

ROUTLEDGE STUDIES IN LABOUR ECONOMICS

The Economics of Trade Unions

A Study of a Research Field and Its Findings

Hristos Doucouliagos,
Richard B. Freeman and Patrice Laroche



The Economics of Trade Unions

Richard B. Freeman and James L. Medoff's now classic 1984 book *What Do Unions Do?* stimulated an enormous theoretical and empirical literature on the economic impact of trade unions. Trade unions continue to be a significant feature of many labor markets, particularly in developing countries, and issues of labor market regulations and labor institutions remain critically important to researchers and policy makers.

The relations between unions and management can range between cooperation and conflict; unions have powerful offsetting wage and non-wage effects that economists and other social scientists have long debated. Do the benefits of unionism exceed the costs to the economy and society writ large, or do the costs exceed the benefits? *The Economics of Trade Unions* offers the first comprehensive review, analysis and evaluation of the empirical literature on the microeconomic effects of trade unions using the tools of meta-regression analysis to identify and quantify the economic impact of trade unions, as well as to correct research design faults, the effects of selection bias and model misspecification.

This volume makes use of a unique dataset of hundreds of empirical studies and their reported estimates of the microeconomic impact of trade unions. Written by three authors who have been at the forefront of this research field (including the co-author of the original volume, *What Do Unions Do?*), this book offers an overview of a subject that is of huge importance to scholars of labor economics, industrial and employee relations, and human resource management, as well as those with an interest in meta-analysis.

Hristos Doucouliagos is Professor of Economics at the Department of Economics, and the Alfred Deakin Institute for Citizenship and Globalisation, Deakin University, Australia.

Richard B. Freeman holds the Herbert Ascherman Chair in Economics at Harvard University. He directs the National Bureau of Economic Research/Science Engineering Workforce Projects and is Senior Research Fellow in Labour Markets at the London School of Economics' Centre for Economic Performance, UK.

Patrice Laroche is Professor of Human Resource Management and Labor Relations at the ISAM-IAE Nancy (Université de Lorraine) and at the ESCP Europe Business School, France.

Routledge Studies in Labour Economics

1 Youth and the Crisis

Unemployment, Education and Health in Europe

Edited by Gianluigi Coppola and Niall O'Higgins

2 Workers and the Global Informal Economy

Interdisciplinary Perspectives

Edited by Supriya Routh and Vando Borghi

3 The Political Economy of Employment Relations

Alternative Theory and Practice

Aslihan Aykac

4 The Economics of Trade Unions

A Study of a Research Field and Its Findings

Hristos Doucouliagos, Richard B. Freeman and Patrice Laroche

The Economics of Trade Unions

A Study of a Research Field and Its Findings

**Hristos Doucouliagos,
Richard B. Freeman and
Patrice Laroche**

First published 2017
by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN

and by Routledge
711 Third Avenue, New York, NY 10017

Routledge is an imprint of the Taylor & Francis Group, an informa business

© 2017 Hristos Doucouliagos, Richard B. Freeman and Patrice Laroche

The right of Hristos Doucouliagos, Richard B. Freeman and Patrice Laroche to be identified as authors of this work has been asserted by them in accordance with sections 77 and 78 of the Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

Trademark notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

Library of Congress Cataloging in Publication Data

Names: Doucouliagos, Hristos, author. | Freeman, Richard B. (Richard Barry), 1943- author. | Laroche, Patrice, author.

Title: The economics of trade unions : a study of a research field and its findings / Hristos Doucouliagos, Richard B. Freeman and Patrice Laroche.

Description: Abingdon, Oxon ; New York, NY : Routledge, 2017. | Includes bibliographical references and index.

Identifiers: LCCN 2016042103 | ISBN 9781138888302 (hardback) | ISBN 9781315713533 (ebook)

Subjects: LCSH: Labor unions—Economic aspects. | Labor economics. | Industrial relations.

Classification: LCC HD6483 .D68 2017 | DDC 331.88—dc23

LC record available at <https://lcn.loc.gov/2016042103>

ISBN: 978-1-138-88830-2 (hbk)

ISBN: 978-1-315-71353-3 (ebk)

Typeset in Times New Roman PS
by diacriTech, Chennai

To our friend and meta-analysis mentor, T.D. Stanley, and to all researchers who study union effects.

This page intentionally left blank

Contents

<i>List of figures</i>	<i>ix</i>
<i>List of tables</i>	<i>xi</i>
Introduction: why study studies of unionism?	1
<i>Meta-analysis as arbiter in debates</i>	<i>4</i>
<i>Structure of the book</i>	<i>5</i>
1 A bibliometric analysis of <i>What Do Unions Do?</i>	7
<i>Freeman and Medoff's research agenda</i>	<i>8</i>
<i>Approach and data</i>	<i>11</i>
<i>Analysis</i>	<i>12</i>
<i>Summary</i>	<i>27</i>
2 Research synthesis through meta-regression analysis	30
<i>The core challenge of inference</i>	<i>31</i>
<i>Collecting and coding meta-data</i>	<i>32</i>
<i>Effect size</i>	<i>33</i>
<i>Meta-averages</i>	<i>35</i>
<i>Multiple meta-regression analysis</i>	<i>37</i>
<i>Summary</i>	<i>38</i>
3 Unions and productivity: direct estimates	40
<i>Unions and productivity levels</i>	<i>41</i>
<i>Unions and productivity in manufacturing industries</i>	<i>61</i>
<i>Unions and productivity in other industries</i>	<i>66</i>
<i>Summary</i>	<i>70</i>

4 Unions and productivity growth	72
<i>Unions and productivity growth: new data for an old issue</i>	73
<i>Summary</i>	84
5 Unions and productivity: investment channels	86
<i>Unions and physical capital investment</i>	86
<i>Unions and investment in intangible capital</i>	97
<i>Summary</i>	108
6 Unions and productivity: employee behavior channels	110
<i>Unions and employee turnover</i>	110
<i>Unions and job satisfaction</i>	113
<i>Unions and organizational commitment</i>	126
<i>Summary</i>	127
7 Unions and financial performance of firms	130
<i>Unions and profits</i>	131
<i>Summary</i>	145
8 Summary and conclusions	147
<i>Findings on union effects</i>	148
<i>Measured and unmeasured artifacts in research of union effects</i>	156
<i>Challenges for future research and policy</i>	160
<i>Bibliography</i>	164
<i>Index</i>	188

Figures

I.1	Union density, 21 OECD economies, 1870–2011	2
I.2	Cumulative number of studies on the economic effects of unions, 1973–2015	3
1.1	Published articles citing <i>What Do Unions Do?</i> , 1984–2014	23
1.2	Co-citations among the top 30 most cited studies referencing <i>What Do Unions Do?</i>	24
1.3	Networks among the most influential authors within the Industrial and Labor Relations research area citing <i>What Do Unions Do?</i>	25
1.4	The top 15 most frequently used keywords of studies citing <i>What Do Unions Do?</i>	27
1.5	Frequency of major keywords among the 40 most cited articles referencing <i>What Do Unions Do?</i>	27
3.1	Funnel plot of unions and productivity, average estimate	54
3.2	Funnel plot of unions and productivity, all estimates	54
3.3	Funnel plot of unions and productivity, manufacturing	55
3.4	Funnel plot of unions and productivity, other industries	56
3.5	Unions and productivity partial correlations, manufacturing, chronological order	56
3.6	Unions and productivity partial correlations, other industries, chronological order	57
4.1	Funnel plot of unions and productivity growth, average estimate	78
4.2	Funnel plot of unions and productivity growth, all estimates	79
5.1	Funnel plot of unions and physical capital investment, average estimate	90
5.2	Funnel plot of unions and physical capital investment, all estimates	91
5.3	Funnel plots of unions and physical capital investment, comparison of non-US and US estimates	92
5.4	Unions and physical capital investment partial correlations, chronological order	93
5.5	Funnel plot of unions and intangible capital investment, all estimates	101
5.6	Funnel plots of unions and intangible capital investment, comparison of non-US and US estimates	102

5.7	Unions and intangible capital investment, partial correlations, chronological order	103
6.1	Funnel plot of unions and job satisfaction	119
6.2	Funnel plots of unions and job satisfaction, UK and US	119
7.1	Funnel plot of unions and profitability, all estimates	138
7.2	Funnel plot of unions and profitability, US estimates	139
7.3	Funnel plot of unions and profitability, non-US estimates	139
8.1	The rising number of articles on unions and the share of articles among all social sciences articles, Web of Science, 1960–2015	148
8.2	Union effects, chronological order	156

Tables

1.1	Freeman and Medoff's contributions to the study of the economic effects of unions, 1976–1984	8
1.2	The ten most cited authors in the <i>Industrial and Labor Relations Review</i> , 1985–2006	12
1.3	Top 20 authors in the Industrial and Labor Relations research area	13
1.4	Top 20 authors citing <i>What Do Unions Do?</i>	14
1.5	Top 10 ISI Web of Science disciplines and research areas	16
1.6	Top 15 academic journals citing <i>What Do Unions Do?</i>	17
1.7	Top 40 most cited articles referencing <i>What Do Unions Do?</i>	18
3.1	Econometric studies of unions and productivity levels	46
3.2	Number of estimates and meta-average by country	52
3.3	Number of estimates and meta-average by industry	53
3.4	Unconditional meta-average partial correlation, unions and productivity, manufacturing and other industries	58
3.5	Unions and productivity, multiple MRA, manufacturing	62
3.6	Unions and productivity, conditional meta-average correlation, by country and degree of labor market regulation, manufacturing	66
3.7	Unions and productivity, multiple MRA, other industries	67
3.8	Unions and productivity, conditional meta-average correlation, other industries	70
4.1	Econometric studies of unions and productivity growth	75
4.2	Basic characteristics of the unions and productivity growth literature	78
4.3	Unconditional meta-average partial correlation, unions and productivity growth	80
4.4	Unions and productivity growth, multiple MRA	82
5.1	Econometric studies of unions and physical capital investment	89
5.2	Basic characteristics of the unions and physical capital investment literature	90
5.3	Unconditional meta-average partial correlation, unions and physical capital investment	93
5.4	Unions and physical capital investment, multiple MRA	95
5.5	Econometric studies of unions and investment in intangible capital	99

5.6	Basic characteristics of the unions and intangible capital investment literature	101
5.7	Unconditional meta-average partial correlation, unions and intangible capital	104
5.8	Unions and investment in intangible capital, multiple MRA	107
6.1	Econometric studies of unions and job satisfaction	115
6.2	Basic characteristics of the unions and job satisfaction literature	118
6.3	Unconditional meta-average partial correlation, unions and job satisfaction	120
6.4	Variable definitions and summary measures	120
6.5	Unions and job satisfaction, multiple MRA	122
6.6	Estimated effect of unionization on job satisfaction	125
7.1	Union membership wage premium in different countries	133
7.2	Econometric studies of unions and profitability	136
7.3	Basic characteristics of the unions and profitability literature	138
7.4	Unconditional meta-average partial correlation, unions and profitability	141
7.5	Unions and profits, multiple MRA	143
7.6	Unions and profits, conditional meta-average correlation, by degree of labor market regulation, manufacturing	145
8.1	Summary of meta-analysis findings on the economic impact of trade unions	149
8.2	Meta-regression estimates of union effects on specified outcomes, by country group	153
8.3	Time variation in union effects	155
8.4	Effects of data aggregation and measurement on estimated union effects	157
8.5	Publication selection bias and endogeneity on estimates of union effects	159

Introduction

Why study studies of unionism?

Speaking broadly then it may be said that trade unions have benefited the nation as well as themselves.... Any rise of wages or improvement in the conditions of life, and employment, which they may obtain by these reasonable methods, is likely to make for social well being.

(Alfred Marshall, 1961: 588)

Trade unions – “a continuous association of wage-earners for the purpose of maintaining or improving the conditions of their working lives” (Webb and Webb, 1920: 1) – are the key institution representing workers in capitalism, with impacts on a wide range of outcomes, from employee wages and benefits, job satisfaction, and organizational commitment to the productivity and profitability of plants and to macroeconomic outcomes such as inflation, unemployment, and economic growth.

While most social scientists agree that unions benefit their members, there is considerable disagreement about whether unions have a net positive or negative impact on economies writ large. Contrary to Marshall’s view, many social scientists view unions as monopolies that adversely affect firm performance (Hirsch and Addison, 1986) or as an influential interest group that distorts policies in favor of union members at the expense of others (Olson, 1965). Others have taken the view that Adam Smith’s principle that self-interested actions can produce socially desirable outcomes can apply in the case of unions. Freeman (1976) and Freeman and Medoff (1984) argue that positive non-wage effects, such as improved communication channels and reduced labor turnover, often offset adverse monopoly effects of unions on wage and non-wage outcomes. Brown and Medoff (1978) present evidence that unions are associated with gains in productivity and benefit firms in that respect.

Unions have been important in capitalist economies since the Industrial Revolution. They provide their members with a voice at work and wider political representation. But after growing in membership and influence in most advanced countries from the Great Depression and World War II through the 1950s and in some countries through the 1960s, unions are now in decline in most advanced countries.¹ Figure I.1 places this pattern in historic perspective in terms of the

2 Introduction

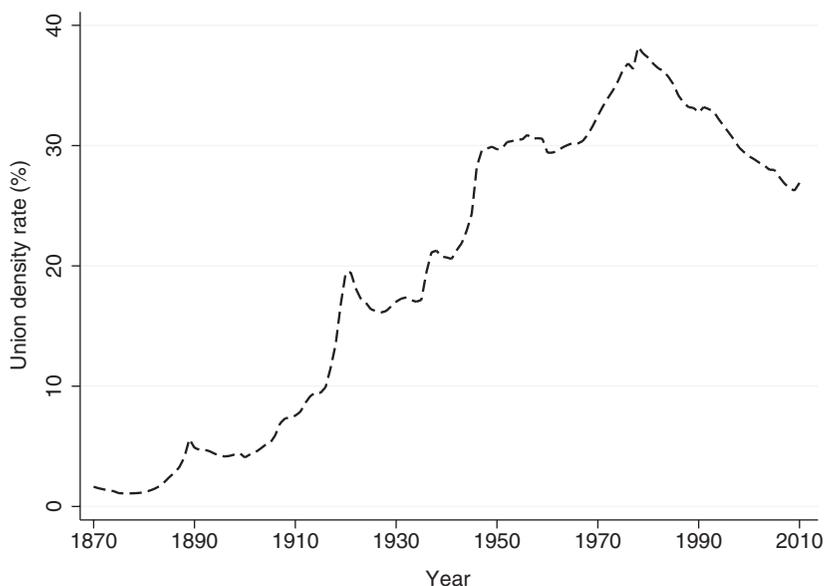


Figure I.1 Union density, 21 OECD economies, 1870–2011

Source: Islam et al. (2016)

average trade union density for 21 OECD countries from 1870 to 2011. Union density increased for most of this period, often in sudden spurts in periods of crisis, but has fallen in virtually every country since the 1980s.

Even in a weakened state, however, unions affect economic outcomes and attract considerable attention from business and government. Business continues to worry about the impact of union wages on labor costs, especially with the entry of China, India, and the former Soviet bloc into the global economy. Policy makers worry about the effects of unions on labor market flexibility and labor market outcomes, such as unemployment (e.g., OECD, 2016). In some countries, unions continue to influence policy development on a wide range of issues, especially through labor and social democratic organizations and political parties. As inequality has become a key economic problem of the twenty-first century, there is increasing recognition that, whatever their effects on economic efficiency, unions are one of the few social institutions with the potential to limit further growth of inequality and to reduce it to more socially desired levels.

Given the huge amount of literature on the economic consequences of unions, some readers may wonder what motivated us to write this book. In *What Do Unions Do?*, Freeman and Medoff (1984) summarized the available evidence base at that time for the United States. Two or so decades later, Bennett and Kaufman (2007) edited a 20-year perspective that reviewed the findings in *What Do Unions Do?* on the basis of ensuing work. Is there truly something new to say about empirical analyses of unions? Yes, there is. There are new things to say and new ways to parse the evidence that adds to what economics and related social sciences can tell us about unions.

There are four reasons for looking anew at the effects of unions.

First, recent decades have witnessed a spread of econometric studies about unions to countries beyond the United States, including developing countries that advanced country researchers largely excluded from consideration. Freeman and Medoff dealt almost exclusively with the United States, and Bennett and Kaufman's edited volume also largely focused on the United States. Globalization of economic activity demands a wider view of union activity and recognition of the variation in unionism and its impacts throughout the world.

Second, the newest work applies more advanced statistical techniques than those used in most studies two to three decades ago. Many employ panel data econometrics that allows analysts to remove person- or establishment-fixed effects from estimates of union impacts. Figure I.2 depicts the growth in the cumulative number of published econometric studies about unions. We use estimates from these studies for our meta-analysis of productivity, productivity growth, physical and intangible capital investment, job satisfaction, and financial performance.² From only six studies in the 1970s, the literature bloomed to 125 new studies in the 1990s, with an additional 104 new studies published since 2000. The meta-analyses that constitute the heart of this volume treat 301 studies that report 2,257 estimates of union effects.

Third, the mode of summarizing the findings of diverse studies into a statistically valid assessment of the evidence has advanced considerably. In the early 2000s, Doucouliagos and Laroche (2003a, 2003b, and 2003c) pioneered the use of meta-analysis to combine the results from research studies of union effects into a statistically valid summary picture. As in other areas of science, the techniques of meta-analysis have improved, for example, with new ways to identify and correct for publication selection bias and for assessing replications of extant findings.

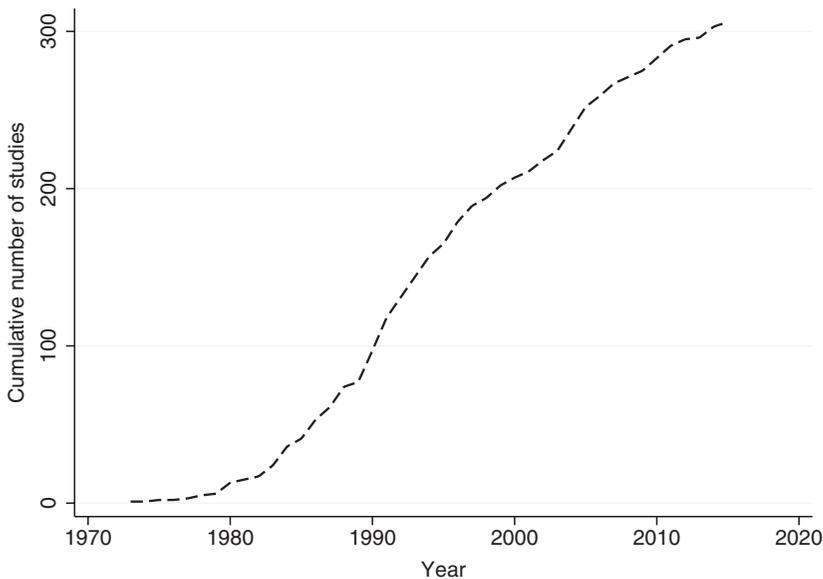


Figure I.2 Cumulative number of studies on the economic effects of unions, 1973–2015

Source: Authors' calculations

4 Introduction

This book uses these newer techniques to explore whether prior meta-analyses findings stand up to differences in techniques and whether newer evidence results in fresh insights and inferences about unions as economic institutions.

Fourth, the existence of several meta-analyses on unions provides an opportunity to learn from the findings of meta-analyses on distinct but related topics in a *meta-meta-analysis*. Meta-analysis focuses on drawing inferences from a specific research question. As the name suggests, meta-meta-analysis draws inferences from several related meta-studies, in our case on different outcome variables. Specifically, we use the findings of meta-analyses on the impact of unions on productivity, productivity growth, physical and intangible capital investment, financial performance, labor turnover, organizational commitment, and job satisfaction to provide a more comprehensive picture of what unions do.

Meta-analysis as arbiter in debates

Economic theory often consists of models that allow for a given factor to have competing effects on outcomes – the income effect versus the substitution effect in labor supply behavior being an archetype example. What effect does an increase in wages have on labor supply? Economic theory says it depends on two competing forces: the higher income from increased wages that increases workers' desire for leisure and the higher opportunity cost of leisure from the increased wages. Which effect matters more determines whether time or effort at work are positively or negatively related to changes in wages. The theory poses questions and identifies potential causal lines of impact but cannot resolve the net effect of competing forces. Only empirical analysis can tell whether one effect dominates another in a particular situation.

In the case of the impact of unions on business performance, or indeed of institutions on outcomes more broadly, theory is often highly ambiguous. There are many agents operating under varying constraints and with differing goals. Game theory allows for many potential equilibria. As King Richard III would have said had he been a social scientist, “Empirical estimates, empirical estimates, empirical estimates, my kingdom for some estimates”.

We now have many empirical estimates on unionism. The estimates are heterogeneous with differing statistical and economic significance. Some of the variation and difference in significance comes from the lack of statistical power due to small sample sizes in studies of firms. Only a meta-analysis combining the studies can show what the body of work has found and with what statistical precision.

Empirical estimates also vary with outcome variables, data, model, statistical methodology used, country, and time of analysis. They differ because different researchers or the same researcher at different times chooses somewhat different auxiliary variables and/or econometric models. These decisions can produce spurious heterogeneity in reported estimates. If the studies had used exactly the same model and variables, the results might have been similar. Heterogeneity may also be real, as when union effects differ by industry, country, and time. Only a meta-analysis combining and analyzing the studies can identify the sources of this heterogeneity.

The published literature can also suffer from publication selection bias in which researchers choose which of several equally valid estimates to report. This produces a truncated distribution of estimates with artificially inflated effects that leads to possible erroneous inferences (Stanley, 2008; Doucouliagos and Stanley, 2013). Traditional literature reviews are particularly vulnerable to incorrect inferences. Meta-analysis can provide a more rigorous and statistical approach to research synthesis.

This book provides a review of evidence that is more quantitative, complete, statistically systematic, and of course up-to-date than *What Do Unions Do?* or the Bennett and Kaufman 20-year review of findings. It uses state-of-the-art *meta-regression analysis* to identify and quantify associations between unions and dimensions of economic performance, such as productivity, investment, and profitability. Meta-analysis is the scientific way to draw inferences from the diversity of results and to detect possible regularities across studies (Stanley, 2001; Stanley and Doucouliagos, 2012) based on *quantitative* synthesis of a large number of individual studies (Rosenthal, 1984; Schmidt and Hunter, 2015). It is well suited to exploring the multidimensional research on trade unions, synthesizing the knowledge in available estimates, correcting the evidence base for various biases, and drawing inferences from underpowered econometric studies.

Structure of the book

This book consists of eight chapters beyond this introduction.

Chapter 1 gives a scientometric analysis of the literature spawned by *What Do Unions Do?* (Freeman and Medoff, 1984). It analyzes citation and co-citation patterns and keywords to describe quantitatively the contributions of *What Do Unions Do?* over the past 32 years. This chapter was written by Doucouliagos and Laroche, with Freeman absenting himself for reasons the reader will understand.

Chapter 2 lays out the meta-regression methodology that we apply throughout the book. The chapter addresses issues of data collection, research synthesis, publication bias, mis-specification bias, and heterogeneity in empirical findings.

Chapter 3 presents our meta-analysis of the effect of unions on productivity. It updates Doucouliagos and Laroche (2003a) with a new meta-regression analysis of the effect of unions on productivity based on 111 studies.

Chapter 4 presents a new meta-regression analysis of the effect of unions on productivity growth based on 42 studies. It updates Doucouliagos and Laroche (2003b).

Chapter 5 drills down to identify some of the investment channels through which unions impact productivity. We update Doucouliagos and Laroche (2003c) with a new meta-analysis of the link between unionism and physical capital investment from 20 econometric studies and summarize the results of a meta-analysis of 25 studies of investment in intangible capital based on Doucouliagos and Laroche (2013).

Chapter 6 moves beyond the production function methodology to examine the evidence on three forms of employee behavior – turnover, job satisfaction,

6 Introduction

and organizational commitment – that impact both productivity and worker well-being. It reviews findings from several meta-analyses by other authors and presents a new meta-analysis of 59 studies on the impact of unions on job satisfaction by Laroche (2016).

Chapter 7 explores the classic topic in the study of unions – their impact on wages – and presents a new meta-analysis of the effects of unions on profitability. We update Doucouliagos and Laroche (2009) with findings from 44 econometric studies.

Chapter 8 gives our summary and conclusions and offers suggestions for future research on the effects of unionism.

The book does not cover the entire waterfront of topics on unions. We do not explore the effects of unions on the macroeconomic issues of inflation and employment or on strikes and inequality³ – nor union effects on social and political issues, such as whether unions lobby successfully for laws that expand their monopoly power, the democratic nature of unionism, and corruption in the union bureaucracy.

The idea to write this book took shape several years ago. Beginning in 2014, the authors began working on the task. All three authors have devoted large parts of their research careers to analyzing the economic effects of unionism. Richard B. Freeman has made a seminal contribution with his path-breaking book with James L. Medoff, as well as in numerous other scientific publications. Nearly 19 years later, Doucouliagos and Laroche pioneered the use of meta-analysis to the growing body of research. We hope that by bringing together our various expertise, we shed additional light on the economic impact of unions.

Notes

- 1 In the United States, union density has decreased continually since the 1960s (US-BLS, 2016). In the United Kingdom, union membership peaked in 1979 and has since declined. However, in recent years, trade union membership in the United Kingdom has increased in the private sector but declined in the public sector (DBIS, 2015).
- 2 For the purposes of Figure I.2, we define a study as a published journal paper or book that reports estimates of union effects on one of the outcome variables we review in this book: productivity, productivity growth, physical and intangible capital investment, job satisfaction, and financial performance. Where estimates are provided on more than one outcome variable, we count them as separate studies; e.g., if a journal article reports estimates of the effects of unions on productivity and profitability, we count this as two studies.
- 3 Macroeconomic effects are explored by Calmfors and Driffill (1988), Pencavel (1991), Flanagan (1999), and Nickell and Layard (1999), among others. Several studies find a negative association between unions and inequality, e.g., Freeman and Medoff (1984), Koeniger et al. (2007), and Koske et al. (2012).

1 A bibliometric analysis of *What Do Unions Do?*¹

If I am right that each scientific revolution alters the historical perspective of the community that experiences it, then that change of perspective should affect the structure of post-revolutionary textbooks and research publications. One such effect – a shift in the distribution of the technical literature cited in the footnotes to research reports – ought to be studied as a possible index to the occurrence of revolutions.

(Kuhn, 1962: xi)

The purpose of this chapter is to present a scientometric analysis of *What Do Unions Do?* (Freeman and Medoff, 1984), from 1984 to 2014, with a particular focus on articles published in the ‘Industrial and Labor Relations’ research area.² The aim of the bibliometric analysis is to explore some of the contributions of *What Do Unions Do?* over the past 30 years. We show that this book had an enormous impact on the study of unions. Citations data from the ISI Web of Science reveal that this seminal work has been cited by 1,480 articles, proceedings papers, and book chapters since its publication in 1984; a notable average of 49 citations per annum.³ This large number of citations suggests that the book has had a major impact on the academic literature across the globe.⁴ We investigate the scientific impact of Freeman and Medoff (1984) through a citation analysis and a keywords analysis. Specifically, we explore (1) citation patterns over time, (2) who cites Freeman and Medoff (1984) most frequently, and (3) the main cited themes associated with Freeman and Medoff (1984).

Analysis of citations of Freeman and Medoff (1984) is of interest for several reasons. First, citation counts are a useful measure of academic influence and the depth of citations indicates impact; if only a small number of authors cites their work, then Freeman and Medoff’s influence is limited. Second, impact can be assessed by the extent to which a study is cited outside its home discipline. Examination of citations by other disciplines reflects the extent to which the influence of *What Do Unions Do?* spread beyond the domain of industrial relations and labor economics. Third, studying the time trend in citation rates offers another way to assess the book’s influence. Most scientific contributions are rarely cited (Lindsey, 1989). However, some landmark studies continue to be cited over

time. Hence, we investigate whether citations to Freeman and Medoff (1984) are declining over time.

This chapter has four sections. In the first we give a brief review of Freeman and Medoff's contribution to the economic analysis of trade unions. The second section describes the bibliometric approach employed and data. The third section presents the bibliometric analysis. The last section summarizes the main findings.

Freeman and Medoff's research agenda

In *What Do Unions Do?*, Freeman and Medoff consider a variety of issues related to the economic effects of unions, with the primary concern being the contribution of union voice to the functioning of the economy. Freeman and Medoff argue that unions can play a beneficial role in improving workplace performance by stabilizing the workforce, increasing workers' productivity, and reducing pay inequality. This line of research was developed in a series of articles that highlighted the importance and role of union voice on workers' behavior and consequently on different economic outcomes (Brown and Medoff, 1978; Freeman, 1976, 1980, 1981, 1984; Freeman and Medoff, 1979a, 1979b, 1981, 1982). Table 1.1 summarizes Freeman and Medoff's major studies for the period 1976 to 1984, including *What Do Unions Do?*, a summary of the findings of each study, and the number of citations received as of July 2015.

Freeman's (1976) article was the starting point to the whole analysis. This article was written in honor of Hirschman's (1970) *Exit, Voice, and Loyalty* book. The American Economic Association asked Freeman to say what *Exit, Voice, and*

Table 1.1 Freeman and Medoff's contributions to the study of the economic effects of unions, 1976–1984

<i>Study</i>	<i>Summary</i>	<i>Citations</i>
Freeman (1976). Individual mobility and union voice in the labor market. <i>The American Economic Review: Papers and Proceedings</i> .	Examines the non-wage effects of unions using Hirschman's exit-voice framework.	141
Brown & Medoff (1978). Trade unions in the production process. <i>The Journal of Political Economy</i> .	Examines the effect of unions on productivity. Unionization has a significant positive effect on output per worker.	208
Freeman & Medoff (1979a). New estimates of private sector unionism in the United States. <i>Industrial and Labor Relations Review</i> .	Presents new estimates of two measures of unionism in the US: percent of private sector workers covered by union agreements and percent who are union members. Estimated coverage is higher on average than estimated membership percentage.	183