry to the market. Moreover, the increase in the density of retail trade and wholesale decrease the percentage of exit from the market. These results do not strongly support Darwinian selection. Kazekami (2016) also argues that the number of establishments that enter or exit the market is the most stagnant in the highest quartile of change in the TFP. As for the narrowly defined service industries, the increase in the TFP increases the percentage of entry to the market, but increase in the density of establishments in them increases the percentage of exit from the market. It might imply that Darwinian selection works for the narrowly defined service industries.

Municipalities Specializing in the Health and Nursing Sector and Agglomeration of Manufacturing Industries

Many rural municipalities have faced decreasing population and do not have a large manufacturing sector. Table 8 indicates that the health and nursing dummy (the health and nursing dummy equals one if a municipality specializes in this sector) is significant and negative for all service sectors (i.e., retail trade, wholesale, and the narrowly defined service sector). However, the cross-term indicates that the agglomeration of establishments in the retail trade or wholesale industries increases the TFP even if the municipality specializes in the health and nursing sector, as indicated in columns 5 and 12. The cross-term between the health dummy and manufacturing indicates that agglomeration of establishments in the manufacturing sector does not improve the TFP of every service industry.

Figure 1 indicates the distribution of TFP of the retail trade industry in 2001 using municipal data. The TFP indicated by the red and blue lines, that is, the municipalities that do not specialize in the health and nursing sector, is higher than the TFP indicated by the green and orange lines, that is, the municipalities that specialize in the health and nursing sectors as there is a lack of manufacturing or core tradable sectors.

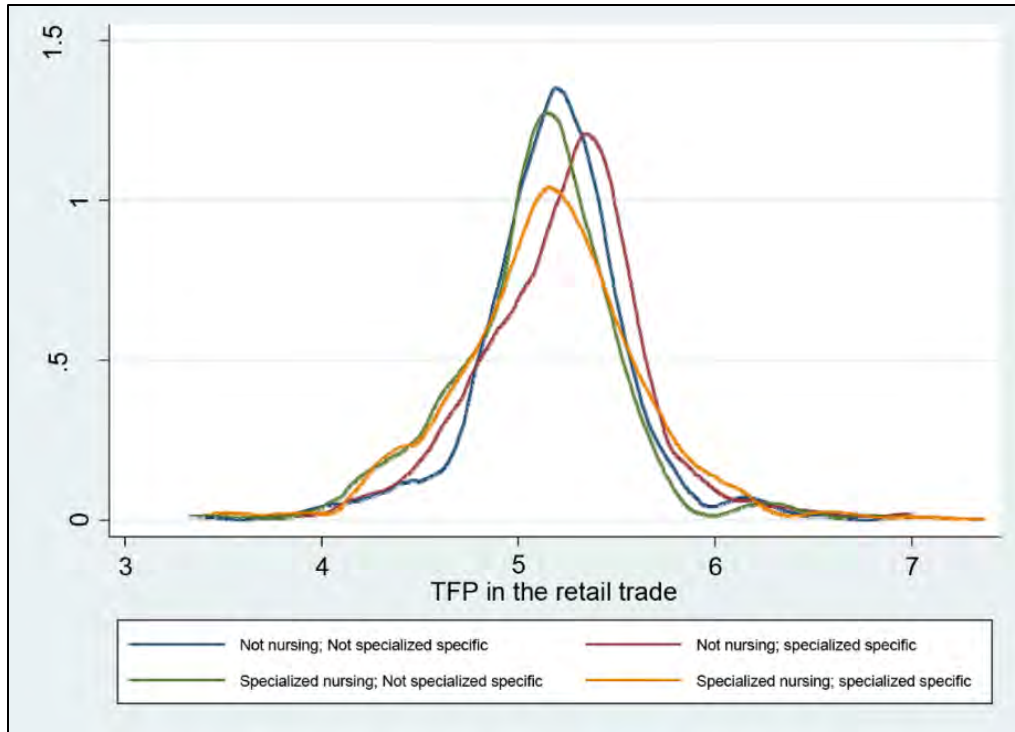
Comparing the blue distribution with the red distribution and the green distribution with the orange distribution, the municipalities that specialize in specific manufacturing industries have higher levels of TFP in the retail trade industry. It implies that the manufacturing or core tradable sectors are required to improve the productivity of the service sectors.

A few municipalities specializing in the specific manufacturing sector may have a bigger hospital and care houses. In that case, the health and nursing sector is also a specialized sector because people visit from other regions as well. These municipalities are indicated in the right tail of the orange line-distribution in Figure 1 (see next page)

Conclusion

I examined the effects of competition and an agglomeration economy on the productivity of service industries. First, an agglomeration economy improves the TFP of the retail trade industry. Second, competition improves the TFP of the wholesale industry and narrowly defined service industries. In Japan, some municipalities have few industries and the main industry is health and nursing. I find that these municipalities have lower productivity in the service sectors. However, agglomeration economies of retail trade, wholesale, and manufacturing industries increases the productivity even in these municipalities. These results suggest policy makers that encouraging the service sector only is not sufficient. They need to consider reconstructing all the regional industries.

FIGURE 1
Distribution of the TFP in Retail Trade in 2001



Not nursing = The municipalities do not specialize the health and nursing sectors.

Not specialized specific = The municipalities do not specialize the specific tradable industries.

Acknowledgments

The author thanks Daniel van Jaarsveld at University of British Columbia, Tracy Anderson at University of Pennsylvania and Tianlong You at Arizona State University, and participants in the Labor and Employment Relations Association the 69th Annual Meeting for their very helpful comments. The author is also grateful to Atsushi Seike, Atsushi Yashiro, and participants in Human Resource Management seminar at Keio University for useful comments. Moreover, the author is thankful for the financial support provided by the Japan Society for the Promotion of Science (grant number: 25380377).

Endnotes

¹Labor data are available only for large classifications. Additionally, the estimation of TFP cannot be conducted for data using small classifications.

²This specialized index implies that, considering labor productivity is equal among municipalities, if a sector has a specialized index that is more than one, the sector trades surplus with other municipalities. I use the specialized index in each municipality published by the Ministry of Internal Affairs and Communications.

References

- Ellison, Glen, and Edward L. Glaeser, 1997, “Geographic Concentration in U.S. Manufacturing Industries: a Dartboard Approach,” *Journal of Political Economy*, Vol. 105, No. 5, pp. 889-927.
- Foster, Lucia, John Haltiwanger, and C.J. Krizan, 2006, “Market Selection, Reallocation, and Restructuring in the U.S. Retail Trade Sector in the 1990s,” *The Review of Economics and Statistics*, Vol. 88, No. 4., pp. 748-758.
- Japan Revitalization Strategy, 2016, The cabinet in Japan.
- Kazekami, Sachiko, 2016, “Do Service Sectors Need Another Core Sector to Improve Their Productivity?”, presented at the 20th Eurasia Business and Economic Society Conference, the 14th Global Business and Economics Conference, and the 15th International Convention of the East Asian Economic Association.
- Lucas, Robert E., 1988, “On the Mechanics of Economic Development,” *Journal of Monetary Economics*, Vol. 22, pp. 3-41.
- Moretti, Enrico, 2004, “Workers’ Education, Spillovers, and Productivity: Evidence from Plant-Level Production Functions,” *The American Economic Review*, Vol. 94, No. 3, pp. 656-690.
- Morikawa, Masayuki, 2014, *Sabisu Sangyo No Seisansei Bunseki [Analysis of Productivity in Service Sectors]*, Nihon Hyoron Sya, Japan.
- Morikawa, Masayuki, 2016, *Service-Oriented Nation [Sabisu Rikkoku Ron]*, Nihon Keizai shinbun syuppansya.
- Rauch, James E., 1991, “Productivity Gains from Geographic Concentration of Human Capital: Evidence from the Cities,” National Bureau of Economic Research (NBER) Working Paper No. 3905.
- Syverson, Chad, 2004, “Market Structure and Productivity: A Concrete Example,” *Journal of Political. Economy*, Vol. 112, No. 6, pp. 1181-1222.
- Syverson, Chad, 2011, “What Determines Productivity?”, *Journal of Economic Literature*, Vol. 49, No. 2, pp. 326-365.

WORK ORGANIZATION AND PUBLIC POLICY

Table 1 the descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
TFP of retail trade	5932	5.251	0.490	0.974	7.810
TFP of wholesale	5433	6.361	0.749	1.817	11.652
TFP of the narrowly defined service industries	4775	4.915	0.752	1.491	11.161
Sales of retail trade per resident	5932	0.898	0.817	0.048	27.838
Sales of wholesale per resident	5433	2.232	33.498	0.000	1389.051
Income per resident	5932	1226.985	339.408	480.976	5508.200
Density of retail trade	5932	0.190	0.508	0.001	10.803
Density of wholesale	5433	0.055	0.349	0.000	10.836
Density of the narrowly defined service industries	4775	0.294	0.860	0.003	19.848
Density of manufacturing	5932	0.078	0.243	0.000	5.666
log establishment of retail trade	5932	5.912	1.161	2.773	11.399
log establishment of wholesale	4775	6.374	1.183	3.178	11.303
log establishment of the narrowly defined service industries	5433	4.069	1.483	-0.693	10.458
log establishment of manufacturing	5932	4.833	1.273	0.693	10.519
Agglomeration (retail trade and wholesale)	5932	0.000	0.000	0.000	0.000
Agglomeration (narrowly defined service industries)	4773	0.000	0.000	0.000	0.000
Competition (retail trade)	5932	0.271	0.280	0.013	1.000
Competition (wholesale)	5433	0.396	0.326	0.008	1.000
Competition (narrowly defined service industries)	4775	0.441	0.337	0.011	1.000
Labor productivity	5932	3.122	0.813	0.497	9.358
the change in employment of retail trade and wholesale	5917	-0.547	24.483	-108.942	92.789
Health and nursing dummy	4435	0.356	0.479	0.000	1.000
Ratio of persons with a college degree	5932	15.174	5.521	6.702	36.587
Ratio of elderly population	5932	22.183	6.594	5.717	47.373
percent of entry establishment in retail trade	2003	0.174	0.101	0.011	2.148
percent of entry establishment in wholesale	2003	0.206	0.122	0.000	1.667
percent of entry establishment in the narrowly defined service industries	2003	0.300	0.122	0.063	1.102
percent of exit establishment in retail trade	2003	0.190	0.119	0.000	0.467
percent of exit establishment in wholesale	2003	0.167	0.113	0.000	0.600
percent of exit establishment in the narrowly defined service industries	2003	0.133	0.091	0.000	0.487

Table 2 the effect on TFP of the retail trade

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Dependent variable=TFP of retail Trade													
sales of retail trade per resident	0.100*** (0.0383)										0.106** (0.0439)	0.0896** (0.0412)	0.100*** (0.0382)	0.101*** (0.0384)
Ratio of persons with a college degree	-0.0366*** (0.00505)	-0.0398*** (0.00493)	-0.0289*** (0.00565)	-0.0237*** (0.00586)	-0.0341*** (0.00539)	-0.0315*** (0.00551)	-0.0396*** (0.00509)	-0.0403*** (0.00516)	-0.0395*** (0.00498)	-0.0398*** (0.00499)	-0.0240*** (0.00583)	-0.0322*** (0.00550)	-0.0364*** (0.00505)	-0.0367*** (0.00506)
Ratio of elderly population	0.00574 (0.00367)	0.00583 (0.00378)	0.00621* (0.00360)	0.00793** (0.00366)	0.00617* (0.00360)	0.00682* (0.00361)	0.00641 (0.00398)	0.00558 (0.00404)	0.00622* (0.00361)	0.00625* (0.00362)	0.00822** (0.00362)	0.00629* (0.00372)	0.00573 (0.00367)	0.00576 (0.00368)
Income per resident		-4.89e-05 (9.22e-05)												
density (retail trade)		0.0895*** (0.0168)		0.215*** (0.0325)							0.222*** (0.0311)			
square density (retail trade)				-0.0136*** (0.00293)							-0.0198*** (0.00371)			
density (manufacturing)					0.187*** (0.0545)							0.325*** (0.110)		
square density (manufacturing)						0.482*** (0.0866)								
log establishment (retail trade)						-0.0560*** (0.0129)								
log establishment (manufacturing)							0.00188 (0.0129)	-0.00762 (0.0135)						
Agglomeration economy									9.204*** (2.459)				8.465*** (2.253)	
Competition										0.0168 (0.0860)				0.0234 (0.0858)
Constant	5.261*** (0.0849)	5.461*** (0.157)	5.235*** (0.0911)	5.114*** (0.0991)	5.305*** (0.0889)	5.239*** (0.0925)	5.374*** (0.147)	5.445*** (0.142)	5.386*** (0.0841)	5.385*** (0.0882)	5.009*** (0.102)	5.181*** (0.0955)	5.257*** (0.0849)	5.254*** (0.0890)
Observations	5,932	5,932	5,932	5,932	5,932	5,932	5,932	5,932	5,932	5,932	5,932	5,932	5,932	5,932
Number of city_code	1,558	1,558	1,558	1,558	1,558	1,558	1,558	1,558	1,558	1,558	1,558	1,558	1,558	1,558
Adjusted R-squared	0.363	0.358	0.361	0.363	0.360	0.360	0.358	0.358	0.358	0.358	0.367	0.364	0.363	0.363
city FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

density: density of establishment

log establishment: log of the number of establishments

Agglomeration economy: the modified Ellison-Glaeser measure of retail trade

Competition: the Herfindahl-Hirschman Index of retail trade

Table 3 the effect on TFP of the wholesale

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Dependent variable=TFP of retail trade													
sales of wholesale per resident	0.000975*** (0.000252)													
Ratio of persons with a college degree	0.0123 (0.00747)	0.0114 (0.00737)	0.0144* (0.00761)	0.0157** (0.00775)	0.0193** (0.00816)	0.0205** (0.00841)	0.0115 (0.00754)	0.0125 (0.00760)	0.0115 (0.00741)	0.0122* (0.00729)	0.0158** (0.00775)	0.0204** (0.00842)	0.0125* (0.00748)	0.0132* (0.00736)
Ratio of elderly population	-0.00123 (0.00382)	-0.00185 (0.00392)	-0.00137 (0.00380)	-0.00112 (0.00381)	-0.000939 (0.00379)	-0.000639 (0.00381)	-0.000364 (0.00415)	0.000536 (0.00432)	-0.000822 (0.00380)	-0.000896 (0.00377)	-0.00108 (0.00382)	-0.000707 (0.00385)	-0.00123 (0.00382)	-0.00128 (0.00378)
income per resident		-0.000119 (0.000102)												
density (wholesale)			0.251*** (0.0683)	0.605*** (0.128)							0.621*** (0.138)			
square density (wholesale)				-0.0249*** (0.00721)							-0.0253*** (0.00732)			
density (manufacturing)					0.250*** (0.0477)	0.378*** (0.110)						0.369*** (0.118)		
square density (manufacturing)						-0.0243* (0.0143)						-0.0236 (0.0150)		
log establishment (wholesale)							0.00533 (0.0187)							
log establishment (manufacturing)								0.0156 (0.0191)						
Agglomeration economy									7.237*** (2,524)				7.074*** (2,510)	
Competition										0.453*** (0.0882)				0.452*** (0.0882)
Constant	5.935*** (0.112)	6.115*** (0.173)	5.899*** (0.114)	5.861*** (0.119)	5.820*** (0.123)	5.789*** (0.130)	5.911*** (0.165)	5.827*** (0.190)	5.939*** (0.112)	5.755*** (0.115)	5.860*** (0.119)	5.791*** (0.132)	5.931*** (0.112)	5.747*** (0.115)
Observations	5,433	5,433	5,433	5,433	5,433	5,433	5,433	5,433	5,433	5,433	5,433	5,433	5,433	5,433
Number of city_code	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488	1,488
Adjusted R-squared	0.227	0.227	0.227	0.227	0.228	0.228	0.226	0.227	0.227	0.240	0.227	0.228	0.227	0.240
city FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Robust standard errors in parentheses														
*** p<0.01, ** p<0.05, * p<0.1														
density: density of establishment														
log establishment: log of the number of establishments														
Agglomeration economy: the modified Ellison-Glaeser measure of wholesalae														
Competition: the Herfindahl-Hirschman Index of wholesalae														

Table 4 the effect on TFP of the narrowly defined service

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Dependent variable=TFP of the narrowly service								
Ratio of persons with a college degree	-0.00747 (0.00973)	-0.00683 (0.0104)	-0.00723 (0.0107)	-0.00635 (0.0107)	-0.00636 (0.0109)	-0.00713 (0.00994)	-0.00413 (0.0102)	-0.00826 (0.00969)	-0.0105 (0.00969)
Ratio of elderly population	-0.0145** (0.00597)	-0.0108* (0.00574)	-0.0108* (0.00574)	-0.0106* (0.00569)	-0.0106* (0.00571)	-0.00700 (0.00623)	-0.00577 (0.00626)	-0.0105* (0.00568)	-0.0112** (0.00567)
income per resident	-0.000377** (0.000147)								
density (narrowly defined service)		-0.0300 (0.0231)	-0.0177 (0.0629)						
square density (narrowly defined service)			-0.000610 (0.00208)						
density (manufacturing)				0.0724 (0.0581)	0.0709 (0.126)				
square density (manufacturing)					0.000278 (0.0190)				
log establishment (narrowly defined service)						0.0370 (0.0255)			
log establishment (manufacturing)							0.0521** (0.0250)		
Agglomeration economy								13,067*** (4,899)	
Competition									0.173** (0.0703)
Constant	5.586*** (0.241)	5.013*** (0.138)	5.015*** (0.140)	4.988*** (0.148)	4.988*** (0.157)	4.722*** (0.275)	4.623*** (0.260)	5.019*** (0.136)	4.949*** (0.140)
Observations	4,775	4,775	4,775	4,775	4,775	4,775	4,775	4,773	4,775
Number of city_code	1,398	1,398	1,398	1,398	1,398	1,398	1,398	1,398	1,398
Adjusted R-squared	0.111	0.109	0.109	0.109	0.109	0.110	0.110	0.109	0.112
city FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

density: density of establishment

log establishment: log of the number of establishments

Agglomeration economy: the modified Ellison-Glaeser measure of narrowly defined service

Competition: the Herfindahl-Hirschman Index of narrowly defined service

Table 5 The effect on the labor productivity

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
	Dependent variable=log of labor productivity														
sales of retail trade per resident	0.147 (0.0992)											0.266*** (0.0880)	0.302*** (0.0696)	0.148 (0.0996)	0.146 (0.0990)
Ratio of persons with a college degree	0.0925*** (0.00934)	0.0885*** (0.00895)	0.0393*** (0.0110)	0.00746 (0.0108)	0.0551*** (0.00990)	0.0364*** (0.00980)	0.0433*** (0.00593)	0.0341*** (0.00582)	0.0875*** (0.00945)	0.0884*** (0.00945)	0.0909*** (0.0100)	0.0662 (0.0109)	0.0339*** (0.00979)	0.0920*** (0.00936)	0.0928*** (0.00936)
Ratio of elderly population	0.0862*** (0.00577)	0.0921*** (0.00577)	0.0871*** (0.00553)	0.0766*** (0.00543)	0.0873*** (0.00551)	0.0827*** (0.00546)	0.0168*** (0.00411)	0.0206*** (0.00396)	0.0870*** (0.00570)	0.0868*** (0.00569)	0.0892*** (0.00602)	0.0773*** (0.00540)	0.0809*** (0.00540)	0.0862*** (0.00577)	0.0861*** (0.00576)
income per resident		0.000633*** (0.000104)													
density (retail trade)			-0.404*** (0.0751)	-1.165*** (0.109)								-1.145*** (0.124)			
square density (retail trade)												0.0669*** (0.0140)			
density (manufacturing)					-1.102*** (0.235)	-3.188*** (0.364)							-3.716*** (0.410)		
square density (manufacturing)						0.397*** (0.0676)							0.433*** (0.0661)		
log establishment (retail trade)							-0.759*** (0.0205)								
log establishment (manufacturing)								-0.778*** (0.0183)							
Agglomeration economy									-16.383*** (4.184)					-17.475*** (4.546)	
Competition										-0.122* (0.0741)	-0.0162 (0.0571)				-0.113 (0.0726)
Constant	0.478*** (0.180)	-0.249 (0.224)	1.370*** (0.186)	2.102*** (0.185)	1.172*** (0.167)	1.639*** (0.172)	7.061*** (0.202)	6.259*** (0.172)	0.675*** (0.152)	0.702*** (0.153)	0.661*** (0.159)	1.837*** (0.195)	1.447*** (0.182)	0.485*** (0.180)	0.511*** (0.181)
Observations	5,932	5,932	5,932	5,932	5,932	5,932	5,932	5,932	5,932	5,932	5,439	5,932	5,932	5,932	5,932
Number of city_code	1,558	1,558	1,558	1,558	1,558	1,558	1,558	1,558	1,558	1,558	1,492	1,558	1,558	1,558	1,558
Adjusted R-squared	0.287	0.287	0.315	0.347	0.307	0.336	0.608	0.618	0.281	0.281	0.289	0.363	0.360	0.287	0.287
city FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

density: density of establishment

log establishment: log of the number of establishments

Agglomeration economy: the modified Ellison-Glaeser measure of retail trade

Competition: the Herfindahl-Hirschman Index of retail trade in (10) and (15), and that index of wholesale in (11)

PROCEEDINGS OF THE LERA 2017 MEETINGS

Table 6 the effect of productivity on the percent change in the number of workers

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable=the percent change in the number of workers							
TFP in the retail trade	-0.402 (1.020)	-0.428 (1.030)						
TFP in the wholesale			0.254 (0.821)	0.258 (0.823)				
average TFP					0.291 (1.381)	0.306 (1.394)		
Labor productivity							-35.51*** (0.895)	-36.25*** (0.948)
sales of retail trade per resident		0.236 (1.225)		-0.378 (1.289)		-0.387 (1.299)		10.19** (4.034)
sales of wholesale per resident		0.0102 (0.0400)		0.0204 (0.0418)		0.0206 (0.0419)		-0.257*** (0.0646)
Ratio of persons with a college degree	-1.972*** (0.338)	-1.955*** (0.342)	-2.178*** (0.360)	-2.169*** (0.367)	-2.171*** (0.361)	-2.162*** (0.367)	1.177*** (0.301)	1.303*** (0.294)
Ratio of elderly population	-2.420*** (0.281)	-2.425*** (0.283)	-2.447*** (0.311)	-2.453*** (0.314)	-2.448*** (0.311)	-2.454*** (0.314)	0.670*** (0.241)	0.783*** (0.249)
Constant	75.19*** (8.905)	74.95*** (8.959)	74.53*** (8.806)	74.84*** (8.948)	74.38*** (10.92)	74.64*** (10.96)	96.60*** (5.814)	85.90*** (7.005)
Observations	5,917	5,917	5,262	5,262	5,262	5,262	5,917	5,917
Number of city_code	1,558	1,558	1,444	1,444	1,444	1,444	1,558	1,558
Adjusted R-squared	0.056	0.056	0.056	0.055	0.056	0.055	0.371	0.377
city FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1