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Labor Unions and Economic Inequality in the Wealthy Democracies

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Ian Down, Major Professor

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**Labor Unions and Economic Inequality in the Wealthy
Democracies**

A Dissertation Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Eric Graig Castater
December 2015

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DEDICATION

This work is dedicated to my parents, who through their unconditional love and interest in my life have ingrained in me a sense of worth and purpose that too many people seem to live without; to Christine Puglisi, who through her love, kindness, and incredible spirit gave me the confidence, strength, and hope needed to succeed; to my grandmothers, Fay Kaye and the recently deceased Esther Driscoll, who through their sweetness, love, and attentiveness have provided me with a sense of comfort and inner security that serve as the foundation for everything I do; to George, Marc, and Jeremy, true and wonderful friends that stood by me when I did not return their calls and texts because I was too tired from work; and to that presence in my life that I call God, which allows me to have a faith that no intellectual argument can justify. I love you all.

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ABSTRACT

Previous research on the determinants of economic inequality in the wealthy democracies has found that differences in the size and constitution of labor unions accounts for much of the cross-national and over time variation in economic inequality. Despite numerous theoretical and empirical reasons to suppose the contrary, most of this research assumes that the union effect on economic inequality is independent of the particular socio-economic and political environment unions are situated within and the types of workers actually unionized. The broad purpose of this dissertation is to push back against these assumptions and examine whether the union effect on economic inequality is conditioned by certain factors external and internal to unions. This is done through consideration of the four processes by which unions impact economic inequality; which I label the employer, intra-union, insider, and political mechanisms. In particular, I argue that the level of unionization conditions the political mechanism by providing (dis)incentives for parties of the left and right to respond to union member preferences for government action to reduce economic inequalities (chapter 2); that increasing exposure to the world economy conditions the employer, intra-union, and insider mechanisms by reducing the ability and willingness of lower-paid union workers to extract wage gains from their employers (chapter 3); and that market institution and welfare state regimes indirectly condition the employer, intra-union, and insider mechanisms for female and male union workers by generating particular forms and levels of vertical gender occupational segregation within unions (chapter 4). The empirical analyses focus on between 8 and 16 wealthy democracies (depending on data availability) over the final decades of the twentieth century and the first

decade of the twenty-first century. The evidence presented suggests that we cannot understand the totality of the union effect on economic inequality - or on any other socio-economic outcome - without considering each of the four mechanisms by which unions impact economic inequality, the many and varied ways these mechanisms are expressed, and how these mechanisms interact within particular contexts.

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CHAPTER I

INTRODUCTION AND GENERAL INFORMATION

General Introduction

Although some degree of economic inequality¹ is probably inevitable – and perhaps even desirable (e.g., to incentivize or reward individual effort), high levels and/or specific forms of economic inequality are likely to conflict with basic norms of fairness and produce outcomes that, according to modern liberal values at least, are suboptimal and even pernicious (Foster and Sen 1997). Empirical work on the consequences of higher levels of economic inequality have found it to be harmful to economic growth (Stiglitz 2013); the survival of democratic institutions (Reenock et al. 2007; Houle 2009); the protection of civil liberties and private property (Landman and Larizza 2009; Fails 2012); tolerance toward minorities (Andersen and Fetner 2008); political engagement (Solt 2008; Pontusson and Rueda 2010; Anderson and Baramendi 2012); the responsiveness of politicians to citizen preferences (Ellis 2013; Rigby and Wright 2013); trust in individuals and the government (Rothstein and Uslaner 2005; Anderson and Singer 2008); and even overall public health (Ghobarah et al. 2004; Wilkinson and Pickett 2009). Perhaps less worrisome, but highly significant nonetheless, are findings that higher levels of economic inequality increase ideological, political party, and class polarization (McCarty et al. 2006; Garanda 2010; Newman et al. 2015); the positive evaluation of the role of religion in politics

¹ Economic inequality is defined here as differences across a particular population in access to, or control over, monetary resources or certain factors of production. This definition is a slightly modified version of that provided by Jenkins (1991).

(Karakoç and Başkan 2012); nationalist sentiment (Shayo 2009; Solt 2011); and support among the poor for radical right-wing political parties (Han forthcoming). In short, in addition to its inherent moral implications, economic inequality matters for a host of important socio-economic and political outcomes.

Labor unions (also referred to as trade unions; hereafter unions) are organizations consisting primarily of wage earners and dedicated to improving the economic well-being of their members – and, at times, certain non-union members - through the exertion of pressure on employers and policymakers.² This exertion of pressure takes many forms, from economic strikes (targeted at particular firms or industries) to general strikes (targeted at government) to information and political campaigns (targeted at union members and the wider public) to lobbying efforts (targeted at particular political parties, politicians, or bureaucrats) to simple hard-nosed bargaining tactics (targeted primarily at employers) (e.g., see Leighley and Nagler 2007; Anzia 2011; Avdagic et al. 2011; Iversen and Soskice 2011; Hamann et al. 2013). By substituting collective action for separate individual action (McLean 1996), unions are often able to gain concessions from employers and/or policymakers (or install their preferred employers and policymakers) through these methods, and thus have a substantial impact on numerous national level outcomes. These include, but are certainly not limited to, tax structures (Swank 2006; Beramendi and Rueda 2007; Plümpert et al. 2009), social insurance policies (Esping-Andersen 1990; Korpi 2006; Nijhuis 2009), economic growth (Durham 2004; Hall and Gingerich 2009), unemployment

² This is a slightly modified version of the definitions provided by Webb and Webb (1920) and Bennett and Kaufman (2007).

(Mares 2004; Baccaro and Diego Rei 2007; Bradley and Stephens 2007), and, of course, economic inequality.

The Union Effect on Economic Inequality

One of the few areas of broad consensus in the comparative political economy literature has been that differences in union strength account for much of the cross-national and over-time variation in economic inequality in the wealthy democracies, with stronger unions resulting in less economic inequality (Iversen 1996; Kahn 1998; Wallerstein 1999; Freeman and Oostendorp 2000; Kahn 2000; Rueda and Pontusson 2000; Alderson and Nielsen 2002; Pontusson et al. 2002; Bradley et al. 2003; Mahler 2004; Golden and Londregan 2006; Oliver 2008; Visser and Checchi 2009; Martin and Swank 2012). However, there has been less consensus on how, exactly, unions achieve this effect. Each of the major academic branches and theoretical traditions in comparative political economy has argued that unions impact economic inequality through one or more of four (non-mutually exclusive) processes; or what I label here the employer, intra-union, insider, and political mechanisms. The employer mechanism is emphasized in the power resource theory (PRT) literature and refers to unions' ability to extract wage and other compensation-related concessions from employers (Stephens 1980; Korpi 1985); the intra-union mechanism is emphasized in the varieties of capitalism (VoC) and economics literature and refers to the tendency of unions to compress wages among their own members (Huber and Stephens 1998; Kahn 1998; Wallerstein 1999; Pontusson et al. 2002; Card et al. 2003; Checchi et al. 2007; Hall and Thelen 2007; Iversen and Soskice 2010); the insider mechanism is emphasized primarily in the economics literature and refers to the

(positive or negative) externalities that result from the costs associated with collective bargaining (e.g., higher wages for non-union members or elevated levels of unemployment) (Friedman 1962; Freeman 1980; Freeman and Medoff 1984; Rueda and Pontusson 2000; Wallerstein and Western 2000; Card et al. 2003; Rosenfeld and Western 2012); and the political mechanism is emphasized in PRT and the insider-outsider model and refers to the ability of unions to (successfully) pressure governments to implement policies that have consequences for economic inequality (e.g., employment protections and particularly designed social insurance policies) (Esping-Andersen 1990; Rueda 2007; Bacarro 2008; Visser and Checchi 2009; Ellis 2013).

Despite a long-standing (and unstated) agreement across the major academic branches and theoretical traditions that the net effect of the employer, intra-union, insider, and political mechanisms is to reduce economic inequality, a number of recent studies have found the size and significance of the union effect on economic inequality to vary across countries and over time (Baccaro 2008; Scheve and Stasavage 2009; Beecher and Pontusson 2011; Golden and Wallerstein 2011; Pontusson 2013). More specifically, these studies have generally found the union effect on economic inequality to have diminished, on average, across the wealthy democracies since at least the 1990s.³ The explanation provided for this finding varies. One claim is that it is the result of a less effective employer mechanism, or unions losing the ability to extract substantial wage gains from their employers. The argument here is that greater economic globalization, particularly trade

³ The one exception to this is Scheve and Stasavage (2009). In their analysis of the determinants of the proportion of total income shares held by top earners over the course of most of the twentieth century, these authors find that the effect of union density has diminished in recent decades but that the effect of the level of wage bargaining has grown.

with less developed countries (LDCs), has produced wage pressures that increasingly weak unions have been unable to resist (Golden and Wallerstein 2011). Another claim is that the diminished union effect is the result of a less effective intra-union mechanism, or lesser-paid union members extracting fewer wage gains relative to higher-paid union members as they did in the past. There have been two different but related reasons given for this phenomenon. First, in response to membership losses, unions in the manufacturing sector increasingly support employer efforts to decouple wage developments in the manufacturing and service sectors (Pontusson 2013). Second, economic globalization and technological change have changed how wage bargaining institutions function, as the former reduces demand for less skilled (and lower-paid) union members and the latter increases demand for more skilled (and better-paid) union members (Baccaro 2008). Still others claim that the diminished union effect is the result of a more potent insider mechanism, or a growing wage gap between union and non-union members. The argument here is that unions increasingly consist of workers that are better-paid than most non-union members. This condition also has implications for the political mechanism, as better-paid union members support inequality-reducing social insurance transfers less than lesser-paid union members (Becher and Pontusson 2011). Some recent scholarship on labor markets and the welfare state also alludes to a weakened or altered political mechanism. For example, Mares (2004) argues that union members become less likely to practice wage restraint as taxes on labor rise and social insurance policies become increasingly targeted at non-union members; and Kwon and Pontusson (2010) find that left governments

increase social insurance spending less relative to center and right governments when union strength is declining; a condition that currently exists in nearly all wealthy democracies.⁴

If unions no longer reduce economic inequality to the same extent as in the past, then this necessarily implies that unions' indirect effect on the socio-economic and political outcomes associated with greater economic inequality has also diminished. Furthermore, it suggests that the direct union effect on other macro-level outcomes – such as unemployment and inflation – is changing as well. Why has the union effect on economic inequality diminished? Or, more precisely, why does the union effect on economic inequality vary across countries and over time? The broad purpose of this dissertation is to provide some preliminary answers to these questions by considering how the union effect on economic inequality is conditioned by certain features of the environment that unions operate within as well as particular union characteristics.

How the Dissertation is Organized

Each of the three core chapters in this dissertation is dedicated to examining a conditional union effect on income or wage inequality through consideration of how a particular factor or factors external or internal to unions influence the employer, intra-union, insider, and/or political mechanisms.

In chapter 2, I examine how the level of unionization determines the responsiveness of particular partisan governments to union member preferences for less economic inequality. Scholars have long argued that partisanship matters for income inequality

⁴ A political mechanism-based explanation for the diminished union effect on income inequality is also provided by Jacobs and Myers (2014), but their analysis focuses exclusively on the United States.

because left governments favor government action to reduce economic inequalities more than center or right governments (e.g., see Esping-Andersen 1990 and Korpi and Palme 2003). However, many other scholars have claimed that partisanship does not matter for income inequality (or most other socio-economic outcomes) because environmental factors, including voter sentiments and political institutions, frequently prohibit politicians from pursuing their first-order policy preferences (e.g., see Kitschelt 1994; Pierson 2001; Beckfield 2006). Both the “partisanship matters” and the “partisanship does not matter” viewpoints have found empirical support in studies examining the determinants of income inequality across the wealthy democracies (Bradley et al. 2003; Mahler 2004; Scheve and Stasavage 2009; Mahler et al. 2013). I argue that these inconsistent findings are at least partly the result of scholars not properly modeling the relationship between unionization and the partisan composition of government. If we accept that union members favor greater government intervention to reduce economic inequalities than non-union members (Iversen 2001; Checchi et al. 2007; Iversen and Soskice 2011), politicians desire to hold elected office and be popular but also to implement particular public policies (Muller and Strom 1999), and left party politicians share union members’ policy preferences to a greater extent than center and right party politicians (Esping-Andersen 1990; Kwon and Pontusson 2010), then partisan differences should be greatest at moderate levels of unionization, a condition that allows all politicians to pursue their policy preferences while maintaining electoral viability. The empirical analysis in this chapter examines 16 wealthy democracies between 1970 and 2010. The results of error-correction models confirm the theoretical expectation and hold regardless of whether there is a majoritarian or proportional

representation electoral system. These findings suggest that the impact of declining unionization on political and socio-economic outcomes will depend on the level of unionization from which a country is falling from and that electoral outcomes only have consequences for economic inequality under certain (relatively limited) conditions.

In chapter 3, I examine how economic globalization influences the ability and willingness of particular types of union members to extract wage gains from their employers. Although scholars have speculated as to the possible causes of the decline in the union effect on wage inequality since the 1990s, a comprehensive theory explaining it has not been crafted or tested. I argue that economic globalization – or increasing exposure of states to the world economy – reduces the ability and willingness of traditionally lower-paid union workers (in sectors and occupations substantially exposed to international competition) to extract wage gains from their employers while having no such effect on the ability and willingness of traditionally higher-paid union workers (in sectors and occupations relatively sheltered from international competition). This results in greater earnings dispersion between traditionally lower-paid union workers and employers, traditionally lower-paid union workers and traditionally higher-paid union workers, and low-paid non-union workers and employers. The empirical analysis in this chapter primarily focuses on 8 wealthy democracies between 1980 and 2010, although three additional countries are examined as well. The results of error-correction models demonstrate that as a state becomes more exposed to the world economy, the union effect on the level of wage inequality declines (and perhaps even reverses for the lower half of the wage distribution); but that the union effect on the “structure” of wage inequality (or

the extent to which the upper half of the wage distribution is more compressed than the lower half) grows. This finding suggests that the meaning of the “the union effect on wage inequality” depends on which aspects of wage inequality are being considered; and increasingly changes as economic globalization proceeds. A more general implication is that the union effect on economic inequality is likely influenced by a range of other factors – such as those relating to the partisan or ideological orientation of government and public opinion – that alter the bargaining power of (some) employers relative to (some) union members.

In chapter 4, I examine how gender occupational segregation among union members influences the female union effect on female wage inequality and the male union effect on male wage inequality. Although numerous scholars have acknowledged the decline in union strength in recent decades and its likely consequences for wage inequality, few have explored whether certain types of union workers have experienced a more substantial decline than others; and whether any such divergence has had consequences for wage inequality. Of particular interest is evidence that male union strength has weakened substantially more than female union strength; and that a large and growing share of union members are women as a result.⁵ All else being equal, this suggests that aggregate union decline has contributed more to a rise in male wage inequality than female wage inequality. Yet different degrees and types of gender occupational segregation across liberal market economies (LMEs) and coordinated market economies (CMEs) as well as liberal, conservative, and social democratic welfare states, suggests that all else might not be equal

⁵ Data on female and male union membership are presented in Chapter 4.

(Sainsbury 1996; Esping-Andersen 1999; Chang 2000; Korpi 2000; Soskice 2005; Estevez-Abe 2006). I argue that a particularly large number of professionals among female union members in LMEs (with liberal welfare states) means that the female union effect is likely to be smaller than the male union effect within that regime; and that a particularly large number of workers in traditionally lower-paid occupations among female union members in CMEs with conservative welfare states means that the female union effect is likely to be larger than the male union effect within that regime. In other words, the size of the female union effect relative to the male union effect is indirectly conditional on market institution and welfare state type. The empirical analysis in this chapter focuses on 15 wealthy democracies between 1980 and 2010. The results of error-correction models confirm the theoretical expectations, although differences between the female and male union effects across the regimes are generally larger than those between the female and male union effects within each regime. These findings suggest that the occupational composition of union members is critical to explaining the union effect on economic inequality; and that the consequences that aggregate union decline has on economic inequality in general and gender economic inequality in particular depends (indirectly) on the market institution and welfare state regime that such union decline is happening within.

In the fifth and final chapter, I summarize the main empirical and theoretical contributions of each of the core chapters and the dissertation as a whole; discuss three important factors that were omitted from the preceding chapters – employer organizations, wealth inequality, and conceptions of economic inequality that incorporate consumption and/or non-paid non-market work; provide suggestions on how to incorporate these omitted

factors into future research on labor unions and economic inequality; outline a potentially promising research agenda that focuses on unions as an effect rather than unions as a cause; and offer some reflections on how union weakening may ironically be leading to the growing popularity of redistributive public policies and, eventually, stronger workers' movements as well.

CHAPTER II UNIONIZATION AND THE PARTISAN EFFECT ON INCOME INEQUALITY

Introduction

Do left governments reduce income inequality⁶ relative to center and right governments? The expectation that partisanship should matter for income inequality arises somewhat tautologically out of the traditional political party typology, whereby left parties are defined as those favoring government intervention to reduce economic inequalities; and center and right parties are defined as those favoring either less government intervention in the economy generally, or government intervention that maintains or exacerbates economic inequalities (Esping-Andersen 1990; Huber and Inglehart 1995; Lijphart 1997; Korpi 2002; Korpi and Palme 2003).⁷ The expectation that partisanship should not matter for income inequality arises out of the recognition that environmental factors, including voter sentiments and political institutions, frequently prohibit politicians from pursuing their first-order policy preferences (Kitschelt 1994; Pierson 2001; Beckfield 2006).⁸ Both the “partisanship matters” and the “partisanship does not matter” viewpoints have found empirical support in studies that have examined the determinants of income inequality

⁶ In this article, the term “income” encompasses wages, other market (pre-tax and pre-transfer) income such as rents and capital gains, and government transfers such as means-tested benefits and pensions.

⁷ Two assumptions in this article are that politicians consciously pursue a policy based on its likely outcome and, once implemented, a policy typically results in that expected outcome.

⁸ A “first-order preference” is defined here as an actor’s (not necessarily revealed) “ideal point”, or the particular option an actor would choose under minimal external constraints. This can be contrasted with “revealed preferences”, or the choices that are made by actors within a particular environmental context, frequently as a result of practical or pragmatic concerns. In the theoretical argument outlined here, left party politicians are assumed to possess a greater first-order preference for government intervention to reduce economic inequalities than center and right party politicians (Korpi 2002, 2006). The question, therefore, is under what political conditions such politicians are able to pursue these preferences to a greater or lesser degree.

across wealthy democracies (Pontusson et al. 2002; Bradley et al. 2003; Mahler 2004; Scheve and Stasavage 2009; Mahler et al. 2013).

What explains the inconsistent findings of partisan effects on income inequality? I argue that one part of the explanation is the difference in unionization levels across countries and over time. Although many scholars acknowledge the strongly symbiotic relationship between unions and particular political parties, surprisingly few model such a relationship when they empirically examine the determinants of income inequality. Instead, partisan effects are assumed to be constant across space and time, despite the scholarly consensus that parties strategically adapt to their environment in general and to union movements in particular (Kitschelt 1994; Alesina and Glaeser 2004; Simoni 2013). When partisanship has been argued to be conditional on union presence,⁹ scholars have tended to assume that this union impact is exclusively through left parties (Pontusson et al. 2002; Kwon and Pontusson 2010; Golden and Wallerstein 2011). This is understandable given the historical connection between unions and left parties and their similar first-order preferences on matters relating to economic inequality (Esping-Andersen 1990; Esping-Andersen 1999). However, if union members have a stronger preference for government intervention to reduce economic inequalities than non-union members (Iversen 2001; Checchi et al. 2007; Iversen and Soskice 2011), politicians have policy preferences but also desire to hold elected office and be popular (Muller and Strom 1999), and left party

⁹ A country's degree of union presence can be measured in numerous ways, including by union density (the proportion of workers that belong to a union), union coverage (the proportion of workers that are covered by a collective bargaining agreement, whether or not the workers are union members), or the level of wage bargaining (the primary level at which unions and employers negotiate over compensation) (Visser and Checchi 2009).

politicians share union-member policy preferences to a greater extent than center and right party politicians, then left party politicians should see higher unionization levels as an opportunity to pursue their first-order policy preferences and lower unionization levels as necessitating consenting to non-union member preferences. Likewise, center and right party politicians should see lower unionization levels as an opportunity to pursue their first-order policy preferences and higher unionization levels as necessitating consenting to union member preferences. In other words, an environmental condition that acts to constrain politicians from one political party simultaneously acts to enable politicians from another. These expectations imply that the anticipated negative effect of left government on income inequality is likely to diminish as we reach relatively low and relatively high levels of unionization, conditions in which left party politicians and center and right party politicians, respectively, have to veil their first-order preferences in order to remain electorally viable. Stated another way, the partisan effect on income inequality is likely to grow as we reach relatively moderate levels of unionization.

To assess whether unionization rates condition the partisan effect on income inequality in a non-linear manner, I employ data on net income inequality from 16 wealthy democracies over the years 1970 to 2010. The evidence I present suggests that countries with lower and higher levels of unionization experience less of a partisan effect on income inequality than countries with moderate levels of unionization. This result holds regardless of whether a country has a majoritarian or proportional representation (PR) electoral system, although a country's electoral system does influence at what level of unionization partisanship matters more or less for income inequality. This article is divided into six

sections. The first section discusses how public policy may act to decrease or increase income inequality. The second and third sections place the theoretical expectations outlined above within the context of the existing literature. The fourth section details the methods and variables used in the analysis. The fifth section report the results of the empirical analysis and the sixth section provides a discussion of the findings.

Public Policy and Income Inequality

Income inequality can be described as arising from a two-stage distributional process (Kelly 2009; Morgan and Kelly 2013). The first stage consists of those factors that lead to the “pre-tax and pre-transfer” distribution of income, while the second stage consists of those tax and spend policies that alter this distribution and replace it with the “post-tax and post-transfer” distribution of income. The change in income inequality from the first stage to the second stage of the distributional process is typically termed “redistribution” (Bradley et al. 2003; Iversen and Soskice 2006). Redistributive policies may entail taxing the rich and providing cash benefits to the poor or taxing the employed and providing cash benefits to those without employment, but it also may include publically financed and managed social insurance, such as pensions, in which individuals at least partially finance their own benefits (Moene and Wallerstein 2001; Moene and Wallerstein 2003; Pennings 2013). Redistributive policies may also include any government transfer that is financed through more diffuse and regressive means, such as with a general sales tax (Prasad and Deng 2009).

Given that governments are able to choose more or less progressive methods of financing redistributive policies, as well as the specific individuals or households that will

benefit from government transfers, it is by no means certain, a priori, that “redistribution” reduces income inequality from before taxes and transfers to after taxes and transfers. The issue becomes further complicated by the fact that the “pre-tax and pre-transfer” distribution of income is itself dependent on redistributive policies. For example, long-term unemployment benefits may encourage individuals to remain outside of the labor market (and thus earn zero pre-tax and pre-transfer income) or generous public pensions may crowd out private pensions or encourage early retirement (and thus, again, produce greater numbers of individuals with zero pre-tax and pre-transfer income) (Esping-Andersen 2009; Bradley and Stephens 2012). On the other hand, redistributive policies may also increase pre-tax and pre-transfer incomes by raising the “reservation wage” and thus inducing employers to offer higher wages (Golden and Wallerstein 2011). These higher wages, however, are also likely to increase the cost of business and thus may result in elevated levels of unemployment, once again producing a greater stock of individuals earning zero pre-tax and pre-transfer income (Boix 1998).

In order to examine whether the net effect of redistributive policies is to increase or decrease income inequality, Figure 1 plots redistribution¹⁰ by pre-tax and pre-transfer (“market”) income inequality and post-tax and post-transfer (“net”) income inequality in 16 wealthy democracies between 1970 and 2010 for all available country-years. A clear positive relationship emerges in the plot containing redistribution and market income inequality ($r=.5412$), suggesting that redistributive policies do tend to increase “pre-tax and pre-transfer” income inequality. However, a clear negative relationship emerges in the plot

¹⁰ Redistribution is arrived at by way of the equation provided by Iversen et al. (2006): $[(\text{market income inequality} - \text{net income inequality})/\text{market income inequality}]*100$. Data provided by Solt (2009).

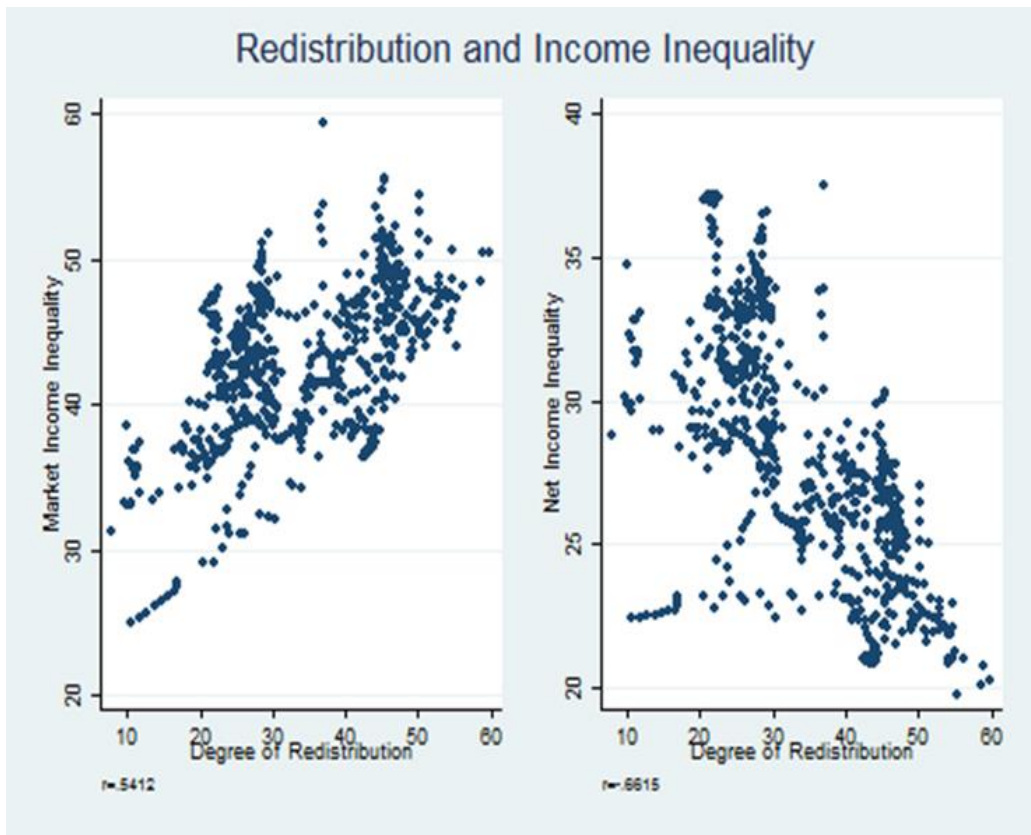


Figure 1. Bivariate Correlations of Redistribution and Market (Net) Income Inequality in 16 rich democracies for all available country-years between 1970 and 2010

containing redistribution and net income inequality ($r=-.6615$), with higher (lower) levels of redistribution clearly associated with lower (higher) levels of net income inequality. Given that post-tax and post-transfer income inequality is the result of both the first and second stages of the distributional process, this suggests that the net effect of redistributive policies is to reduce income inequality.

Such explicitly redistributive policies are not the only method at the disposal of governments if they wish to impact income inequality. Governments may engage more directly in the first stage of the distributional process and implement policies that determine the distribution of “pre-tax and pre-transfer” income. Most obviously, governments can enact a minimum wage, expand public sector employment, or increase public sector wages (Pontusson et al. 2002; Rueda 2008). In addition, governments can actively encourage and facilitate (private or public sector) employment (so called “active labor market policies”) or invest in education or worker training, which act to improve the skills of the labor force and thus increase workers’ market earning potential (Huo et al. 2008; Bradley and Stephens 2012). There are countless other government policies that may impact the distribution of “market” incomes, from trade agreements, to (lack of) restrictions on capital flows, to taxation and employment regulations (Rueda and Pontusson 2000; Burgoon 2001; Reuveny and Li 2003; Beckfield 2006; Koske et al. 2014).

Partisanship and Income Inequality

Given that governments have a plethora of policies at their disposal to impact the distribution of income, one would expect the partisan orientation of government to matter

for income inequality. After all, parties of the left are typically defined as those favoring government intervention to reduce economic inequalities, while parties of the center and right are defined as those favoring either less government intervention in the economy generally, or government intervention that maintains or exacerbates economic inequalities (Esping-Andersen 1990; Huber and Inglehart 1995; Lijphart 1997; Korpi 2002; Korpi and Palme 2003). Thus, we would anticipate left party electoral success to be associated with lower levels of market and net income inequality and higher levels of redistribution than center or right party electoral success. However, the empirical evidence is notably mixed. In their examination of market income inequality across wealthy democracies over the twentieth century, Scheve and Stasavage (2009) found a modest negative effect of left government on the share of national income held by the top 1 percent of income earners, but no such partisan effect on the share of national income held by the top 10 percent of income earners. In one of the few cross-national studies of wealthy democracies that focuses on the determinants of both pre-tax and pre-transfer income inequality and redistribution, Bradley et al. (2003) found no partisan effect on the former but the anticipated positive effect of left government on the latter. Given the clear negative association between redistribution and net income inequality that we observed in Figure 1, this finding would lead us to expect a negative association between left government and post-tax and post-transfer income inequality. Yet in one of the few cross-national studies

examining the determinants of such inequality across wealthy democracies,¹¹ Mahler (2004) found no such partisan effect.¹²

One explanation for absent or inconsistent partisan effects on income inequality or redistribution is the difficulty any partisan government has in making major changes to the public sector and existing welfare state policies due to political pressure from voters and interest groups (Pierson 2001; Mahler et al. 2013). However, this explanation is unsatisfying given the plethora of public sector and welfare state reforms across rich democracies in recent decades (Clayton and Pontusson 1998; Allan and Scruggs 2004) and the growing body of evidence that partisan governments are *not* systematically punished for engaging in welfare state retrenchment (Wenzelburger 2014). A likelier explanation for absent or inconsistent partisan effects is that, over time, common underlying forces or processes push most political parties in the same ideological direction; or, similarly, result in “waves” of party convergence and divergence (Scheve and Stasavage 2009; Kwon and Pontusson 2010). In other words, partisan behavior is not driven solely (or primarily) by the inherent programmatic differences between party families or relatively constant constituent preferences, but by parties’ changing environmental contexts (Mahler 2004). If this is correct, then absent or inconsistent partisan effects on income inequality would be

¹¹ Bradley et al. (2003) and Mahler (2004) use a Gini coefficient as their measure for income inequality. Unlike the income share data utilized by Stasavage and Scheve (2009), Gini coefficients consider the entire income distribution. This may or may not have practical empirical implications. A change in the share of national income going to the top 1 percent of households will be apparent with both measures. However, a change in the share of national income going to households representing a particular subgroup within the top 1 percent (e.g., the top .1 percent) may only be reflected in the Gini coefficient.

¹² Empirical results are similarly mixed in examinations of wage or earnings inequality (e.g., see Wallerstein 1999; Pontusson, Rueda, and Way 2002; Golden and Wallerstein 2011; Martin and Swank 2012). This is not surprising given that individual labor income inequality accounts for most of the variation in household market income inequality (Hoeller et al. 2014).

the result of politicians' shifting (revealed) preferences, which at times produce a partisan consensus for greater government intervention to reduce economic inequalities or (at other times) produce a partisan consensus for less government intervention to reduce economic inequalities.

Politicians' Preferences and Partisan Behavior

If the absent or inconsistent partisan effects on income inequality are the result of trending environmental factors that pressure most or all political parties to drift in the same ideological direction and if these environmental factors consistently impact partisan behavior in the same manner over time, then there are at least two reasons for us to expect these factors to result in an increase in partisanship in some circumstances and a decrease in partisanship in other circumstances. First, while it is reasonable to suppose that most politicians want to hold elected office and be popular, politicians from different party families are likely to have divergent preferences regarding the size, scope, and role of government, and consequently the type of public policies they would prefer to implement. In other words, most politicians are simultaneously "office-seeking", "vote-seeking", and "policy-seeking" (Laver and Schofield 1990; Muller and Strom 1999). Second, each party family has a different base of electoral support. While politicians' policy agenda may not perfectly reflect that favored by their constituents, it is likely to be more representative of their constituents' preferences than that of parties representing other voters with different preferences (Dalton 1985; Bartels 2008; Adams and Ezrow 2009). In short, even if all politicians and party families experience a common external stimuli that pushes them towards implementing particular public policies, their divergent preferences and

constituencies are likely to lead them to resist (or exploit) this pressure more or less (Plümper et al. 2009).

Although early work that explored candidate preferences assumed that politicians were exclusively office- or vote-seeking and were able to change their policy positions to appeal to the pivotal voter with relative ease (Downs 1957), more recent work has acknowledged that politicians, like most political activists, have their own policy preferences (Wittman 1983; Aldrich and McGinnis 1989); and that politicians' ability to shift their positions for electoral purposes is constrained by party activists (Kitschelt 1994; Moon 2004). This more sophisticated characterization of politicians' preferences and behavior suggests that political leaders are likely to desire to seek to mobilize and exploit their activist base (which presumably shares their policy preferences) when it is large enough and strong enough to be a benefit electorally (as this will assist the politicians in both winning elected office and implementing their preferred policies), but attempt to dislodge themselves from this activist base when it is a hindrance to their electoral prospects (as this will at least provide the politicians with the opportunity to be successful electorally).

Labor Unions and Parties of the Left

Parties of the center and right have traditionally found their largest base of activist support and a reservoir of potential political leaders among employers and the (upper) middle class. By contrast, parties of the left have traditionally found their largest base of activist support and a reservoir of potential political leaders among working class wage laborers and the poor (Duverger 1990; Ware 1996). Micro studies have consistently found

members of the latter group to have a stronger preference for economic inequality reduction than the former group (Corneo and Gruner 2002; Alesina and Giuliano 2009; Pontusson 2013). While there are numerous types of political resource theories, each emphasizing different actors, actions, or institutions, nearly all postulate that political influence increases as the result of larger (informal or formal) membership numbers and sustained collective action.¹³ Since the traditional left party constituency is numerically larger than that of the center or right, there would appear to be a natural advantage for parties of the left within a democratic context. However, this advantage is substantially hampered as a result of the low levels of political knowledge and market resources within these left party constituencies (Korpi and Palme 2003; Iversen and Soskice 2011) and the collective action problems that arise with large, diverse groups (Rudra 2002).

Labor unions have played a critical role in overcoming such challenges faced by left parties, acting to educate and organize these parties' natural constituencies. There is a broad scholarly consensus that, even controlling for income, union members have a greater preference for economic inequality reduction and generous social spending than non-union members (Iversen 2001; Checchi et al. 2007; Pontusson 2013); and that greater union presence translates into lower levels of wage and income inequality (e.g., see Wallerstein 1999; Pontusson et al. 2002; Bradley et al. 2003; Mahler et al. 2013). The negative association between union presence and wage and income inequality is primarily explained by reference to the ability of unions to extract compensation-related concessions from employers, the tendency of unions to compress the earnings distribution within their

¹³ By definition, political resource theories “share a focus on the empowering role of resources for the realization of outcomes that advance actors' perceived interests” (Hicks and Misra 1993, 61).

membership (as well as for others covered by collectively bargained contracts),¹⁴ and union support for a redistributive public policy agenda (Bacarro 2008; Visser and Checchi 2009). This latter, indirect union effect is typically assumed to work through left government, with a country needing both strong left parties and strong labor unions to construct a comprehensive, universalistic welfare state, and therefore lower levels of income inequality (Esping-Andersen 1990; Esping-Andersen 1999; Kwon and Pontusson 2010; Simoni 2013).

When acknowledging the conditional relationship between partisan behavior and union presence, scholars tend to make one of two arguments. Either unions and left parties are complements, and thus greater unionization increases partisanship by moving left parties to the left (Kwon and Pontusson 2010); or unions and left parties are substitutes, with the latter engaging in greater government intervention to reduce economic inequalities when unions are weak (Pontusson et al. 2002; Golden and Wallerstein 2011). These seemingly contradictory arguments rest on the same underlying assumption; that politicians are primarily “policy-seeking”.¹⁵ The first argument implies that no matter how many voters are unionized, center or right party politicians will not appeal to union member preferences for greater government intervention to reduce economic inequalities. The second argument implies that left party politicians will respond *more* to union member

¹⁴ Union negotiated wages may also “spillover” to workers not explicitly covered by a collectively bargained contract if non-unionized firms voluntarily abide by such agreements (Rueda and Pontusson 2000).

¹⁵ Scholars within the policy-seeking tradition “implicitly (assume) that the ultimate outcomes that flow from...policies matter to (politicians)” (Muller and Strom 1999, 8).

preferences for greater government intervention to reduce economic inequalities as the number of voters that are unionized declines.¹⁶

If we maintain the assumption that politicians are policy-seeking, but accept that they are substantially office- and vote-seeking as well (an assumption underlying most of the work on political party behavior), then we deviate from both the “left party as complement” and the “left party as substitute” to unions theses. Instead, we are lead to expect the union effect on partisan behavior to be conditioned by the overall level of unionization. Higher levels of unionization should create an incentive for *all* office- and vote-seeking politicians, no matter their partisan persuasion, to appeal to union member preferences, while lower levels of unionization should create a disincentive for such politicians to appeal to union member preferences. However, given that left party politicians are likelier to share union members’ first-order preferences regarding government intervention to reduce economic inequalities than center or right party politicians, we can expect them to respond to union member preferences “sooner” (at lower levels of unionization) than center or right party politicians. In other words, pragmatic politicians seek an opportunity to simultaneously pursue their first-order policy preferences and attain or hold elected office. This expectation suggests that at low levels of

¹⁶ It is possible that union member preferences for government intervention to reduce economic inequalities increase as unionization declines and union organizations become weaker. However, this still leaves open the question as to why an organization that must achieve electoral success to survive (a left leaning political party) and whose members (politicians) desire to hold elected office and be popular would appeal just as much to the preferences of a weaker union movement as they did to a stronger union movement. Another possibility is a more complex causal chain in which a decline in union presence precipitates an increase in economic inequality, which then leads to greater demand (among non-union members) for government action to reduce economic inequalities. While there are strong theoretical reasons to anticipate a positive association between economic inequality and a preference for redistribution, the empirical evidence has been notably mixed (e.g., see Moene and Wallerstein 2003; Kenworthy and Pontusson 2005; Kelly and Enns 2010).

unionization, no pragmatic politician will appeal to union member preferences, but at high levels of unionization, all pragmatic politicians will appeal to union member preferences. However, at more moderate levels of unionization, a circumstance in which left, center, and right party politicians may substantially reveal their first-order preferences and still maintain electoral viability, pragmatic left party politicians will appeal to union member preferences, while pragmatic center and right party politicians will not. This leads us to the central hypothesis of this article:

Hypothesis: The negative effect of left government on income inequality is likely to increase (decrease) as unionization approaches relatively moderate (low or high) levels

Thus far we have focused on the incentives for pragmatic politicians to appeal to union member preferences. What is crucial for the partisan effect on income inequality, however, is not mere rhetorical appeals, but actual government policy. If party policy positions tend to reflect the policy preferences of those voters within their electoral coalition, a crucial link between union member preferences and partisan behavior is the extent to which a political party depends on union members for votes.¹⁷ The above argument implies that no major political party will substantially depend on union member votes in weakly unionized countries, only left parties will do so in moderately unionized

¹⁷ There is an ongoing scholarly debate regarding whether politicians are more responsive to the general electorate or partisan constituencies (Ezrow et al. 2011). However, this research has largely focused on relatively short-term shifts in public opinion and political rhetoric more than actual government policies (Adams 2012). Analyses focusing less on change and more on the general correspondence between the issue positions of party elites and those party's voters find a significant correlation between the two (Dalton 1985; Iversen 1994).

countries, and all major political parties will do so in highly unionized countries. In order to explore whether this is indeed the case, Table 1 uses European Values Study (EVS) and World Value Survey (WVS) data to examine the proportion of each major political party's voters that are union members in the years 1981 to 2008 in 14 wealthy democracies.¹⁸ The countries are listed in descending order based on the average level of unionization in the country during the examined period.

As conventional wisdom would anticipate, across all countries left parties depend on union member votes more than their main center and right party competitors.¹⁹ The only partial exception to this is in Belgium, where the left is fractured along ethnic lines. Here, the centrist Christian People's Party²⁰ relies more on union member votes than the Francophone Socialists, but less than the Flemish Socialists. However, the degree to which political parties depend on union member votes in absolute terms and relative to their main party competitors varies significantly across countries. In the two most weakly unionized countries, France and the United States, and the moderately unionized Italy, union members comprise less than 13 percent of the voters of all major political parties. By contrast, in the four most heavily unionized countries, Sweden, Denmark, Finland, and Norway, union members comprise more than 30 percent of the voters of *all* major political parties. In fact, union members comprise more than 40 percent and 50 percent of the voters

¹⁸ The EVS/WVS asks respondents whether they belong to a trade union (variable a067) and which political party they would vote for if the election were held tomorrow (variable e179).

¹⁹ This analysis uses the party families outlined in the Comparative Manifestos Project. "Left" parties are those coded as belonging to the "Social Democratic" party family, while "center" or "right" parties are those coded as belonging to the "Agrarian", "Liberal", "Christian Democratic", or "Conservative" party families. Center and right parties that received at least 10 percent of the vote in two or more elections during the 1981-2008 period (and for which data is available) are included in the analysis.

²⁰ The Christian People's Party changed its name to the Christian Democratic and Flemish Party in 2001.

Table 1. Proportion of Left, Center, and Right Party Voters that are Union Members, 1981-2008

Country	Union Density†	Union Members as % of Left Vote	Union Members as % of Non-Left Vote	Left-Center (Right) Ratio
France	10.2	6.8 (Socialists)	3.4 (UMP)	2.0
US	14.7	12.1 (Democrats)	8.8 (Republicans)	1.4
Netherlands	24.6	28.6 (PVDA)	14.1 (VVD)	2.0
Germany	28.7	26.3 (SPD)	15.2 (CDU/CSU)	1.7
Canada	31.9	19.8 (NDP)	11.7 (Liberals)	1.7
			10.8 (Progressive Conservative)	1.8
UK††	36.1	15.9 (Labour)	8 (Conservatives)	2.0
Italy	38.2	10 (PSI)	4.8 (Forza Italia)	2.1
		10 (SDI)		2.1
Austria	42.2	26.1 (SPA)	10.6 (AVP)	2.5
Ireland	43.8	19.4 (Labour)	9.6 (Fine Gail)	2.0
			9.6 (Fianna Fail)	2.0
Belgium	51.1	29.8 (SP)	21.8 (CVP)	1.4 (SP/CVP), 3.3 (SP/PVV-VLD)
		14.4 (PS)	9.1 (PVV-VLD)	0.7 (PS/CVP), 1.6 (PS/PVV-VLD)
Norway	56.3	51.8 (Labor)	40.9 (SP)	1.3
			37 (Christian People's)	1.4
			31.2 (Conservative)	1.7

Table 1. Continued.

Country	Union Density†	Union Members as % of Left Vote	Union Members as % of Non-Left Vote	Left-Center (Right) Ratio
Finland	73.7	43.3	30.3	1.4
		(Social Democrats)	(Centre)	
Denmark	75.2	57.8 (Social Democrats)	31.7	1.4
			(National Coalition)	
			45.9	1.3
Sweden	79.6	56.3 (Social Democrats)	(Venstre Liberals)	
			38.7	1.5
			(Conservative)	
			55.4	1.0
			(FP)	
			48.9	1.2
			(Centre)	
			35.5	1.6
			(Moderate Coalition)	

† Average union density level, 1981-2008.

†† Voting statistics do not include Northern Ireland.

for the centrist liberal parties in Denmark and Sweden, respectively. In other words, voters for center and right parties in highly unionized countries are anywhere from 2.5 to over 4 times more likely to be union members than voters for left parties in weakly unionized countries. Such data implies that center and right governments in highly unionized countries are likelier to respond to union member preferences (for government action to reduce economic inequalities) more than left governments in weakly unionized countries. In the two most weakly unionized countries, France and the United States, and the moderately unionized Italy, union members comprise less than 13 percent of the voters of all major political parties. By contrast, in the four most heavily unionized countries, Sweden, Denmark, Finland, and Norway, union members comprise more than 30 percent of the voters of *all* major political parties. In fact, union members comprise more than 40 percent and 50 percent of the voters for the centrist liberal parties in Denmark and Sweden, respectively. In other words, voters for center and right parties in highly unionized countries are anywhere from 2.5 to over 4 times more likely to be union members than voters for left parties in weakly unionized countries. Such data implies that center and right governments in highly unionized countries are likelier to respond to union member preferences (for government action to reduce economic inequalities) more than left governments in weakly unionized countries.

In addition to differences in absolute levels of reliance on union member support, also critical is the difference between left and center or right party reliance on union member support within the same country. The theory outlined above leads us to expect larger partisan differences in moderately unionized countries than weakly and strongly

unionized countries. While the correlation between unionization level and partisan differences is not perfect, these expectations are largely borne out. We find the partisan differences to be smallest in the five most heavily unionized countries (the four Nordic countries and Belgium) and the second most weakly unionized country, the United States. By contrast, the two largest partisan divides are in the moderately unionized countries of Austria and Italy.²¹ Substantial partisan differences are found in the moderately unionized countries of the United Kingdom and Ireland as well, but also the more weakly unionized Netherlands and the least unionized country, France.

In short, union members are a minor constituency of all major political parties in weakly unionized countries, a substantial constituency of only left parties in most moderately unionized countries, and a major constituency of all major political parties in strongly unionized countries. Thus, if unionization matters for the partisan effect on income inequality, as most extant literature suggests it should, we are likely to find partisanship to be greatest at relatively moderate levels of unionization.

Data and Measurement²²

To test whether unionization rates condition the partisan effect on income inequality in a non-linear manner, I examine 16 wealthy democracies between 1970 and

²¹ There is a very large partisan divide in Belgium between the Flemish Socialists (SP) and the liberals (PVV-VLD). However, there is a substantially smaller partisan divide between SP and the Christian People's Party (CVP) and between the other socialist party, the Francophone Socialists (PS), and both the PVV-VLD and CVP.

²² Data and do file are available from author upon request.

2010.²³ The dependent variable in this analysis is net income inequality. The measure is from the Standardized World Income Inequality Database (SWIID) (Solt 2009). SWIID attempts to combine the strengths and neutralize the weaknesses of inequality measures produced by the Luxembourg Income Study (LIS) and the United Nations University World Institute for Development Economics Research (UNU-WIDER). The LIS data has consistent measurement concepts across countries, but is only produced at 5 year intervals. The UNU-WIDER data has inconsistent measurement concepts across countries, but is produced more regularly. SWIID examines the country-years in which the two datasets overlap as well as the income concepts used in UNU-WIDER to arrive at estimates for inequality that are both wide ranging and consistent in the concepts that they measure. The net income inequality measure is a Gini coefficient²⁴ for post-tax and post-transfer household income inequality adjusted for household composition.

I focus solely on the determinants of post-tax and post-transfer (net) income inequality as opposed to pre-tax and pre-transfer income (market) inequality or “redistribution” (the change in income inequality from before taxes and transfers to after taxes and transfers). This is because the theoretical argument put forth here is agnostic regarding what types of policies are pursued to reduce, maintain, or increase a certain level of income inequality. Whether a particular partisan government pursues policies that

²³ The countries included in the analysis are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, Norway, Sweden, the United Kingdom, and the United States.

²⁴ A Gini coefficient represents the area between the Lorenz curve (a plot of the cumulative percentage of total income received against the cumulative number of recipients, starting with the poorest households and moving toward the wealthiest households) and a linear line that represents (hypothetical) perfect income equality. Gini coefficients range from 0 to 100, with 0 identifying perfect income equality (all households have identical income), and 100 identifying perfect income inequality (one household has all of the income).

primarily impact wage or market income inequality (e.g., through the generosity of investments in education or worker training), redistribution (e.g., through the progressivity of the tax structure or the extent to which benefits are universalized), or a combination of the two is unclear (Kelly 2009). The claim in this article is only that union members condition the behavior of politicians towards government intervention in the economy; and that this behavior has measurable consequences for income inequality.

There are two main independent variables of theoretical interest, union presence and the partisan composition of government. Since the focus is on the relative electoral power of union members, union presence is measured as the percentage of wage earners in employment that are union members (“union density”). This data is from the OECD and Visser’s Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (ICTWSS), 1960-2010 database. The partisan composition of government is measured by the proportion of cabinet seats held by parties of the left.²⁵ This data is from the Comparative Political Data Set I (Armingeon et al. 2013). As a robustness check, partisanship is also measured as the percentage of all legislative seats held by parties of the left. This data is from the Comparative Political Parties Dataset (Swank 2013).

Two interaction terms containing the union density and partisan composition of government variables are constructed. The level of union density and the level of union

²⁵ In the dataset use here, all of the countries have at least one party of the “center” or “right” that has been represented in the cabinet. However, two countries, Canada and the United States, do not have a party of the “left” that has been represented in the cabinet. While Canada has a legitimate and relatively robust left party, the New Democratic Party, which has been able to gain a substantial portion of the national vote over successive elections, the United States does not. In the absence of a clear left party, it is likely that the center party acts as the defacto party of organized labor, and thus behaves in the same manner discussed above regarding parties of the left. Therefore, I have recoded the center party in the United States (the Democratic Party) as a party of the left. Nonetheless, the overall conclusions of the analysis do not change substantially if this party is instead coded as a party of the center.

density squared are separately interacted with the level of government partisanship because the argument outlined above suggests that lower and higher levels of unionization should be associated with a smaller partisan effect on income inequality relative to moderate levels of unionization. The *Union Density X Partisan Composition of Government* variable is expected to have a significant negative sign, indicating that as unionization increases from lower to moderate levels, left parties have more of a negative effect on net income inequality relative to center and right parties. The *Union Density² X Partisan Composition of Government* variable is expected to have a significant positive sign, indicating that as unionization increases from moderate to higher levels, left parties have less of a negative effect on net income inequality relative to center and right parties.

Control Variables

Previous research has identified a host of institutional and socio-economic determinants of income inequality.²⁶ The institutional variables most commonly explored in this literature are welfare state design²⁷ and wage bargaining structure. The *welfare regime* typology outlined by Esping-Andersen identifies three types of welfare states in

²⁶ Control variables are chosen based on their anticipated effect on market income inequality and redistribution (i.e., the first and the second stage of the distributional process). At times, a variable will be anticipated to increase (decrease) market income inequality, but also increase (decrease) redistribution. This does not necessarily mean that this variable is expected to have no effect on net income inequality, as it is possible that the effect on market income inequality (redistribution) is substantially greater than the effect on redistribution (market income inequality).

²⁷ Given the substantial controversy over which regime type most appropriately characterizes particular countries, only those 9 countries for which a broad scholarly consensus exists regarding their regime type will be included. Therefore, welfare regime type will only be included in an alternative specification that serves as a robustness check. See Appendix for details.

wealthy democracies (Esping-Andersen 1990). Social democratic welfare states, paradoxically, tend to be both “de-commodifying” (i.e., reduce workers’ reliance on the market) and “labor activating” (i.e., encourage employment) (Bradley and Stephens 2006). By contrast, conservative welfare states, based on corporatist (i.e., welfare state benefits differentiated by occupation) and traditional familial (i.e., supporting the male as bread winner, female as caregiver model) principles, while frequently generous and de-commodifying, tend to discourage employment and engage in limited redistribution (Iversen and Wren 1998). Liberal welfare states that rely on means-tested or other benefits that provide only a basic level of economic security tend to incentivize employment without increasing skills or earnings and thus have only a modest impact on redistribution (Boix 1998; Korpi and Palme 1998). *The level of wage bargaining* refers to the primary level (national, industry, or firm/workplace) at which unions and employers negotiate over compensation. More centralized wage bargaining institutions tend to compress wages between different categories of workers (less skilled and more skilled), different firms, and/or different industries (if bargaining occurs at the national level) (Wallerstein 1999; Scheve and Stasavage 2009). Relatedly, the support of more skilled workers for such a system that holds down their earnings relative to less skilled workers may be maintained by generous public provisions relating to worker training and unemployment benefits (Iversen and Soskice 2010).

The socio-economic variables most frequently cited in the income inequality literature are national wealth, unemployment, female labor force participation, service sector employment, and social spending. The overall impact of these variables on income

inequality is not straightforward. Increasing *national wealth* may reduce market income inequality by slowing population growth (and thus also the supply of labor) and producing a more educated and skilled citizenry (Nielsen and Alderson 1995), or increase market inequality if the rate of return on capital grows at a faster rate than the economy as a whole (Picketty 2014). While increasing national wealth likely results in higher government revenue which can be used for greater social spending, it may also lower demand for compensation (because of widely shared improvements in the quality of life). Greater *unemployment* is likely to increase market income inequality, as less skilled individuals make up a disproportionate number of the unemployed and the greater surplus labor stock that higher unemployment implies may act to increase the bargaining power of capital relative to labor (Iverson 1996; Hall and Franzese 1998; Korpi 2002). However, the positive impact of unemployment is likely to be attenuated by automatic economic stabilizers, such as unemployment insurance and means-tested benefits, which exist to varying degrees in all wealthy democracies (Kenworthy and Pontusson 2005). *Female labor force participation*²⁸ is likely to increase market income inequality if women who join the workforce are primarily from already wealthy households, but likely to decrease market income inequality if women who join the workforce are primarily from already poor households (Maxwell 1990). If greater economic participation translates into greater political participation, then we might expect higher female labor force participation to lead to more inequality-reducing policies on the part of all political parties given that women tend to support redistribution more than men (Alesina and Guiliano 2009). Because *service*

²⁸ Female labor force participation data is only available for the 1980-2010 period. Therefore, this variable will only be included in an alternative specification that serves as a robustness check.

sector employment tends to be bifurcated between those jobs that require high skills and provide generous compensation (e.g., physicians and lawyers) and those that require little skill and provide meager compensation (e.g., retail store clerks and dishwashers), there is general consensus that market income inequality increases as a country becomes more service-oriented and less industry-oriented (Alderson and Nielsen 2002). However, if the reduction in the industrial sector results in economic insecurity and lower wages, we may expect people to demand (and government to respond with) compensation (Iversen and Cusack 2000). As alluded to in the discussion of redistribution above, *social spending* may act to either increase or decrease market income inequality and redistribution depending on whether benefits are employment reducing or employment enhancing, how focused the benefits are at strengthening the skill level of the citizenry, and which households receive the most benefits.

Scholars also frequently cite the impact on income inequality of policies and processes associated with economic globalization. Most frequently discussed are international trade, foreign direct investment (FDI), and the degree of capital openness. Since *international trade* incentivizes firms to specialize in those functions that utilize their country's comparative advantage, firms in wealthy capital abundant countries tend to focus relatively more on those industries or services that require little physical labor but a high level of skill. Therefore, the so-called "losers" from trade are likely to be the less skilled (and therefore less generously compensated) workers (and the capital owners that employ them) (Boix and Adserà 2000). However, these losers from trade may demand and receive compensation from the government in the form of targeted social transfers or subsidies,

resulting in less of an increase in income inequality than would be anticipated without explicit government intervention (Garrett 1995; Cao et al. 2007). *FDI* refers to investment involving a lasting interest in and control by a resident entity in one country of an enterprise resident in a different country, while *capital openness* refers to restrictions on cross-border financial transactions. Both of these factors are typically argued to increase market income inequality and reduce redistribution, as greater exit options for capital are likely to lead to more labor concessions and fewer redistributive taxing and spending schemes (Rodrik 1997; Reuveny and Li 2003; Boix 2010).

Data measurement and sources for all control variables are included in the appendix.

Method

To examine the impact that union members have on the partisan effect on net income inequality, I utilize single-equation time-series cross-sectional error correction models (ECMs) estimated with OLS and the Rogers' robust-cluster variance estimator. The Rogers' variance estimator allows for valid hypothesis tests in the presence of any pattern of correlation within units (countries), including serial correlation and correlation due to unmodeled country-specific factors (Rogers 1994). However, this estimator also assumes that errors are uncorrelated between units. This assumption could be violated if there are unmodeled factors that impact net income inequality in all or most countries at a particular point in time (Huber et al. 2006). In order to address this possibility, dummy variables representing each decade are included in the analysis, with 2000 to 2010 serving as the baseline category.

ECMs are flexible time-series models that have at least two advantages over other statistical models. First, they can be applied to both integrated and stationary data.²⁹ Second, they are able to estimate both the short-term and long-term effect of an independent variable on the dependent variable. A short-term (or immediate) effect indicates that a change in an independent variable in one time period produces a change in the dependent variable only in the concurrent time period. By contrast, a long-term effect expresses dynamic causality and indicates that a shift in an independent variable in one time period produces a change in the dependent variable over many time periods.

A single-equation ECM can be expressed in the following way:

$$\Delta Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \beta_1 \Delta X_t + \beta_2 X_{t-1} + \varepsilon_t,$$

Each independent variable is included in the equation twice, once in its differenced form (ΔX_t) and once in its lagged level form (X_{t-1}). The short-term effect of an independent variable can be determined simply by observing the coefficient for the differenced version of the variable (β_1). The long-term effect, by contrast, is determined by dividing the coefficient for the lagged version of the variable (β_2) by the coefficient for the lagged dependent variable (α_1). The latter coefficient is known as the “error correction rate” and represents the speed at which the independent variable and the dependent variable arrive

²⁹ While ECMs may be applied to both integrated and stationary data (DeBoef and Keele 2008), Enns et al. (2014) demonstrate that cointegration tests only produce correct inferences when the dependent variable is integrated. An augmented Dickey-Fuller test was conducted on the dependent variable used in this analysis (the Gini coefficient for net income inequality). The null hypothesis that all panels contain a unit root could not be rejected at the 95 percent confidence level or greater, indicating that the dependent variable is integrated.

back at equilibrium after a shift in the level of the independent variable. For example, an α_1 of -.1 would indicate that 10 percent of the full long term effect is felt after one time period, that 10 percent of the remaining long term effect is felt in the following time period, and so on. Higher absolute values of α_1 indicate a faster movement back to equilibrium.

Results

Model 1 in Table 2 is the baseline model. It includes all of the independent variables outlined above with the exception of female labor force participation and welfare regime type and covers the years 1970 to 2010. The error correction rate is -.051 and significant at the 95 percent confidence level. This informs us that any long-term effect on net income inequality will be incrementally distributed over time and not fully realized until approximately 20 years after a shift in the level of an independent variable. There are only two control variables that reach statistical significance. First, the coefficient for the level of trade is negative and significant at the 99 percent confidence level. A one standard deviation, or 34 percentage points of GDP³⁰, increase in trade eventually decreases net income inequality by 4.09, or nearly one standard deviation. This finding has at least two possible explanations: governments “overcompensate” losers from trade (i.e., provide more in the way of compensatory benefits than individuals have lost as a result of trade) and/or countries that trade the most are also those that invest most heavily in human capital (with such investments expanding the pool of skilled labor and thus enlarging the number of workers that are able to win from trade). Second, the coefficient for the difference in

³⁰ Between 1970 and 2010, the average level of trade of the 16 countries examined here increased by 34.78 percentage points of GDP.

Table 2. Determinants of Net Income Inequality in 16 (15) Wealthy Democracies

Model	1	2	3
Time	Main Model	No France	No Sweden
	1970-2010	1970-2010	1970-2010
Net Income Inequality (t-1)	-0.051** (0.021)	-0.065** (0.022)	-0.050** (0.022)
Δ Govt. Partisanship (t)	-0.000 (0.001)	-0.000 (0.001)	0.000 (0.002)
Govt. Partisanship (t-1)	0.012*** (0.002)	0.014*** (0.005)	0.012*** (0.002)
Δ Union Density (t)	-0.030 (0.029)	-0.040 (0.032)	-0.044 (0.031)
Union Density (t-1)	0.042** (0.015)	0.020 (0.016)	0.034** (0.015)
Union Density X Union Density (t-1)	-0.000*** (0.000)	-0.000** (0.000)	-0.000*** (0.000)
Union Density X Govt. Partisanship (t-1)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Union Density X Union Density X Govt. Partisanship (t-1)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Δ GDP Per Capita (in thousands) (t)	0.058 (0.054)	0.064 (0.058)	0.045 (0.057)
GDP Per Capita (in thousands) (t-1)	-0.011 (0.013)	-0.013 (0.010)	-0.013 (0.014)
Δ Unemployment (t)	0.017 (0.031)	0.012 (0.032)	0.015 (0.036)
Unemployment (t-1)	0.016 (0.012)	0.024* (0.013)	0.015* (0.014)
Δ Service Sector Employment (t)	-0.009 (0.031)	-0.003 (0.031)	-0.016 (0.034)
Service Sector Employment (t-1)	0.016 (0.010)	0.015 (0.012)	0.016 (0.011)

Table 2. Continued

Model	1	2	3
	Main Model	No France	No Sweden
Time	1970-2010	1970-2010	1970-2010
Δ Social Spending (t)	.037 (0.055)	.049 (0.063)	.016 (0.063)
Social Spending (t-1)	0.001 (0.009)	0.006 (0.011)	-0.001 (0.009)
Δ The Level of Wage Bargaining (t)	0.051 (0.063)	0.044 (0.066)	0.027 (0.067)
The Level of Wage Bargaining (t-1)	0.049 (0.063)	0.055 (0.068)	0.035 (0.071)
Δ International Trade (t)	0.008 (0.006)	0.006 (0.006)	0.008 (0.007)
International Trade (t-1)	-0.006*** (0.001)	-0.006*** (0.002)	-0.006*** (0.001)
Δ Foreign Direct Investment (outflows) (t)	0.019* (0.010)	0.017** (0.008)	0.014** (0.006)
Foreign Direct Investment (outflows) (t-1)	0.010 (0.006)	0.012* (0.006)	0.007 (0.005)
Δ Capital Openness (t)	0.125 (0.108)	0.131 (0.118)	0.139 (0.105)
Capital Openness (t-1)	-0.013 (0.053)	-0.061 (0.065)	-0.009 (0.051)
Constant	0.285 (1.470)	1.316 (1.650)	0.391 (1.521)
Range of UD for Negative and Significant Left Govt Effect	29 to 70	31 to 70	30 to 68
Peak Negative and Significant Left Govt. Effect (Moderate UD)	48	49	49
Positive and Significant Left Govt. Effect (Low UD)	19	13	19
Positive and Significant Left Govt. Effect (High UD)	75	78	None
N	586	552	546
R ²	0.087	0.093	0.086

(Note: Robust standard errors are in parentheses; *** $p < .01$; ** $p < .05$; * $p < .10$)

outward FDI flows is positive and significant at the 90 percent confidence level. This is in line with expectations and informs us that growth in outward FDI flows increases net income inequality in the short-term, although the size of the coefficient is substantively small.

As anticipated, the *UNION DENSITY X PARTISAN COMPOSTION OF GOVERNMENT* variable has a significant negative coefficient, and the *UNION DENSITY² X PARTISAN COMPOSITION OF GOVERNMENT* variable has a significant positive coefficient.³¹ Given that the interaction terms contain the levels of, as opposed to the changes in, the partisan composition of government, the coefficients for these variables represent the long term effect that a left (center and right) government has on net income inequality relative to center and right (left) governments.

Figure 2 charts the marginal effect of a shift in government partisanship to the left over the observed values of union density in the dataset used here. A clear U-shaped relationship can be identified, whereby the negative effect of left government relative to center or right government on net income inequality increases as union density approaches moderate levels. Left government has its largest negative effect on net income inequality relative to center and right governments when the union density level reaches 48 (a condition that existed in the United Kingdom in the late 1970s, near the start of Margaret Thatcher's term as Prime Minister). At such a time, a shift in government from one controlled completely by the center or right to one evenly divided between the left and the

³¹ T-tests of the marginal effects confirm that *UNION DENSITY X PARTISAN COMPOSTION OF GOVERNMENT* and *UNION DENSITY² X PARTISAN COMPOSITION OF GOVERNMENT* are significant at the 99 percent confidence level.

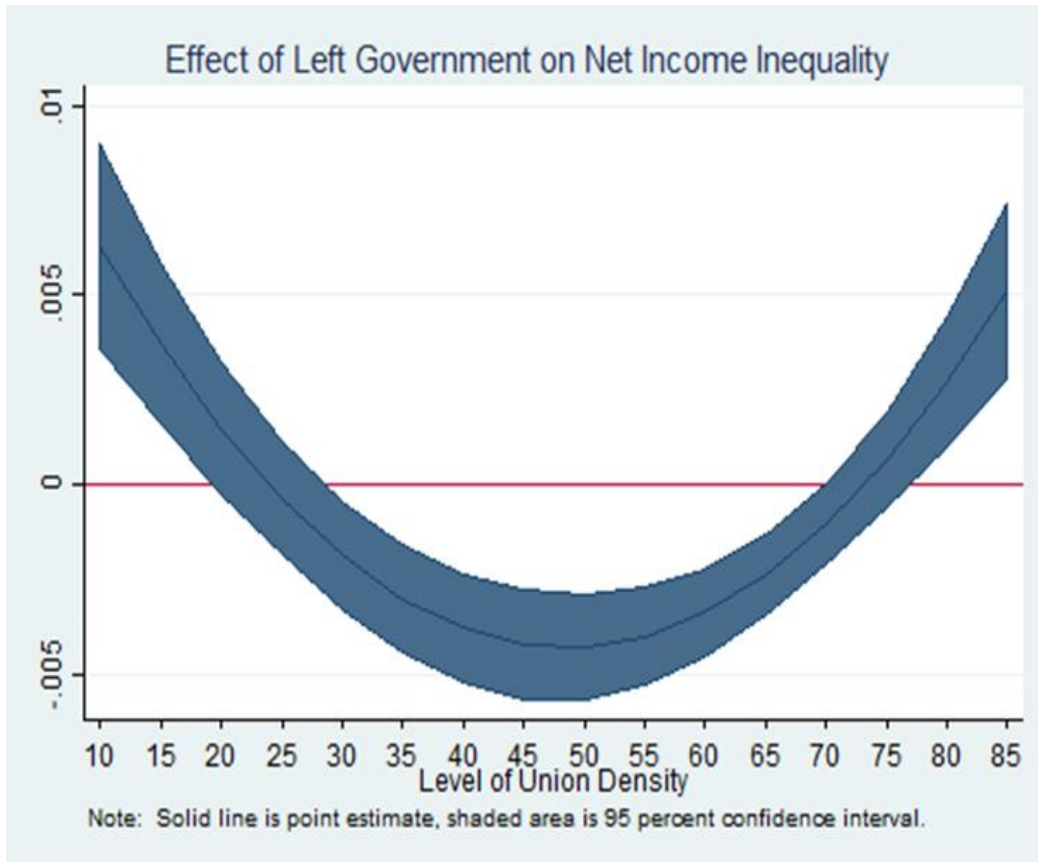


Figure 2. Conditional Effect of Left Government on Net Income Inequality Across Range of Union Density Levels in 16 Wealthy Democracies

center or right results in a decrease in net income inequality of 4.25, or slightly over one standard deviation. In the final two decades of the analysis, only Finland experienced a change in net income inequality exceeding this amount.³² A shift in government from one controlled completely by the center or right to one controlled completely by the left results in a decrease in net income inequality of 8.50, or slightly more than two standard deviations. This is approximately the difference between Japan, the tenth most equal country in the analysis, and Sweden, the most equal country in the analysis, in 2010.³³

Moving our attention away from moderate levels of union density towards higher and lower levels, we observe that left government does not reduce net income inequality relative to center and right governments when union density is less than 29 or more than 70. In 2010, the final year of the analysis, 9 of the 16 countries examined here fell in the former category³⁴ while not a single country fell in the latter category. However, Finland and Sweden were above a union density level of 70 as recently as 2008, while Denmark fell below this level only in 2006. This suggests that partisan differences towards government intervention in the economy may be on the rise in these three countries. At very low (less than 20) and very high (more than 76) levels of union density, the marginal effects indicate that left governments actually increase net income inequality relative to center and right governments.

In an effort to determine the robustness of the above results, 7 additional models are included in Tables 2 and 3. First, excluded from the analysis are those countries that

³² Finland's level of net income inequality increased from 21.04 to 25.54 between 1990 and 2010.

³³ 2010 data is not available for Canada and Ireland.

³⁴ The countries are Australia, Austria, Canada, France, Germany, Japan, the Netherlands, the United Kingdom, and the United States.

Table 3. Determinants of Net Income Inequality in 16 (9) Wealthy Democracies

Model	4	5	6	7	8
Time	No Social Spending 1970-2010	W/ Female Labor Part. 1980-2010	W/ Welfare Regime† 1970-2010	W/ Partisan Leg. 1970-2010	Reduced Model 1970-2010
Net Income Inequality(t-1)	-0.050** (0.021)	-0.050** (0.021)	-0.159* (0.084)	-0.061** (0.022)	-0.048*** (0.016)
Δ Govt. Partisanship (t)	-0.000 (0.001)	-0.001 (0.001)	-0.001 (0.001)	0.007 (0.009)	-0.000 (0.001)
Govt. Partisanship (t-1)	0.013*** (0.002)	0.015*** (0.003)	0.011*** (0.003)	0.049*** (0.015)	0.013*** (0.003)
Δ Union Density (UD) (t)	-0.028 (0.029)	0.003 (0.033)	0.017 (0.030)	-0.035 (0.029)	-0.030 (0.034)
Union Density (UD) (t-1)	0.041** (0.014)	0.054*** (0.017)	0.006 (0.031)	0.120** (0.041)	0.034** (0.012)
UD X UD (t-1)	-0.000*** (0.000)	-0.001*** (0.000)	0.000 (0.000)	-0.001** (0.000)	-0.000*** (0.000)
UD X Govt. Partisanship (t-1)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.002*** (0.001)	-0.001*** (0.000)
UD X UD X Govt. Partisanship (t-1)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000** (0.000)	0.000*** (0.000)
Δ GDP Per Capita (in thousands) (t)	0.038 (0.042)	-0.040 (0.056)	0.039 (0.136)	0.059 (0.055)	
GDP Per Capita (in thousands) (t-1)	-0.010 (0.013)	-0.018 (0.015)	0.029 (0.039)	-0.020 (0.013)	
Δ Unemployment (t)	0.023 (0.030)	-0.027 (0.051)	0.069 (0.055)	0.008 (0.033)	
Unemployment (t-1)	0.016 (0.012)	0.006 (0.015)	0.017 (0.042)	0.006 (0.016)	
Δ Service Sector Employment (t)	-0.008 (0.032)	0.011 (0.013)	-0.082 (0.181)	-0.011 (0.031)	
Service Sector Employment (t-1)	0.016 (0.010)	0.024 (0.006)	0.043 (0.049)	0.015 (0.011)	

Table 3. Continued.

Model	4	5	6	7	8
	No Social Spending	W/ Female Labor Part.	W/ Welfare Regime†	W/ Partisan Leg.	Reduced Model
Time	1970-2010	1980-2010	1970-2010	1970-2010	1970-2010
Δ Social Spending (t)		-0.062 (0.088)	-0.063 (0.068)	0.036 (0.063)	
Social Spending (t-1)		0.014 (0.008)	-0.069 (0.071)	0.004 (0.013)	
Δ The Level of Wage Bargaining (t)	0.055 (0.065)	0.106* (0.056)	0.141 (0.083)	0.041 (0.065)	
The Level of Wage Bargaining (t-1)	0.051 (0.063)	0.127*** (0.038)	0.216 (0.118)	0.031 (0.065)	
Δ International Trade (t)	0.007 (0.006)	0.007 (0.008)	0.014* (0.008)	0.006 (0.006)	0.013** (0.006)
International Trade (t-1)	-0.006*** (0.001)	-0.008*** (0.001)	-0.013*** (0.005)	-0.007*** (0.002)	-0.004*** (0.001)
Δ Foreign Direct Investment (outflows) (t)	0.019* (0.009)	0.019* (0.010)	0.019 (0.015)	0.018 (0.011)	0.013* (0.007)
Foreign Direct Investment (outflows) (t-1)	0.010* (0.006)	0.009 (0.005)	0.011 (0.013)	0.007 (0.007)	
Δ Capital Openness (t)	0.123 (0.106)	0.063 (0.131)	0.080 (0.193)	0.102 (0.106)	
Capital Openness (t-1)	-0.013 (0.053)	-0.016 (0.056)	-0.172 (0.222)	-0.024 (0.054)	
Δ Female Labor Force Participation (t)		-0.162 0.141			
Female Labor Force Participation (t-1)		0.008 0.013			
Liberal (t)			1.800 (1.087)		
Conservative (t)			1.086 (0.099)		
Constant	0.315 (1.345)	-0.294 (1.152)	7.255 (5.221)	-0.520 (1.631)	1.188** (0.455)

Table 3. Continued.

Model	4	5	6	7	8
Time	No Social Spending 1970-2010	W/ Female Labor Part. 1980-2010	W/ Welfare Regime† 1970-2010	W/ Partisan Leg. 1970-2010	Reduced Model 1970-2010
UD Levels (Negative and Significant Left Govt Effect)	29 to 69	28 to 68	37 to 56	37 to 52	34 to 65
Peak Negative and Significant Left Govt. Effect	49	49	51	51	49
Positive and Significant Left Govt. Effect (Low UD)	19	17	15	20	18
Positive and Significant Left Govt. Effect (High UD)	77	None	None	None	79
N	587	467	336	586	595
R ²	0.087	0.115	0.142	0.088	0.071

(Note: Robust standard errors are in parentheses; *** $p < .01$; ** $p < .05$; * $p < .10$)

† Regression includes only 9 countries (see fn. 27 and the Appendix)

consistently have the highest and lowest levels of union density in the dataset used here and thus may disproportionately impact the results. In Model 2, France (which in all 41 years has the lowest level of union density) is removed. In Model 3, Sweden (which in 34 of the 41 years has the highest level of union density) is removed. Second, given that partisan governments play a critical role in determining levels of, and changes in, social spending, controlling for this variable may act to under or overestimate the relationship between partisanship and net income inequality. Therefore, Model 4 drops this variable from the analysis. Third, Model 5 includes the female labor force participation variables. Due to data limitations, this model is only able to cover the 1980 to 2010 period. Fourth, Model 6 incorporates dummy variables for welfare regime type. Countries for which there is little scholarly consensus regarding their welfare state type are excluded from the

analysis.³⁵ Fifth, Model 7 measures the partisan composition of government with the proportion of legislative seats, rather than cabinet positions, held by parties of the left. Finally, Model 8 includes only those variables that were significant at the 90 percent level or greater in Model 1.³⁶

In 6 of these robustness checks, both the *UNION DENSITY X PARTISAN COMPOSITION OF GOVERNMENT* and the *UNION DENSITY² X PARTISAN COMPOSITION OF GOVERNMENT* interaction terms are in the hypothesized direction and significant at the 99 percent confidence level. The only difference is Model 7, which includes the alternative measure for partisan composition of government. In that model, the quadratic interaction term just barely misses the cutoff for statistical significance at the 99 percent confidence level (with a p-value of .013). The “turning point” for the partisan effect on net income inequality proves robust across models. In every model (including Model 1), left governments decrease net income inequality the most relative to center or right governments when the union density level is between 48 and 51. Furthermore, the substantive effects of partisanship at these turning points do not differ by model (i.e., the 95 percent confidence intervals for these estimates overlap). Also robust is the range in which a negative effect of left government relative to center and right government is found. In each model, left government has a significant negative effect when the union density level is between 37 and 52 (with the range dropping as low as 28 in Model 5 and as high as 70 in Models 1 and 2). If we exclude the models containing only 9 countries (Model 6)

³⁵ See fn. 27 and the Appendix.

³⁶ Both short-term and long-term coefficients are included for trade (the variable with a statistically significant long-term effect in Model 1).

and the alternative measure of the partisan composition of government (Model 7), this range expands significantly (with the remaining 6 models demonstrating a significant left government effect when the union density level is between 34 and 65). Slightly less robust is the finding that left government increases net income inequality relative to center and right governments at low levels of union density. In Model 2, which excludes the low union density country of France, left government does not begin to have a statistically significant positive effect on net income inequality until a union density level of 13. This is down from a union density level of 19 in Model 1 and would only apply to only 11 of the 552 remaining country-years, all of which belong to the United States (2000 to 2010).³⁷ Far less robust is the finding that left government increases net income inequality relative to center and right governments at high levels of union density. No such effect is found in Model 3, which excludes the high union density country of Sweden, Model 5, which includes female labor force participation and only covers the years 1980 to 2010, Model 6, which includes welfare regime and only includes 9 countries, or Model 7, which uses the alternative measure for partisanship.

The findings in Model 1 regarding the long-term negative effect of trade and the short-term positive effect of outward FDI flows prove robust. In each of the additional models the coefficient for the level of trade is negative and significant at the 99 percent confidence level, while in all but two models the coefficient for the difference in outward FDI outflows is positive and significant at the 90 confidence level (with the coefficient

³⁷ If the Democratic Party of the United States reverts to its original coding as a center party in this model, the positive effect of left government exists only until a union density level of 4. Given that there is no country-year in the analysis with a union density level that low, this finding has little substantive meaning.

reaching the 95 percent confidence level in Models 2 and 3). No other control variable consistently reaches statistical significance.

If the ability and willingness of politicians to respond to union preferences is substantially determined by both first-order policy preferences and electoral incentives, then we might expect the conditioning union effect on partisanship to differ based on the electoral threshold necessary to hold elected office. The lower electoral thresholds in proportional representation (PR) systems allow politicians to appeal to a narrower base in the electorate than politicians in majoritarian systems with higher electoral thresholds, where there are greater incentives to make electoral appeals to the median voter (Downs 1957; Norris 2005; Iversen and Soskice 2006). This would imply that left party politicians respond to union preferences “sooner” (at lower levels of unionization) and right and center party politicians respond to union preferences “later” (at higher levels of unionization) in countries with a PR system than left, center, and right party politicians in countries with a majoritarian system.

In an effort to determine whether the conditional effects of unionization on partisanship found above differ based on the electoral system in place, I include two supplementary models, one for countries with a majoritarian system and one for countries with a PR system.³⁸ Figures 3 plots the marginal effects of government partisanship on net income inequality at different levels of union density in majoritarian and PR electoral systems, respectively. First, notice that the x axis on these two plots differ, as the levels of

³⁸ I utilize the country classification put forth by Iversen and Soskice (2006). The countries characterized as having majoritarian systems are Australia, Canada, France, Ireland, Japan, the United Kingdom, and the United States. The countries characterized as having PR systems are Austria, Belgium, Denmark, Finland, Germany, Italy, the Netherlands, Norway, and Sweden.

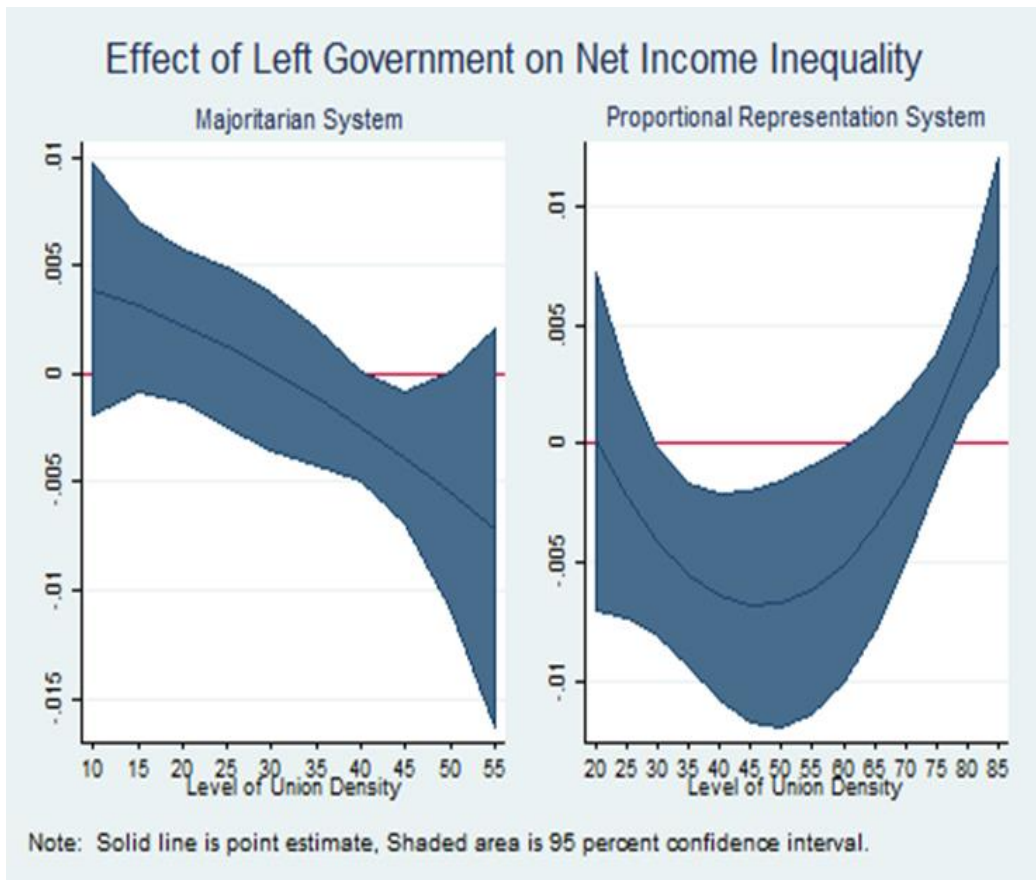


Figure 3. Conditional Effect of Left Government on Net Income Inequality Across Range of Union Density Levels in 7 Majoritarian and 9 Proportional Representation Countries.

union density shown correspond to those that exist in the country-years covered in each model. Majoritarian systems have a relatively narrow spread in union density (ranging from about 11 to 54), while PR systems have a much wider spread (ranging from about 19 to 84). These different spreads have the consequence of producing very different distributions, with a more or less linear interactive effect in majoritarian systems and the familiar U-shaped distribution in the PR systems. The theoretical expectations receive support. The significant and negative left government partisan effect can be identified over a much wider range of values of union density in the PR plot (union density levels 30 to 60) than the majoritarian plot (union density levels 41 to 49). The substantive size of this effect, however, does not significantly differ by electoral system. Three additional similarities between the two plots should be recognized. First, in confirmation of the central hypothesis of this article, as unionization approaches moderate levels, left government has more of a negative effect on net income inequality relative to center and right governments. Second, the “turning point” for the negative left government effect is very similar in the two systems. In majoritarian countries, the negative partisan effect of left government is greatest at a union density level of 49, while in PR systems the negative partisan effect of left government is greatest at only the slightly lower union density level of 47. Third, unlike the plot generated by Model 1 which pooled together both types of electoral systems, in neither plot is there a positive left government effect at low levels of union density.³⁹

³⁹ In the PR plot, left government has a positive effect on net income inequality relative to center and right governments when the union density level is 78 or higher. For the same reasons as outlined above, the regression was run again with Sweden excluded. While the results are substantially similar at lower and

Discussion and Conclusion

Why has no consistent partisan effect on income inequality been found in the scholarly literature? I have argued here that a part of the explanation concerns a country's level of unionization, which conditions the partisan effect on income inequality. This argument rests on three main pillars. First, union members favor government intervention to reduce economic inequalities more than non-union members. Second, politicians are both pragmatic (office- and vote-seeking) and ideological (policy-seeking). Third, politicians in parties of the left, which have historic links with organized labor, have a greater first-order preference for government intervention to reduce economic inequalities than politicians in center or right parties. With each of these three pillars in place, we can expect lower levels of unionization to produce fewer efforts at economic inequality reduction on the part of all partisan governments, reducing the partisan effect on income inequality; moderate levels of unionization to produce substantially greater efforts at economic inequality reduction on the part of left governments than center or right governments, increasing the partisan effect on income inequality; and high levels of unionization to produce greater efforts at economic inequality reduction on the part of all partisan governments, reducing the partisan effects on income inequality. In short, partisan effects on income inequality are likely to increase (decrease) as we approach relatively moderate (low or high) levels of unionization. This theory was tested with a series of error-correction models, using net income inequality as the dependent variable, linear and

moderate levels of union density as the PR model that included Sweden, the positive effect of left government at high levels of union density disappears.

quadratic interaction terms consisting of the level of union density and the partisan composition of government, and a set of controls. The empirical results confirm the theoretical expectation and hold regardless of whether there is a majoritarian or PR electoral system.

Table 4 provides data on the level of unionization in the 16 countries examined in this analysis. Column two contains the level and year at which unionization reached its peak, while column three contains the level and year at which unionization fell to its trough. There are several observations that deserve our attention. First, all but one country (Belgium) reaches its peak unionization level prior to the twenty-first century, with half of the countries reaching this peak in the 1970s, the first decade of the analysis. Second, there is a bimodal distribution in regards to the trough of unionization, with five countries (the four Nordic countries and Belgium) hitting this point in the 1970s (as unionization trended upwards) and the remaining eleven countries doing so in the 2000s (as unionization trended downwards), the last decade of this analysis. Third, the levels of the various peaks and troughs differ substantially across countries. Three countries (Denmark, Finland, and Sweden) have peaks that meet or exceed 80, while six countries have peaks less than half of that level (Canada, France, Germany, Japan, the Netherlands, and the United States); and four countries have troughs that exceed 50 (the four Nordic countries), while five countries have troughs less than half that level (Australia, France, Japan, the Netherlands, and the United States). In short, wealthy democracies are experiencing a broad decline in unionization levels, but the timing, depth, and starting level of this decline differs substantially across countries.

Table 4. Peak and Trough Unionization Levels in 16 Wealthy Democracies, 1970-2010

Country	Peak (Year)	Trough (Year)
Australia	50.2 (1976)	18.1 (2010)
Austria	62.8 (1970)	28.4 (2010)
Belgium	54.1 (2006)	39.9 (1970)
Canada	36.8 (1982)	27.2 (2008)
Denmark	80.8 (1983)	60.3 (1970)
Finland	80.7 (1993)	51.3 (1970)
France	21.7 (1970)	7.5 (2007)
Germany	36.0 (1991)	18.6 (2010)
Ireland	54.8 (1978)	32.7 (2010)
Italy	50.5 (1976)	33.2 (2006)
Japan	35.1 (1970)	18.2 (2008)
Netherlands	37.8 (1975)	18.6 (2010)
Norway	58.5 (1990)	51.9 (1972)
Sweden	83.9 (1993)	67.7 (1970)
UK	49.9 (1981)	26.4 (2010)
US	27.4 (1970)	11.4 (2010)

What consequences might such observations have for the partisan effect on income inequality? The theoretical argument and empirical results outlined here suggests that declining unionization *should not* have the same effect on the partisan effect on income inequality across countries (at least in the short to medium term). Rather, what is critical is the level of unionization from which each country is falling from. Those countries with a relatively high peak level of unionization are likely to experience an increase in partisanship towards distributional issues as unionization declines, while those countries with a relatively moderate or low peak level of unionization are likely to experience a decrease in partisanship towards distributional issues as unionization declines. While many scholars have argued that partisanship is decreasing or increasing across most or all wealthy democracies as a result of common domestic and international trends (Boix 1998; Garrett 1998; Pierson 2001; Boix 2010), these findings suggest that the impact of common trends will differ depending on each country's starting point (Thelen 1993).

The marginal effects of partisanship on income inequality in PR and majoritarian electoral systems demonstrate that partisanship persists at a wider range of unionization levels in the former than the latter. This finding contradicts the traditional description of PR systems as comparatively "consensual" (Rogowski 1987; Rueda and Pontusson 2000), but lends support to recent work demonstrating that because of their lower electoral thresholds, PR systems have more ideologically disparate parties than majoritarian systems (Dow 2011). Evidence indicating that partisan differences are present in majoritarian systems only at very moderate levels of unionization provides conditional support for the traditional argument that such systems limit partisanship by providing all office- and vote-

seeking politicians with an electoral incentive to appeal to the median voter. On the one hand, the results do indicate that politicians in majoritarian systems attempt to appeal to the same (median) voter most of the time. On the other hand, the results also indicate that there are certain electoral conditions in such systems that allow politicians with divergent policy preferences to appeal to different voters. This suggests that politicians from different party families may project their own preferred median voter onto the electorate when doing so is intellectually credible. These results contribute to a growing body of literature that finds that electoral rules matter for government output and socio-economic outcomes, but that the extent to which they do so depends on a host of environmental factors such as the preferences of the politicians in government, the ideological and demographic characteristics of the electorate, and the competitiveness of the electoral system (Kang and Powell 2010; Ezrow 2011; Warwick 2011).

The broader implication of this study is that because politicians strategically adjust to their environment, there is unlikely to ever be an “independent” partisan effect which is constant across space and time. While such a statement should be uncontroversial among scholars who study the behavior of politicians and political parties, it is a crucial point that is often neglected in studies that examine the determinants of income inequality and other socio-economic outcomes. In the future, it is important for us to take more seriously the modelling of environmental factors that are likely to increase or decrease the ideological distance and policy differences between politicians belonging to different political parties.

The theoretical argument outlined above is in the tradition of scholars such as Garrett, Korpi, and Pontusson, who have emphasized the importance of social, economic,

and political conditions for the ability of politicians to pursue their first-order policy preferences. It is important to note that such conditions may not merely be represented by variables that are more or less trending in a predictable direction over time (e.g., unionization or economic globalization), but frequently unpredictable (or at least largely unpredicted) major world events such as the Great Depression, World War II, 9/11, and the Great Recession (Scheve and Stasavage 2009; Pontusson 2013; Picketty 2014). If partisan politicians have policy preferences, then they should use such crises (which may rally support for the government in general and/or increase pressure for “government action”) to push through a predetermined policy agenda that existed independently of the event discussed. Further work that asks under what conditions partisan politicians are able to pursue their first-order preferences, as well as under what conditions politicians may actually alter their first-order preferences, seems to be a promising avenue for future research.

Before concluding, it is important to note two clear shortcomings of this analysis. First, I have implicitly assumed that all union members share more or less the same preferences and that these preferences are largely constant across countries and over time. However, scholars have found that union members frequently exhibit different preferences towards distributive issues based on their skill or income level and the sector that they work within (Garrett and Way 1999; Nijhuis 2009; Becher and Pontusson 2011; Iversen and Soskice 2010), and that the demographic makeup of union movements differs both across countries and over time (Iversen and Soskice 2009; Visser and Checchi 2009; Pontusson 2013). Although data on union composition is relatively scarce, future research should

attempt to take such factors into account before estimating direct or indirect union effects. Second, the focus here has been on the partisan effect on income inequality. However, partisan governments impact income inequality primarily through the policies that they pursue, not simply by attaining or holding office (Rueda 2008). The central assertion that all partisan governments will be less likely to engage in government intervention to reduce economic inequalities when unionization is low, left parties will be likelier to engage in substantial government intervention to reduce economic inequalities than center or right parties when unionization is at moderate levels, and all political parties will be more likely to engage in government intervention to reduce economic inequalities when unionization is high, could be tested more directly by examining how unionization conditions the policy orientation of different types of partisan governments and, in turn, how any of those enacted policies impact income inequality. Such an analysis will help us better determine the causes and consequences of partisan conflict over distribution and redistribution, as well as specific distributional outcomes.

CHAPTER III

ECONOMIC GLOBALIZATION AND THE UNION EFFECT ON WAGE INEQUALITY

Introduction

For many years, one of the few areas of broad consensus in the literature on wage inequality in the wealthy democracies was that union strength accounts for much of the cross-national and over-time variation in wage inequality, with stronger unions resulting in less wage inequality (e.g., see Iversen 1996; Kahn 1998; Wallerstein 1999; Kahn 2000; Rueda and Pontusson 2000; Pontusson et al. 2002; Golden and Londregan 2006; Oliver 2008; Martin and Swank 2012).⁴⁰ However, recent evidence indicates that this union effect disappeared at some point in the 1990s (Golden and Wallerstein 2011; Pontusson 2013). Despite the important theoretical and practical implications of this finding, scholars have yet to craft a comprehensive theory to explain the disappearance of the union effect; nor have they provided empirical tests of the few suppositions offered to explain it.

What is responsible for the disappearance of the union effect on wage inequality?⁴¹ I focus attention on one of the most obvious culprits; economic globalization. While previous scholarship has examined how economic globalization impacts unions, this literature has tended to focus on the consequences that economic globalization has for the

⁴⁰ “Wage inequality” differs from “income inequality” in that the latter includes compensation derived from investments (e.g., capital gains) as well as labor. Unlike wage inequality, income inequality encompasses persons with and without gainful employment and is frequently measured at the household, rather than the individual, level. This article focuses exclusively on the determinants of wage inequality, a term that is used synonymously with earnings inequality.

⁴¹ Within the existing wage inequality literature, “wage” is a broad term that encompasses employee remuneration regardless of whether it is provided on a fixed hourly, weekly, monthly, or annual basis or in return for a particular good or service.

organizational characteristics of unions rather than on unions' ability or willingness to utilize a given organization toward particular ends. In particular, numerous scholars have argued that economic globalization reduces the number of union members relative to non-union members⁴² or precipitates the breakdown of centralized wage bargaining institutions.⁴³ However, none have seriously considered (theoretically or empirically) how economic globalization conditions the union effect on wage inequality⁴⁴ – or, for that matter, many other socio-economic or political outcomes.⁴⁵

This article aims to explain the disappearance of the union effect on wage inequality and address such shortcomings in the literature by identifying and examining in detail the three interrelated processes by which unions impact wage inequality, which I label the employer, intra-union, and insider mechanisms; and by considering how economic globalization impacts each and all of these mechanisms by altering the bargaining power and thus also the preferences of different types of employers, union workers, and non-union workers. The evidence I present suggests that economic globalization reduces the union effect by exacerbating wage differentials between employers (managers) and lower-paid union workers, higher-paid union workers and lower-paid union workers, and employers (managers) relative to many of the least paid non-union workers. Given that economic globalization is expanding with no obvious interruptions in sight, the implication is that if

⁴² See Dreher and Gaston (2007) for a brief review of this literature.

⁴³ See Western (1997) for the most prominent example.

⁴⁴ Economists frequently examine factors that influence unions' wage extracting ability. However, these scholars focus almost exclusively on factors associated with the business cycle (e.g., see McDonald and Solow 1981 and Messina et al. 2009).

⁴⁵ Notable exceptions include Beckfield (2006), Iversen and Soskice (2010), and Kwon and Pontusson (2010).

the traditional union effect on wage inequality has disappeared, it may very well have vanished for good.

This article is divided into six sections. The first section addresses in detail the employer, intra-union, and insider mechanisms. The second section outlines recent evidence that the union effect on wage inequality disappeared in recent decades. The third section discusses how economic globalization can be expected to condition the employer, intra-union, and insider mechanisms and thus also the union effect more broadly. The fourth section provides information on the dependent variables, independent variables, and estimation strategy employed in the empirical analysis. The fifth section reports the results of the empirical analysis and the sixth section includes a discussion of the findings.

The Union Effect on Wage Inequality

Unions impact wage inequality through three interrelated processes; or what I term here the employer⁴⁶, intra-union, and insider mechanisms.⁴⁷

The *employer mechanism* is emphasized in the power resource theory (PRT) literature and refers to unions' ability to extract wage and other compensation-related concessions from employers (Stephens 1980; Korpi 1985). In the absence of working class organizations, market power in capitalist economies is concentrated in the hands of the few (i.e., employers). By organizing "subordinate classes" (i.e., employees), unions are able to

⁴⁶ In this article, "employer" refers not only to actual business owners, but also top managers (e.g., chief executive officers or high level bureaucrats) that may or may not have an ownership stake in a firm but nonetheless formulate and implement policies relating to investments and/or employee compensation.

⁴⁷ The focus in this article is on how unions impact wage inequality "directly", or through employer-union and intra-union negotiations. However, unions almost certainly impact wage inequality "indirectly" as well by supporting (or opposing) particular political parties, politicians, and public policies.

redistribute some of this market power to their members (Bradley et al. 2003). This may be done, for example, by representing most (potential) workers in a particular firm, industry, or region and therefore monopolizing a certain segment of the workforce (Freeman and Medoff 1984; Mishel 1986) or by facilitating the ability of workers to jointly withhold their services until particular demands are met regarding compensation (Checci et al. 2007). More generally, unions foster a class-based identity among employees through information campaigns and the politicization of distributional struggles (Thompson 1978; Pontusson et al. 2002; Iversen and Soskice 2011); and, by applying “normative power resources”, may ultimately instill a greater “taste for equality” in the wider citizenry (Korpi 1985; Kenworthy and Pontusson 2005; Plumper et al. 2009).

The *intra-union mechanism* is emphasized in the varieties of capitalism (VoC) literature and refers to the tendency of unions to compress wages among their own members. This may be done by providing equal pay for equal work or by workers in lower-paid occupations receiving larger wage gains from union membership than workers in higher-paid occupations (Huber and Stephens 1998; Kahn 1998; Pontusson et al. 2002; Card et al. 2003; Hall and Thelen 2007). This latter phenomenon is explained as the result of the solidaristic norms within union organizations (Wallerstein 1999), a political exchange between highly skilled union workers and politicians, whereby the former agree to wage restraint in return for generous social insurance policies (Iversen and Soskice 2010), and/or the democratic nature of union organizations, which tends to result in wage

agreements that benefit the median union member (Pontusson et al. 2002; Checci et al. 2007).⁴⁸

The *insider mechanism* is emphasized primarily in the economics literature and refers to the (positive or negative) externalities that result from union wage gains (and other costs associated with collective bargaining). If workers earn a wage premium⁴⁹ as a result of union membership, then that necessarily implies that unions increase wage inequality between otherwise identical union and non-union workers (Friedman 1962; Freeman and Medoff 1984; Card et al. 2003). However, the union wage premium also impacts the wage differentials between dissimilar union and non-union workers (Freeman 1980). Union wage premiums for workers in lower-paid jobs shrink earnings differentials between these union workers and non-union workers (and employers) in higher-paid jobs; while union wage premiums for workers in higher-paid jobs aggravate wage differentials between these union workers and non-union workers in lower-paid jobs. However, union wage gains may result in higher wages in the non-union sector as well and thus at least partly cancel out the union wage premium - and thus also the impact such a premium has on union/non-union wage differentials. “Pour over effects” occur as a result of laws requiring that union-bargained wages extend to non-union workers (Wallerstein and Western 2000) while “spillover effects” occur as a result of non-union employers voluntarily offering higher wages in an attempt to preempt potential union organizing efforts or to entice workers away

⁴⁸ A decision-making process that strengthens the median union member relative to the mean union member is likely to result in a wage agreement that is more beneficial to the former than the latter. Since the median union wage tends to be lower than the mean union wage, this implies greater within union wage compression.

⁴⁹ A union wage premium refers to the (positive) difference in the wage of a union worker relative to a (hypothetical) non-union worker with an identical job profile.

from already unionized establishments (Rueda and Pontusson 2000; Rosenfeld and Western 2012).⁵⁰

While distinct theoretical propositions, the employer, intra-union, and insider mechanisms are clearly neither independent from one another nor are they mutually exclusive. Indeed, without an employer mechanism there is unlikely to be either an intra-union mechanism or an insider mechanism; as the intra-union mechanism implies that less-paid union workers have extracted greater wage gains from their employers than better-paid union workers⁵¹ and the insider mechanism is a product of externalities resulting from any such union wage gains. Therefore, the overall union effect on wage inequality can be said to be the net result of the gains of union workers relative to their employers, some union workers relative to other union workers, union workers relative to non-union workers, and non-union workers relative to their employers.

The Disappearing Union Effect

There has been a broad (implicit) consensus in the comparative political economy literature that the net result of the employer, intra-union, and insider mechanisms is to reduce wage inequality (e.g., see Iversen 1996; Kahn 1998; Wallerstein 1999; Kahn 2000; Rueda and Pontusson 2000; Pontusson et al. 2002; Golden and Londregan 2006; Oliver

⁵⁰ There are numerous other externalities arising from union wage gains that have consequences for the overall wage distribution. For example, if the elevated costs of union labor increase unemployment, non-union wages may fall in response to the larger supply of idle labor (Friedman 1962). On the other hand, such union-induced unemployment may actually increase non-union wages in the long-term if the unemployed are induced to augment their skill level in an effort to improve their prospects for employment (Kahn 2000). Finally, union wage gains may motivate employers to invest in capital improvements to boost worker productivity, ultimately leading to higher wages throughout the broader economy (Erixon 2010).

⁵¹ It is difficult to imagine a sustainable union movement in which lower-paid union workers achieve relative gains exclusively or even primarily by extracting wage gains from higher-paid union workers, the latter of which would then experience not only relative but also absolute losses as a result of union membership.

2008; Martin and Swank 2012). Yet recent evidence provided by prominent scholars in this literature indicates that this union effect disappeared at some point in the 1990s (Golden and Wallerstein 2011; Pontusson 2013). These scholars have provided two contradictory explanations for the diminished union effect, neither of which has been tested empirically. First, greater economic globalization, particularly trade with less developed countries (LDCs), has produced wage pressures that increasingly weak unions have been unable to resist (Golden and Wallerstein 2011). This explanation implies that economic globalization reduces the union effect by harming the ability of unions to extract wage gains from their employers (i.e., via the employer mechanism). While certainly plausible, left unconsidered is the impact that economic globalization has on different types of union workers and non-union workers (as well as non-union employers). Second, in response to membership losses, unions in the manufacturing sector have become increasingly supportive of employer efforts to decouple wage developments in the manufacturing and service sectors (Pontusson 2013). This explanation implies that the union effect has diminished as the result of greater intra-union and union/non-union wage dispersion (i.e., via the intra-union and insider mechanisms), but is primarily descriptive in nature. Left unexplained is *why* unions in the manufacturing sector have stopped supporting solidaristic wage policies, unions in a sector exposed to international competition achieve greater wage gains than unions in more sheltered sectors, and employers in a sector exposed to international competition deliver greater wage gains for their workers than employers in relatively sheltered sectors.

Economic Globalization and the Union Effect

Economic globalization – or the increasing exposure of states to the world economy⁵² - matters for the union effect because of its impact on the bargaining position, preferences, and behavior of employers as well as different types of union and non-union workers; and thus also the employer, intra-union, and insider mechanisms.⁵³ Due to their interdependent nature, the impact that economic globalization has on each of these union mechanisms necessarily has consequences for the others.

Employer mechanism

There are at least two ways in which economic globalization may impact the ability of unions to extract wage gains from their employers. First, the greater market competition that economic globalization implies reduces the “rents” available for union extraction (Abowd and Lemieux 1993). This could occur as the result of more competition in the international marketplace (for firms that are exporting) or more domestic competition (arising from imports or inward flowing foreign direct investments). Second, since capital tends to be more mobile than labor, employers can invest abroad (rather than domestically) if labor costs become too high, but workers cannot easily move abroad if wages become too low (Rodrik 1997; Salvatore 1998; Brady and Wallace 2000).

⁵² This definition is a slightly modified version of that provided by Li and Reuveny (2003).

⁵³ Immigration, while potentially consequential for the union effect on wage inequality and other socio-economic outcomes, is likely to work through a very different set of mechanisms than the (potential) cross-border flow of goods, services, and capital. Therefore, in an effort to maintain theoretical clarity, the term “economic globalization” refers only to the latter phenomena in this article.

Declining rents and/or greater opportunities for employers relative to workers is likely to have profound effects on the preferences and bargaining strategies of employers and unions. Employers are likely to be more cutthroat in their efforts to keep labor costs down and threaten to exit the domestic market if their demands for lower labor costs are not met (Huber and Stephens 1998; Flanagan 2007; Rosenfeld and Western 2012). Unions, on the other hand, will find themselves faced with a more pronounced “wage-employment trade-off”, whereby higher wages increasingly translate into less available employment (Dumont et al. 2005). Since collective bargaining means that unions have at least some say in the outcome of this trade-off, many will choose to restrain wages in order to salvage union jobs (Rosenfeld and Western 2012).

If economic globalization diminishes union bargaining power, produces more aggressive bargaining strategies on the part of employers, and weakens union preference for wage gains, then this leads us to the following expectation:

The employer mechanism hypothesis: As a country becomes more exposed to the world economy, the ability and willingness of unions to reduce wage inequality between employers (managers) and union workers will decline

Intra-union mechanism

The primary way economic globalization impacts intra-union wage compression is through its effect on the collective interests of union workers and therefore union solidarity;

for while economic globalization harms the ability of some union workers to extract wage gains, it is unlikely to do so for others.

In regard to available rents for union extraction, many sectors – such as education and transportation – are substantially sheltered from international competition, while other sectors – such as manufacturing – are not; and firms involved in the production of highly capital intensive and/or innovative goods or services – such as airplanes or wealth management - are likely to experience less of an increase in foreign competition as a result of economic globalization than firms involved in the production of less capital intensive and innovative goods or services – such as clothes, economy automobiles,⁵⁴ or call center customer service. This suggests that employers and unions in some sectors and firms are impacted more by economic globalization than employers and unions in other sectors and firms.

In regard to employers' ability to offshore and shift investments abroad, many occupations - such as railroad engineers and longshoremen – produce a service that cannot be delivered over long distances (with current technology), while other occupations – such as those in manufacturing or call centers – produce a product that can; and occupations requiring highly specific skill sets – such as commercial aircraft piloting – are relatively scarce globally, while occupations requiring skill sets that are more easily acquired – such as product assembling – are not. This suggests that union members in some occupations

⁵⁴ Of course, there are firms that produce some “premium” products and other “economy” products. In such a case, the ability and willingness of unions to extract wage gains will likely be determined by the particular product mix, with firms generating more revenue from premium products being riper for wage extraction than firms generating more revenue from economy products.

(and those that employ them) are impacted less by economic globalization than union members in other occupations (and those that employ them).

If economic globalization reduces the rents in some sectors and firms more than others and provides opportunities to offshore some occupations but not others, then the preferences and bargaining strategies of different types of employers and union workers are likely to diverge considerably as economic globalization expands. Employers in more sheltered, capital intensive, and/or highly innovative sectors will be less cutthroat in their efforts to keep labor costs down, and will either not threaten to exit the domestic market at all or not do so to the same extent as employers in less sheltered, capital intensive, and/or innovative sectors (Silver 2003). The same can be said for employers in their interaction with union workers providing services that cannot be delivered over long distances or that hold a highly specific skill set that is scarce globally. In addition, unions representing workers in sectors or firms experiencing minimal global competition or union workers in occupations experiencing minimal threat from foreign workers will not confront an increasingly steep wage-employment trade-off as a result of economic globalization, and are therefore unlikely to moderate their wage demands in response to it.

If some union workers are losing their ability to demand higher wages while other union workers are not, then union movements should grow increasingly divided over the desirability and acceptability of particular wage bargaining agreements.⁵⁵ Union workers

⁵⁵ While these strains in union solidarity may eventually lead to wholesale reform of collective wage bargaining institutions (e.g., the devolution of wage bargaining from the national to the sectoral level), such reforms tend to occur as discrete events, not in incremental stages (Western 1997). In the meantime, unions need to hash out new collective bargaining agreements in old institutional contexts. If or when there is successful institutional reform, preferences should continue to diverge as a country grows more exposed to the world economy, even as wage bargaining institutions (once again) remain relatively stable.

with an increasingly steep wage-employment trade-off should offer wage concessions in exchange for employment guarantees, while union workers with a weaker and more stable wage-employment trade-off should be able to (successfully) resist such wage restraint (Western 1997). The overall effect of this dynamic for the intra-union mechanism depends on whether traditionally higher-paid union workers disproportionately occupy the former or latter category. If the former, then intra-union wage dispersion will diminish as better-paid union workers engage in wage restraint. If the latter, then intra-union wage dispersion will grow as better-paid union workers resist wage restraint (and thus also wage compression) (Wallerstein et al. 1997). Given that the union workers that are maintaining the ability and willingness to demand higher wages are generally also those that hold substantial market power in a less open and competitive economy (i.e., those in relatively sheltered sectors and/or those holding a relatively scarce skill set⁵⁶), economic globalization should result in larger wage gains for already higher-paid union workers than for already lower-paid union workers, and therefore reduce intra-union wage compression. This leads us to the following expectation:

The intra-union mechanism hypothesis: As a country becomes more exposed to the world economy, the ability and willingness of unions to reduce wage inequality between union members will decline

⁵⁶ It is unclear whether union workers providing services in which proximity is critical are, in the aggregate, lower- or higher-paid than union workers providing services in which proximity is less important. For example, retail store clerks and nurses' aides are likely paid less than most workers in the manufacturing sector (who occupy positions that can be offshored), while university professors and railroad engineers are likely paid more.

Insider Mechanism

If lower-paid union workers are not receiving as much of a benefit from union membership as previously, then this will result in fewer pour over and spillover effects. In regard to pour over effects, the wage restraint increasingly practiced by lower-paid union workers will result in lower-paid non-union workers covered by union contracts receiving less of a benefit from union bargaining than previously (as they practice wage restraint by proxy). In regard to spillover effects, there will be less of an incentive for (potential) lower-paid non-union workers to join unions and thus also for employers to offer higher wages to these workers in an effort to preempt union organizing efforts or to entice such individuals away from already unionized establishments (Flanagan 2007). This leads us to the following expectation:

The insider mechanism hypothesis: As a country becomes more exposed to the world economy, the tendency of unions to reduce wage inequality between lower-paid non-union workers and their employers (managers) will decline⁵⁷

Briefly summarized, economic globalization, through its effects on the competitive environment confronted by employers and unions and thus also these actors' preferences,

⁵⁷ If lower-paid union workers have traditionally earned a substantial wage premium, then the wage restraint increasingly practiced by these workers implies two additional (and contradictory) trends. First, shrinking wage dispersion between lower-paid union workers and similar lower-paid non-union workers. Second, growing wage dispersion between lower-paid union workers and dissimilar but higher-paid non-union workers. However, the net result of these two contradictory trends is not obvious and therefore leads to no firm expectations.

reduces the ability and willingness of traditionally lower-paid union workers to extract wage gains from their employers while having no such effect on the ability and willingness of traditionally higher-paid union workers. This results in greater earnings dispersion between traditionally lower-paid union workers and employers as well as traditionally lower-paid union workers and traditionally higher-paid union workers. Furthermore, this decline in the bargaining power of lower-paid union workers diminishes wage compression resulting from pour over and spillover effects. In other words, while the exact impact that economic globalization has on the union effect depends on which union mechanism it is flowing through, all of these consequences lead to the same general expectation:

General Hypothesis: As a country becomes more exposed to the world economy, the union effect on wage inequality will decline

Data and Methods⁵⁸

The dependent variable employed in most studies examining the determinants of wage inequality in wealthy democracies is the 90/10 wage ratio (the ratio of the gross earnings of a full-time dependent employee at the ninetieth percentile to that of a full-time dependent employee at the tenth percentile) provided by the Organization for Economic Cooperation and Development (OECD). Unfortunately, this variable will not allow us to test the employer mechanism hypothesis or the intra-union mechanism hypotheses, as union workers tend to be situated modestly above or modestly below the median wage

⁵⁸ Data and do file are available from the author upon request.

earner (Checchi et al. 2010). In an effort to better capture the dynamics that were postulated in these hypotheses, I will instead utilize the other two wage ratios provided by the OECD: the 90/50 wage ratio (the ratio of the gross earnings of a full-time dependent employee at the ninetieth percentile to that of a full-time dependent employee at the median) and the 50/10 wage ratio (the ratio of the gross earnings of a full-time dependent employee at the median to that of a full-time dependent employee at the tenth percentile). However, the 90/10 wage ratio will be employed to test the insider mechanism (more on each of these dependent variables and their accompanying theoretical expectations below).

A shortcoming of all of the wage inequality data is its severely unbalanced nature. The primary purpose of this article is to determine what contributed to the disappearance of the union effect on wage inequality in the 1990s. However, there are only a limited number of countries for which there are multiple observations both before and after that period. Table 5 summarizes the availability of wage inequality data for the 18 countries typically examined in time-series cross-sectional analyses of the determinants of wage inequality in wealthy democracies.⁵⁹ Countries are grouped by the year in which their wage inequality data series begins. Group 1 has wage ratio data that begins during or before the mid-1970s; Group 2 has wage ratio data that begins between the mid-to-late 1970s and 1990; Group 3 has wage ratio data that begins in the early to mid-1990s; and Group 4 has wage ratio data that begins in 1995 or later. All countries have wage data available through 2010. Columns three through five provide the level of the respective wage ratios in each country in the last year of the data series (2010) and columns six

⁵⁹ Table 1 includes linearly interpolated data for missing observations in the wage inequality dataset. Interpolated observations account for approximately 9.1 percent of all observations.

Table 5. Wage Inequality, Union Strength, and Economic Globalization Data for 18 Wealthy Democracies

Country	First Year of Wage Ratio Data†	90/10 Wage Ratio (2010)	90/50 Wage Ratio (2010)	50/10 Wage Ratio (2010)	Union Density	Level of Wage Bargaining	Econ. Global Index	Capital Openness
<i>Group 1</i>								
United Kingdom	1970	3.58	1.98	1.81	35.9	1.6	60.8	2.4
United States	1973	5.01	2.37	2.12	14.9	1	36.7	2.4
Australia	1975	3.33	2	1.67	33	2.9	61.2	1.4
Japan	1975	2.96	1.83	1.62	24	1	23	2.3
Sweden	1975	2.23	1.62	1.38	78.8	3.5	69.9	1.8
Group Avg.		3.42	1.96	1.72	37.3	2	50.3	2.1
<i>Group 2</i>								
Finland	1977	2.52	1.74	1.45	73.3	4.2	64.8	1.9
Denmark	1980	2.8	1.68	1.66	74.2	3.3	75.4	1.7
New Zealand	1984	2.83	1.81	1.56	36.5	1.9	63.8	2
Italy	1986	2.22	1.53	1.45	38.3	2.9	52	1.3
Group Avg.		2.59	1.69	1.53	55.6	3.1	64	1.7
<i>Group 3</i>								
Germany	1992	3.33	1.8	1.86	28.3	3	45.4	2.4
Ireland	1994	3.63	2	1.81	43.4	3.9	94.8	1.3
Group Avg.		3.48	1.9	1.84	35.9	3.5	70.1	1.9
<i>Group 4</i>								
France	1995	2.97	1.99	1.5	10.3	2	47.3	1.4
Switzerland	1996	2.7	1.84	1.47	22	3	79.8	2.4††
Canada	1997	3.71	1.89	1.97	31.6	1	72.1	2.4
Norway	1997	2.3	1.47	1.56	56.3	3.7	69.2	1.2
Belgium	1999	2.38	1.73	1.37	51.1	4.5	89.9	1.7
Netherlands	2002	2.89	1.78	1.62	24.5	3.3	87.7	2.4
Austria	2004	3.39	1.94	1.74	41.8	3	68.9	1.9
Group Avg.		2.91	1.81	1.6	33.9	2.9	73.6	1.9
Total Avg.		3.04	1.83	1.65	39.9	2.8	64.6	1.9

† Wage ratios are available through 2010 for all 18 wealthy democracies.

†† Capital mobility data missing for Switzerland before 1996.

through nine provide the average level of the main variables of theoretical interest (more on these below) by country for all years for which the data is available between 1980 and 2010.

There are several important points to note. First, previous analyses of wage inequality have typically examined all available country-years beginning in the early-to-mid 1970s (e.g., see Pontusson et al. 2002 and Rueda 2008). However, only five countries (Group 1) have wage inequality data stretching back that far. This group of countries have relatively high wage inequality and the lowest average levels of wage bargaining and the economic globalization index. Therefore, an analysis that includes all available country-years beginning in the early-to-mid 1970s likely produces results that are skewed toward five countries that are not representative of wealthy democracies in general. Second, seven countries (Group 4) do not have wage inequality data available until 1995 or later (with the data for two of those countries, Austria and the Netherlands, starting after 2000). Such a small number of observations inhibit the ability to conduct time-series analysis and make it difficult (or impossible) to determine if the union effect on wage inequality diminished in these countries during the 1990s. Furthermore, two additional countries (Group 3) have only a very small number of observations (three and one, respectively) before 1995. Third, Group 4 has the lowest average level of union density and the highest average level of the economic globalization index. Indeed, three of the four countries with the highest average level of the economic globalization index (Belgium, the Netherlands, and Switzerland) are in this group (the lone exception being Ireland, which is in Group 3). In short, at least in

regard to the variables of theoretical interest to us here, there does appear to be a systematic difference between the countries with relatively short and relatively long wage data series.

In an effort to be sure that any observed over-time variations in the union effect are the result of changes within countries, not only differences between them, the primary models will include only those countries in Group 1 and Group 2 (minus New Zealand⁶⁰) and cover the 1980 to 2010 period. These countries and this time period were chosen because they allow us to examine a more diverse set of countries than if we examined Group 1 alone, include all of the control variables in the full models (see below), and maintain a substantial number of observations both before and after the assumed critical juncture of the early to mid-1990s. This should provide us with confidence that the observed results are not disproportionately driven by particular types of countries or specific time periods. However, in an effort to determine the robustness of the above results, additional models will be presented that include all eleven countries in Group 1, Group 2, and Group 3.

Main Variables of Theoretical Interest

The empirical analysis will utilize the two most common measures for union strength in the wage inequality literature; union density and the level of wage bargaining. Union density refers to the proportion of employed individuals that belong to a union. The

⁶⁰ New Zealand is missing private service sector employment and public sector employment data. In order to include all of the control variables in the full models, New Zealand was excluded from the primary analysis. However, New Zealand (along with Germany and Ireland) are included in an additional model serving as a robustness check.

level of wage bargaining refers to the primary level at which unions and employers negotiate over compensation, ranging from firm-level, to sectoral-level, to national level bargaining. The level of wage bargaining is measured here with an ordered categorical variable ranging from 1 to 5. Higher values indicate a more centralized wage bargaining system.⁶¹ Data for all of these union measures are from the Database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (ICTWSS), 1960-2012, version 4.0.

Economic globalization is measured with an economic globalization index that captures the *actual* cross-border flows of goods, services, investments (foreign direct investments and portfolio investments), and monetary transfers; and a capital openness measure that captures the *potential* for domestic employers to invest abroad and for foreign employers to invest domestically by considering the legal restrictions on cross-border financial transactions.⁶² The economic globalization index ranges from 0 to 100, with higher values indicating greater cross-border flows, and is provided by Dreher (2006). The capital openness measure ranges from -1.9 to 2.4, with higher values indicating fewer restrictions on cross-border financial transactions, and is provided by Chinn and Ito (2008).

⁶¹ See appendix A for details.

⁶² Excluded from the analysis are the much more limited measures for economic globalization that are commonly used in models of wage inequality in wealthy democracies; total trade and trade with LDCs. These measures do not capture the increased market competition that arises from foreign owned but domestically located multi-national corporations (MNCs), nor do they consider the willingness and ability of employers to offshore or invest abroad.

Control Variables

In addition to union strength and economic globalization, the socio-economic factors most frequently cited in the determinants of wage inequality literature are national wealth, private service sector employment, public sector employment, unemployment, female labor force participation, education, and immigration. The most commonly cited political factor is government partisanship.⁶³ Theoretical expectations, data measurement, and sources for all control variables can be found in Appendix A.

Estimation Strategy

To examine whether economic globalization conditions the union effect on wage inequality, I utilize single-equation time-series cross-sectional error correction models (ECMs) estimated with OLS and the Rogers' robust-cluster variance estimator. The Rogers' variance estimator allows for valid hypothesis tests in the presence of any pattern of correlation within units (countries), including serial correlation and correlation due to unmodeled country-specific factors (Rogers 1994). However, this estimator also assumes that errors are uncorrelated between units. This assumption could be violated if there are unmodeled factors that impact wage inequality in all or most countries at a particular point

⁶³ The ability of partisan governments to impact socio-economic outcomes is almost certainly constrained (facilitated) by the political and institutional environment in which such governments operate (e.g. see Clark et al. 1998 and Castater 2015). Therefore, it is probably inappropriate to anticipate left party participation in government to have an effect on wage inequality that is relatively constant across countries and over time. Surprisingly, however, previous scholarly work on the determinants of wage inequality in wealthy democracies has neglected the issue of a conditional partisan effect; and an adequate exploration of the issue here would carry us well beyond the scope of this article.

in time (Huber et al. 2006). In order to address this possibility, dummy variables representing each decade are included in the analyses.⁶⁴

ECMs are flexible time-series models that have at least two advantages over other statistical models. First, they can be applied to both integrated and stationary data (DeBoef and Keele 2008).⁶⁵ Second, they are able to estimate both the short-term and long-term effect of an independent variable on a given dependent variable. A short-term (or immediate) effect indicates that a change in an independent variable in one time period produces a change in the dependent variable only in the concurrent time period. By contrast, a long-term effect expresses dynamic causality and indicates that a shift in an independent variable in one time period produces a change in the dependent variable over many time periods.

A single-equation ECM can be expressed in the following way:

$$\Delta Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \beta_1 \Delta X_t + \beta_2 X_{t-1} + \varepsilon_t,$$

Each independent variable is included in the equation twice, once in its first-difference form (ΔX_t) and once in its lagged level form (X_{t-1}). The short-term effect of an independent variable can be determined simply by observing the coefficient for the first-difference version of the variable (β_1). The long-term effect, by contrast, is determined by

⁶⁴ Results for the time dummies are not reported below but are available from the author upon request.

⁶⁵ While ECMs may be applied to both integrated and stationary data, Enns et al. (2014) demonstrate that cointegration tests only produce correct inferences when the dependent variable is integrated. An augmented Dickey-Fuller test was conducted on the dependent variables used in this analysis. The null hypothesis that all panels contain a unit root could not be rejected at the 95 percent confidence level or greater, indicating that the dependent variables are integrated.

dividing the coefficient for the lagged version of the variable (β_2) by the coefficient for the lagged dependent variable (α_1). The latter coefficient is known as the “error correction rate” and represents the speed at which the independent variable and the dependent variable arrive back at equilibrium after a shift in the level of the independent variable. For example, an α_1 of -.1 would indicate that 10 percent of the full long-term effect is felt after one time period, that 10 percent of the remaining long-term effect is felt in the following time period, and so on. Higher absolute values of α_1 indicate a faster movement back to equilibrium.

I begin by examining the full model of the 90/10 wage ratio separately for the 1980 to 1994 period and the 1995 to 2010 period. Since a version of this wage ratio⁶⁶ was employed by the scholars who observed the disappearance of the union effect, we should find one or more of the union strength measures to have a statistically significant effect in the earlier time period but not in the latter. The union strength measure(s) found to have a time-varying effect on wage inequality in these models will in subsequent models be separately interacted with the level form of the economic globalization index and the level form of the capital openness measure. The level rather than the first-difference form of these variables are chosen because the theoretical explanations provided above are in regard to whether a state is more or less exposed to the global economy; not whether a state happens to become more or less exposed in a particular year. The interaction terms are expected to have significant and positive coefficients, indicating that unions become less

⁶⁶ Golden and Wallerstein (2011) utilize a differenced natural logarithmic version of the 90/10 wage ratio [$\ln(p_{90}-p_{10}/p_{10})$]; while Pontusson (2013) examines both the level of the 90/10 wage ratio and the long-term change in the 90/10 wage ratio.

wage inequality reducing as a state becomes more exposed to the global economy. The coefficient for the union strength measure that is a component of the interaction terms informs us of the impact that a one unit increase in this measure has on wage inequality when both the economic globalization index and the capital openness measure are zero. Since there are no country-years in which a state has had no actual cross-border flows of goods, services, investments, and monetary transfers, this result has little substantive meaning by itself. However, the central contention in this article is that a major cause of the recent disappearance in the union effect on wage inequality is the increasing exposure of states to the world economy. Such an argument clearly implies that unions reduce wage inequality when they are minimally exposed to the global economy. Therefore, we should expect the coefficient of the union strength measure that is a component of the interaction terms to have a significant negative sign.

If we assume that the wage gains of lower-paid union workers spillover to low-paid non-union workers and the wage gains of higher-paid union workers spillover to non-union workers near the median, then we would expect lower-paid union workers to matter more for the bottom half of the wage distribution and higher-paid union workers to matter more for the upper half of the wage distribution. The employer mechanism hypothesis anticipates that economic globalization will reduce the wage extraction ability of all union workers, and thus diminish the union effect on both the 90/50 wage ratio (the upper half of the wage distribution) and the 50/10 wage ratio (the lower half of the wage distribution). The intra-union mechanism hypothesis anticipates that economic globalization will almost exclusively reduce the wage extracting ability of lower-paid union workers, and thus

condition the union effect on the 50/10 wage ratio to a greater extent than the union effect on the 90/50 wage ratio. In order to test this expectation, I employ the “skew” variable (the 90/50 wage ratio divided by the 50/10 wage ratio) conceptualized by Lupu and Pontusson (2011). The insider mechanism hypothesis anticipates that economic globalization will reduce the wages of low-paid non-union workers relative to their employers as a result of fewer pour over and spillover effects. The 90/10 wage ratio will be utilized to test this hypothesis, under the assumption that the ninetieth percentile of wage earners primarily consists of professionals and employers (managers). Finally, the general hypothesis anticipates that economic globalization will diminish the union effect on all three wage ratios.

Results

The first two models in Table 6 employ the 90/10 wage ratio to examine whether the union effect on wage inequality disappeared in recent decades as previous research suggests. Model 1 focuses exclusively on the 1980 to 1994 period while Model 2 focuses exclusively on the 1995 to 2010 period. Both models include all of the variables referenced above but exclude the interaction terms. Only those variables of main theoretical interest are included in the table.⁶⁷ The results provide support for the contention that the union effect on wage inequality disappeared at some point in the 1990s. In the model that covers the 1980 to 1994 period (Model 1), union density is found to have a negative and statistically significant long-term effect on wage inequality (p-value = .023). By contrast,

⁶⁷ See Appendix B for full results.

Table 6. Determinants of Wage Inequality in 8 Wealthy Democracies, 1980 to 2010 (1980 to 1994; 1995 to 2010)

Model	1 (Full)	2 (Full)	3 (Reduced)	4 (Reduced)	5 (Reduced)	6 (Reduced)
Years	1980- 1994	1995- 2010	1980- 2010	1980- 2010	1980- 2010	1980- 2010
Countries	Groups 1&2†	Groups 1&2†	Groups 1&2†	Groups 1&2†	Groups 1&2†	Groups 1&2†
Dependent Variable	Δ 90/10 Wage Ratio	Δ 90/10 Wage Ratio	Δ 90/10 Wage Ratio	Δ 90/50 Wage Ratio	Δ 50/10 Wage Ratio	Δ "skew"
90/10 Wage Ratio (t-1)	- 0.139*** (0.030)	-0.060* (0.030)	-0.027** (0.010)	-0.100*** (0.029)	-0.068*** (0.019)	-0.268** (0.096)
Δ Union Density (t)	0.005 (0.006)	-0.009 (0.010)	-0.008 (0.006)	-0.004 (0.003)	-0.000 (0.001)	-0.003* (0.002)
Union Density (t-1)	-0.004** (0.001)	0.000 (0.002)	-0.004*** (0.001)	-0.006*** (0.001)	-0.002*** (0.000)	-0.001 (0.001)
Δ Level of Wage Bargaining (t)	0.007 (0.001)	-0.001 (0.007)				
Level of Wage Bargaining (t-1)	-0.007 (0.008)	0.008 (0.007)				
Δ EG Index	0.001 (0.001)	-0.002 (0.003)	0.000 (0.002)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)
EG Index (t-1)	0.002 (0.001)	-0.004** (0.001)	-0.002** (0.001)	-0.001 (0.000)	-0.002*** (0.000)	0.002*** (0.000)
Union Density X EG Index (t-1)			0.000** (0.000)	0.000* (0.000)	0.000*** (0.000)	-0.000** (0.000)
Δ Capital Openness (t)	-0.009 (0.029)	-0.003 (0.038)	-0.009 (0.040)	0.006 (0.016)	-0.005 (0.014)	0.001 (0.002)
Capital Openness (t-1)	0.001 (0.008)	0.009 (0.014)	-0.030*** (0.005)	-0.003 (0.005)	-0.008* (0.004)	-0.002 (0.003)
Union Density X Capital Openness (t-1)			0.000*** (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
N	106	128	234	234	234	234
R ²	0.361	0.248	0.133	0.120	0.163	0.217

(Note: Robust standard errors are in parentheses; *** $p < .01$; ** $p < .05$; * $p < .10$)

† Excludes New Zealand (see fn. 60)

union density does not have a statistically significant long-term (or short-term) effect in the model that covers the period since 1995 (Model 2). Indeed, the coefficient on the lagged level version of the union density variable is positive in this model. The level of wage bargaining is not found to have a significant effect on wage inequality in either Model 1 or Model 2, suggesting that if economic globalization is conditioning the union effect on wage inequality, it is doing so primarily through union density.

The last four models in Table 6 examine whether economic globalization is conditioning the union effect. All four models cover the entire 1980 to 2010 period and include two interaction terms, each consisting of the union strength measure found to have a time-varying effect on wage inequality in Model 1 and Model 2 (the lagged level version of the union density variable) and the lagged level version of one of the economic globalization variables described above; the economic globalization index and the capital openness measure, respectively. Model 3 is a reduced model of the 90/10 wage ratio, Model 4 is a reduced model of the 90/50 wage ratio, Model 5 is a reduced model of the 50/10 wage ratio, and Model 6 is a reduced model of the skew variable.⁶⁸

As anticipated, the union density measure that serves as a component of the interaction terms is found to have a negative and statistically significant effect (at the 99

⁶⁸ Since including the interaction terms with all of the control variables would demand a lot of the relatively small dataset utilized in this analysis, only the results of the reduced models are reported here. These full models included all of the control variables outlined above along with a union density squared term to control for the possibility that the union effect on wage inequality has diminished due to the declining union density levels that have been observed in nearly all wealthy democracies since the 1990s. If a non-interaction control variable was found to have a statistically significant long-term effect (at the 90 percent confidence level) in a given full model, both its first-difference and lagged level form were included in the reduced model. If the first-difference version of a non-interaction control variable was found to have a statistically significant effect (at the 90 percent confidence level), only this version of the variable was included in the reduced model. The results of these full models are available from the author upon request.

percent confidence level) across Models 3, 4, and 5. This signifies that in the hypothetical situation in which the economic globalization index and the capital openness measure are zero, unions significantly reduce all three wage ratios.⁶⁹ The employer mechanism hypothesis anticipates that economic globalization will weaken the tendency of unions to reduce both the 90/50 and 50/10 wage ratios. This expectation finds support. The interaction term containing the economic globalization index is positive and statistically significant in both Model 4 and Model 5 (at the 90 percent confidence level and 99 percent confidence level, respectively). The interaction term containing the capital openness measure is not statistically significant in either model.

In order to examine whether economic globalization conditions the union effect on the 90/50 and 50/10 wage ratios in a similar manner, Figure 4 plots the marginal union effect on each of these wage ratios when the capital openness measure is held at its mean level for the entire 1980 to 2010 period (1.93).⁷⁰ The x axis in the figure corresponds to the levels of the economic globalization index observed between 1980 and 2010 in the countries examined in Table 2. The short dash vertical line signifies the average score of the economic globalization index in the 1980 to 1994 period; and the long dash vertical line signifies the average score of the economic globalization index in the 1995 to 2010 period. Broadly, we observe that while economic globalization conditions the union effect

⁶⁹ The error correction rates in the models of the three wage ratios are statistically significant at the 95 percent confidence level or greater. The value of these error correction rates inform us that a shift in the level of an independent variable produces an effect on wage inequality that is incrementally distributed over time and not fully realized for approximately 37 years in Model 3, approximately 10 years in Model 4, and approximately 15 years in Model 5.

⁷⁰ The averages and ranges utilized in this empirical analysis are for the eight countries (Australia, Denmark, Finland, Italy, Japan, Sweden, the UK, and the US) and time period (1980 to 2010) examined in Models 3 through 6.

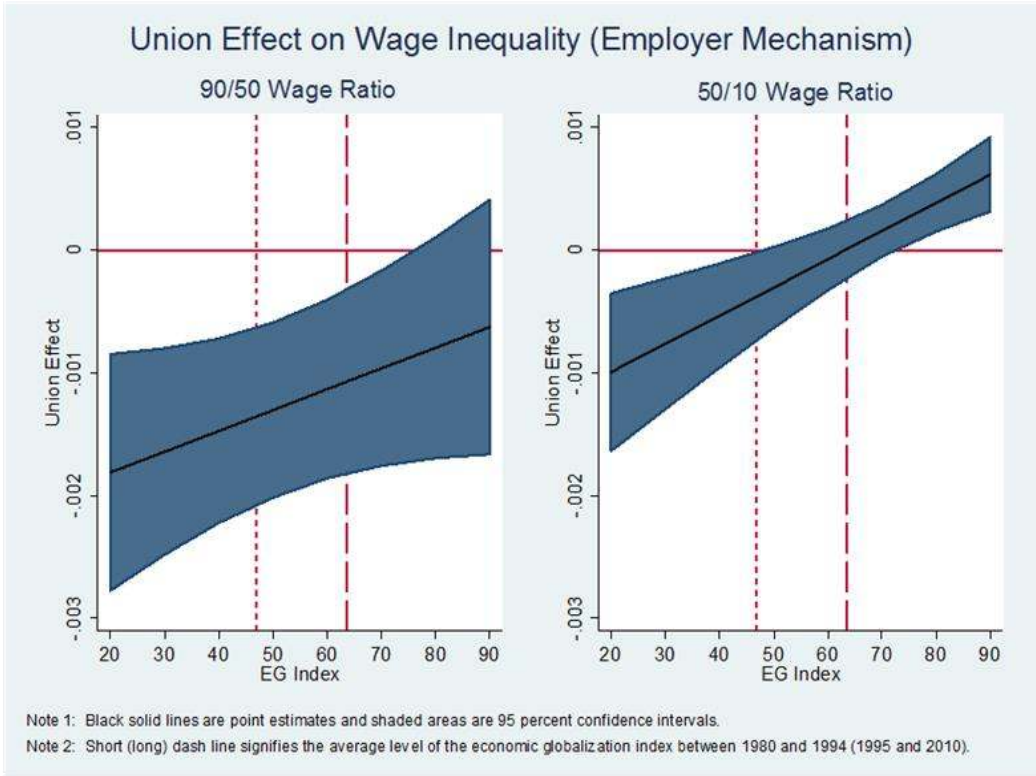


Figure 4. Conditional Effect of Union Density on Wage Inequality Across Range of Economic Globalization Index and Capital Openness Levels in 8 Wealthy Democracies, 1980 to 2010

*Estimates derived from Model 4 (left graph) and Model 5 (right graph).

on both the upper and lower parts of the wage distribution, the impact is much greater on the latter than the former. The union effect on the 90/50 wage ratio is present until the economic globalization index reaches 77, substantially higher than the average economic globalization index score for both the 1980 to 1994 period and the 1995 to 2010 period. By contrast, the union effect on the 50/10 wage ratio is only present until the economic globalization index reaches 49, only slightly higher than the average economic globalization index score in the 1980 to 1994 period and lower than the average economic globalization index score in the 1995 to 2010 period. Indeed, when the economic globalization index exceeds 72, unions are found to significantly *increase* the 50/10 wage ratio (at the 95 percent confidence level). In short, although the (traditional) union effect on the lower half of the wage distribution has disappeared since the 1990s, the union effect on the upper half of the wage distribution has not.

The finding that economic globalization conditions the union effect on the lower half of the wage distribution to a greater extent than the union effect on the upper half of the wage distribution suggests that economic globalization also conditions the union effect on the “structure” of the wage distribution. Model 6 confirms this intuition. While the union strength variable that serves as a component of the interaction terms is statistically insignificant, the interaction term containing the economic globalization index is found to be negative and statistically significant (at the 95 percent confidence level). This informs us that as a state becomes more exposed to the world economy, unions begin to shrink the upper half of the wage distribution to a greater extent than the lower half. In particular, when the capital openness measure is held at its mean level for the entire 1980 to 2010

period, this “anti-skew effect” becomes statistically significant (at the 95 percent confidence level) as the economic globalization index exceeds 69, a condition that first existed in Denmark, Finland, and Sweden in the 1990s and Australia in 2006. Given that economic globalization appears to increase the distance between the higher-paid and lower-paid union effect, the implication is that economic globalization diminishes the willingness and/or ability of unions to compress the union wage distribution, and thus provides support for the intra-union hypothesis. The interaction term containing capital openness is not found to be statistically significant in Model 6.

Finally, the insider mechanism hypothesis anticipates that economic globalization will weaken the tendency of unions to reduce the 90/10 wage ratio, as low-paid non-union workers increasingly lose relative to their employers. This expectation finds support in Model 3, where both the interaction term containing the economic globalization index and the interaction term containing the capital openness measure are positive and statistically significant (at the 95 percent confidence level and 99 percent confidence level, respectively).

Figure 5 plots the marginal union effect on the 90/10 wage ratio at different levels of the economic globalization index and the capital openness measure, respectively. The graphs on the top row illustrate the conditioning effect of each of the economic globalization variables when the other economic globalization variable is held at its mean level for the 1980 to 1994 period. The graphs on the bottom row illustrate the conditioning effect of each of the economic globalization variables when the other economic

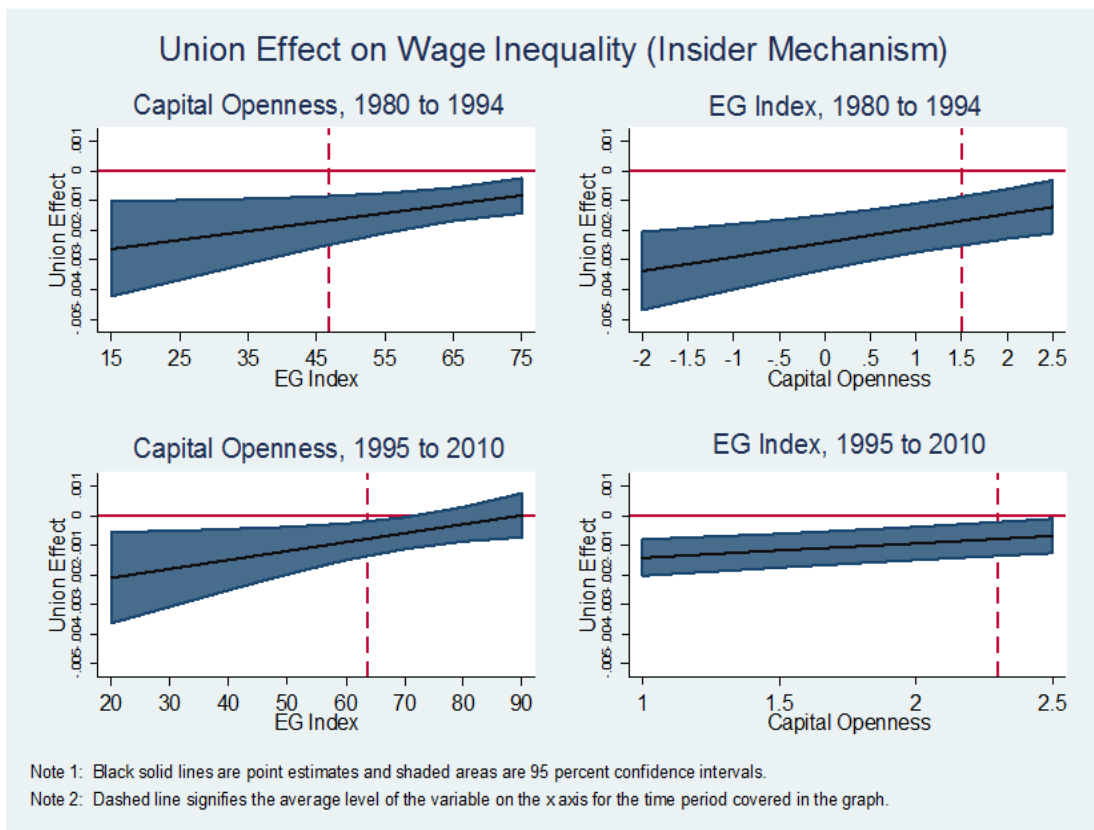


Figure 5. Conditional Effect of Union Density on Wage Inequality Across Range of Economic Globalization Index and Capital Openness Levels in 8 Wealthy Democracies, 1980 to 1994; 1995 to 2010

*Estimates derived from Model 3.

globalization variable is held at its mean level for the 1995 to 2010 period.⁷¹ The dashed vertical lines signify the average level of the economic globalization variable along the x axis for the period covered in the graph.

When the economic globalization index and the capital openness measure are at their average for the 1980 to 1994 period (46.8 and 1.5, respectively), a one standard deviation increase in union density (24.2 percentage points) decreases the 90/10 wage ratio by 1.49, or by about 2.02 standard deviations. This is slightly greater than the difference between the average level of the 90/10 wage ratio in Sweden (the country with the lowest average 90/10 wage ratio in the analysis) and the United Kingdom (the county with the second highest average 90/10 wage ratio in the analysis) for the entire 1980 to 2010 period. Although the union effect on the 90/10 wage ratio is found to consistently decline between 1980 and 1994, unions still significantly reduce this wage ratio (at the 95 percent confidence level or higher) at all existing levels of the economic globalization index and the capital openness measure during this period. By contrast, when the economic globalization index and capital openness measures are at their average for the 1995 to 2010 period (63.6 and 2.3, respectively), the effect of a one standard deviation increase in union density is .7, or .94 standard deviations, less than half of that of the earlier period. This is now equivalent to the difference in the average level of the 90/10 wage ratio in Sweden and Australia (the country with the fourth highest average 90/10 wage ratio in the analysis) for the entire 1980 to 2010 period. Between 1995 and 2010, unions are found to no longer significantly reduce the 90/10 wage ratio (at the 95 percent confidence level) when the

⁷¹ The x axes in Figure 5 correspond to the levels of the economic globalization index and the capital openness measure, respectively, for the time period covered in the given graph.

economic globalization index exceeds 71, a condition that existed in four of the eight countries examined in Table 2 (Australia, Denmark, Finland, and Sweden) by the end of the first decade of the twenty-first century. Furthermore, while unions continue to significantly reduce the 90/10 wage ratio at all existing levels of the capital openness measure between 1995 and 2010, they just barely do so when this measure hits its upper bound limit (2.46), a condition that existed in seven of the eight countries examined in Table 6 (the lone exception being Australia) during the entire first decade of the twenty-first century.

The primary purpose of the interaction terms included here was to determine whether economic globalization conditions the union effect on wage inequality, but the inherently symmetrical nature of interaction terms allows us to simultaneously observe whether unions condition the economic globalization effect on wage inequality as well (Berry et al. 2012). Somewhat surprisingly, the coefficient on the economic globalization index that is a component of the interaction term is negative and statistically significant (at the 95 percent confidence level or higher) in the models containing the tenth percentile of wage earners (i.e., Model 3 and Model 5); while, once again, most of the interaction terms in these models are positive and statistically significant (at the 95 percent level or higher). These results inform us that economic globalization strengthens the relative economic position of many of the lowest-paid non-union workers when union density is at low to moderate levels and that greater union density actually diminishes this negative economic globalization effect. While the exact mechanisms behind this result will have to be examined in future research, one tentative explanation is that the higher labor costs that

greater union density implies may, over time, increase the tendency of domestic employers to (threaten to) exercise their exit option and/or decrease the desire of foreign investors to invest in a given host country (Silver 2003). Either or both of these scenarios might be expected to decrease demand for less skilled labor and thus also lead to greater wage inequality.

In regard to the control variables, six are found to be statistically significant at the 95 percent confidence level or higher in at least one of the wage ratio models (full results are reported in Appendix B): immigration, female labor force participation, education, private service sector employment, and left government. Greater immigration and female labor force participation increase all three wage ratios, informing us that an influx of workers competing for lower-paid jobs exacerbates wage inequality generally; a higher proportion of individuals with a secondary education decreases all three wage ratios, demonstrating that an increased supply of educated workers reduces the “skill wage premium”; a higher proportion of individuals in the private service sector decrease the wage ratios containing wage earners at the ninetieth percentile (i.e., the 90/10 and 90/50 wage ratios), suggesting that expansion in private service sector employment implies a larger relative supply of low-end service sector jobs (e.g., in retail) than high-end service sector jobs (e.g., in the legal and medical professions); greater left party participation in government decreases the wage ratios containing wage earners at the tenth percentile (i.e., the 90/10 and 50/10 wage ratios), providing evidence that partisan policy platforms matter most for workers at the lower-end of the wage distribution (likely through higher reservation wages, minimum wages, and investments in education and/or worker training);

and unemployment significantly reduces the 50/10 wage ratio owing to the disproportionate number of lower-paid workers losing (gaining) employment when unemployment rises (falls).⁷²

The models in Table 7 replicate the interaction models in Table 2 but include New Zealand and the two countries in Group 3 (Germany and Ireland).⁷³ Model 7 replicates Model 3, Model 8 replicates Model 4, and so on. We once again observe that the union density measure that serves as a component of the interaction terms (the lagged level version of the union density variable) is found to have a negative and statistically significant effect (at the 99 percent confidence level) across all three wage ratios. Furthermore, the coefficient on the interaction terms containing the economic globalization index remains positive and statistically significant (at the 99 percent confidence level) in the models of the 90/10 and 50/10 wage ratios (i.e., Model 7 and Model 9). However, the positive and statistically significant coefficient on the interaction term containing the economic globalization index has now been replaced by a positive and statistically significant coefficient on the interaction term containing the capital openness measure in the model of the 90/50 wage ratio (Model 8), while the same interaction term has turned statistically insignificant in the model of the 50/10 wage ratio (Model 9).⁷⁴ These results,

⁷² Contrary to expectations, the squared union density term has a positive and statistically significant coefficient (at the 99 percent confidence level) in the model of the 90/50 wage ratio (Model 4). One potential explanation for this finding is the tendency of unions to increasingly represent higher-paid workers as unionization declines (see Han and Castater 2014 and Castater and Han 2015).

⁷³ The private service sector employment and public sector employment data are unavailable for New Zealand and Germany and thus are dropped from the models in Table 7.

⁷⁴ In regard to the control variables in the models in Table 7, the most robust findings are for female labor force participation (long-term positive effect on the 90/10 and 50/10 wage ratios), left government (long-term negative effect on the 90/10 and 50/10 wage ratios), and the union density squared term (positive effect on the 90/50 wage ratio). See Appendix C for full results.

Table 7. Determinants of Wage Inequality in 11 Wealthy Democracies, 1980 to 2010

Model	7 (Reduced)	8 (Reduced)	9 (Reduced)	10 (Reduced)
Years	1980-2010	1980-2010	1980-2010	1980-2010
Countries	Groups 1,2,&3	Groups 1,2,&3	Groups 1,2,&3	Groups 1,2,&3
Dependent Variable	Δ 90/10 Wage Ratio	Δ 90/50 Wage Ratio	Δ 50/10 Wage Ratio	Δ "skew"
90/10 Wage Ratio (t-1)	-0.040** (0.014)	-0.042*** (0.009)	-0.079*** (0.025)	-0.165*** (0.048)
Δ Union Density (t)	0.003 (0.005)	-0.002 (0.001)	0.002 (0.003)	-0.002 (0.002)
Union Density (t-1)	-0.005*** (0.001)	-0.004*** (0.001)	-0.002*** (0.001)	-0.001 (0.001)
Δ EG Index	0.002 (0.002)	0.000 (0.001)	0.001 (0.001)	-0.000 (0.001)
EG Index (t-1)	-0.001 (0.001)	0.000 (0.000)	-0.001 (0.001)	0.001 (0.001)
Union Density X EG Index (t-1)	0.000*** (0.000)	0.000 (0.000)	0.000*** (0.000)	-0.000** (0.000)
Δ Capital Openness (t)	-0.001 (0.039)	-0.002 (0.014)	0.002 (0.014)	-0.005 (0.006)
Capital Openness (t-1)	-0.018 (0.020)	-0.012** (0.004)	0.001 (0.011)	-0.013 (0.008)
Union Density X Capital Openness (t-1)	0.000 (0.000)	0.000*** (0.000)	-0.000 (0.000)	0.000 (0.000)
Δ GDP Per Capita (in thousands) (t)	-0.002 (0.004)			
N	294	294	294	294
R ²	0.078	0.065	0.120	0.135

(Note: Robust standard errors are in parentheses; *** $p < .01$; ** $p < .05$; * $p < .10$)

while moderately different than those reported in Table 6, continue to provide support for the employer and insider mechanism hypotheses, as an interaction term is found to be statistically significant (at the 95 percent confidence level) in all three wage ratio models.⁷⁵ The results for the skew model (Model 10) are also similar to those observed in Table 6, as the union density variable that is a component of the interaction terms and the interaction term containing the capital openness measure remain statistically insignificant while the coefficient on the interaction term containing the economic globalization index remains negative and statistically significant (at the 95 percent confidence level). This finding lends further support to the intra-union hypothesis, or that the willingness and ability of unions to reduce wage inequality between union members declines as a country becomes more exposed to the world economy.

Discussion and Conclusion

Unlike previous scholarship, this article provides a comprehensive explanation of the conditional nature of the union effect on wage inequality and conducts empirical tests to determine the validity of the theoretical claims that are offered. I began by identifying and consolidating the three processes by which unions have been argued to impact wage inequality, which I labeled the employer, intra-union, and insider mechanisms. I then argued that economic globalization – broadly defined as the exposure of states to the world economy – weakens or alters the expression of each of these mechanisms, and thus also the union effect on wage inequality more generally. More specifically, economic

⁷⁵ However, it should be noted that economic globalization does not significantly reduce any of the wage ratios in the models in Table 7 at low levels of union density.

globalization, through its effects on the competitive environment confronted by different types of employers and union workers, reduces the ability and therefore willingness of unions to compress the employer/union, union/union, and employer/non-union wage distributions (and, by implication, the union/non-union wage distribution as well). A series of single-equation time-series cross-sectional error-correction models including interaction terms, a set of controls, and different wage ratios provided robust evidence for these theoretical claims.

Has the union effect on wage inequality disappeared in recent decades? That depends on what exactly we mean by “the union effect on wage inequality”. While the union effect has declined in general, unions appear to still be able to impact the upper half of the wage distribution. Furthermore, as a country becomes more exposed to the global economy, unions increasingly reduce the “skew” of the wage distribution, or compress the upper half of the wage distribution to a greater extent than the lower half. Indeed, such a phenomenon requires a qualification of the general hypothesis provided above, for while economic globalization was found to reduce the union effect on the *extent* of wage inequality, it was also found to increase the union effect on the *structure* of wage inequality. Finally, while the union effect on the lower half of the wage distribution apparently disappears as a country becomes more exposed to the world economy, the evidence presented here suggests that the union effect on this part of the wage distribution may actually reverse when a country becomes highly exposed to the world economy. In short, the meaning of the “the union effect” depends on which aspects of wage inequality are being considered; and increasingly changes as economic globalization proceeds.

At first glance, some might infer that such changes in the union effect must be substantially responsible for the well documented rise in wage inequality across the wealthy democracies in recent decades. After all, if union strength used to account for much of the cross-national and over-time variation in wage inequality, with stronger unions resulting in less wage inequality, and this union effect has diminished or perhaps even reversed, then wage inequality must be higher than it would have been otherwise. However, such an interpretation would be neglecting to consider the consistent decline in union strength over the last three decades.⁷⁶ This trend suggests, to the contrary, that *union decline is no longer contributing to the rise in wage inequality, and, in some cases, may even be decreasing wage inequality*. What accounts for this latter phenomenon is not exactly clear, although it is likely related to the increasingly precarious nature of much low wage non-union employment.

While the union effect on wage inequality is in most cases diminishing, this does not necessarily mean that the union effect on other aspects of economic inequality is also diminishing; or that union membership is providing fewer (relative) benefits to individual workers. Indeed, the theoretical arguments outlined here suggest that as economic globalization expands, unions should matter more for the employment security of workers in lower-paid jobs and continue to matter for the wages of workers in traditionally higher-paid jobs. Furthermore, in an age of “permanent austerity”, unions may be increasingly

⁷⁶ As a number of scholars have noted, union density began a sharp decline across most wealthy democracies in the early 1980s after climbing steadily throughout much of the post-World War II period. While several European countries initially escaped this fate, the ICTWSS database informs us that by the first decade of the twenty-first century, every wealthy democracy included in Table 5 with the exception of Belgium (and perhaps Norway) was experiencing such a decline.

important for the provision of fringe benefits, such as those relating to healthcare and retirement. Under what conditions unions are willing and able to provide such non-monetary benefits to their workers has received surprisingly little attention in the political science literature, but is certainly worthy of future research.

A broad implication of this study is that because unions and the workers they represent are situated within a particular environmental context, there is unlikely to ever be an “independent” union effect that is constant across space and time. The union effect on wage inequality and other socio-economic outcomes is likely to be influenced by a range of factors in addition to economic globalization, such as those relating to political globalization (e.g., European integration), the partisan or ideological orientation of government, and the congruence between public opinion and the traditional union agenda of greater wage compression and redistribution (Beckfield 2006; Scheve and Stasavage 2009; Jacobs and Myers 2014; Castater 2015). Further work needs to be done to determine under what conditions particular union members or union organizations are able to achieve their distributional goals, as well as under what conditions these goals may be altered.

Before concluding, it is important to note three clear shortcomings of this analysis. First, data limitations restricted most of the empirical analysis to a relatively small subset of wealthy democracies and the 1980 to 2010 period. Therefore, we cannot state with confidence that economic globalization has conditioned the union effect across all wealthy democracies, or that union strength translated into less wage inequality throughout most of the post-World War II period (as the argument presented here clearly implies). Second, the theoretical expectations outlined above are built on strong micro-foundations that

cannot be directly tested with macro-level data such as that used here. Therefore, additional empirical analyses, utilizing survey data and multi-level models, will need to be conducted to more fully determine the validity of the theoretical claims. Third, while arguing that economic globalization is substantially responsible for the diminished union effect on wage inequality, I have implicitly assumed that the job profile of union workers is more or less constant across countries and over-time. However, a growing body of research demonstrates the dubious nature of this assumption. Most relevant for this analysis, recent evidence indicates that unions are increasingly representing higher-skilled and better paid workers (Beecher and Pontusson 2011; Han and Castater 2014; Castaer and Han 2015).⁷⁷ This implies a further weakening of the intra-union mechanism and a growing tendency of the insider mechanism to increase wage inequality. Furthermore, the limited data available on the sectoral composition of national union movements reveals a profound shift in the types of sectors that are unionized. Increasingly, unions are representing fewer workers in the traditional union stronghold of manufacturing and representing more workers in the sheltered public sector.⁷⁸ This would suggest that the tendency of economic globalization to condition the union effect on wage inequality in the way described here is probably fading, although a different type of mediating role for economic globalization (through downward pressure on tax rates and government expenditures) may very well be growing stronger.

⁷⁷ For other work on cross-national and over-time variation in the composition of union movements, see Iversen and Soskice 2009; Nijhuis 2009; Visser and Checchi 2009; and Castater and Han 2015.

⁷⁸ According to the ICTWSS database, manufacturing union density and public sector union density were almost identical, on average, across the wealthy democracies in the 1980s. However, between the 1980s and 2000s, the average manufacturing union density level declined by over 20 percent while the average public sector union density level *rose* by nearly 5 percent. This occurred at the same time that manufacturing employment was falling relative to public sector employment.

CHAPTER IV

GENDERING THE UNION EFFECT ON WAGE INEQUALITY

Introduction

One of the few areas of broad consensus in the comparative political economy literature is that stronger unions translate into less wage inequality. Indeed, the rapid decline in union density (the proportion of workers that belong to a union) and the decentralization of wage bargaining institutions are among the most commonly cited explanations for the rise in aggregate wage inequality in wealthy democracies in recent decades (Wallerstein 1999; Freeman and Oostendorp 2000; Rueda and Pontusson 2000; Pontusson et al. 2002; Golden and Wallerstein 2011; Martin and Swank 2012). Receiving far less attention, however, has been whether certain types of union workers have undergone a more substantial decline than others. Most relevant to us here is evidence that male unionization has fallen substantially more than female unionization; and that a large and growing share of union members are women as a result.⁷⁹ If female unionization reduces female wage inequality to the same extent as male unionization reduces male wage inequality, then this would imply that aggregate union decline has contributed not only to a rise in wage inequality in general, but to a rise in male wage inequality in particular. Yet occupational segregation across the wealthy democracies suggests that the union effect on female wage inequality may in fact differ from the union effect on male wage inequality; and different degrees and types of such segregation across liberal market economies

⁷⁹ Data on female and male union density is presented below.

(LMEs) and coordinated market economies (CMEs) as well as liberal, conservative, and social democratic welfare states (Sainsbury 1996; Esping-Andersen 1999; Chang 2000; Korpi 2000; Soskice 2005), further suggest that the size of the difference between the union effect on female wage inequality and the union effect on male wage inequality may depend on which of these regime types unions are situated within.

To assess whether there are differences within and across market institution and welfare state regimes in the union effect on female wage inequality and the union effect on male wage inequality, I utilize European Values Study survey data and conduct a time-series cross-sectional analysis of 15 wealthy democracies between 1980 and 2010. The evidence I present demonstrates that the union effect on female wage inequality and the union effect on male wage inequality are substantially determined by a product of market institution and welfare state design – the occupational composition of female and male union members. In particular, the union effect on female wage inequality is less widespread than the union effect on male wage inequality in LMEs (with liberal welfare states) – the regime in which workers in professional occupations are particularly well represented among female union members; while the union effect on female wage inequality is more substantial than the union effect on male wage inequality in CMEs with conservative welfare states – the regime in which workers in traditionally lower-paid occupations are particularly well represented among female union members. Nonetheless, union effects are generally more widespread and substantial in CMEs with conservative welfare states than either LMEs or CMEs with social democratic welfare states. These findings suggest that the consequences of union decline for aggregate economic inequality

and gender economic inequality depend (indirectly) on the market institution and welfare state regime that such union decline is occurring within.

This article is divided into five sections. The first section provides descriptive statistics on female and male union strength. The second section generates hypotheses of a conditional union effect on female and male wage inequality that is dependent on market institution and welfare state regime type. The third section provides information on the dependent variables, estimation strategy, and independent variables employed in the empirical analysis. The fourth section reports the results of the empirical analysis and the fifth section includes a discussion of the findings.

Gender-Specific Union Strength

As mentioned at the outset, there is a broad consensus in the comparative political economy literature that stronger unions result in less wage inequality; and that union weakening is a primary explanation for the rise in aggregate wage inequality in the wealthy democracies in recent decades (e.g., see Iversen 1996; Kahn 1998; Wallerstein 1999; Kahn 2000; Rueda and Pontusson 2000; Pontusson et al. 2002; Golden and Londregan 2006; Oliver 2008; Martin and Swank 2012). One of the most common measures for union strength in this literature is union density, or the proportion of employed individuals that belong to a union. In order to examine whether union weakening has been equally distributed among women and men, Figure 6 utilizes data from the Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (ICTWSS) to separately plot the level of female union density (the proportion of female workers that belong to a union) and male union density (the proportion of male workers

Union Membership by Gender

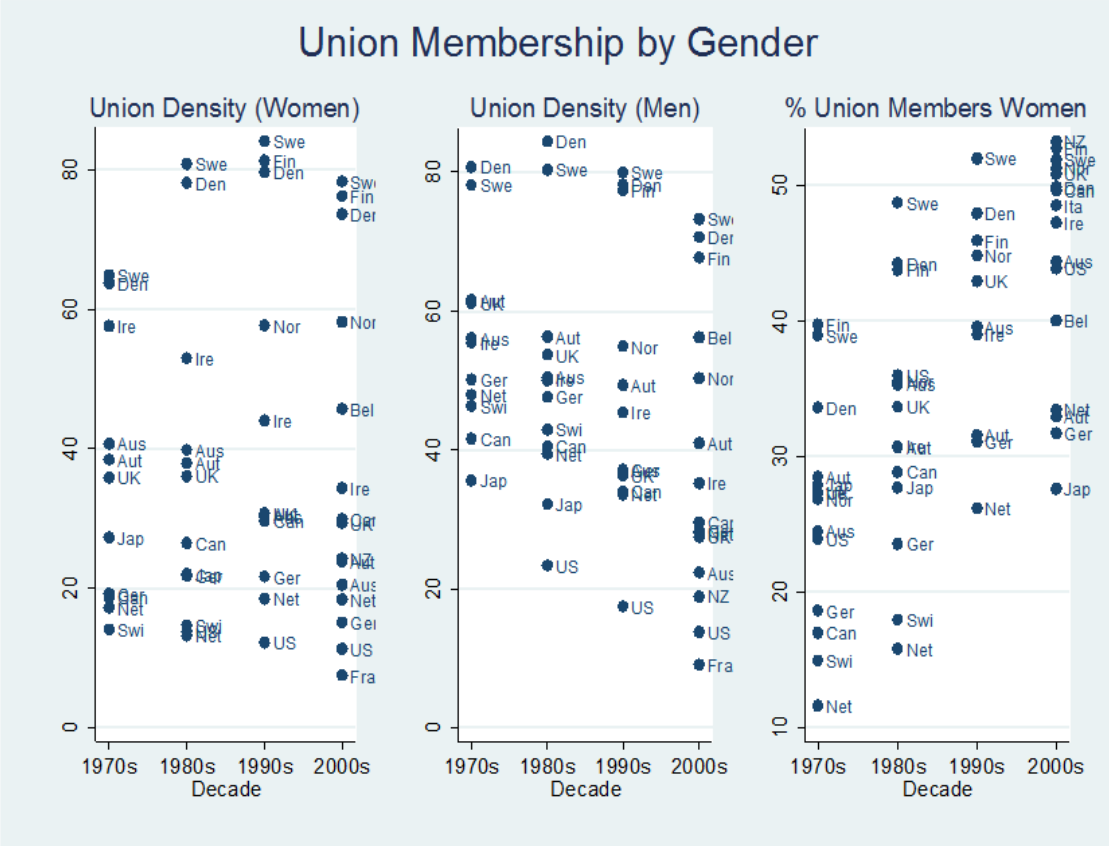


Figure 6. Female and Male Union Membership in 17 Wealthy Democracies by Decade Average, 1970s to 2000s

that belong to a union) as well as the proportion of all union members that are female for 17 wealthy democracies by country-decade average.⁸⁰ The plots demonstrate that male union density has experienced a sharper and steadier decline than female union density; and that these union density trends have contributed to an increasing share of union members that are female. Indeed, by the 2000s, seven countries (Canada, Denmark, Finland, New Zealand, Norway, Sweden, and the United Kingdom) – all of them LMEs or CMEs with social democratic welfare states - had higher female than male union density; and five of these countries (Finland, New Zealand, Norway, Sweden, and the United Kingdom) had a union membership that was majority female. While these trends certainly suggest that aggregate union decline has contributed more to a rise in male wage inequality than female wage inequality, the extent to which this is so will depend on the relative magnitude of the union effect on female wage inequality and the union effect on male wage inequality.

Variation in the Union Effect

Unions have been argued to impact wage inequality through three interrelated processes; or what I term here the employer⁸¹, intra-union, and insider mechanisms.⁸² The *employer mechanism* refers to the process of unions extracting wage concessions from

⁸⁰ Female and male union density data are unavailable for France and Italy and the proportion of union members that are female data are unavailable for France.

⁸¹ In this context, “employer” refers not only to actual business owners, but also top managers (e.g., chief executive officers or high level bureaucrats) that may or may not have an ownership stake in a firm but nonetheless formulate and implement policies relating to employee compensation.

⁸² The focus here is on how unions impact wage inequality “directly”, or through employer-union and intra-union negotiations. However, unions impact wage inequality “indirectly” as well by supporting (or opposing) particular political parties, politicians, and public policies.

employers (Stephens 1980; Freeman and Medoff 1984; Korpi 1985; Mishel 1986; Bradley et al. 2003; Checci et al. 2007); the *intra-union mechanism* refers to the process of unions compressing wages among their own members (Huber and Stephens 1998; Kahn 1998; Wallerstein 1999; Pontusson et al. 2002; Card et al. 2003; Checci et al. 2007; Hall and Thelen 2007; Iversen and Soskice 2010); and the *insider mechanism* refers to the process of union wage gains producing (positive or negative) externalities (Freeman 1980; Friedman 1962; Freeman and Medoff 1984; Card et al. 2003; Rueda and Pontusson 2000; Wallerstein and Western 2000; Rosenfeld and Western 2012). While distinct theoretical propositions, these three mechanisms are neither independent from one another nor are they mutually exclusive; as the intra-union mechanism implies that less-paid union workers have extracted greater wage gains from their employers than better-paid union workers⁸³ and the insider mechanism is the product of externalities resulting from any such union wage gains.

Despite the broad (implicit) consensus that the net result of the employer, intra-union, and insider mechanisms is to reduce wage inequality, a growing body of evidence indicates that the magnitude of this union effect differs across countries and over time; and that circumstances exist in which this union effect is not present at all (Becher and Pontusson 2011; Golden and Wallerstein 2011; Pontusson 2013; Han and Castater 2014). One explanation for the varying union effect is differences in the occupational composition of unions (Becher and Pontusson 2011; Han and Castater 2014). In particular, unions

⁸³ It is difficult to imagine a sustainable union movement in which lower-paid union workers achieve relative gains exclusively or even primarily by extracting wage gains from higher-paid union workers, the latter of which would then experience not only relative but also (substantial) absolute losses as a result of union membership.

dominated by workers in traditionally lower-paid occupations are expected to reduce wage inequality more than unions dominated by workers in traditionally better-paid occupations. Most obviously, this is because unions with fewer workers in traditionally lower-paying jobs means fewer numbers of such workers experiencing wage gains relative to (union and non-union) employers and (union and non-union) workers in traditionally better-paying jobs. While accurate, this rather straightforward reasoning may actually underestimate the influence of union occupational composition on the union effect; as union composition helps determine the wage gains of specific types of union workers.

One of the primary expressions of the intra-union mechanism is union workers in traditionally lower-paid occupations extracting larger wage gains from employers than union workers in traditionally higher-paid occupations (Pontusson et al. 2002; Card et al. 2003).⁸⁴ This phenomenon is explained as the result of the solidaristic norms within union organizations (Wallerstein 1999), union workers in traditionally higher-paying jobs practicing wage restraint in return for generous social insurance policies (Iversen and Soskice 2010), and/or the democratic nature of union organizations (Pontusson et al. 2002; Checci et al. 2007). It is through this last route that we would expect union occupational composition to matter most for the relative wage gains of different types of union workers. Prior to negotiating with employers, unions develop particular wage bargaining goals (e.g., regarding wage levels for certain occupational categories) through internal compromise between different types of union workers (Carruth and Oswald 1987). Since unions are relatively democratic organizations, these compromises need to consider the preferences

⁸⁴ The other primary expression of the intra-union mechanism is the provision of equal pay for equal work (Huber and Stephens 1998; Kahn 1998).

of different types of union workers (Pontusson et al. 2002; Checci et al. 2007). As one might expect, union workers in traditionally lower-paid occupations generally favor (intra-union) wage compression more than union workers in traditionally better-paid occupations (Hall and Thelen 2007; Oliver 2008; Iversen and Soskice 2010; Becher and Pontusson 2011; Han and Castater 2014). How these preferences are aggregated into collective action depends on several factors, including the formal decision-making rules within the union and the unions' institutional culture (Baccaro and Lim 2007; Checci et al. 2007; Ahlquist and Levi 2013). Nonetheless, a reasonable assumption is that wage agreements better reflect the preferences of a particular occupational group when that group has substantial representation within the union - both in absolute terms and relative to other occupational groups with different preferences. Thus, we would expect unions dominated by workers in traditionally lower-paid occupations to produce more egalitarian wage bargaining agreements than unions dominated by workers in traditionally better-paid occupations.

Gender Occupational Segregation and Union Composition

While all wealthy democracies exhibit substantial gender occupational segregation, or a large proportion of workers employed in occupations dominated by one sex (Anker et al. 2003), the form and extent of this segregation differ substantially across market institutions and welfare state types. CMEs, which are characterized as consisting of workers with “specific skills”, strong employment protections, and a large public sector, generate greater gender occupational segregation than LMEs, which are characterized as consisting of workers with “general skills”, weak employment protections, and a small public sector (Estevez-Abe 2006). To a greater extent than their counterparts in LMEs, women in CMEs

are overrepresented in low-end private service sector occupations⁸⁵ and underrepresented in managerial positions (Iversen and Rosenbluth 2011).⁸⁶ However, among CMEs, substantial variation exists between those with social democratic and conservative welfare states. Social democratic welfare states, which include robust active labor market policies, publicly provided childcare services, paid maternity and paternity leave, and strong gender equality norms, produce more well-educated and higher earning women than conservative welfare states, which include “labor clearing” policies, financial support only for female caregivers, and norms accepting of a gendered division of labor (Sainsbury 1996; Esping-Andersen 1999; Chang 2000; Korpi 2000; Soskice 2005).

The differences in gender occupational segregation across market institutions and welfare states suggests that differences may also exist across regimes in the occupational composition of female and male union members, and thus also the female and male union effect. Of most relevance in this regard is the degree of vertical gender occupational segregation within unions, or the extent to which lower-paid (higher-paid) occupations are better represented among female or male union members. To explore this matter, Table 8 includes data from the European Values Study (EVS) on the types of occupations held by female and male union members with countries separated by regime type.⁸⁷ The survey

⁸⁵ It is argued that “women-specific risks” – namely, career interruptions due to family caregiving – produce a disincentive for women to acquire (less portable) “specific skills” and for employers to hire women for jobs that require such skills (Estevez-Abe 2006).

⁸⁶ It is argued that the restrictions on working hours present in many CMEs exacerbate gender-based discrimination in the selection of managers, as women are unable to demonstrate a commitment to the firm (rather than family caring responsibilities) by working long hours.

⁸⁷ For the market institution and welfare state types, I utilize the country classifications put forth by Iversen and Stephens (2008), with two minor modifications. First, I rename their “Christian Democratic” welfare state “Conservative”. Second, following Esping-Andersen (1990), I categorize Japan as a conservative welfare state, rather than leaving it outside of the welfare state typology.

Table 8. Female and Male Union Composition and Union Density (by Occupation Type) in 14 Wealthy Democracies

Country	% Union Professional (Women)	% Union Professional (Men)	% Union Lower- Paid (Women)	% Union Lower- Paid (Men)	Union Density Professional (Women)	Union Density Professional (Men)	Union Density Lower- Paid (Women)	Union Density Lower- Paid (Men)
	1	2	3	4	5	6	7	8
<i>LMEs (Liberal)</i>	-							
Australia	NA	NA	NA	NA	NA	NA	NA	NA
Canada	43.7	17	28.2	43.7	17	12.2	6.5	24
Ireland	26.7	15.1	29.9	27.6	15.6	20.1	6.5	19
New Zealand	NA	NA	NA	NA	NA	NA	NA	NA
United Kingdom. †	24	14.9	32	23	20.2	15.9	8.1	20.1
United States	49.2	44.5	12.3	7	11.3	17.4	4.7	8.4
LME Avg.	35.9	22.9	25.6	25.3	16	16.4	6.5	17.9
<i>CMEs (Cons)</i>								
Austria	1	1.8	62.5	40.1	3.4	6	20.2	31.8
Belgium	4.3	6.2	33.5	28.9	5.2	8.9	13.7	24.1
Germany	2	1.4	47.5	27.6	7.1	4.6	15.6	29.1
Japan	NA	NA	NA	NA	NA	NA	NA	NA
Nether/	11.5	14.1	16.5	8.9	22.9	26.2	11.4	22.4
Switz.	NA	NA	NA	NA	NA	NA	NA	NA
CME (Cons) Avg.	4.7	5.9	40	26.4	9.7	11.4	15.2	26.9

Table 8. Continued.

Country	% Union Professional (Women)	% Union Professional (Men)	% Union Lower- Paid (Women)	% Union Lower- Paid (Men)	Union Density Professional (Women)	Union Density Professional (Men)	Union Density Lower- Paid (Women)	Union Density Lower- Paid (Men)
<i>CMEs (Social Democratic)</i>								
Denmark	1.3	3.7	26.9	23.3	14.2	26.7	42.7	58.4
Finland	7.6	5.6	17	9	45.8	37.5	43.6	38.4
Norway	11.4	16.5	22.7	14.4	49.3	38.9	35.7	42.3
Sweden	7.4	9.5	11.8	10.8	59.8	43.6	70.3	68.8
CME (SD) Avg.	6.9	8.8	19.6	14.4	42.3	36.7	48.1	52
CME Avg.	5.8	7.4	29.8	20.4	26	24.1	31.7	39.4
<i>Mixed (Conservative)</i>								
France	14.3	20.7	21.5	15	9.4	12.2	2.6	7.6
Italy	32.2	13.6	12.9	29.3	11.8	6.6	3.2	13.7
Mixed Avg.	23.3	17.2	17.2	22.2	10.6	9.4	2.9	10.7
Total Avg.	16.9	13.2	26.8	22	20.9	19.8	20.3	29.2

The presented statistics are averages for each country using all available observations between 1981 and 1999.

† Data do not include Northern Ireland.

data includes all available observations for 14 wealthy democracies⁸⁸ over the 1981 to 1999 period.⁸⁹ Columns 1 and 2 consist of averages of the proportion of female and male union members, respectively, that are in professional occupations; and columns 3 and 4 consist of averages of the proportion of female and male union members, respectively, that are in traditionally lower-paid occupations.⁹⁰ Since the effect of the occupational composition of union members on wage inequality is partly determined by the composition of union members relative to non-union members, columns 5 and 6 consist of union density averages for female and male workers, respectively, in professional occupations and columns 7 and 8 consist of union density averages for female and male workers, respectively, in traditionally lower-paid occupations.

In general, we observe larger differences in the occupational composition of union members across regimes than between female and male union members within each regime, although some significant gender-based intra-regime differences do exist.⁹¹ By far

⁸⁸ Data is not available for Australia, New Zealand, Japan, or Switzerland for the survey waves examined here (see fn. 90).

⁸⁹ The EVS conducted four waves of surveys between 1981 and 2008; in 1981, 1990, 1999, and 2008. In 2008, however, the potential answers to the question regarding the respondent's job type changed substantially (see variables x036 and x036d in the EVS Longitudinal Data File 1981 – 2008). Since the number of respondents that answer that they belong to a trade (labor) union (variable a067) may be relatively small in a particular country in a given wave and the 2008 survey does not cover countries outside of Europe, I have chosen to pool together the three waves between 1981 and 1999 and exclude the fourth wave from the analysis.

⁹⁰ The EVS asks respondents whether they belong to a trade (labor) union (variable a067) and what type of job they hold in their particular profession or industry (variable x036). Respondents answering "yes" to the first question and "employer/manager" or "professional worker" to the second question are categorized here as union workers in professional occupations; and respondents answering "yes" to the first question and "junior level non-manual", "semi-skilled manual", or "unskilled manual" to the second question are categorized here as union workers in traditionally lower-paid occupations.

⁹¹ Since there are no female or male union density data available for the mixed market economies (with conservative welfare states) (France and Italy), these countries will be excluded from the forthcoming discussion and the empirical models to follow. Nonetheless, in terms of the occupational composition of female and male union members and the occupation-specific female and male union density, we can observe in Table 8 that mixed market economies most closely resemble LMEs.

the largest share of union members that are in professional occupations can be found in LMEs (with liberal welfare states). In this regime, professionals consist of over one-third of female union members and one-fifth of male union members. In no other regime do professionals consist of even one-tenth of female or male union members. However, traditionally lower-paid workers do have a sizable presence within unions in this regime, representing approximately one-fourth of both female and male union members. We observe by far the largest class imbalance in union membership in CMEs with conservative welfare states, where female union members in traditionally lower-paid occupations outnumber female union members in professional occupations by over eight to one and male union members in traditionally lower-paid occupations outnumber male union members in professional occupations by over four to one. In CMEs with social democratic welfare states, the proportion of professionals and workers in traditionally lower-paid occupations among union workers is relatively low for both women and men (although the union density level for each of these gender-specific occupational groupings is relatively high), suggesting that union members consist of a large share of workers in traditionally medium-paid occupations within this regime.⁹²

If unions with a large absolute and relative presence of workers in traditionally lower-paid (professional) occupations reduce wage inequality the most (least); and this tendency is strengthened when unions disproportionately represent traditionally lower-paid (professional) workers, the observations derived from the EVS data lead us to different

⁹² The remaining difference in the proportion of union members (after taking professional and traditionally lower-paid workers into account) does not entirely consist of workers in traditionally medium-paid occupations, as union members may also consist of the unemployed or retirees (Western 1997; Anderson and Lynch 2007).

expectations regarding the relative size of the union effect on female and male wage inequality depending on regime type. On the one hand, the union effect on male wage inequality is likely to be greater than the union effect on female wage inequality in LMEs – as there are fewer professionals among male union members than female union members within this regime. On the other hand, the union effect on female wage inequality is likely to be greater than the union effect on male wage inequality in CMEs with conservative welfare states – as there are more workers in traditionally lower-paid occupations among female union members than male union members within this regime.⁹³ The relatively low levels of both professional and traditionally lower-paid workers among union members in CMEs with social democratic welfare states does not lend itself to any clear expectations regarding differences in the union effect within that regime. Therefore, two hypotheses regarding intra-regime differences are offered:

Hypothesis 1: The union effect on male wage inequality is greater than the union effect on female wage inequality in LMEs

⁹³ The precise method by which we would expect the union effect on female wage inequality and the union effect on male wage inequality to differ within a particular market institution and welfare state regime depends on the extent to which wage bargaining agreements are produced by unions that disproportionately represent one gender (as a consequence of individual unions representing female and/or male dominated occupations). If wage bargaining agreements are the product of unions that substantially represent both female and male workers, then any difference in the union effect on female wage inequality and the union effect on male wage inequality will be because female (male) union workers disproportionately benefit from a particular wage bargaining agreement. If, instead, wage bargaining agreements are the product of unions that disproportionately represent one gender (which is perhaps often the case given substantial horizontal and vertical gender occupational segregation), then the union effect on female wage inequality and the union effect on male wage inequality will differ because of distinct female-dominated union and male-dominated union bargaining agreements.

Hypothesis 2: The union effect on female wage inequality is greater than union effect on male wage inequality in CMEs with conservative welfare states

Given the particularly large class imbalance among both female and male union members in CMEs with conservative welfare states, a third hypothesis focusing on inter-regime differences is also offered:

Hypothesis 3: The union effect on female wage inequality and the union effect on male wage inequality are greater in CMEs with conservative welfare states than in LMEs or CMEs with social democratic welfare states

Data and Methods

Female and Male Wage Inequality

The dependent variables most commonly employed in studies examining the determinants of aggregate wage inequality in wealthy democracies are three ratios including the wages of full-time dependent employees provided by the Organization for Economic Cooperation and Development (OECD): the ratio of the ninetieth percentile earning to that of the tenth percentile earning (90/10 ratio), the ratio of the ninetieth percentile earning to that of the median earning (90/50 ratio), and the ratio of the median earning to that of the tenth percentile earning (50/10 ratio). A wage ratio with a larger value signifies a greater distance between those with higher and lower earnings, and thus higher wage inequality. It should be stated explicitly that these measures focus exclusively

on income from labor and do not explicitly measure the earnings at the very top or very bottom of the earnings distribution (e.g., the top or bottom 1 percent). In other words, the data do not capture the earnings of many top managers (who may have earnings above the ninetieth percentile) or marginalized workers (who may have earnings below the tenth percentile). Furthermore, because this variable includes only full-time dependent employees, it necessarily excludes business owners, the unemployed, the self-employed, and part-time workers. For these reasons, the three wage ratios almost certainly and substantially understate the extent of economic inequality in wealthy democracies.

The OECD provides three different versions of each wage ratio, one that includes only women, one that includes only men, and another that pools together women and men. Previous analyses of the determinants of wage inequality have focused exclusively on the pooled wage data. This analysis will instead focus exclusively on the gender-specific wage data. To examine whether there are substantial differences between female and male wage inequality, Figure 7 provides graphical depictions and correlation coefficients for the level and first-difference (year over year change) form of each like female and male wage ratio for the 18 wealthy democracies⁹⁴ typically examined in time-series cross-sectional analyses of the determinants of aggregate wage inequality. Included are all available observations for these countries between 1980 and 2010.

The levels of each wage ratio are found to be strongly and positively correlated, with the correlation coefficient ranging from .884 for the 50/10 wage ratios to .945 for the

⁹⁴ The 18 Countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, and the United States.

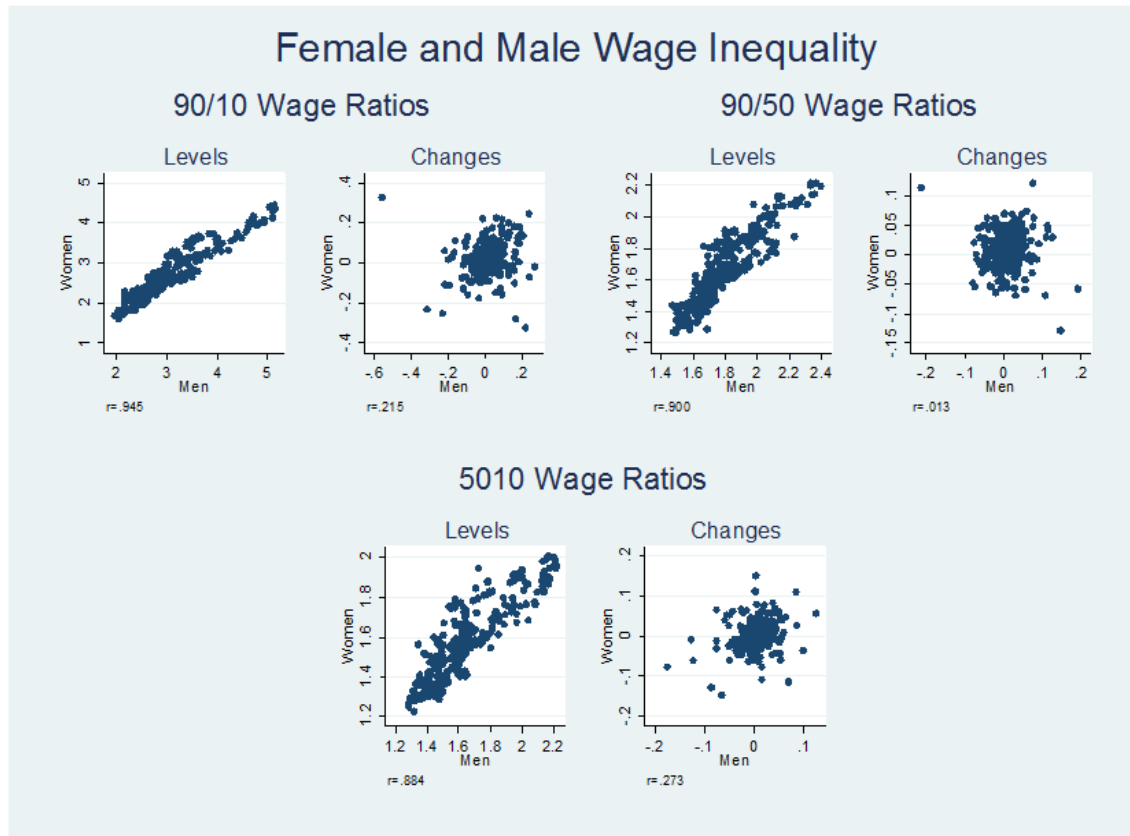


Figure 7. Bivariate Correlations of the Female and Male 90/10, 90/50, and 50/10 Wage Ratios, Respectively, in their Level and First-Difference (Year to Year Change) Form

90/10 wage ratios. However, a quite different result is found for the first-difference form of the variable. Here, the correlation coefficients range from a meager .019 for the 90/50 wage ratios to only a moderately stronger .273 for the 50/10 wage ratios. The very different coefficients for the level and first-difference forms of the wage ratios could be interpreted as informing us that countries with relatively high (low) levels of female wage inequality also have relatively high (low) levels of male wage inequality, but the extent of the annual increase or decrease of female (male) wage inequality tells us little, if anything, about the extent of the annual increase or decrease in male (female) wage inequality. This would suggest that, controlling for country specific features, female and male wage inequality have different determinants and/or are impacted by particular factors in dissimilar ways, and thus it is appropriate to model each of these wage distributions separately. Summary data for the female and male wage ratios are included in Appendix D.

Estimation Strategy

Due to limitations in the gender-specific union density and wage ratio data, the empirical analysis is restricted to 15 wealthy democracies⁹⁵ between 1980 and 2010.⁹⁶ To

⁹⁵ The 15 countries examined are those 18 included in fn. 95 minus France, Italy, and Switzerland. These three countries do not have any overlapping union density and wage ratio data and thus are automatically dropped from the regression analysis.

⁹⁶ A majority of the countries in the analysis only have overlapping gender-specific union density and wage ratio data after 1990, and only four countries – Australia, Japan, Sweden, and the United Kingdom – have overlapping union density and wage ratio data before 1980. In an effort to maintain a maximum number of observations while diminishing any possible bias toward particular countries, the empirical analysis has been restricted to the 1980 to 2010 period. Nonetheless, empirical analyses of the 1975 to 2010 and 1990 to 2010 periods provide substantively similar (although not identical) results to those reported below. Results are available from the author upon request.

examine the (conditional) effect of female and male union strength and other socio-economic and political factors on female and male wage inequality, I utilize the single-equation time-series cross-sectional error correction model (ECM), the seemingly unrelated regressions (SUR) model, and the Rogers' robust-cluster variance estimator

ECMs are flexible time-series models that have at least two advantages over other statistical models. First, they can be applied to both integrated and stationary data (DeBoef and Keele 2008).⁹⁷ Second, they are able to estimate both the short-term and long-term effect of an independent variable on the dependent variable. A short-term (or immediate) effect indicates that a change in an independent variable in one time period produces a change in the dependent variable only in the concurrent time period. By contrast, a long-term effect expresses dynamic causality and indicates that a shift in an independent variable in one time period produces a change in the dependent variable over many time periods.

A single-equation ECM can be expressed in the following way:

$$\Delta Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \beta_1 \Delta X_t + \beta_2 X_{t-1} + \varepsilon_t,$$

Each independent variable is included in the equation twice, once in its first-difference form (ΔX_t) and once in its lagged level form (X_{t-1}). The short-term effect of an independent variable can be determined simply by observing the coefficient for the first-

⁹⁷ While ECMs may be applied to both integrated and stationary data, Enns et al. (2014) demonstrate that cointegration tests only produce correct inferences when the dependent variable is integrated. Augmented Dickey-Fuller tests were conducted on each of the dependent variables in this analysis (the female and male 90/10, 90/50, and 50/10 wage ratios, respectively). In every case, the null hypothesis that all panels contain a unit root (i.e., are integrated) could not be rejected at the 95 percent confidence level or greater.

difference version of the variable (β_1). The long-term effect, by contrast, is determined by dividing the coefficient for the lagged version of the variable (β_2) by the coefficient for the lagged dependent variable (α_1). The latter coefficient is known as the “error correction rate” and represents the speed at which the independent variable and the dependent variable arrive back at equilibrium after a shift in the level of the independent variable. For example, an α_1 of -.1 would indicate that 10 percent of the full long-term effect is felt after one time period, that 10 percent of the remaining long-term effect is felt in the following time period, and so on. Higher absolute values of α_1 indicate a faster movement back to equilibrium.

A SUR model allows us to employ sample information in one regression to improve the precision of the parameter estimates in other regressions. This can be done when the error terms in multiple regressions exhibit contemporaneous cross-equation error correlation, each regression contains a different dependent variable, and there is at least one unlike independent variable across the regressions (Zellner 1962; Moon and Peron 2006; Zellner 2006).⁹⁸ The latter two conditions are met by our use of six distinct dependent variables (the female and male versions of the 90/10, 90/50, and 50/10 wage ratios, respectively) and multiple gender specific independent variables (union density, unemployment, and education). The first condition is met with the result of a Breusch-Pagan test, which allows us to reject the null hypothesis that the regression errors are independent (at the 99 percent confidence level).

⁹⁸ SUR models reduce to single-equation estimators when the error terms in the two or more equations are uncorrelated (Zellner 2006).

Finally, the Rogers' robust-cluster variance estimator provides valid hypothesis tests in the presence of any pattern of correlation within units (countries), including serial correlation and correlation due to unmodeled country-specific factors (Rogers 1994). However, this estimator also assumes that errors are uncorrelated between units. This assumption could be violated if there are unmodeled factors that impact wage inequality in all or most countries at a particular point in time (Huber et al. 2006). In order to address this possibility, dummy variables representing each decade are included in the analyses.⁹⁹

Main Independent Variables

Each model in the empirical analysis will contain four interaction terms: the first-difference and lagged level form of the gender-specific union density variable each separately interacted with a dummy variable for CMEs with social democratic welfare states ($\Delta Union Density \times CME (SD)$ and $Union Density (t-1) \times CME (SD)$) and a dummy variable for LMEs ($\Delta Union Density \times LME (Lib.)$ and $Union Density (t-1) \times LME (Lib.)$). Since CMEs with conservative welfare states serve as the baseline category, the coefficients on the non-interacted first-difference and lagged level union density variables inform us of the short- and long-term effect, respectively, of gender-specific union density within this regime. The coefficients on the interaction terms containing the dummy for CMEs with social democratic welfare states inform us of the difference between the union effect in CMEs with social democratic welfare states and CMEs with conservative welfare

⁹⁹ Results for the time dummies are not reported below but are available from the author upon request.

states; while the coefficients on the interaction terms containing the dummy for LMEs inform us of the difference between the union effect in LMEs and CMEs with conservative welfare states.¹⁰⁰

In an effort to make the investigation as expansive as possible, three aspects of the results will be considered when determining whether a particular hypothesis has or has not received empirical support. First, the direction, statistical significance, and magnitude of the interaction terms. This will inform us of the difference between the union effect in CMEs with conservative welfare states and the union effect in each of the other two regimes (for a given gender-specific wage ratio). Second, the direction and statistical significance of the union effect in each regime in each model (determined via marginal effects). This will inform us of whether a statistically significant union effect exists for a particular gender on a specific wage ratio but not the other gender on the same (but gender-specific) wage ratio. Third, the magnitude of statistically significant union effects on each like wage ratio within each regime. This will inform us of whether the substantive union effect is greater for a particular gender on a given (but gender-specific) wage ratio.

¹⁰⁰ CMEs with conservative welfare states were chosen as the baseline category to provide an easily identifiable test of *Hypothesis 3*, which anticipates the coefficients on the union variables that serve as components of the interaction terms to be negative and statistically significant and the coefficients on the interaction terms to be positive and statistically significant. Nonetheless, it should be noted that the statistical significance and magnitude of the union effects in each regime are not affected by which regime serves as the baseline category.

Control Variables

The other socio-economic and political factors considered in this analysis are those that are typically included in models of aggregate wage inequality in wealthy democracies: the level of wage bargaining, international trade, national wealth, service sector employment, unemployment, female labor force participation, education, immigration, and left party participation in government.¹⁰¹ Theoretical expectations¹⁰², data measurement, and sources for all variables can be found in Appendix E.

Results

Table 9 contains “full” models of the female and male 90/10, 90/50, and 50/10 wage ratios, respectively. These models include all of the socio-economic and political factors outlined above (including the dummy variables for LMEs and CMEs with social democratic welfare states) but exclude the interaction terms. The odd numbered models are of female wage inequality and the even numbered models are of male wage inequality. Only the gender-specific union variables and those found to be statistically significant (at the 90 percent confidence level or higher) are included in the table.¹⁰³ In terms of the main

¹⁰¹ Public sector employment (public employment as a share of total employment) is another factor typically included in models of aggregate wage inequality in wealthy democracies. However, in order to test the hypotheses outlined above, the statistical models in this article include other (indirect) measures of public sector employment - dummy variables indicating the presence of particular market institution and welfare state regimes. Therefore, a unique public sector employment variable is excluded from the analysis.

¹⁰² While there are theoretical reasons to suppose that some of these factors will impact the female wage distribution differently than the male wage distribution, this is less clearly the case with other factors. Therefore, gender is only explicitly mentioned in the theoretical expectations when there is a strong theoretical prior that a particular factor has a disproportionate impact on the wage distribution of women or men.

¹⁰³ Full results can be found in Appendix F.

Table 9. Determinants of Female and Male Wage Inequality in 15 Wealthy Democracies between 1980 and 2010

Model	1	2	3	4	5	6
Gender (Number of Countries)	Women (15 Countries)	Men (15 Countries)	Women (15 Countries)	Men (15 Countries)	Women (15 Countries)	Men (15 Countries)
Dependent Variable (Model)	90/10 wage ratio (Full)	90/10 wage ratio (Full)	90/50 wage ratio (Full)	90/50 wage ratio (Full)	50/10 wage ratio (Full)	50/10 wage ratio (Full)
Wage Ratio (t-1)	-0.080*** (0.014)	-0.090*** (0.014)	-0.087*** (0.015)	-0.102*** (0.015)	-0.081*** (0.015)	-0.096*** (0.014)
Δ Female (Male) Union Density (t)	-0.005 (0.006)	0.002 (0.007)	-0.004* (0.002)	-0.000 (0.003)	0.001 (0.003)	0.000 (0.003)
Female (Male) Union Density (t-1)	-0.002 (0.001)	-0.003** (0.001)	-0.000 (0.000)	-0.001* (0.000)	-0.001 (0.001)	-0.001** (0.000)
LME (Lib.)	0.055** (0.023)	0.089*** (0.026)	0.017** (0.009)	0.024** (0.010)	0.019* (0.011)	0.027*** (0.010)
CME (SD)	0.033 (0.063)	0.087* (0.050)	-0.008 (0.024)	0.005 (0.020)	0.031 (0.030)	0.045** (0.019)
Δ Level of Wage Bargaining (t)	0.015* (0.009)	-0.004 (0.010)	0.005 (0.003)	-0.005 (0.004)	0.005 (0.004)	0.003 (0.004)
Δ International Trade	-0.003** (0.001)	-0.003** (0.001)	-0.002*** (0.000)	-0.000 (0.001)	0.000 (0.001)	-0.001** (0.001)
Δ GDP Per Capita (in thousands) (t)	0.022*** (0.008)	0.007 (0.011)	0.012*** (0.003)	0.001 (0.004)	-0.000 (0.004)	0.003 (0.004)
Δ Unemployment (t)	0.026*** (0.008)	0.010 (0.008)	0.009*** (0.003)	0.004 (0.003)	0.005 (0.004)	0.002 (0.003)
Unemployment (t-1)	0.002 (0.003)	0.007** (0.003)	0.000 (0.001)	0.001 (0.001)	0.001 (0.001)	0.003*** (0.001)
Female Labor Force Participation (t-1)	0.008* (0.004)	0.002 (0.005)	0.004** (0.002)	0.002 (0.002)	0.001 (0.002)	-0.002 (0.002)
Female (Male) Education (t-1)	-0.001 (0.002)	0.008*** (0.003)	0.001 (0.001)	0.002** (0.001)	-0.002** (0.001)	0.002** (0.001)
Immigration (t-1)	-0.001 (0.001)	-0.003** (0.002)	-0.001** (0.001)	-0.001 (0.001)	0.001 (0.001)	-0.001* (0.001)
Left Govt. (t-1)	-0.001*** (0.000)	0.000 (0.001)	-0.000 (0.000)	0.000 (0.000)	-0.001*** (0.000)	0.000 (0.000)
N	225	225	225	225	225	225
R ²	0.201	0.136	0.223	0.118	0.129	0.186

(Note: Robust standard errors are in parentheses; *** $p < .01$; ** $p < .05$; * $p < .10$)

variables of theoretical interest, male union density significantly reduces male wage inequality in the long-term (at the 90 percent confidence level or greater) across all three male wage ratios but female union density only significantly reduces female wage inequality in the short-term (at the 90 percent confidence level) in the model of the 90/50 wage ratio. Indeed, this phenomena of a variable impacting female and male wage inequality in the same general direction but for different wage ratios and/or time horizons is found for international trade, unemployment, and immigration as well. Three additional variables – GDP per capita, female labor force participation, and left government – are found to significantly influence two or more female wage ratios but not any male wage ratios; while the proportion of individuals with a tertiary education acts to significantly increase all three male wage ratios but decrease the female 50/10 wage ratio. Not surprisingly, the dummy variable for LMEs has a positive and statistically significant coefficient in all six models while the coefficient for the dummy variable for CMEs with social democratic welfare states is statistically insignificant in five of the six models. This result indicates that in terms of wage inequality, larger differences exist between market institutions than welfare states, per se.

Given the relatively small number of observations in each of the models (225), the interaction terms are added to slimmed down, more efficient models in Table 10. In addition to the interaction terms, these “reduced” models include those variables found to be statistically significant at the 90 percent confidence level or greater in the full models in Table 9.¹⁰⁴ Model 7 is the reduced version of Model 1, Model 8 is the reduced version of

¹⁰⁴ If a variable has a statistically significant long-term effect, both its first-difference and lagged level form are included in the reduced models. Furthermore, to keep the results for the female and male wage

Table 10. Conditional Union Effect on Female and Male Wage Inequality in 15 Wealthy Democracies between 1980 and 2010

Model	7	8	9	10	11	12
Gender (Number of Countries)	Women (15 Countries)	Men (15 Countries)	Women (15 Countries)	Men (15 Countries)	Women (15 Countries)	Men (15 Countries)
Dependent Variable (Model)	90/10 wage ratio (Reduced)	90/10 wage ratio (Reduced)	90/50 wage ratio (Reduced)	90/50 wage ratio (Reduced)	50/10 wage ratio (Reduced)	50/10 wage ratio (Reduced)
Wage Ratio (t-1)	-0.077*** (0.015)	-0.095*** (0.016)	-0.080*** (0.017)	-0.107*** (0.019)	-0.084*** (0.017)	-0.103*** (0.017)
Δ Female (Male) Union Density (t)	0.035 (0.026)	0.023 (0.029)	0.010 (0.010)	-0.007 (0.016)	0.010 (0.012)	0.020* (0.010)
Female (Male) Union Density (t-1)	-0.004*** (0.001)	-0.005*** (0.002)	-0.001 (0.000)	-0.000 (0.001)	-0.002** (0.001)	-0.003*** (0.001)
LME (Lib.)	0.018 (0.056)	-0.013 (0.081)	0.011 (0.022)	0.053 (0.035)	-0.004 (0.026)	-0.066** (0.028)
Δ Female (Male) Union Density (t) X LME (Lib.)	-0.036 (0.028)	-0.016 (0.030)	-0.010 (0.011)	0.009 (0.012)	-0.009 (0.013)	-0.018* (0.011)
Female (Male) Union Density (t-1) X LME (Lib.)	0.001 (0.002)	0.002 (0.002)	0.000 (0.001)	-0.001 (0.001)	0.001 (0.001)	0.002*** (0.001)
CME (SD)	-0.234*** (0.096)	-0.207* (0.107)	-0.096*** (0.037)	-0.079* (0.042)	-0.045 (0.044)	-0.052 (0.040)
Δ Female (Male) Union Density (t) X CME (SD)	-0.043 (0.028)	-0.035 (0.032)	-0.015 (0.011)	0.001 (0.013)	-0.009 (0.013)	-0.022* (0.011)
Female (Male) Union Density (t-1) X CME (SD)	0.005*** (0.002)	0.005** (0.002)	0.001** (0.001)	0.001 (0.001)	0.002* (0.001)	0.002** (0.001)
Δ International Trade	-0.004*** (0.001)	-0.003** (0.001)	-0.002*** (0.000)	-0.000 (0.001)	-0.000 (0.001)	-0.001** (0.001)
Δ GDP Per Capita (in thousands) (t)	0.024*** (0.005)	0.003 (0.007)	0.013*** (0.003)	0.002 (0.004)		

distributions as comparable as possible, measures found to be statistically significant in a model of a particular female (male) wage ratio are included in the reduced model not only for that female (male) wage ratio but also the like male (female) wage ratio.

Table 10. Continued.

Model	7	8	9	10	11	12
Gender (Number of Countries)	Women (15 Countries)	Men (15 Countries)	Women (15 Countries)	Men (15 Countries)	Women (15 Countries)	Men (15 Countries)
Dependent Variable (Model)	90/10 wage ratio (Reduced)	90/10 wage ratio (Reduced)	90/50 wage ratio (Reduced)	90/50 wage ratio (Reduced)	50/10 wage ratio (Reduced)	50/10 wage ratio (Reduced)
Δ Unemployment (t)	0.023*** (0.007)	0.006 (0.006)	0.008*** (0.003)	0.005 (0.003)	0.004 (0.003)	-0.001 (0.002)
Unemployment (t-1)	0.000 (0.002)	0.004** (0.002)			0.000 (0.001)	0.002** (0.001)
Female (Male) Education (t-1)	-0.002 (0.002)	0.005* (0.003)	0.001 (0.001)	0.001 (0.001)	-0.002** (0.001)	0.002* (0.001)
Immigration (t-1)	-0.001 (0.001)	-0.003** (0.001)	-0.001*** (0.001)	-0.001* (0.001)	0.000 (0.001)	-0.001* (0.001)
Left Govt. (t-1)	-0.001*** (0.000)	-0.000 (0.000)			-0.001*** (0.000)	-0.000 (0.000)
Δ Female (Male) Union Density (t) LME (Lib.)	-0.001 (0.009)	0.007 (0.009)	-0.000 (0.003)	0.002 (0.004)	0.001 (0.004)	0.001 (0.003)
Female (Male) Union Density (t-1) LME (Lib.)	-0.002** (0.001)	-0.003** (0.001)	-0.001 (0.000)	-0.001** (0.001)	-0.001 (0.000)	-0.000 (0.000)
Δ Female (Male) Union Density (t) CME (SD)	-0.008 (0.008)	-0.012 (0.011)	-0.006* (0.003)	-0.006 (0.005)	0.001 (0.004)	-0.002 (0.004)
Female (Male) Union Density (t-1) CME (SD)	0.001 (0.001)	-0.000 (0.001)	0.001 (0.000)	0.001 (0.000)	-0.000 (0.001)	-0.001** (0.000)
N	225	225	225	225	225	225
R ²	0.222	0.145	0.236	0.127	0.134	0.191

(Note: Robust standard errors are in parentheses; *** $p < .01$; ** $p < .05$; * $p < .10$)

Model 2, and so on. Once again, only the gender-specific union variables and those found to be statistically significant (at the 90 percent confidence level or higher) are included in the table.¹⁰⁵ Beginning with the error correction rates, we observe that all six are significant at the 99 percent confidence level. The values of the error correction rates inform us that a shift in the level of an independent variable produces an effect on female and male wage inequality that is incrementally distributed over time and not fully realized for approximately 9 to 13 years. As anticipated, unions are found to reduce wage inequality across most of the female and male wage ratios in CMEs with conservative welfare states. More specifically, gender-specific union density has a negative and statistically significant long-term effect (at the 95 percent confidence level or higher) in four of the six models. Not surprisingly given the union composition survey data, all of these statistically significant coefficients are in models that include the lower parts of the wage distributions (i.e., models of the 90/10 and 50/10 wage ratios, respectively). However, no support is found for *Hypothesis 2*, as female and male union strength are found to significantly impact the same wage ratios within this regime

Turning our attention to the interaction terms, we observe that *Hypothesis 3*, which states that the female and male union effect are greatest in CMEs with conservative welfare states, receives broad support: the interaction term containing the lagged level form of the union density variable and the dummy variable for CMEs with social democratic welfare states has a positive and statistically significant coefficient (at the 90 percent confidence level or higher) in five of the six models; and the interaction term containing the lagged

¹⁰⁵ Full results can be found in Appendix G.

level form of the union density variable and the dummy variable for LMEs has a positive and statistically significant coefficient (at the 99 percent confidence level) in one model (Model 12).¹⁰⁶ These results indicate that the long-term union effect in CMEs with conservative welfare states is significantly greater than the long-term union effect in CMEs with social democratic welfare states across nearly all parts of the female and male wage distributions and the long-term union effect in LMEs when we consider the lower half of the male wage distribution. The much stronger result for CMEs with social democratic welfare states may be the result of the particularly small number of union workers in traditionally lower-paid occupations within that regime.

Included at the bottom of Table 10 are the effects of female and male union strength in LMEs and CMEs with social democratic welfare states, respectively. Consistent with *Hypothesis 1*, male union strength is found to significantly reduce wage inequality across a larger portion of the male wage distribution than female union strength does across the female wage distribution in LMEs. More specifically, male union density significantly reduces the male 90/10 and 90/50 wage ratios (at the 95 percent confidence level) while female union density “only” significantly reduces the female 90/10 wage ratio (at the 95 percent confidence level). This would suggest that, within LMEs, unions are able to increase the relative wages of those in the middle part of the male wage distribution to a greater extent than those in the middle part of the female wage distribution – perhaps due to the particularly small number of female union members in traditionally medium-paid

¹⁰⁶ The only interaction term with the lagged level union density variable to have a negative coefficient is that including the dummy for LMEs in Model 10; but this coefficient does not approach statistical significance (p-value = .41).

occupations within this regime.¹⁰⁷ As anticipated based on the union composition survey data, weaker gender differences are found in CMEs with social democratic welfare states. Both female and male union density significantly reduce one wage ratio (at the 90 percent confidence level or higher), although it is a short-term effect on the 90/50 wage ratio for women and a long-term effect on the 50/10 wage ratio for men. It is not clear what would cause such a pattern of diverging female and male union effects within this regime.

In order to examine the substantive effects of female and male union strength, Figure 8 graphs the impact of a one standard deviation change in female and male union density¹⁰⁸ in each of the three regimes on the female and male 90/10, 90/50, and 50/10 wage ratios, respectively.¹⁰⁹ All bars signify negative (inequality reducing) effects. In an effort to make the results for each model as comparable and intuitive as possible, these effects have been converted into standard deviation changes in the corresponding wage ratio. Consistent with *Hypothesis 3*, union strength is generally found to have the largest substantive effects in CMEs with conservative welfare states. Within this regime, a one standard deviation increase in gender-specific union density reduces gender-specific wage inequality by approximately 1.5 standard deviations or more in three models (Models 7, 8, and 11). In no other regime does a union effect even exceed 1.2 standard deviations. In CMEs with conservative welfare states, the female union effect is only .3 standard deviations larger than the male union effect in the models of the 90/10 wage ratios but over

¹⁰⁷ In LMEs, approximately 61.5 percent of female union members are either professionals or workers in traditionally lower-paid occupations. For no other regime- and gender-specific union grouping does this figure even reach 50 percent.

¹⁰⁸ The standard deviations utilized in this analysis are derived from the country-years covered in Table 10.

¹⁰⁹ Substantive effects include short-term and long-term coefficients that are statistically significant at the 90 percent confidence level or greater.

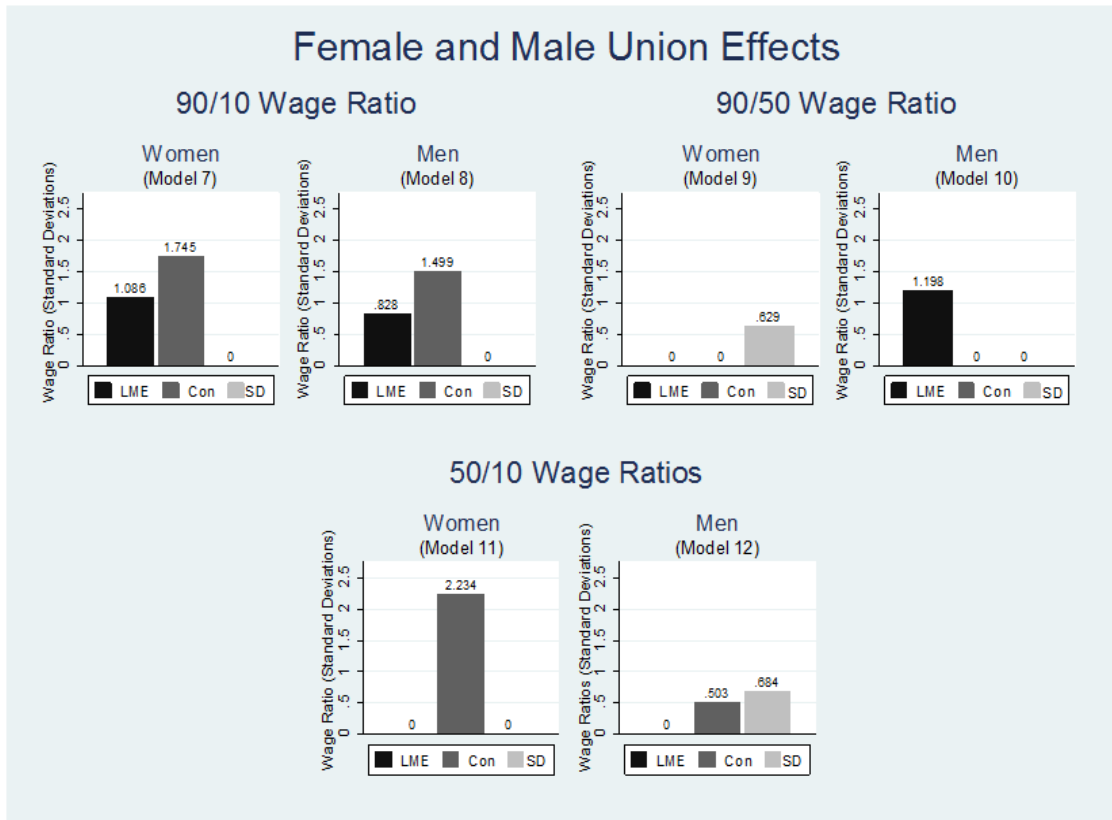


Figure 8. Total (Long-Term Plus Short-Term) Effect of a One Standard Deviation Shift in Female and Male Union Density.

*Results derived from models in Table 10.

1.7 standard deviations larger in the models of the 50/10 wage ratios. While this latter result provides strong support for *Hypothesis 2*, it should be noted that it is primarily due to an unusual significant and positive short-term coefficient (at the 90 percent confidence level) for male union density in Model 12. If this marginally significant short-term result is excluded, then the difference between the female and male union effect in the models of the 50/10 wage ratios shrinks to less than .1 standard deviations. In LMEs, a one standard deviation rise in male union density is associated with a substantially large reduction in the male 90/50 wage ratio (1.2 standard deviations), while a similar rise in female union density has no significant effect on the female 90/50 wage ratio. While this finding lends support to *Hypothesis 1*, the slightly larger substantive effect of female union density compared to male union density in the models of the 90/10 wage ratios (1.1 standard deviations to .8 standard deviations, respectively) runs counter to this hypothesis. Finally, the gender-specific union effects in CMEs with social democratic welfare states – in the two instances in which the union effects in this regime are statistically significant – are relatively modest, never reaching two-thirds of a standard deviation.

The primary purpose of the interaction terms included here was to determine whether the occupational composition of union members conditions the union effect on female and male wage inequality, but the inherently symmetrical nature of interaction terms allows us to simultaneously observe whether female and male union strength condition the market institution and welfare state regime effect on wage inequality as well (given that dummy variables for market institution and welfare state regimes were used as indirect measures for union composition) (Berry et al. 2012). The coefficient on the

dummy variable for CMEs with social democratic welfare states is negative and statistically significant (at the 90 percent confidence level or higher) in the models containing wage ratios with the ninetieth percentile of wage earners (i.e., the gender-specific 90/10 and 90/50 wage ratios, respectively). Since both female and male union strength have been diminishing across nearly all wealthy democracies in recent years, we can interpret the positive and statistically significant interaction terms containing the dummy for CMEs with social democratic welfare states as informing us that policies associated with the social democratic welfare state reduce the relative wages of top earners more compared with policies associated with the conservative welfare state as female and male union density decline within the former regime. This finding suggests a sort of “substitution effect”, whereby policies associated with social democratic welfare states play a more important role in restraining the wages of top earners as unions become less able – or less willing – to do so. Interestingly, a similar result is found in only one model of LMEs – that for the male 50/10 wage ratio. This may indicate that particular features associated with LMEs – such as minimum wages and means tested benefits - have been particularly important for lower earning men as male union density has declined sharply and steadily within this regime.¹¹⁰

There are four important points to note regarding the other socio-economic and political determinants of female and male wage inequality included in the models. First, and as alluded to above when discussing the results in Table 9, several factors impact

¹¹⁰ In the dataset utilized here, male union density declined by about 29 percentage points in LMEs between the 1970s and 2000s. Over that same period, female union density in LMEs declined by about 13 percentage points; male union density in CMEs declined by about 10 percentage points; and female union density in CMEs *rose* by about 9 percentage points.

female and male wage inequality in the same general direction, but do so in dissimilar ways. In particular, unemployment increases female wage inequality exclusively in the short-term but increases male wage inequality exclusively in the long-term; while immigration and international trade reduce different parts of the female and male wage distributions. Second, two factors – GDP per capita and left government – impact female wage inequality but not male wage inequality. More specifically, economic growth allows the highest earning women to make wage gains relative to lower earning women while left government helps the lowest earning women to make wage gains relative to higher earning women. Third, only one factor – education – is found to impact female and male wage inequality in opposite directions. The proportion of males with a tertiary education is found to increase the wage ratios including the highest earning men (i.e., the male 90/10 and 90/50 wage ratios); while a rise in the proportion of females with a tertiary education is found to decrease wage inequality among the lower half of the wage distribution. Finally, none of the substantive effects of these other socio-economic and political factors match the magnitude of the statistically significant union effects provided in Figure 8. While a one standard deviation shift in gender-specific union density often impacts a particular wage ratio by more than one standard deviation, the impact of a one standard deviation shift in left government in Model 11 – the next largest effect outside of those for the gender-specific union density variables – is less than three-fourths of a standard deviation.

Discussion and Conclusion

Does female union strength reduce female wage inequality to the same extent that male union strength reduces male wage inequality? In an effort to answer this question, I

focused attention on differences in the occupational composition of female and male union members - a condition that is itself determined by market institution and welfare state design. I began by providing descriptive statistics demonstrating that male union strength has experienced a sharper and steadier decline than female union strength. I then outlined the three processes by which unions have been argued to impact wage inequality, which I labeled the employer, intra-union, and insider mechanisms; and considered how differences in the occupational composition of union members is likely to influence the intra-union mechanism and thus also the union effect on wage inequality more broadly. EVS survey data informed us that the occupational composition of female and male union members differs within and (especially) across market institution and welfare state regimes. A series of single-equation time-series cross-sectional error-correction models and seemingly unrelated regression models covering 15 countries between 1980 and 2010 provided evidence that the union effect on female wage inequality is less widespread than the union effect on male wage inequality in LMEs, the regime in which workers in professional occupations are particularly well represented among female union members; while the union effect on female wage inequality is more substantial than the union effect on male wage inequality in CMEs with conservative welfare states, the regime in which workers in traditionally lower-paid occupations are particularly well represented among female union members. Nonetheless, both female and male union effects were generally more widespread and substantial in CMEs with conservative welfare states than in either LMEs or CMEs with social democratic welfare states.

The findings in this article have several implications for the broader gender and economic inequality literature. First, the popular perception of unions as organizations dedicated to the protection of working class male “insiders” at the expense of vulnerable female “outsiders” (Rueda 2005, 2007) has become antiquated. In a number of LMEs and CMEs with social democratic welfare states, female union density is now greater than male union density and female union members now outnumber male union members; and in at least four LMEs - Canada, Ireland, the United Kingdom, and the United States - female workers in professional occupations are better represented among union members and/or more highly unionized than male workers in traditionally lower-paid occupations. Future research might examine how such changes in the gender and occupational composition of national union movements has impacted internal and external labor politics and the perception of unions among the wider citizenry.

Second, before we can determine whether declining union strength is contributing to a rise in aggregate economic inequality or a reduction in gender economic inequality, we have to first consider whether (de)unionization trends vary across different types of union workers; and whether certain types of union workers impact wage inequality more or less than others. The evidence provided here suggests that a focus on declining unionization in general conceals a disproportionate decline in male union strength and a corresponding (and radical) shift in union composition; and that the extent to which these trends matter for aggregate economic inequality and gender economic inequality depends on the market institution and welfare state regime that such changes are occurring within. Furthermore, the finding that unions reduce female and male wage inequality more when

they represent many workers in traditionally lower-paid occupations suggests that trends in the occupational composition of female and male union members can inform us of developments in the union effect on female wage inequality, male wage inequality, and gender economic inequality. While recent evidence indicates that the overall union effect on wage inequality is diminishing as a result of unions representing fewer low-skilled workers (Han and Castater 2014), future work could be done to determine whether these occupational changes are disproportionately found among women or men; and if so, what impact this has on the female and male wage distributions as well as the gender wage gap.

Third, the evidence here strongly suggests that institutional, political, and supply and demand factors do not impact the wages and wage distributions of women and men in identical ways. In particular, unemployment was found to increase female wage inequality in the short-term but male wage inequality over the long-term, international trade and immigration were found to impact the upper part of the female wage distribution but (also) the lower part of the male wage distribution, GDP per capita and left government were found to impact the female wage distribution but not the male wage distribution, and the proportion of individuals (women or men, respectively) with a tertiary education was found to decrease female wage inequality but increase male wage inequality. Such distinctive ways for factors to impact female and male wage inequality likely account for the negligible positive correlation between the (year over year) change in the like female and male wage ratios observed in Figure 1 – and implore scholars to more seriously consider gender when examining the determinants of aggregate economic inequality in the wealthy democracies.

Before concluding, it is important to note three clear shortcomings of this analysis. First, the focus here has been somewhat narrowly concentrated on one indirect way in which gender influences the union effect on wage inequality – through the vertical gender occupational segregation of union members. Yet there are other ways that gender may impact the union effect as well, such as indirectly through the horizontal gender occupational segregation of union members (e.g., female-dominated public sector unions versus male-dominated private sector unions) or directly through differences in the preferences of female and male union members even after controlling for occupation. Additional work could and should be done to determine whether such factors influence the union effect on female and male wage inequality as much or more than the vertical gender occupational segregation of union members considered here. Second, this article posits a causal relationship flowing from market institution and welfare state design to union composition to female and male wage inequality. However, the measure used to empirically assess this relationship – a simple dummy variable noting the presence or lack thereof of a particular market institution or welfare state regime – is rather crude. This measure was chosen out of practical necessity, as there is a dearth of data on the occupational composition of union members in general and female and male union members in particular. Nonetheless, the use of this measure precluded identification of any intra-regime or over-time variation in female and male union composition and thus also the union effect on female and male wage inequality – variation that recent work on the skill composition of union members suggests almost surely exists. Finally, this article has focused primarily on the gender-specific union effect on female and male wage

inequality. The other factors considered in this analysis – particularly those found to have a statistically significant effect on the female and/or male wage distributions – deserve additional attention. In general, further investigation is needed into why certain factors impact female wage inequality in one way but male wage inequality in another way (or not at all). Of particular interest to scholars of comparative political economy may be the finding that the partisan composition of government matters for the female wage distribution but not the male wage distribution. Future research could consider whether the left government effect on female wage inequality is driven by governments explicitly targeting working poor women, which policies act to compress (exacerbate) the female wage distribution but not the male wage distribution, and if this partisan effect is conditional on particular socio-economic and political institutions – including labor unions with a large and growing female presence.

CHAPTER V CONCLUSION

Empirical and Theoretical Contributions

Previous research on the determinants of economic inequality in the wealthy democracies found that differences in the size and constitution of labor unions accounted for much of the cross-national and over time variation in economic inequality. Despite numerous theoretical and empirical reasons to suppose the contrary, most of this research assumed the union effect on economic inequality to be independent of the particular socio-economic and political environment unions were situated within and the types of workers actually unionized. The broad purpose of this dissertation has been to push back against these assumptions and examine whether the union effect on economic inequality is conditioned by certain factors external and internal to unions. The evidence presented suggests that unions are able to impact economic inequality the most when unionization is relatively high or relatively moderate and accompanied by a left leaning government (chapter 2);¹¹¹ a country is minimally exposed to the global economy and unions primarily represent workers in occupations most vulnerable to market competition (chapter 3); and

¹¹¹ The analysis in Chapter 2 focused on how unions impact income inequality through the political mechanism, or by conditioning the partisan effect on income inequality. However, the symmetry of interaction (Berry et al. 2012) informs us that if unions condition the partisan effect on income inequality then this necessarily implies that partisan governments condition the union effect on income inequality as well (through some combination of the employer, intra-union, and insider mechanisms). This may be done, for example, through government intervention in the collective bargaining process (e.g., see Thelen 1993 and Jacobs and Myers 2014) or through the formation and completion of social pacts (e.g., see Baccaro and Lim 2007 and Avdagic et al. 2011).

unions represent many workers in traditionally lower-paid occupations but few workers in professional occupations (chapter 4).

Although nearly all scholars of comparative political economy acknowledge that unions matter for economic inequality, few recognize the multitude of ways that unions come to matter. For example, scholars in the power resource theory tradition emphasize how unions allow workers to extract more generous compensation from employers and help in the election of left leaning governments but neglect internal union conflicts over compensation and negative externalities arising from collective bargaining; while those in the varieties of capitalism tradition emphasize distributional conflicts between private and public sector union members, blue and white collar union members, or less and more skilled union members, but neglect the important role unions play in furthering the interests of all of these types of workers relative to their employers, supporting class-based political parties, and generating positive outcomes for many non-union members. A major aim of this dissertation has been to recognize and delve more deeply into the different ways that unions impact economic inequality. To further this goal, I identified the four primary processes by which unions impact economic inequality, which I labeled the employer, intra-union, insider, and political mechanisms. Unions influence the wages and benefits provided by union employers (the “employer mechanism”); the wages and benefits provided to different types of union workers (the “intra-union mechanism”); the employment opportunities, wages, and benefits offered to different types of non-union members (the “insider mechanism”); and the types of policies governments implement (the “political mechanism”). It needs to be emphasized that we cannot understand the totality

of the union effect on economic inequality - or on any other socio-economic outcome - without considering each of these four mechanisms, the many and varied ways that they are expressed, and how they interact within particular contexts.

Omissions and Suggestions

In an effort to achieve analytical precision and theoretical clarity, every research project must necessarily omit a number of factors relevant to the subject matter under consideration; and this dissertation is no exception. In this section, I will discuss two of the most important – and interesting – omissions from the previous chapters and provide suggestions for how to incorporate these factors into future research on labor unions and economic inequality. First, the focus throughout this dissertation has been on different aspects of unions: the breadth of their membership, their preferences, their internal conflicts, the types of workers they represent, and so on. Little attention, however, has been given to other interest groups operating within the same economic and political system and how unions impact, and are impacted by, these interest groups. One particularly notable omission is employer organizations. As mentioned several times above, one of the primary measures of union strength in the economic inequality literature is the level of wage bargaining, or whether unions negotiate with employers primarily at the firm, sectoral, or national level. It is assumed that union organizations that bargain at a “higher” level – i.e., negotiate on behalf of a larger share of the workforce – are stronger than those that do not, as the “encompassing” nature of these organizations implies a relatively cohesive and coherent workers’ movement (e.g., see Craypo 1986). Yet such an encompassing union organization would be incapable of negotiating on behalf of so many

workers if a similarly encompassing employers' organization was not present. Thus, at least some of the outcomes attributed to unions in this dissertation must also, necessarily, be the result of employers' organizations as well. Furthermore, evidence that employers' organizations initially formed in response to the rise in working class organizations (Martin and Swank 2011), that dysfunction within employers' organizations ultimately weakens unions (Thelen and van Wijnbergen 2003), and that the revealed preferences of employer organizations are at least partly the result of union strength (Thelen 2001; Paster 2013), suggest a symbiotic relationship between employers' organizations and unions that deserves much greater attention than that which was received here.

Given the apparent interdependent nature of unions and employer organizations, it is probably inappropriate to speak of independent "union effects" and "employer organization effects" on economic inequality (as is done, for example, by Martin and Swank 2012). On the other hand, conflict between unions and employers' organizations over employment, compensation, and public policy recommend against treating these two groups as analytical equals – as a measure such as the level of wage bargaining implicitly does. Rather, one might instead consider the "structure" of wage bargaining institutions – or how union/employer organization relations are constituted – to determine whether particular configurations exist that provide a relative advantage or benefit to one or the other of these (broadly conceived) economic actors. For example, it may be the case that a highly centralized employer organization facilitates the provision of generous social insurance policies when accompanied by an equally centralized union organization but not otherwise; or institutionally fragmented unions are able to achieve substantial wage

concessions from their employers when employer organizations are equally fragmented, but not when employer organizations are highly centralized and thus able to formulate a collective response to union demands. If the configuration of union-employer relations does matter for socio-economic and political outcomes, then we would still be able to speak of union effects and employer organization effects, but not without considering the *relative strength* of both unions and employers' organizations.

Second, following most of the literature on the causes and consequences of economic inequality, each of the core chapters in this dissertation focused exclusively on one of two types of economic inequality; income inequality or wage inequality. However, this has meant that other types of economic inequality have been neglected; most notably wealth inequality (e.g., see Jantti et al. 2013; Sierminska et al. 2013; Fredriksen 2014) and conceptions of economic inequality that incorporate consumption and/or unpaid non-market work (e.g., see Folbre et al. 2013). While income and wage inequality are highly and positively correlated across the wealthy democracies (Hoeller et al. 2014), this is not necessarily the case with income and wage inequality on the one hand and these additional types of economic inequality on the other. For example, Fredriksen (2014) finds that Sweden – often the most equal country in terms of income and wage inequality – has, along with the United States, the highest level of wealth inequality among the 11 wealthy democracies she examines; and Folbre et al. (2013) find that if we consider the value of unpaid work, household market income inequality rises as women enter the paid workforce, suggesting that countries with relatively low female labor force participation (e.g., CMEs with conservative welfare states) have less economic inequality relative to

countries with more female labor force participation (e.g., LMEs and CMEs with social democratic welfare states) than typically acknowledged. Such evidence informs us that theories used to explain variation in wage and income inequality are probably not as helpful in explaining variation in other types of economic inequality; and, therefore, much theorizing still needs to be done on how unions influence economic inequality more broadly understood. In terms of wealth inequality, we should consider whether unions, by successfully improving their members' working conditions and the generosity of publically provided social insurance policies, sometimes disincentivize the accumulation of private wealth (Esping-Andersen 2009). In terms of incorporating consumption and/or unpaid non-market work into our analyses of economic inequality, we need to more seriously consider factors at the household (rather than just the individual) level. This is particularly the case in models of income inequality, a phenomenon that tends to be measured at the household level. Two of the more obvious factors that deserve consideration are the proportion of households with multiple wage earners and the number of dependents, on average, living within each household (Esping-Andersen 2007, 2009).¹¹² Including such factors into our analysis will help us better understand how economic inequality is impacted by the decline in marriage, lower birthrates, children remaining in their parents' household well into adulthood, and middle-aged adults assuming caring responsibilities for their elderly parents (Adserà 2004; Giuliano 2007; Isengard and Szydlik 2012).

¹¹² While most of the comparative politics literature on the determinants of income inequality neglects such household level factors, this is not universally the case. For example, Bradley et al. (2003) model "single-mother families", or the percentage of households with children under 18 that have a female head of household – and find it to be significantly and positively associated with pre-tax and pre-transfer (household) income inequality.

Avenues for Future Research

In the conclusion of each of the three core chapters of the dissertation I proposed several potentially promising avenues for future research. Many of these proposals focused on unions as a cause; fewer focused on unions as an effect. It is the latter of which I will expand further on here.

Given widespread scholarly agreement that unions matter for a host of socio-economic and political outcomes, it is surprising how little attention has been given in the comparative political economy literature to understanding variation in the macro and micro level characteristics of unions. While a number of scholars have sought to explain cross-national and over time variation in aggregate unionization and wage bargaining centralization (e.g., see Western 1997; Lee 2005; Dreher and Gaston 2007; and Ahlquist 2010), much less work has been done on explaining variation in other important union characteristics, such as union composition and union preferences.¹¹³

As has been discussed throughout this dissertation, union composition has changed substantially in the wealthy democracies over the last several decades, as unions increasingly represent workers in the public sector, the service sector, higher-earning occupations, and women. An intriguing research agenda would be to explore the factors driving these changes in union composition. For example, we might ask whether those socio-economic factors most frequently cited as contributing to aggregate union decline – such as economic globalization and deindustrialization – may more properly be said to contribute to private sector union decline; while a different set of factors – such as those

¹¹³ Two notable and recent exceptions are Ahlquist and Levi (2013) and Ahlquist et al. (2014).

relating to public opinion, partisanship, and political globalization – are more relevant in explaining public sector union decline, persistence, or even growth. We could also ask whether certain cultural factors are diminishing the attractiveness of unions for workers in lower earning occupations; or whether unions are more attractive to women than men because of particular fringe benefits that unions provide.

If we conceptualize unions as unitary actors and hold much of their environment constant, such changes in union composition are almost certain to have consequences for the preferences and behavior of unions. Yet unions, of course, are made up of individual members and are situated in very different environmental contexts both across countries and over time. Do different environmental conditions - such as those relating to unionization, collective bargaining centralization, the public sector, immigration from the Global South, and economic inequality – affect the attitudes of particular types of union members in different ways? If so, then it may well tell us something about what is happening to worker solidarity across the wealthy democracies, help explain the shifting political landscapes we are witnessing across much of Europe, and provide us with some firmer micro-foundations for our theories on the (conditional) effect of unions on a number of macro-level outcomes.

Real World Implications and Concluding Remarks

The introduction of this dissertation referenced some of the large body of literature establishing a causal link between higher levels of economic inequality and outcomes widely perceived of as negative in the contemporary world. The findings reported above suggest that unions are becoming less and less able – and perhaps less and less willing - to

mitigate those undesirable outcomes associated with economic inequality. Unionization is declining across nearly all wealthy democracies, diminishing the political influence of unions; influence that has traditionally been used to elect politicians sympathetic to a redistributive agenda or to pressure politicians unsympathetic to that agenda to implement it anyway or face the electoral consequences. Economic globalization is expanding unabated, strengthening the bargaining power of employers relative to union and non-union workers alike, particularly those in low to moderate paying occupations exposed to international competition – some of the individuals most in need of the wage and non-wage benefits that union membership has historically provided. Unionization is declining most rapidly among private sector workers and those in low to moderate paying occupations – the individuals who have in the past most benefited from union membership and thus are substantially responsible for the long-standing association between union strength and economic inequality.

Yet while union strength is diminishing and unions ability and/or willingness to reduce economic inequality is waning, that traditional redistributive union agenda appears to be gaining steam – apparently and ironically because of the rise in economic inequality that a weakening union movement has helped to bring about. There is evidence that as the wealthy gain relative to the working and middle classes, the latter increasingly join with the poor in a political coalition in favor of government action to reduce economic inequalities (Lupu and Pontusson 2011); and that in response, left parties often engage in such government action (Pontusson and Rueda 2010). Furthermore, growing movements for higher minimum wages across the United States (substantially organized by a flagging

union movement), the introduction of a minimum wage in Germany by a center-right government, an increase in the minimum wage in the United Kingdom by a center-right government, and the electoral success of formerly peripheral populist parties throughout Europe suggest that there is growing recognition of, and substantial dissatisfaction with, rising economic inequality and a widespread desire to counteract it. Whether such movements can be sustained or will be enough to negate or overwhelm the growing political power of domestic and international capital - and the deregulation, tax reforms, and public spending reductions that it often desires - remains to be seen. Nonetheless, if economic inequality and its concomitant dissatisfaction continue to grow, it may, in a further irony, ultimately increase demand for the formation or strengthening of organizations dedicated to resisting it – something, it would seem, like labor unions.

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APPENDICES

APPENDIX

Welfare Regime is measured with two dummy variables, one for conservative regimes and the other for liberal regimes, with the baseline category represented by the social democratic regimes. The conservative regimes are Austria, Belgium, France, and Italy; the liberal regimes are Canada and the United States; and the social democratic regimes are Denmark, Norway, and Sweden. These 9 countries were chosen and coded based on a comprehensive review of the welfare state literature provided by Arts and Gelissen (2002).

The Level of Wage Bargaining is measured with an ordered categorical variable, where higher values indicate a more centralized wage bargaining system. The variable is coded as follows: 1 = bargaining predominantly takes place at the local or company level; 2 = bargaining is intermediate or alternating between sector and company bargaining; 3 = bargaining predominantly takes place at the sector or industry level; 4 = bargaining is intermediate or alternating between central and industry bargaining; and 5 = bargaining predominantly takes place at central or the cross-industry level and there are centrally determined binding norms or ceilings to be respected by agreements negotiated at lower levels. Data is from the Database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (ICTWSS), 1960-2011.

National wealth is measured as GDP Per Capita adjusted for purchasing power parity (PPP) and is in 2005 constant U.S. dollars. The data is from the Penn World Table (v.7.1).

Unemployment is measured as the percentage of the civilian labor force that is unemployed. Data is from the Comparative Politics Dataset I (Armingeon et al. 2013).

Service Sector Employment is measured as the proportion of the civilian workforce that is employed in the service sector (as opposed to industry or agriculture). Data is from the Comparative Politics Dataset I (Armingeon et al. 2013).

Social Spending is measured as social assistance grants and welfare benefits paid by the general government as a percentage of GDP. Data is from the Comparative Politics Dataset I (Armingeon et al. 2013).

Female Labor Force Participation is measured as the proportion of the total labor force that is female. Data is from the United Nations Conference on Trade and Development (UNCTAD).

International trade is measured as exports plus imports as a percentage of GDP. Data is from the World Bank's World Development Indicators (WDI).

Capital Openness is measured with the Chinn-Ito index, which is based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported by the International Monetary Fund's *Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER)*. Higher values signify greater capital account openness. Data is from Chinn and Ito (2008).

Foreign Direct Investment (FDI) is measured as outward FDI flows as a percentage of GDP. Data is from the United Nations Conference on Trade and Development (UNCTAD).

APPENDIX A: DATA

National Wealth (GDP per capita): On the one hand, greater national wealth may reduce wage inequality by slowing population growth (and thus also the supply of labor) and generating tax revenue necessary to sustain costly egalitarian policies (Nielson and Alderson 1995; Martin and Swank 2012). On the other hand, economic growth in the wealthy democracies has become increasingly associated with investment in, and production of, technologies that require greater skills to utilize and that make previous jobs requiring less skills redundant (Koske et al. 2014). Since the aggregate result of these two contrary rationales is unknown, *there is no strong expectation regarding the impact that a rise in national wealth (GDP per capita) will have on wage inequality.* National wealth is measured as GDP Per Capita adjusted for purchasing power parity (PPP) and is in 2005 constant U.S. dollars (in thousands). Data is from the Penn World Table (version 7.1).

Private service sector employment: The private service sector is frequently characterized as containing jobs that are bifurcated into those that require high skills and provide generous compensation (e.g., physicians and lawyers) and those that require little skill and provide meager compensation (e.g., retail store clerks and dishwashers) (Alderson and Nielson 2002). Given that this implies increased demand for workers both at the high and low end of the wage distribution, *there is no strong expectation regarding the impact that a rise in private service sector employment will have on wage inequality.* Private service sector employment is measured as the proportion of the civilian workforce that is employed in the service sector (as opposed to industry or agriculture) minus the proportion of total employment in the public sector. The variable is constructed by the author from data in the Comparative Politics Dataset I (Armingeon et al. 2013) and the Organization for Economic Cooperation and Development (OECD), Economic Outlook.

Public Sector Employment: The relatively compressed nature of the public sector wage distribution relative to the private sector wage distribution implies that an “intra-public sector mechanism” may be present (Pontusson et al. 2002). However, the existence of a wage premium for at least some public sector workers and/or public sector spillover effects imply a public sector insider mechanism as well. Previous work suggests that the aggregate effect of these mechanisms is to reduce wage inequality (Rueda 2008). Therefore, *a rise in public sector employment is anticipated to decrease wage inequality.* Public sector employment is measured as public employment as a share of total employment. Data is from the Organization for Economic Cooperation and Development (OECD), Economic Outlook.

Unemployment: The highly substitutable nature of less skilled workers makes them more vulnerable to unemployment than highly skilled workers (Hall and Franzese 1998). A surplus supply of idle workers with less skills should reduce the bargaining power of these workers and thus increase wage inequality (Korpi 2002). However, if the unemployed consist of a disproportionate number of less skilled workers, then wage earners (i.e., individuals in employment) must consist of a disproportionate number of more skilled workers, which suggests less wage inequality. Since the aggregate result of these two

contrary rationales cannot be determined a priori, *there is no strong expectation regarding the impact that a rise in unemployment will have on wage inequality*. Unemployment is measured as the percentage of the civilian labor force that is unemployed. Data is from the Comparative Politics Dataset I (Armingeon et al. 2013).

Female Labor Force Participation: All wealthy democracies exhibit a gap between the earnings of men (who are paid more) and women (who are paid less). There are numerous explanations for this gap, including gender discrimination, differing skill levels, gender occupational segregation, and hours worked (Blau and Kahn 1992; Pontusson et al. 2002; Magnussen 2009; Iversen and Rosenbluth 2011). While an increase in the supply of women workers might reduce gender discrimination in the long-term, in the short- to medium-term it implies greater competition for jobs requiring less skills and/or that are dominated by women, as well as greater variation in hours worked. Therefore, *a rise in female labor force participation is anticipated to increase wage inequality*. Female labor force participation is measured as the proportion of the total labor force that is female. Data is from the United Nations Conference on Trade and Development (UNCTAD).

Education: As the supply of more educated labor grows, the wage premium attached to that education should decline (Alderson and Doran 2013). Since earnings and education tend to be positively correlated, *a rise in the proportion of individuals with secondary education is anticipated to decrease wage inequality*. Education is measured as the proportion of individuals fifteen years of age and older who completed their secondary education. Linear interpolation is used to impute data for missing years. Data is from Barro and Lee (2013).

Immigration: Growth in immigration in wealthy democracies implies both an increase in the supply of less skilled labor (e.g., certain types of manual laborers and customer service representatives) and higher skilled labor (e.g., scientists and information technology professionals) (Card 2001; Mahroum 2001; Hainmueller and Hiscox 2007). Since the aggregate result of these two contrary forces is unknown, *there is no strong expectation regarding the impact that a rise in immigration will have on female and male wage inequality*. Immigration is measured as proportion of the population that is foreign born. Linear interpolation is used to impute data for missing years. Data is from the World Bank's World Development Indicators (WDI).

Left government: The expectation that government partisanship should matter for wage inequality arises somewhat tautologically out of the traditional political party typology, whereby left parties are defined as those most strongly favoring government action to reduce economic inequalities (Lijphart 1997). Therefore, *an increase in left party participation in government is anticipated to decrease wage inequality*. Left government is measured as left party legislative seats as a proportion of all legislative seats. Data is from the Comparative Political Parties Dataset: Electoral, Legislative, and Government Strength of Political Parties by Ideological Group in 21 Capitalist Democracies, 1950-2011 (Swank 2013).

APPENDIX B: FULL RESULTS (TABLE 2)

Model	1 (Full)	2 (Full)	3 (Reduced)	4 (Reduced)	5 (Reduced)	6 (Reduced)
Years	1980- 1994	1995- 2010	1980- 2010	1980- 2010	1980- 2010	1980- 2010
Countries	Groups 1&2†	Groups 1&2†	Groups 1&2†	Groups 1&2†	Groups 1&2†	Groups 1&2†
Dependent Variable	Δ 90/10 Wage Ratio	Δ 90/10 Wage Ratio	Δ 90/10 Wage Ratio	Δ 90/50 Wage Ratio	Δ 50/10 Wage Ratio	Δ "skew"
90/10 Wage Ratio (t-1)	-0.139*** (0.030)	-0.060* (0.030)	-0.027** (0.010)	-0.100*** (0.029)	-0.068*** (0.019)	-0.268** (0.096)
Δ Union Density (t)	0.005 (0.006)	-0.009 (0.010)	-0.008 (0.006)	-0.004 (0.003)	-0.000 (0.001)	-0.003* (0.002)
Union Density (t-1)	-0.004** (0.001)	0.000 (0.002)	-0.004*** (0.001)	-0.006*** (0.001)	-0.002*** (0.000)	-0.001 (0.001)
Δ Level of Wage Bargaining (t)	0.007 (0.001)	-0.001 (0.007)				
Level of Wage Bargaining (t-1)	-0.007 (0.008)	0.008 (0.007)				
Δ EG Index	0.001 (0.001)	-0.002 (0.003)	0.000 (0.002)	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)
EG Index (t-1)	0.002 (0.001)	-0.004** (0.001)	-0.002** (0.001)	-0.001 (0.000)	-0.002*** (0.000)	0.002*** (0.000)
Union Density X EG Index (t-1)			0.000** (0.000)	0.000* (0.000)	0.000*** (0.000)	-0.000** (0.000)
Δ Capital Openness (t)	-0.009 (0.029)	-0.003 (0.038)	-0.009 (0.040)	0.006 (0.016)	-0.005 (0.014)	0.001 (0.002)
Capital Openness (t-1)	0.001 (0.008)	0.009 (0.014)	-0.030*** (0.005)	-0.003 (0.005)	-0.008* (0.004)	-0.002 (0.003)
Union Density X Capital Openness (t-1)			0.000*** (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Δ GDP Per Capita (in thousands) (t)	0.003 (0.018)	-0.003 (0.008)	-0.002 (0.006)			
GDP Per Capita (in thousands) (t-1)	-0.013** (0.004)	0.009* (0.004)				

APPENDIX B. Continued.

Model	1 (Full)	2 (Full)	3 (Reduced)	4 (Reduced)	5 (Reduced)	6 (Reduced)
Years	1980- 1994	1995- 2010	1980- 2010	1980- 2010	1980- 2010	1980- 2010
Countries	Groups 1&2†	Groups 1&2†	Groups 1&2†	Groups 1&2†	Groups 1&2†	Groups 1&2†
Dependent Variable	Δ 90/10 Wage Ratio	Δ 90/10 Wage Ratio	Δ 90/10 Wage Ratio	Δ 90/50 Wage Ratio	Δ 50/10 Wage Ratio	Δ "skew"
Δ Private Service Sector Employment (t)	-0.004 (0.009)	-0.002*** (0.000)	-0.002** (0.001)	-0.001 (0.001)		
Private Service Sector Employment (t-1)	-0.000 (0.006)	-0.002* (0.001)	-0.001** (0.000)	-0.001** (0.000)		
Δ Public Sector Employment (t)	0.009 (0.009)	-0.032** (0.012)		-0.003 (0.004)		
Public Sector Employment (t-1)	0.001 (0.003)	0.002 (0.003)		-0.001* (0.001)		
Δ Unemployment (t)	-0.013* (0.017)	0.005 (0.009)		0.005* (0.002)	-0.004** (0.002)	0.004** (0.002)
Unemployment (t-1)	-0.003 (0.002)	0.005 (0.005)				
Δ Female Labor Force Participation (t)	-0.028 (0.022)	0.037* (0.017)	-0.010 (0.013)	-0.012 (0.007)	0.006 (0.004)	-0.013** (0.005)
Female Labor Force Participation (t-1)	0.005 (0.005)	0.011*** (0.002)	0.007*** (0.002)	0.003*** (0.001)	0.003*** (0.000)	0.000 (0.001)
Δ Education (t)	-0.004 (0.006)	0.045*** (0.005)	0.018 (0.010)	0.000 (0.003)	0.005** (0.002)	-0.001 (0.002)
Education (t-1)	-0.000 (0.001)	-0.003*** (0.001)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	0.001*** (0.000)
Δ Immigration (t)	0.296*** (0.053)	0.146** (0.061)	0.065** (0.021)	-0.016 (0.018)	0.041*** (0.011)	-0.063*** (0.015)
Immigration (t-1)	0.006** (0.002)	0.010*** (0.002)	0.005*** (0.001)	0.002** (0.001)	0.003*** (0.001)	-0.003*** (0.001)
Δ Left Govt. (t)	-0.001 (0.002)	-0.001 (0.001)	-0.001 (0.001)		-0.000 (0.000)	-0.000 (0.000)
Left Govt. (t-1)	-0.004*** (0.001)	-0.001*** (0.000)	-0.001*** (0.000)		-0.001*** (0.000)	0.001*** (0.000)
Union Density X Union Density (t-1)				0.000*** (0.000)		0.000* (0.000)
Constant	0.803***	0.275***	0.131*	0.274**	0.145**	0.196*
N	106	128	234	234	234	234
R ²	0.361	0.248	0.133	0.120	0.163	0.217

APPENDIX C: FULL RESULTS (TABLE 3)

Model	7 (Reduced)	8 (Reduced)	9 (Reduced)	10 (Reduced)
Years	1980-2010	1980-2010	1980-2010	1980-2010
Countries	Groups 1,2,&3	Groups 1,2,&3	Groups 1,2,&3	Groups 1,2,&3
Dependent Variable	Δ 90/10 Wage Ratio	Δ 90/50 Wage Ratio	Δ 50/10 Wage Ratio	Δ "skew"
90/10 Wage Ratio (t-1)	-0.040** (0.014)	-0.042*** (0.009)	-0.079*** (0.025)	-0.165*** (0.048)
Δ Union Density (t)	0.003 (0.005)	-0.002 (0.001)	0.002 (0.003)	-0.002 (0.002)
Union Density (t-1)	-0.005*** (0.001)	-0.004*** (0.001)	-0.002*** (0.001)	-0.001 (0.001)
Δ EG Index	0.002 (0.002)	0.000 (0.001)	0.001 (0.001)	-0.000 (0.001)
EG Index (t-1)	-0.001 (0.001)	0.000 (0.000)	-0.001 (0.001)	0.001 (0.001)
Union Density X EG Index (t-1)	0.000*** (0.000)	0.000 (0.000)	0.000*** (0.000)	-0.000** (0.000)
Δ Capital Openness (t)	-0.001 (0.039)	-0.002 (0.014)	0.002 (0.014)	-0.005 (0.006)
Capital Openness (t-1)	-0.018 (0.020)	-0.012** (0.004)	0.001 (0.011)	-0.013 (0.008)
Union Density X Capital Openness (t-1)	0.000 (0.000)	0.000*** (0.000)	-0.000 (0.000)	0.000 (0.000)
Δ GDP Per Capita (in thousands) (t)	-0.002 (0.004)			
Δ Unemployment (t)		0.003** (0.002)	-0.002 (0.002)	0.003** (0.001)

APPENDIX C. Continued.

Model	7 (Reduced)	8 (Reduced)	9 (Reduced)	10 (Reduced)
Years	1980-2010	1980-2010	1980-2010	1980-2010
Countries	Groups 1,2,&3	Groups 1,2,&3	Groups 1,2,&3	Groups 1,2,&3
Dependent Variable	Δ 90/10 Wage Ratio	Δ 90/50 Wage Ratio	Δ 50/10 Wage Ratio	Δ "skew"
Δ Female Labor Force Participation (t)	0.026 (0.022)	-0.004 (0.007)	0.018* (0.008)	-0.015** (0.005)
Female Labor Force Participation (t-1)	0.007*** (0.002)	-0.000 (0.001)	0.003** (0.001)	-0.000 (0.001)
Δ Education (t)	0.004 (0.007)	-0.004 (0.003)	0.003* (0.001)	-0.003 (0.003)
Education (t-1)	-0.001 (0.001)	-0.000* (0.000)	-0.001 (0.000)	0.000 (0.000)
Δ Immigration (t)	-0.022 (0.074)	0.007 (0.007)	-0.013 (0.042)	0.011 (0.026)
Immigration (t-1)	0.003 (0.002)	0.000 (0.000)	0.002* (0.001)	-0.001 (0.001)
Δ Left Govt. (t)	-0.001 (0.001)		-0.000 (0.001)	-0.000 (0.000)
Left Govt. (t-1)	-0.001** (0.000)		-0.001** (0.000)	0.000 (0.000)
Union Density X Union Density (t-1)		0.000*** (0.000)		0.000** (0.000)
Constant	0.025	0.182***	0.113**	0.210**
N	294	294	294	294
R ²	0.078	0.065	0.120	0.135

APPENDIX D: FEMALE AND MALE WAGE INEQUALITY

Country (Years)	90/10 Ratio (Women)		90/50 Ratio (Women)		50/10 Ratio (Women)	
	Mean	% Change	Mean	% Change	Mean	% Change
Australia (1975-2010)	2.61	22.30	1.61	21.00	1.62	1.13
Austria (2004-2010)	3.23	3.82	1.83	2.94	1.76	1.26
Belgium (1999-2010)	2.25	2.20	1.63	3.24	1.38	-1.01
Canada (1997-2010)	3.54	5.76	1.86	5.38	1.90	0.32
Denmark (1996-2010)	2.37	15.67	1.54	3.62	1.54	11.64
Finland (1977-2010)	2.10	1.45	1.54	8.05	1.36	-6.15
France (1995-2010)	2.59	0.12	1.82	4.41	1.43	-4.09
Germany (1992-2010)	2.91	4.29	1.64	-0.41	1.77	4.72
Ireland (1994-2010)	3.38	-2.18	1.94	2.47	1.74	-4.54
Italy (1986-2010)	2.16	4.29	1.42	6.99	1.52	-2.50
Japan (1975-2010)	2.29	-2.59	1.59	-0.74	1.44	-1.92
Netherlands (2002-2010)	2.76	2.10	1.76	2.12	1.57	0.00
New Zealand (1984- 2010)	2.35	24.52	1.55	18.30	1.52	5.24

APPENDIX D. Continued.

Country (Years)	90/10 Ratio (Women)		90/50 Ratio (Women)		50/10 Ratio (Women)	
	Mean	% Change	Mean	% Change	Mean	% Change
Norway (1997-2010)	1.85	17.41	1.31	4.89	1.41	11.93
Sweden (1975-2010)	1.84	6.38	1.41	9.40	1.30	-2.72
Switzerland (1996-2010)	2.31	18.57	1.64	14.80	1.41	3.33
United Kingdom (1970-2010)	2.90	15.27	1.77	8.99	1.63	5.75
United States (1973-2010)	3.69	50.92	1.99	29.23	1.85	16.79
Average	2.62	10.57	1.66	8.04	1.56	2.18
Standard Deviation	0.56	13.18	0.19	7.99	0.18	6.25

Country (Years)	90/10 Ratio (Men)		90/50 Ratio (Men)		50/10 Ratio (Men)	
	Mean	% Change	Mean	% Change	Mean	% Change
Australia (1975-2010)	2.97	49.70	1.79	24.00	1.66	20.70
Austria (2004-2010)	3.10	6.57	1.97	1.54	1.57	4.94

APPENDIX D. Continued.

Country (Years)	90/10 Ratio (Men)		90/50 Ratio (Men)		50/10 Ratio (Men)	
	Mean	% Change	Mean	% Change	Mean	% Change
Belgium (1999-2010)	2.36	1.66	1.74	1.67	1.36	0.00
Canada (1997-2010)	3.52	3.50	1.78	9.78	1.98	-5.74
Denmark (1996-2010)	2.63	11.89	1.70	1.93	1.55	9.74
Finland (1977-2010)	2.53	4.19	1.71	1.72	1.48	2.40
France (1995-2010)	3.23	-6.18	2.09	-2.60	1.54	-3.71
Germany (1992-2010)	3.02	-1.25	1.78	4.32	1.70	-5.31
Ireland (1994-2010)	3.87	-6.57	2.01	2.60	1.92	-8.98
Italy (1986-2010)	2.34	6.05	1.62	4.48	1.45	1.50
Japan (1975-2010)	2.75	11.50	1.71	10.97	1.61	0.44
Netherlands (2002-2010)	2.84	3.72	1.80	1.31	1.57	2.39
New Zealand (1984- 2010)	2.70	35.68	1.71	26.25	1.57	7.48
Norway (1997-2010)	2.29	21.24	1.52	6.15	1.50	14.17
Sweden (1975-2010)	2.21	12.39	1.63	5.14	1.35	6.88
Switzerland (1996-2010)	2.50	17.54	1.77	15.97	1.41	1.28
United Kingdom (1970-2010)	3.16	36.44	1.79	26.31	1.76	7.97
United States (1973-2010)	4.38	51.40	2.08	25.67	2.10	20.45
Average	2.91	14.42	1.79	9.29	1.62	4.26
Standard Deviation	0.58	17.77	0.16	9.89	0.21	8.33

APPENDIX E: DATA

Female union density is measured as union membership as a proportion of all female wage and salary earners in employment. Linear interpolation is used to impute data for missing years. Data is from Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (ICTWSS), 1960-2012, version 4.0.

Male union density is measured as union membership as a proportion of all male wage and salary earners in employment. Linear interpolation is used to impute data for missing years. Data is from Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (ICTWSS), 1960-2012, version 4.0.

The Level of Wage Bargaining: As with union density, the level of wage bargaining (the primary level at which unions negotiate over compensation with employers, ranging from the firm level to the national level) is an indicator of union strength that is often found to be negatively associated with wage inequality in wealthy democracies (e.g., see Wallerstein 1999; Pontusson et al. 2002). Therefore, *a rise in the level of wage bargaining is anticipated to decrease female and male wage inequality*. The level of wage bargaining is measured with an ordered categorical variable and is coded as follows: 1 = bargaining predominantly takes place at the local or company level; 2 = bargaining is intermediate or alternating between company and industry level; 3 = bargaining predominantly takes place at the industry level; 4 = bargaining is intermediate or alternating between industry and national level; and 5 = bargaining predominantly takes place at the national level and there are centrally determined binding norms or ceilings to be respected by agreements negotiated at lower levels. Data is from Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (ICTWSS), 1960-2012, version 4.0.

International Trade: As a wealthy (“capital abundant”) country becomes more exposed to the world economy, workers and owners in the capital intensive sector make gains (through exports) while workers and owners in the labor intensive sector experience losses (through imports) (Stolper and Samuelson 1941; Oatley 2011). Since workers in the capital intensive sector tend to be more skilled than workers in the labor intensive sector, such an argument implies that demand (and thus wages) will rise for the former and fall for the latter (Boix and Adserà 2000; Thelen and Wijnbergen 2003). Given that men are likelier to be in the private manufacturing sector, which produces tangible goods for exports and must compete directly with imports, *a rise international trade is anticipated to increase male wage inequality more than female wage inequality*. International trade is measured as imports plus exports as a percentage of GDP. Data is from the World Bank’s World Development Indicators (WDI).

National Wealth (GDP per capita): One the one hand, greater national wealth may reduce wage inequality by slowing population growth (and thus also the supply of labor) and generating tax revenue necessary to sustain costly egalitarian policies (Nielson and Alderson 1995; Martin and Swank 2012). On the other hand, economic growth in the

wealthy democracies has become increasingly associated with investment in, and production of, technologies that require greater skills to utilize and that make previous jobs requiring less skills redundant (Koske et al. 2014). Since the aggregate result of these two contrary rationales is unknown, *there is no strong expectation regarding the impact that a rise in national wealth will have on female and male wage inequality*. National wealth is measured as GDP Per Capita adjusted for purchasing power parity (PPP) and is in 2005 constant U.S. dollars (in thousands). Data is from the Penn World Table (version 7.1).

Service Sector Employment: A larger share of jobs in the service sector implies a smaller share of jobs in the (male-dominated) manufacturing sector. If men (that would have been) formerly employed in medium-skill manufacturing jobs disproportionately seek out low-skill manual labor and service sector jobs, then this will increase the supply of labor at the low end of the wage distribution. In such a condition, *a rise in service sector employment is anticipated to increase female and male wage inequality*. Service Sector Employment is measured as the proportion of the civilian workforce that is employed in the service sector (as opposed to industry or agriculture). Data is from the Comparative Politics Dataset I (Armingeon et al. 2013).

Unemployment: The highly substitutable nature of less skilled workers makes them more vulnerable to unemployment than highly skilled workers (Hall and Franzese 1998). A surplus supply of idle workers with less skills should reduce the bargaining power of these workers and thus increase wage inequality (Korpi 2002). However, if the unemployed consist of a disproportionate number of less skilled workers, then wage earners (i.e., individuals in employment) must consist of a disproportionate number of more skilled workers. Since the aggregate result of these two contrary rationales is unknown, *there is no strong expectation regarding the impact that a rise in unemployment will have on female and male wage inequality*. Due to the existence of substantial gender occupational segregation, a rise in aggregate unemployment may conceal a disproportionate rise in female or male unemployment. Unemployment is therefore measured as the proportion of the female labor force that is unemployed in the models of female wage inequality and as the proportion of the male labor force that is unemployed in the models of male wage inequality. Data is from the OECD, Short-term Labour Market Statistics.

Female Labor Force Participation: In the shorter-term, a rise in female labor force participation implies greater competition for low-skilled service sector jobs (Svensson 1995). Over the longer-term, however, female labor force participation increasingly translates into experienced and skilled female workers, as well as more liberal gender norms (Pontusson et al. 2002). Therefore, *a rise in female labor force participation is anticipated to increase female and male wage inequality in the short-term and decrease female and male wage inequality in the long-term*. Female Labor Force Participation is measured as the proportion of the total labor force that is female. Data is from the United Nations Conference on Trade and Development (UNCTAD).

Education: Skill-biased technological change and shifts in consumer preferences have increased the demand for, and thus also the wages of, more educated workers. Since earnings and education tend to be positively correlated, this implies a rise in wage inequality. However, as the supply of more educated labor grows, the wage premium attached to that education should decline (Autor et al. 2008; Alderson and Doran 2013). Therefore, *a rise in the proportion of individuals with a tertiary education is anticipated to decrease female and male wage inequality.* Since aggregate data may conceal substantial cross-national and particularly over-time variation in the gender profile of those with a higher education, education is measured as the proportion of the female population (over the age of 15) with a tertiary education in the models of female wage inequality and as the proportion of the male population (over the age of 15) with a tertiary education in the models of male wage inequality. Linear interpolation is used to impute data for missing years. Data is from Barro and Lee (2013).

Immigration: Growth in immigration in wealthy democracies implies both an increase in the supply of less skilled labor (e.g., certain types of manual laborers and customer service representatives) and higher skilled labor (e.g., scientists and information technology professionals) (Card 2001; Mahroum 2001; Hainmueller and Hiscox 2007). Since the aggregate result of these two contrary forces is unknown, *there is no strong expectation regarding the impact that a rise in immigration will have on female and male wage inequality.* Immigration is measured as proportion of the population that is foreign born. Linear interpolation is used to impute data for missing years. Data is from the World Bank's World Development Indicators (WDI).

Left Party Representation in Government: The expectation that government partisanship matters for wage inequality arises somewhat tautologically out of the traditional political party typology, whereby left parties are defined as those most strongly favoring government action to reduce economic inequalities (Lijphart 1997). Given the disproportionate number of women in the lowest paying jobs (Sainsbury 1996), government actions that increase earnings for workers near the bottom of the wage distribution (e.g., higher minimum wages or active labor market policies) provide a particular benefit to lower-earning women (Card et al. 2003; Soskice 2005; Orloff 2009). Therefore, *an increase in left party participation in government is anticipated to decrease female wage inequality more than male wage inequality.* Left Government is measured as left party legislative seats as a proportion of all legislative seats. Data is from the Comparative Political Parties Dataset: Electoral, Legislative, and Government Strength of Political Parties by Ideological Group in 21 Capitalist Democracies, 1950-2011 (Swank 2013).

APPENDIX F: FULL RESULTS (TABLE 2)

Model	1	2	3	4	5	6
Gender (Number of Countries)	Women (15 Countries)	Men (15 Countries)	Women (15 Countries)	Men (15 Countries)	Women (15 Countries)	Men (15 Countries)
Dependent Variable (Model)	90/10 wage ratio (Full)	90/10 wage ratio (Full)	90/50 wage ratio (Full)	90/50 wage ratio (Full)	50/10 wage ratio (Full)	50/10 wage ratio (Full)
Wage Ratio (t-1)	-0.080*** (0.014)	-0.090*** (0.014)	-0.087*** (0.015)	-0.102*** (0.015)	-0.081*** (0.015)	-0.096*** (0.014)
Δ Female (Male) Union Density (t)	-0.005 (0.006)	0.002 (0.007)	-0.004* (0.002)	-0.000 (0.003)	0.001 (0.003)	0.000 (0.003)
Female (Male) Union Density (t-1)	-0.002 (0.001)	-0.003** (0.001)	-0.000 (0.000)	-0.001* (0.000)	-0.001 (0.001)	-0.001** (0.000)
LME (Lib.)	0.055** (0.023)	0.089*** (0.026)	0.017** (0.009)	0.024** (0.010)	0.019* (0.011)	0.027*** (0.010)
CME (SD)	0.033 (0.063)	0.087* (0.050)	-0.008 (0.024)	0.005 (0.020)	0.031 (0.030)	0.045** (0.019)
Δ Level of Wage Bargaining (t)	0.015* (0.009)	-0.004 (0.010)	0.005 (0.003)	-0.005 (0.004)	0.005 (0.004)	0.003 (0.004)
Level of Wage Bargaining (t-1)	0.003 (0.007)	-0.001 (0.008)	0.002 (0.003)	0.003 (0.003)	-0.000 (0.003)	-0.004 (0.003)
Δ International Trade	-0.003** (0.001)	-0.003** (0.001)	-0.002*** (0.000)	-0.000 (0.001)	0.000 (0.001)	-0.001** (0.001)
International Trade (t-1)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.003)	0.000 (0.000)
Δ GDP Per Capita (in thousands) (t)	0.022*** (0.008)	0.007 (0.011)	0.012*** (0.003)	0.001 (0.004)	-0.000 (0.004)	0.003 (0.004)
GDP Per Capita (in thousands) (t-1)	-0.002 (0.002)	0.001 (0.002)	-0.001 (0.001)	-0.001 (0.001)	-0.000 (0.001)	0.001 (0.001)

APPENDIX F. Continued.

Model	1	2	3	4	5	6
Gender (Number of Countries)	Women (15 Countries)	Men (15 Countries)	Women (15 Countries)	Men (15 Countries)	Women (15 Countries)	Men (15 Countries)
Dependent Variable (Model)	90/10 wage ratio (Full)	90/10 wage ratio (Full)	90/50 wage ratio (Full)	90/50 wage ratio (Full)	50/10 wage ratio (Full)	50/10 wage ratio (Full)
Δ Service Sector Employment (t)	-0.002 (0.003)	-0.004 (0.004)	-0.001 (0.001)	-0.001 (0.001)	-0.000 (0.002)	-0.002 (0.001)
Service Sector Employment (t-1)	0.001 (0.002)	-0.001 (0.002)	0.000 (0.001)	-0.000 (0.001)	0.000 (0.001)	-0.000 (0.001)
Δ Unemployment (t)	0.026*** (0.008)	0.010 (0.008)	0.009*** (0.003)	0.004 (0.003)	0.005 (0.004)	0.002 (0.003)
Unemployment (t-1)	0.002 (0.003)	0.007** (0.003)	0.000 (0.001)	0.001 (0.001)	0.001 (0.001)	0.003*** (0.001)
Δ Female Labor Force Participation (t)	0.013 (0.029)	-0.016 (0.033)	0.012 (0.011)	-0.020 (0.013)	-0.006 (0.014)	0.009 (0.012)
Female Labor Force Participation (t-1)	0.008* (0.004)	0.002 (0.005)	0.004** (0.002)	0.002 (0.002)	0.001 (0.002)	-0.002 (0.002)
Δ Female (Male) Education (t)	-0.008 (0.017)	0.012 (0.017)	0.003 (0.007)	0.005 (0.007)	-0.008 (0.008)	0.003 (0.006)
Female (Male) Education (t-1)	-0.001 (0.002)	0.008*** (0.003)	0.001 (0.001)	0.002** (0.001)	-0.002** (0.001)	0.002** (0.001)
Δ Immigration (t)	0.020 (0.038)	-0.022 (0.043)	-0.010 (0.014)	0.009 (0.017)	0.020 (0.018)	-0.024 (0.016)
Immigration (t-1)	-0.001 (0.001)	-0.003** (0.002)	-0.001** (0.001)	-0.001 (0.001)	0.001 (0.001)	-0.001* (0.001)
Δ Left Govt. (t)	0.000 (0.002)	0.000 (0.002)	-0.000 (0.001)	-0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Left Govt. (t-1)	-0.001*** (0.000)	0.000 (0.001)	-0.000 (0.000)	0.000 (0.000)	-0.001*** (0.000)	0.000 (0.000)
Constant	-0.071	0.212	0.002	0.112	0.139	0.224**
N	225	225	225	225	225	225
R ²	0.201	0.136	0.223	0.118	0.129	0.186

APPENDIX G: FULL RESULTS (TABLE 3)

Model	7	8	9	10	11	12
Gender (Number of Countries)	Women (15 Countries)	Men (15 Countries)	Women (15 Countries)	Men (15 Countries)	Women (15 Countries)	Men (15 Countries)
Dependent Variable (Model)	90/10 wage ratio (Reduced)	90/10 wage ratio (Reduced)	90/50 wage ratio (Reduced)	90/50 wage ratio (Reduced)	50/10 wage ratio (Reduced)	50/10 wage ratio (Reduced)
Wage Ratio (t-1)	-0.077*** (0.015)	-0.095*** (0.016)	-0.080*** (0.017)	-0.107*** (0.019)	-0.084*** (0.017)	-0.103*** (0.017)
Δ Female (Male) Union Density (t)	0.035 (0.026)	0.023 (0.029)	0.010 (0.010)	-0.007 (0.016)	0.010 (0.012)	0.020* (0.010)
Female (Male) Union Density (t-1)	-0.004*** (0.001)	-0.005*** (0.002)	-0.001 (0.000)	-0.000 (0.001)	-0.002** (0.001)	-0.003*** (0.001)
LME (Lib.)	0.018 (0.056)	-0.013 (0.081)	0.011 (0.022)	0.053 (0.035)	-0.004 (0.026)	-0.066** (0.028)
Δ Female (Male) Union Density (t) X LME (Lib.)	-0.036 (0.028)	-0.016 (0.030)	-0.010 (0.011)	0.009 (0.012)	-0.009 (0.013)	-0.018* (0.011)
Female (Male) Union Density (t-1) X LME (Lib.)	0.001 (0.002)	0.002 (0.002)	0.000 (0.001)	-0.001 (0.001)	0.001 (0.001)	0.002*** (0.001)
CME (SD)	-0.234*** (0.096)	-0.207* (0.107)	-0.096*** (0.037)	-0.079* (0.042)	-0.045 (0.044)	-0.052 (0.040)
Δ Female (Male) Union Density (t) X CME (SD)	-0.043 (0.028)	-0.035 (0.032)	-0.015 (0.011)	0.001 (0.013)	-0.009 (0.013)	-0.022* (0.011)
Female (Male) Union Density (t-1) X CME (SD)	0.005*** (0.002)	0.005** (0.002)	0.001** (0.001)	0.001 (0.001)	0.002* (0.001)	0.002** (0.001)
Δ Level of Wage Bargaining	-0.001 (0.002)	-0.001 (0.001)				
Δ International Trade	-0.004*** (0.001)	-0.003** (0.001)	-0.002*** (0.000)	-0.000 (0.001)	-0.000 (0.001)	-0.001** (0.001)
Δ GDP Per Capita (in thousands) (t)	0.024*** (0.005)	0.003 (0.007)	0.013*** (0.003)	0.002 (0.004)		

APPENDIX G. Continued.

Model	7	8	9	10	11	12
Gender (Number of Countries)	Women (15 Countries)	Men (15 Countries)	Women (15 Countries)	Men (15 Countries)	Women (15 Countries)	Men (15 Countries)
Dependent Variable (Model)	90/10 wage ratio (Reduced)	90/10 wage ratio (Reduced)	90/50 wage ratio (Reduced)	90/50 wage ratio (Reduced)	50/10 wage ratio (Reduced)	50/10 wage ratio (Reduced)
Δ Unemployment (t)	0.023*** (0.007)	0.006 (0.006)	0.008*** (0.003)	0.005 (0.003)	0.004 (0.003)	-0.001 (0.002)
Unemployment (t-1)	0.000 (0.002)	0.004** (0.002)			0.000 (0.001)	0.002** (0.001)
Δ Female Labor Force Participation (t)	0.027 (0.016)	-0.014 (0.021)	0.015 (0.010)	-0.009 (0.012)		
Female Labor Force Participation (t-1)	0.003 (0.003)	-0.002 (0.004)	0.002 (0.002)	-0.001 (0.002)		
Δ Female (Male) Education (t)	-0.014 (0.017)	0.015 (0.015)	0.003 (0.006)	0.005 (0.006)	-0.011 (0.008)	0.004 (0.006)
Female (Male) Education (t-1)	-0.002 (0.002)	0.005* (0.003)	0.001 (0.001)	0.001 (0.001)	-0.002** (0.001)	0.002* (0.001)
Δ Immigration (t)	0.006 (0.032)	0.005 (0.032)	-0.007 (0.012)	0.014 (0.013)	0.009 (0.015)	-0.011 (0.012)
Immigration (t-1)	-0.001 (0.001)	-0.003** (0.001)	-0.001*** (0.001)	-0.001* (0.001)	0.000 (0.001)	-0.001* (0.001)
Δ Left Govt. (t)	0.001 (0.001)	0.001 (0.001)			0.000 (0.001)	0.000 (0.001)
Left Govt. (t-1)	-0.001*** (0.000)	-0.000 (0.000)			-0.001*** (0.000)	-0.000 (0.000)
Constant	0.248* (0.000)	0.525*** (0.000)	0.091 (0.000)	0.262** (0.000)	0.229*** (0.000)	0.255*** (0.000)
Δ Female (Male) Union Density (t) LME (Lib.)	-0.001 (0.009)	0.007 (0.009)	-0.000 (0.003)	0.002 (0.004)	0.001 (0.004)	0.001 (0.003)
Female (Male) Union Density (t-1) LME (Lib.)	-0.002** (0.001)	-0.003** (0.001)	-0.001 (0.000)	-0.001** (0.001)	-0.001 (0.000)	-0.000 (0.000)
Δ Female (Male) Union Density (t) CME (SD)	-0.008 (0.008)	-0.012 (0.011)	-0.006* (0.003)	-0.006 (0.005)	0.001 (0.004)	-0.002 (0.004)
Female (Male) Union Density (t-1) CME (SD)	0.001 (0.001)	-0.000 (0.001)	0.001 (0.000)	0.001 (0.000)	-0.000 (0.001)	-0.001** (0.000)
N	225	225	225	225	225	225
R ²	0.222	0.145	0.236	0.127	0.134	0.191

VITA

Eric Graig Castater is the son of Judith Kaye Castater and Robert Joseph Castater Jr. He was born in Boston, Massachusetts and has lived parts of his life in Massachusetts, Illinois, Connecticut, Tennessee, and Vienna, Austria. Eric graduated from Central Connecticut State University (BA, 2004), proudly becoming the first member of his father's side of the family to graduate from college. He also earned a MBA from Webster University (Vienna, Austria) and both a MA and PhD from the University of Tennessee, Knoxville. Eric became interested in politics during the 2000 presidential election, after which he returned to school and began his studies in political science. He became interested in comparative and international political economy while taking courses with Professor Ian Down and the recently deceased Professor Robert Gorman at the University of Tennessee between 2004 and 2006. Eric became interested in labor unions and their impact on economic inequality while serving as a research assistant for Jana Morgan and Nathan Kelly in the summer of 2012. Eric plans to continue investigating the many and varied ways in which labor unions impact economic inequality; and has begun a research agenda that focuses on the causes of recent changes in union membership composition and the organizational characteristics of labor movements, as well as the consequences of these changes for socio-economic and political outcomes. In the future, Eric hopes to continuously pursue a meaningful and objective research agenda while also dedicating substantial time and energy to social activism.