Wage Inequality in Rich Democracies

Policies and Politics

Siri Hansen Pedersen

Thesis for the degree of Philosophiae Doctor (PhD)
University of Bergen, Norway
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Name: Siri Hansen Pedersen

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Scientific environment

As a PhD candidate, I am affiliated with the Department of Comparative Politics at the Faculty of Social Science, University of Bergen. I have been a part of the research group Challenges in Advanced Democracies (CHAD) and the cross-departmental seminar series in Comparative Political Economy (CPE) at the Department of Comparative Politics. The PhD research has been conducted as a part of the research project "Bringing in the State: The politics of wage regulation and low-wage employment" (WAGEREG) led by Professor Georg Picot, funded by the Research Council of Norway (project number 275382). From September 2021 to February 2022, I was a visiting scholar at COWS at the Department of Sociology, University of Wisconsin-Madison. This thesis was supervised by Georg Picot (University of Bergen), and co-supervised by Paul Marx (University of Bonn).

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Abstract in English

Growing economic inequality is a major challenge for modern advanced democracies. Economic inequality creates social tensions, reduces social mobility, undermines equal representation and may ultimately challenge democratic institutions. This PhD dissertation examines how democratic governments can tackle economic inequality through policies that reduce wage inequalities and the underlying politics of these policies. The focus of this dissertation is specifically wage inequality, as this is a major component in inequality of economic opportunities and outcomes. After all, for most people wages are the dominant income source. Through three separate articles, this dissertation identifies the primary drivers of wage inequality, explores potential policy solutions, and analyses political aspects of applying policy measures for less wage inequality.

The first article, "*Determinants of wage inequality across advanced democracies*", represents the first systematic review of quantitative comparative studies of drivers of wage inequality across rich democracies. A systematic search in cross-disciplinary databases first yielded 1965 studies, of which, after closer screening, 25 were relevant and included in the further review. These studies comparatively analysed wage inequality and passed proposed quality assessment criteria. Centralised bargaining structure and high coverage of collective agreements consistently reduced wage inequality, while skill dispersion increased wage inequality. Based on these studies, I developed an empirically informed framework for understanding determinants of wage inequality that can also guide future research.

The second article, "*Which government policies reduce wage inequality?*", specifically examines policy instruments for wage inequality, as opposed to wider structural determinants such as collective bargaining and skill distribution. I focus on policy instruments that can impact low-wage employment directly or indirectly through workers' and employers' incentives for low pay. I collected and analysed data for 29 rich democracies and from 2001 to 2018. I find that countries with generous statutory minimum wage levels and countries without statutory minimum wages have lower wage inequality, in the latter case because they have well-functioning collective bargaining. Countries with low statutory minimum wages have higher wage inequality. Moreover, countries with generous in-work benefits and strict employment protections tend to have higher wage inequality.

To better understand how political drivers shape wage inequality, the third article focusses on the politics behind in-work benefits. The article is entitled *“In-work benefits: (how) does government partisanship matter?”* and is co-authored with Joan Abbas. In-work benefits are meant to mitigate negative effects of low wages and thus reduce poverty and incentivise employment. However, there is a lack of studies on in-work benefits with cross-national perspectives. The article investigates how government partisanship (left-wing or right-wing) impacts levels of in-work benefits based on data for 30 rich democracies in 2001-2013. Results show that in-work benefits take on different institutional forms across countries, either through the tax system or more traditional social policies. Secondly, right-wing governments were more likely to expand these benefits. Contextual factors such as high collective bargaining coverage matter, as left-wing governments are less likely to use the policy when collective agreements cover most workers.

In summary, this dissertation makes several important contributions to research on economic inequality and the welfare state. Empirically, this dissertation not only identifies the key drivers of wage inequality, but also the policies that are likely to reduce wage inequality. These findings are further developed through analyses showing how the political context shapes wage inequality. Generally, the policies left-wing governments implement reduce wage inequality, while the policies favoured by right-wing governments increase wage inequality. Theoretically, I present a framework for a nuanced understanding of drivers of wage inequality. These novel theoretical and empirical insights can inform future research and policies. Overall, this dissertation contributes with knowledge about the underlying mechanisms of wage inequality and the most effective policies to combat it.

Abstract in Norwegian

Økende økonomisk ulikhet er en betydelig utfordring for moderne avanserte demokratier. Økonomisk ulikhet skaper sosiale spenninger, reduserer sosial mobilitet, hindrer økonomisk vekst, og undergraver prinsippet om lik presentasjon som endelig kan utfordre demokratiske institusjoner. Denne doktorgradsavhandlingen undersøker hvordan demokratiske regjeringer kan anvende politiske verktøy til å redusere lønnsulikhet og politisk-ideologiske skillelinjer i bruk av slik politikk. Avhandlingen fokuserer særlig på lønnsulikhet ettersom dette er en sentral kilde til ulikheter i økonomiske muligheter og utfall. Lønnsulikhet angår størstedelen av befolkningen ettersom lønn er den dominerende inntektskilden. Gjennom tre artikler utforskes flere sider av økende lønnsulikhet. Først identifiseres de viktigste faktorene for økende lønnsulikhet. Deretter utforskes politiske tiltak som kan anvendes for å redusere lønnsulikhet. Endelig analyseres politisk-ideologiske aspekter i bruken av politiske tiltak mot lønnsulikhet.

Den første artikkelen, «*Bestemmelsesfaktorer for lønnsulikhet på tvers av demokratier*», er den førte systematiske oversiktsartikkelen av kvantitative komparative empiriske studier av faktorer for lønnsulikhet på tvers av rike demokratier. Gjennom systematiske søk i tverrfaglige databaser ble 25 av 1965 identifiserte studier inkludert. Studiene utførte komparative analyser og innfridde kvalitetskriterier. Sentraliserte lønnsforhandlinger og høy dekning av kollektive avtaler bidro konsistent til lavere lønnsulikhet, mens store forskjeller i befolkningens kompetanse økte lønnsulikhet. Med utgangspunkt i disse studiene ble et empirisk informert teoretisk rammeverk utviklet for å bedre forstå faktorer som driver økende lønnsulikhet. Dette rammeverket er også nyttig for å veilede fremtidig forskning.

Den andre artikkelen, *«Hvilken offentlig politikk reduserer lønnsulikheter?»,* undersøker politiske tiltak for lønnsulikhet. Fokuset rettes spesielt mot politiske verktøy som direkte påvirker lave lønninger eller indirekte påvirker lave lønninger via arbeidstakere og arbeidsgiveres insentiver. Empiriske data ble innhentet og analysert for 29 rike demokratier. Resultatene viste nasjonal minstelønn, arbeidsbetingede stønader/ytelser («in-work benefits») og lovfestet stillingsvern er de mest relevante tiltakene for lønnsulikhet. Land med sjenerøs eller ingen lovfestet minstelønn har lavere lønnsulikhet, mens land med lav minstelønn har høyere lønnsulikhet. Land med sjenerøse arbeidsbetingede ytelser og strengt stillingsvern har

høyere lønnsulikhet. For å bedre forstå politiske faktorer som skaper lønnsulikhet, fokuserer den tredje artikkelen på politisk-ideologiske skillelinjer i bruk av arbeidsbetingede stønader.

Den tredje artikkelen, *«Arbeidsbetingede stønader: (hvordan) spiller regjeringens ideologi en rolle?»*, medforfattet med Joan Abbas, bruker innsikter fra den andre artikkelen og undersøker politikken bak arbeidsbetingede stønader. Denne typen stønad er designet for å supplementere lave lønninger. Det var en mangel på studier av arbeidsbetingede stønader med et komparativt perspektiv. Studien undersøker hvordan regjeringers ideologiske orientering (venstre-/høyreorientert) påvirker bruken av arbeidsbetingede stønader basert på data for 30 rike demokratier i 2001-2013. Resultatene viser at arbeidsbetingede stønader inntar forskjellige institusjonelle former i ulike land, enten via skattesystemet eller mer tradisjonelle sosiale tiltak. Arbeidsbetingende stønader er hovedsakelig brukt av høyreorienterte regjeringer som også er mest tilbøyelig til å utvide denne typen stønad. Venstreorienterte regjeringer er derimot mindre tilbøyelig til å benytte og eventuelt ekspandere arbeidsbetingede stønader dersom det er en høy grad av kollektive lønnsforhandlinger som dekker mesteparten av den yrkesaktive befolkningen.

Som sammenfatning bidrar avhandlingen på flere måter til eksisterende forskning på økonomisk ulikhet og velferdsstaten. Empirisk identifiseres sentrale faktorer for økte lønnsulikheter samt politiske tiltak som kan motvirke denne utviklingen. Disse funnene videreutvikles gjennom analyser som viser hvordan politisk kontekst former lønnsulikhet. Generelt bidrar venstreorienterte regjeringers politikk til reduserte lønnsulikheter, mens høyreorienterte regjeringers politikk bidrar til økte lønnsulikheter. Teoretisk bidrar avhandlingen med et teoretisk rammeverk for en mer nyansert forståelse av faktorer som øker lønnsulikhet. De nye teoretiske og empiriske innsiktene i denne avhandlingen kan informere fremtidig forskning og politikk. Samlet bidrar avhandlingen med kunnskap om mekanismer bak lønnsulikhet og identifiserer de mest effektive politiske tiltakene mot lønnsulikhet.

List of Articles

1. Pedersen, Siri Hansen. "Determinants of wage inequality across advanced democracies: a systematic review."

2. Pedersen, Siri Hansen. "Which government policies reduce wage inequality?"

3. Pedersen, Siri Hansen and Abbas, Joan. "In-work benefits: (how) does government partisanship matter?"

Wage Inequality in Rich Democracies: Policies and Politics.

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A framing introduction for the dissertation "Wage Inequality in Rich Democracies: Policies and Politics"

Introduction

Modern democracies face several challenges. Economic and political inequality, political polarisation, the rise of populist parties and movements, and the erosion of trust in democratic institutions threaten democracy (Stiglitz, 2012; Fukuyama, 2015; Plattner, 2015). Economic inequality is at the core of these challenges. Economic power often translates into political power, thereby giving a minority of the population a disproportionate influence on policy outcomes (Gilens, 2012; Bartels, 2016). This undermines a core democratic principle: everyone should have an equal say in decisions affecting them. This unequal political representation contributes to political disengagement. Ordinary citizens feel that their preferences are ignored and lose ground to the preferences of the wealthy (Solt, 2008). Thus, more inequality erodes citizens' trust in politicians and support for democracy (Krieckhaus, Son, Bellinger, & Wells, 2014). The discontents brought about by these power imbalances have set the stage for populist parties. These parties appeal to voters' dissatisfaction with declining economic prospects, and present themselves as the people's voice against the corrupt power elite (Stiglitz, 2012; Gidron & Hall, 2017). Political movements have taken other forms, too. Political and economic disappointments in wake of the Great Recession led to the emergence of movements such as Occupy Wall Street, which protested against shortcomings of both economic and democratic systems. (Stiglitz, 2012; Chomsky, 2012; Hopkins, 2020).

Moreover, economic inequality has several other societal impacts. Economic inequality hampers economic growth and societal well-being (Stiglitz, 2012; Cingano, 2014). Increasing economic inequalities are also associated with poorer overall health, obesity, lower life expectancy, increased crime, lower social mobility and lack of social solidarity (Katz & Autor, 1999; Wilkinson & Pickett, 2009; Marmot, 2015; Chetty, et al., 2017; Chancel, 2021). Due to widening economic gaps in many rich democracies, inequality is increasingly on the political agenda. Combating inequalities is one of the goals and policy priorities of the Norwegian Government elected in 2021 (Regjeringen, 2021, p. 6). The United Nations made "Reducing Inequalities" one of its sustainable development goals, as part of the plan for ending poverty, ending inequalities, and protecting the planet by 2030 (Blanchard & Rodrik, 2021). Thus, reducing economic inequality is an important topic high on the agenda for many political parties and governmental institutions due to its negative consequences for individuals and society.

While economic inequality has increased in many rich democracies over the last few decades, its rate of increase has varied (Kenworthy, 2008; Atkinson, 2015; Chancel, 2021). Economic inequality also differs between countries. To illustrate this, let us take two countries that represent each side of the spectrum of income inequality among rich countries: the US and Norway. In 2021, the wealthiest 10% of the US population earned 45% of the country's total income (the value of goods and services produced during a year), whereas the poorest 50% received only 13% of the income (WID, 2023). In comparison, in Norway, the top 10% earned 29% of the income, while the bottom 50% received 24% (WID, 2023).

Thus, there is considerable economic inequality impacting society in several ways. Nonetheless, whether economic inequality is inherently "bad", and what the state's role should be in addressing economic inequality, are questions that are hotly debated from differing political-ideological standpoints. One perspective in this longstanding debate argues that economic inequality is a natural and fair outcome of the market, because rewards are distributed according to contributions to the economy (Peterson, 2017). Neoclassical economic theory holds that attempts to counter inequality may significantly harm how capitalist economies work. Thus, many economists conclude that for the sake of economic efficiency, the state should not intervene (Peterson, 2017; Shapiro, 2012). On the other side are those favouring redistribution, using both moral and instrumental arguments. From a moral standpoint, inequality is inherently unjust and violates the accepted distributive justice norm (Peterson, 2017). John Rawls (1971) criticises the approach by neoclassical economists for disregarding any moral concerns, and argues that liberty, opportunities, income, and wealth should be distributed equally unless an unequal distribution is to everyone's advantage (Rawls, 1971). Furthermore, Amartya Sen (1999) argues that not only outcomes matter, but that equal opportunities are an essential part of personal freedom. Joseph Stiglitz (2015) argues that inequalities are not a natural outcome but a result of political and economic choices.[1]

The overall objective of this thesis is to investigate how democratic states can address challenges related to increasing economic inequalities. More specifically, I focus on *wage inequality*, i.e., the distribution of income from labour. Focusing on wage inequality is sensible

[1] One of the premises motivating this thesis is that something ought to be done to reduce economic inequalities, that democratic states have the means to do so, and that this may facilitate human progress. However, the analytical framework used to derive empirical knowledge is not grounded in moral arguments. Arguably, the framework can even be used to assess how *not* to fight inequality or how to prevent a reduction in wage inequality.

because wage inequality is at the very heart of income inequality (Piketty, 2015; Chwalisz & Diamond, 2015). In modern societies, based on division of labour, most people rely on monetary income for their livelihood, whether from wages, welfare transfers, capital or pensions. Among the various sources of income, wage earnings are the dominant one (Blau & Kahn, 2011; OECD, 2011; ILO, 2015; Piketty, 2015). Other forms of income, such as welfare transfers and pensions are often to some extent affected by wages, such as earnings-related social insurance. In the last few decades, wages for middle and low-wage earners have been declining or stagnating in rich democracies, making wages a more precarious support for people's livelihood (Chwalisz & Diamond, 2015; Machin, 2016). For many workers, wages are no longer sufficient to cover basic needs and maintain a decent standard of living, let alone for their family members (Lohmann & Marx, 2018). Or in the words of Adam Smith from 1776:

> *A man must always live by his work, and his wages must be at least sufficient to maintain him. They must even upon most occasions be somewhat more, otherwise it would be impossible for him to bring up a family, and the race of such workman could not last beyond the first generation.* (Smith, [1776], 2010, p. 79).

By focusing on wage inequality, it is possible to examine how the state may address economic inequality through predistribution, rather than traditional redistributive social and fiscal policies (Chwalisz & Diamond, 2015; Bozio, et al. 2020). Predistribution policies shape the distribution of wages in the wage-setting process and thus prevent inequalities from arising in the first place. Redistribution, on the other hand, is about redistributing resources through government transfers after the market result (Chwalisz & Diamond, 2015). Democratic states may address wage inequality through public policies, however such policies can be at the centre of political conflict (Stigwell, 2019; Piketty, 2020). A better understanding of the interrelationship between politics and policy in relation to wage inequality is therefore crucial. Although this thesis seeks to understand a specific part of the bigger issue of economic inequality and its social and political implications, the thesis still aims to contribute to creating a fairer and more just society.

Research questions and contributions

What can the state do to reduce wage inequality? To answer this question, the thesis examines the extent to which policies and politics affect wage inequality in rich democracies.

The emphasis is on what the state can do because the state is the basic institution, in democracies, with the monopoly of power and the capacity to enforce laws and provide public goods to its citizens (Fukuyama, 2015). Furthermore, the state assumes a key role in regulating wages in two ways. Directly through law and policies, and indirectly by supporting collective bargaining arrangements and institutions and facilitating the playing field of the self-regulating market in which wages are determined (Piketty, 2014; Pedersen & Picot, forthcoming). Moreover, the ideological orientation governing the state is likely to change over time and is an important factor influencing policies and laws affecting wages (Grimshaw, 2011; Piketty, 2014). This dissertation focuses on the policy instruments available to states to address wage inequality. The focus is on policies because they are directly controlled by the state. Altering other institutional arrangements is a slow process and a less accessible way for states to mitigate inequalities. The dissertation aims to investigate the following three research questions to ascertain what actions states can undertake to address wage inequality:

Research question 1: *What do we know about the drivers of wage inequality?*

Research question 2*: Which government policies can contribute to reducing wage inequality*?

Research question 3: *What are the politics behind policies affecting wage inequality?*

The dissertation addresses these research questions separately through three articles. The articles are underpinned by independent theoretical frameworks and methodological approaches, and offer original empirical contributions. Collectively, the articles contribute to answering the overarching research question. Table 1 below provides a concise summary of the key features and findings of the articles.

The first research question in the dissertation examines what existing empirical research tells us about drivers of wage inequality. There has been a surge in the academic literature on economic inequality, exploring various dimensions of economic inequality, including income, wealth, and wage inequality (e.g., Piketty, 2014; Salvera, Nolan, & Smeeding, 2009; Atkinson, 2015). The motivation behind the research question is to systematically review the current empirical research with an explicit focus on drivers of *wage inequality*. To examine the first research question, I conduct a systematic literature review (*Article 1*). This is a comprehensive approach to review and synthesise existing knowledge on drivers of wage inequality across rich democracies. A systematic literature review provides a more objective, transparent, and reproducible synthesis than traditional narrative literature reviews. This article then provides a comprehensive overview of current knowledge on drivers of wage inequality, and forms a strong foundation that guides the subsequent research questions of the dissertation.

Substantially, the systematic review identifies three main topics as drivers of wage inequality. First, the impact of market forces on demand and labour supply affect wage inequality. Second, the role of collective bargaining institutions and unions contribute to cross-national variation in wage inequality. Third, government composition and policies influence wage levels. Knowledge on the latter topic, however, is scarce. This informed and motivated the approach taken to answer the second research question.

Consequently, in the second article (*Article 2*), I focus on government policies for low wages that may influence wage inequality. Based on theory, five policies are considered the main policies that either directly or indirectly impact low wages. These include direct state regulation via a statutory minimum wage that can effectively elevate low wages. Certain policies also indirectly alter both workers' and employers' incentives for low-paid jobs, such as in-work benefits, unemployment benefits, employment protection legislation, and active labour market policies. Of these policies, statutory minimum wages, employment protection and in-work benefits are most effective in addressing wage inequality. Generous statutory minimum wages can decrease wage gaps, while strict employment protection and generous in-work benefits contribute to an increase in the wage gap.

Building upon the previous article's findings, the third article (*Article 3*) examines the politics of in-work benefits. I focus on in-work benefits because there were no large cross-national studies explaining the politics behind them to date. This knowledge is important in order to better understand these policies and their political underpinnings. This knowledge gap also stands in contrast to other key policy instruments, such as statutory minimum wages (e.g., Kozák & Picot, 2022) and employment protection (e.g., Zohlnhöfer & Voigt, 2021). In-work benefits are a form of targeted social policy aimed at supporting low-income families, but I argue that they also have predistributional consequences for low wages. As discussed in Article 2, comprehensive in-work benefits have been found to increase wage gaps. Article 3 examines how government partisanship influences the use of in-work benefits. The article demonstrates that right-wing governments are more likely to expand these benefits compared to left-wing governments. Institutional contexts play an important role in politics. Left-wing governments are more likely to reduce the generosity of in-work benefits when collective bargaining coverage is high, suggesting that they instead rely on collective bargaining institutions to support low-income workers.

The dissertation makes three types of contributions, methodological, theoretical, and empirical. First, a methodological contribution is made by applying a systematic literature review approach, which is not a commonly used methodology within social science. It is a distinct methodological approach guiding how to do a rigorous and unbiased synthesis of the existing literature by using a set of established guidelines, making it also a transparent approach. This approach is not often used in social sciences but has become more popular in recent years. In addition to being a methodological contribution, it substantially contributes to the wider literature on economic inequality.

Second, each article offers theoretical contributions. Article 1 offers a new and useful conceptual framework for understanding the factors that influence wage inequality. The strength of the framework is that its foundation is built on empirical knowledge of the topic and may guide further research. Article 2 develops a new understanding of how public policies may influence wage inequality through direct wage regulation (statutory minimum wage), and policies that indirectly can affect wage levels (Pedersen & Picot, forthcoming). The rationale is that some policies may give workers or employers incentives to accept low pay or incentivise employers to pay lower wages. For example, in-work benefits may encourage employers to pay lower wages because they know that the state will top up wages for low-wage workers. The theoretical framework is then tested on 29 advanced democracies, which has not been done before. Article 3 offers a theoretical framework to explain the relationship between government partisanship and in-work benefits. The article develops a stylised framework for understanding the link between ideology and the use of in-work benefits. The contribution lies in highlighting how in-work benefits are not regarded as traditional social policies and may garner support across the political spectrum. Hence this policy may deviate from the left-right divide in expanding and retrenching welfare benefits. Additionally, the framework stipulates that the distinction between left vs. right government preferences for expanding in-work benefits are conditioned on specific institutional arrangements such as wage bargaining, wage regulation (e.g., statutory minimum wage), and other universal welfare policies.

Third, the dissertation also makes ana empirical contributions. This contribution involves looking at in-work benefits in relation to wage inequality. Comparatively, these policies are difficult to measure because they are defined differently across countries. This is the main reason why these policies are cross-nationally understudied. Previous research has mostly focused on single-country case studies or used other welfare policies as a proxy for in-work benefits in comparative analysis. Therefore, Articles 2 and 3 provide new insights into this policy area using a new method of measuring in-work benefits developed by Pedersen and Picot (forthcoming). These articles offer new insights into how in-work benefits impact wage inequality (Article 2) and the politics driving these policies (Article 3). Moreover, Article 2 analyses a set of policy instruments in relation to wage inequality in a large sample of 29 rich countries. It offers new insight into how in-work benefits and statutory minimum wages are related to wage inequality in general across rich democracies. Including such a large sample of countries makes it possible to analyse how the wage floor set through law or collective bargaining matters for wage gaps. Typically, in the broader literature, the effects of statutory minimum wages are limited to single-country studies or countries where the law is implemented. The findings suggest that setting a wage floor through collective bargaining yields a more egalitarian wage distribution. Still, at the same time, countries with higher statutory minimum wage levels also have a relatively egalitarian wage distribution, whereas countries with lower statutory minimum wages have higher wage gaps. This suggests that collective bargaining and a high statutory minimum wage can keep the wage gaps low. Moreover, the empirical findings suggest that generous in-work benefits widen wage gaps, and leads to stricter employment protection. The fact that in-work benefits increase wage gaps is an important finding since these policies are used and perceived as helping low-income workers. Article 3 goes deeper into disentangling the political mechanisms behind in-work benefits. The empirical analysis shows that right-wing governments are more likely to expand the use of these types of benefits. In contrast, left-wing governments are more likely to scale back these policies when collective bargaining is strong.

In sum, this thesis offers a comprehensive understanding of the drivers, policies and politics of wage inequality from a comparative perspective in the early 21st century. It adds to the growing literature, debates, and concerns about rising inequalities and the tools governments can use to combat them (e.g., Blanchard & Rodrik, 2021; Stigwell, 2019; Chwalisz & Diamond, 2016; Atkinson, 2015).

My work with the thesis was conducted as part of a research project, "Bringing in the state: The politics of wage regulation and low-wage employment" led by Professor Georg Picot at the Department of Comparative Politics, University of Bergen. The thesis forms an independent contribution within the context of the broader project. It is situated in the project framework, analysing states' policies to regulate low-wage employment and the politics behind such policies, but the research conducted for this thesis was not a pre-designed part of the project.

This framing introduction provides an overview of the thesis and locates it in a wider context. The next section outlines the extensive research literature on economic inequality and situates the thesis in the broader context of the literature. I also discuss different concepts relating to wage inequality, and provide an overview of the empirical trends in recent years. The subsequent section discusses theoretical approaches to the link between wage inequality and policy, and the role played by of political parties' preferences in different types of policies. I then discuss methodological considerations and related choices. The result section summarises the findings from each article and relates them to the overarching research question. Finally, I discuss the implications of the dissertation. The framing introduction is followed by the three articles.

Table 1. Overview of articles

Articles	Research design	Findings
<u>*Article 1:*</u> What are the determinants of wage inequality? *Publication status: under review*	Systematic literature review. 25 quantitative studies explaining levels of wage inequality.	This article conducts a systematic literature review to identify the main drivers of wage inequality in rich democracies. Based on the 25 relevant studies explaining wage inequality, there are three main categories of explanations: (i) market forces, (ii) collective bargaining institutions and (iii) governments and policy. In addition to discussing the theoretical arguments and empirical evidence behind the main explanations, the article also reveals important research gaps, such as, how public policies influence wage inequality.
<u>*Article 2:*</u> Which government policies reduce wage inequality? *Publication status: under review*	Time-series cross-section analysis. 29 advanced democracies from 2001-2018	This paper studies which public policies affect wage inequality. It looks at five policies, minimum wage, in-work benefits, employment protection, unemployment benefits, and active labour market policies, and explains how they are linked to wage inequality. The results show that three policies influence wage inequality. First, higher minimum wage levels decrease wage inequality. However, not having a statutory minimum wage can also lead to low inequality levels. Second, in-work benefits for low-earnings families tend to increase wage inequality, despite being redistributive policies. Thirdly, higher employment protection also widens wage gaps.
<u>*Article 3:*</u> In-work benefits: (how) does government partisanship matter? *Publication status: soon to be submitted*	Time-series cross-section analysis. 30 advanced democracies from 2001-2013	Article 3 builds on the findings from Article 2 by examining the politics behind in-work benefits. Because in-work benefits are a complex form of social policy, few studies have attempted to measure in-work benefits in a cross-country manner. The main finding in this paper is that right-wing governments tend to expand in-work benefits. Left-wing governments are more likely to retrench them when collective bargaining is high. This indicates that left-wing governments prefer unions and collective bargaining institutions to ensure decent earnings for low-income families rather than state-provided in-work benefits.

Economic Inequality, Wage Inequality and Politics

The following section gives an overview of the literature on economic inequality and relates it to research on wage inequality. It further goes on to discuss important distinctions around the concept of wage inequality and provides an empirical overview. Lastly, it discusses existing research on wage inequality more narrowly and connects this literature to the broader welfare state literature regarding policy and politics.

Economic inequality: a brief overview of the literature

In modern times, economic inequality has been a subject of interest among researchers in various social science disciplines, such as economics, political science and sociology. In the 1980s and 1990s, rising income inequality first attracted attention from labour economists trying to understand the increasing trend. The United States, which had slightly higher wage gaps than Europe, was the main focus of early research on income and wage inequality. American labour economists in the 1980s and 1990s predominantly focused on market explanations for rising earnings inequality, while some institutional explanations, such as the federal minimum wage and unions, also got attention (DiPrete, 2007). Interest in wage inequality increased in the late 1990s, and not sooner, mainly due to sociologists' focus on social stratification and mobility and their impact on vulnerable groups in society rather than just wages (DiPrete, 2007). The topic has gained even more attention since the Great Recession of 2008-2009, both in academic research and public debates, as inequalities in the distribution of income and wealth were seen as pressing social problems (Peterson, 2017). Worth mentioning in this context are the Occupy Wall Street movement in 2011 and the publication of Thomas Piketty's (2014) bestseller *"Capital in the Twenty-First Century"*, which drew attention to severe economic inequality.

The central focus of the dissertation pertains to wage inequality. Relating it to the broader literature is important for understanding how wage inequality may provide valuable insight into economic inequalities in rich democracies. Economic inequality, in the most comprehensive sense, can be understood as the unequal distribution of opportunities and outcomes among individuals (Foster & Sen, 1997; Atkinson, 2015). Equality of opportunity implies that everyone should have equal prospects for success in life, regardless of factors beyond their control, such as their family background, personal traits (age, gender, and race) and innate abilities. In contrast, inequality of outcome occurs when individuals do not have the same level of economic resources, such as income and wealth (Atkinson, 2015). In practice, the two are very much related. For example, children from affluent families are more likely to have access to better educational opportunities and acquire skills that provide them with greater prospects for future employment and income. Therefore, income disparities between high-income and low-income families lead also to inequality of opportunity. In the US, upward mobility has traditionally been considered a hallmark of the "American Dream," where children's standard of living should surpass that of their parents. However, since the 1940s, upward mobility has declined across the entire income distribution, especially for middle-class families. This trend can be largely attributed to the unequal distribution of growth, particularly in income (Chetty, et al., 2017). In sum, creating equality of opportunity in the future necessitates greater equality of outcome today (Atkinson, 2015; Stigwell, 2019).

The academic literature on economic inequality has predominantly concentrated on income and earnings inequality and, more recently, the distribution of capital (Salverda, Nolan, & Smeeding, 2009). Although they are closely intertwined, they are also distinct types of income. Income from wages and capital is more narrow, and may not be the only source of income that people have. Disposable income is typically assessed at the household level, and includes income from all members, encompassing various sources such as transfers, pensions, and self-employment, alongside earnings and capital (Piketty, 2015). Given that labour earnings are typically the primary source of household income, understanding the unequal distribution of wages is crucial to comprehending inequalities in disposable income. Additionally, as Piketty (2014) has documented, the concentration of capital (including all types of household assets) has increased, exacerbating disposable income inequality. Consequently, a vast body of literature on economic inequality has examined wage and wealth inequality because these are two essential components in comprehending disposable income inequality (Piketty, 2015).

In economic inequality research, the analysis of historical trends and patterns, sources, consequences and potential solutions is a central focus. Documenting historical trends is often done in different ways. One way to document trends is by looking at international inequality, which examines variation in economic inequality between countries by comparing whether a country is rich or poor using broader measures such as gross domestic product (GDP) or the human development index (HDI). Another way is to look at intra-national inequality, which compares the distribution of wages, capital and income within a country. Lastly, looking at global inequality implies combining the two previously mentioned approaches, the inequality between countries and inequalities within countries (Chancel, 2021; Stigwell, 2019; Bourguignon, 2012; Piketty, 2014).

Further, there is also a tradition of looking into the structural patterns that shape individuals' positions on the income ladder. In other words, the socio-economic characteristics of economic inequality (Stigwell, 2019). The most common characteristics are location, gender, class and ethnicity/race. Geographical location can be in terms of which country one is born into, which region of the country, or even more local factors such as cities and neighbourhoods, which may be crucial in determining the probability of being wealthier (Stigwell, 2019). For example, the economic circumstances in Italy vary drastically between the wealthy north and the poorer south. The United Kingdom has a similar tendency of a north-south divide (Stigwell, 2019). The class structure may also influence an individual's place in income distribution, as workers and capital owners (often employers) occupy opposite sides of the spectrum. The class structure affects people's position in the income distribution. The clearest divide is between workers and capital owners. Profit often yields much more than wages, making it more likely for capital owners to be at the top of the income distribution (Piketty, 2015). Personal characteristics, such as gender and ethnicity, can also shape an individual's position in the income distribution. Men often dominate well-paid occupations and women in lower-paid occupations. There is disagreement about the underlying reasoning for the gender pay gap, which may be due to socialisation, occupational choice, discrimination in the labour market (often affecting women negatively), and institutional barriers (Bishu & Alkadry, 2017; Stigwell, 2019). Similarly, race and ethnicity matter and minority groups are more likely to be at the lower end of the income distribution. In the United States, racial disparities in income persist; white-male is the income winners (Chetty, Hendren, Jones, & Porter, 2020). The socio-economic structure of economic inequality is an important dimension in understanding who gets what.

The literature points to several interacting processes as key sources of cross-national differences and increases in economic inequality. This includes analysis of the relationship between redistribution, political institutions, the welfare state, labour market elected governments and inequalities (Brady & Sosnaud, 2010). One crucial factor that explains differences in economic inequality across countries is the historical development of the welfare state in modern democracies (Bradley, Huber, Moller, Nielsen, & Stephens, 2003).

The extent to which welfare states redistribute economic outcomes varies (Esping-Andersen, 1990). Esping-Andersen (1990) provides a historical account of the emergence of three distinct welfare state regimes – liberal, conservative and social democratic – which differ in their egalitarian outcomes. Contemporary political and economic changes have also played an important role in driving economic inequality. These changes include globalisation, technological advancements, financialisation, and the rise of neoliberalism (Stigwell, 2019). The labour-capital divide has been a crucial factor in the accumulation of capital in recent decades, while wages from labour have not kept pace, contributing to an unequal distribution of income (Piketty, 2020). The possible negative outcomes that greater economic inequality produces have received much attention. More unequal societies are seen to be bad for democracy, economic growth, society and individuals' lives (Stiglitz, 2012; Fukuyama, 2015; Wilkinson & Pickett, 2009; Widding-Havneraas & Pedersen, 2020). Moreover, how to deal with rising inequality has been under scrutiny. Various practical solutions have been proposed. These are most often policy suggestions and recommendations regarding the use of redistributive policies, job creation, improving education and training, progressive taxation, taxation on wealth, basic income schemes, social safety nets, minimum wage laws, and global redistribution (Blanchard & Rodrik, 2021; Stiglitz, 2012; Stigwell, 2019; Piketty, 2015; Chwalisz & Diamond, 2015). In parallel with the more practical approach to how to deal with growing economic inequality, there is a long-standing philosophical debate on whether something should be done (Peterson, 2017).

In summary, the literature on economic inequality is comprehensive, covering a wide range of aspects. The concept of economic inequality encompasses different aspects such as happiness, welfare, income, consumption and wealth (McGregor, et al. 2019). Further, the literature highlights that wages and capital are key aspects of the larger phenomenon of economic inequality. The following section will discuss more explicitly the concept of wage inequality, common indicators and empirical patterns.

Wage inequality

Wage inequality serves as a crucial indicator of economic inequality, which renders into the major challenges modern democracies face today. Scholars have used varying terminology such as "pay" and "earnings" inequality (Kenworthy, 2008). Moreover, wage inequality is interlinked with other concepts like “income” and “market” inequality. A commonality of these concepts is that they all capture the distribution of individuals' or households' economic resources. At the same time, these are three distinct concepts.

Concepts and measures

There are five main types of income: wages, self-employment income, pensions, government transfers and capital income (Piketty, 2015): (1) Wages are monetary compensation an employer pays workers in exchange for their labour; (2) Income from self-employment is revenue generated by selling services directly to a client; (3) Capital income comes from owning assets that appreciate in value or pay dividends, such as stocks, bonds or real estate; (4) Government transfers provide financial assistance through social benefits, such as unemployment benefits, social security, or in-work benefits; (5) Pensions are, for many elderly, the primary source of income, often contingent on having contributed to a pension scheme, and arguably just a specific type of government transfer.

Different types of income are combined to form various income concepts, typically categorized into three main distinctions. The broadest concept is disposable income or post-tax income, which includes all five types of income and subtracts taxes. It also incorporates income from other household members. Inequality in post-tax income among households reveals disparities between individuals' disposable income and reflects the redistributive nature of welfare systems. The second concept is market income or pre-tax/pre-transfer income, consisting of wages, self-employment income, capital income, and other household members' income and excludes tax deductions (Kenworthy, Jobs with equality, 2008). Moreover, sometimes pre-tax income only includes government transfers and pensions (Bozio, et al., 2020). Inequalities in market income among households provide important information about the distribution of income before government transfers and taxes (McGregor, Smith, & Wills, 2019). The third concept is income from wages among individuals, indicating the distribution of wage compensation among the population. Inequality of wages indicates how the compensation of wages is distributed among the population. The largest proportion of income comes from wages for most individuals (Kenworthy, 2008; Piketty, 2015). From a sample of 39,320 European individuals, 58% reported that their main income source was wages and salaries in 2018. This was followed by pensions (28%), self-employment (7%), government transfers (4%) and capital income (0.6%)

(ESS, 2018).[2] However, the importance of the various types of income is not the same for the rich and poor. For poorer households, government transfers are also an important source of income. For households higher in the income distribution, wages still account for a large share of total income. It is only at the very top that capital income accounts for the largest share of income (Piketty, 2015).

Several indices have been used to measure the inequality of disposable income, market income and wages in a single number (Jenkins & van Kerm, 2013). The most commonly used is the Gini coefficient because it is relatively easy to calculate. The Gini coefficient ranges from zero, indicating perfect equality, to 1, indicating perfect inequality. Other commonly used indices are those based on percentiles to compare disparities at the bottom and top of the distribution (Jenkins & van Kerm, 2013). Another way to measure inequality is to focus on the total income or wealth held by the top 1% or 10% of the population (e.g., Piketty, 2015). Data to measure inequality across countries and over time remain scarce, even in more recent times (Chancel, 2021). The most accessible data across countries and over time is for household disposable income. This is therefore often the main focus in the literature (McGregor, Smith, & Wills, 2019). However, one of the main challenges when it comes to income data is that countries use different income concepts in which various types of income are included. There is no universally agreed approach to this. Databases such as OECD statistics, Income Across the Distribution Database, World Inequality Database and Standardised Income Inequality Data offer post-tax and pre-tax income inequality indicators. Especially the World Inequality Database has developed a distributional national account methodology for its online data, making it possible to access historical data on pre-tax and post-tax income inequality (Chancel, 2021). However, when it comes to data on the distribution of wages, the available data is much more scarce.

Conceptually, it is the inequality of wages between working individuals within specific countries that is of interest. Furthermore, these inequality levels are then compared across rich democracies. This makes it possible to assess how national policy variations influence wage inequality levels. The most widely used indicator for wage inequality in the literature is the

[2] Some respondents reported “other” as their main source of income (1.29%). Original variable is “hincsrca”, and respondents are from Austria, Belgium, Czech Republic, Switzerland, Estonia, Finland, France, Hungary, Iceland, Italy, Lithuania, the Netherlands, Norway, Portugal, Slovenia, Slovakia, Denmark, Germany, Spain and Sweden.

wage inequality of full-time employees provided by OECD statistics (OECD, 2022a; e.g., Beramendi & Cusack, 2009; Iversen & Soskice, 2006; Moene & Wallerstein, 2003). It is calculated as percentile ratios to compare disparities at the bottom and the top of the distribution. The advantage is that this measure covers a wide range of rich democracies over a long period

Let us take a closer look at how percentile ratios are calculated. The wage distribution can be broken down into deciles (Piketty, 2015).[3] Figure 1 gives a stylised illustration of the different deciles. The first decile (D1) includes the bottom 10% of wage earners. The second decile (D2) includes the next 10%, and so on. The fifth decile (D5) corresponds to the median wage. While the tenth decile (D10) is those with the top 10% highest wages. To numerically capture the inequalities between the deciles of the wage distribution, percentiles are used.

The overall wage inequality measure, or P90/P10, compares the difference between individuals with the 10% highest wage relative to the individuals with the 10% lowest wages. A second measure, P90/P50, looks at the difference between the top 10% (P90) and median wage earners (P50). A last measure, P50/P10 looks at the difference at the lower end of the distribution (Piketty, 2015).

Figure 1. Deciles of the wage distribution.

Bottom 10%				Average/ median wage					Top 10%
D1	D2	D3	D4	D5	D6	D7	D8	D9	D10

People are categorised based on their wages for each decile, and the wage rates for each decile will vary across countries. On average, across rich democracies, the monthly median wage (D5) was 4,219 US dollars in 2020 (OECD, 2023a). A low-wage worker is often defined as someone earning less than two-thirds of the median wage (Grimshaw, 2011). A low-wage worker will typically be in decile three or below. From the international comparison, low-wage workers can be found in all parts of the economy. In both the public and private sectors,

[3] The breakdown of the wage distribution is also applicable to other types of income, such as total income or capital income.

agriculture, manufacturing and services. Some groups in society are more likely to end up in low-paying jobs than others. Four particular characteristics are common for workers in low-paying jobs. Low-wage workers tend to be female, have low education and skills, are young, and belong to an ethnic minority group (race or migrant status) (Grimshaw, 2011). One of the main disadvantages of the measure provided by OECD is that it only includes full-time employees. Including part-time workers, who are in the bottom decile, would lead to higher wage inequality ratios in most cases (Piketty, 2015). At the other side of the distribution, Europe's top 1% (D10) workers are usually men in their 40s, 50s and 60s, with good education and working in finance or manufacturing and often as senior managers (Denk, 2015).

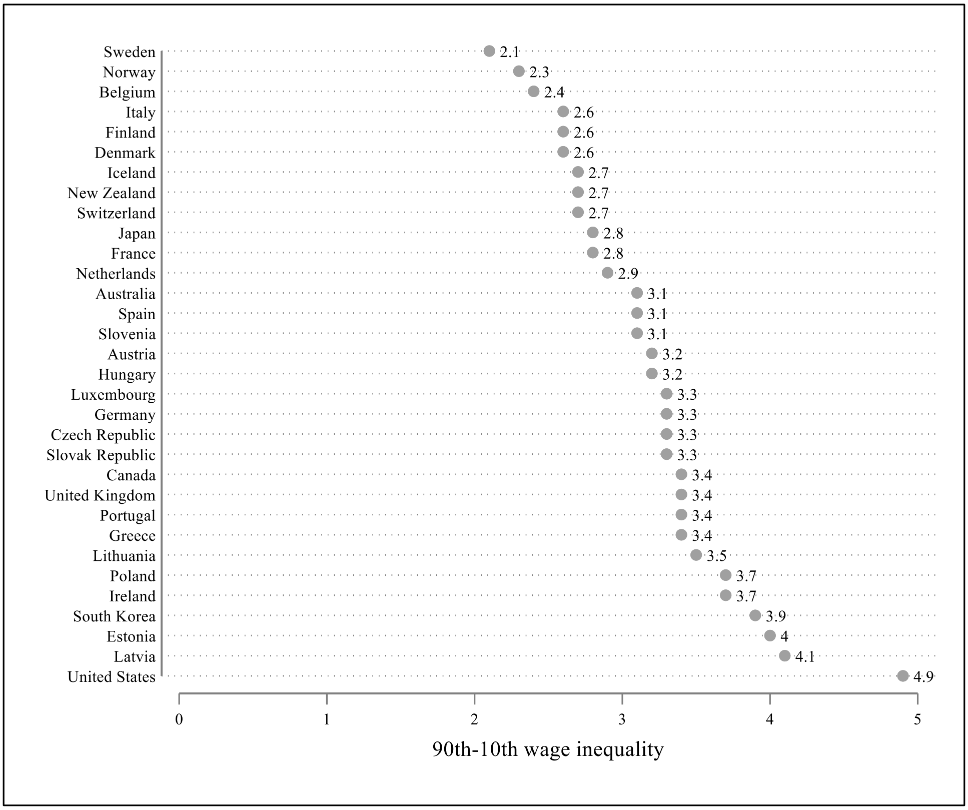
In this dissertation, I focus mainly on the P90/P10 and P50/P10 measures (or 90^{th}-10^{th} wage inequality and 50^{th}-10^{th} wage inequality) (OECD, 2022a). This is because the P90/P10 ratio how equal or unequal the wage distribution is within a country. The P50/P10 ratio is the main measure used in Article 2 because it indicates how wages are distributed at the lower end. This is a useful measure given that the policies that Article 2 focuses on are mainly theorised to affect wages at the lower end.

Although the wage inequality indicators from OECD statistics cover several rich democracies over a long time period, there are some limitations to the data. The main challenges for this measure are that the original data sources for constructing these measures may not be comparable across countries. To construct the three wage inequality measures, OECD collects the original data from different sources such as national statistical offices (national accounts or census data), employee data, and household surveys (either national or from Eurostat microdata). In most cases, the same wage concept is used, gross earnings for full-time employees. However, for South Korea and New Zealand, bonuses and additional allowances are also included in their wage concept, which is not the case for other countries. The implication is that the indicators for wage inequality also include other income sources, not strictly from earnings from work. Moreover, the measure only looks at specific deciles in the distribution, and therefore does not utilise all available information. Table A1 in the appendix gives a full overview of each country's original data source and wage concept. What is also evident is the comprehensive and careful data collection done in harmonising a wage inequality measure covering so many countries, making it one of the most comprehensive indicators (Lupu & Pontusson, 2011).

Empirical patterns: across countries and over time

What does the data say about wage inequality in rich countries? An American worker in the top 90th decile earned almost five times as much as a worker in the bottom 10th decile in 2018. While on the other side, a Norwegian worker in the top 90th decile earned about 2.5 times as much as a worker in the 10th decile (OECD, 2022a). Figure 2 plots the levels of wage inequality across countries in 2018, ranked from the most egalitarian nation, Sweden, to the least egalitarian country, the United States. The visualisation illustrates that the degree of wage inequality varies substantially across countries. Notably, the Nordic countries and Italy exhibit the most equitable wage distributions, whereas Australia, Spain, Slovenia, and Austria fall within the intermediate range. In contrast, Poland, Ireland, South Korea, Estonia, Latvia, and the United States demonstrate the greatest levels of wage inequality.

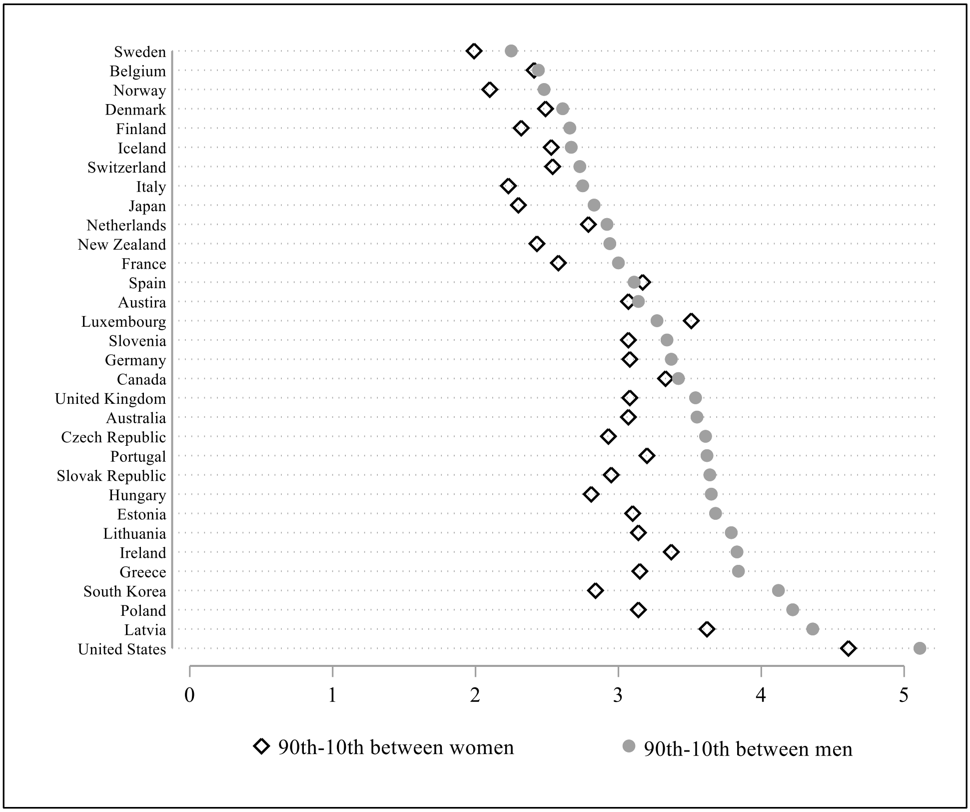
Figure 2. 90th-10th wage inequality in 2018.



Source: OECD (2022a).

A further analysis involves decomposing the 90th-10th wage inequality measure to ascertain whether wage disparities are most prevalent among male or female workers. Figure 3 show the wage inequality levels across genders in 2018. The plot indicates that in the majority of countries, wage inequality among male workers is more pronounced, with the exceptions of France and Luxembourg. This trend may be attributed to men's overrepresentation in higher-paying occupations and industries, while women tend to be overrepresented in low-paid sectors. Grimshaw (2011) suggests that this overrepresentation could be due to undervaluation of women's work, gender bias in eligibility for benefits, uneven gender effects of wage-setting institutions, and workplace discrimination. This gender-based wage structure not only affects the wage distribution for both genders but also perpetuates the gender pay gap, which, although varying across different countries, still persists in rich democracies (Rubery & Koukiadaki, 2015). Moreover, wage regulation in form of influence of unions, bargaining strategies and minimum wage policies are found to be important factors explaining cross-national difference in wage gaps (Schäfer & Gottschall, 2015). Consequently, examining the gender structure of the wage distribution is crucial in understanding the composition of the different deciles in the overall wage distribution.

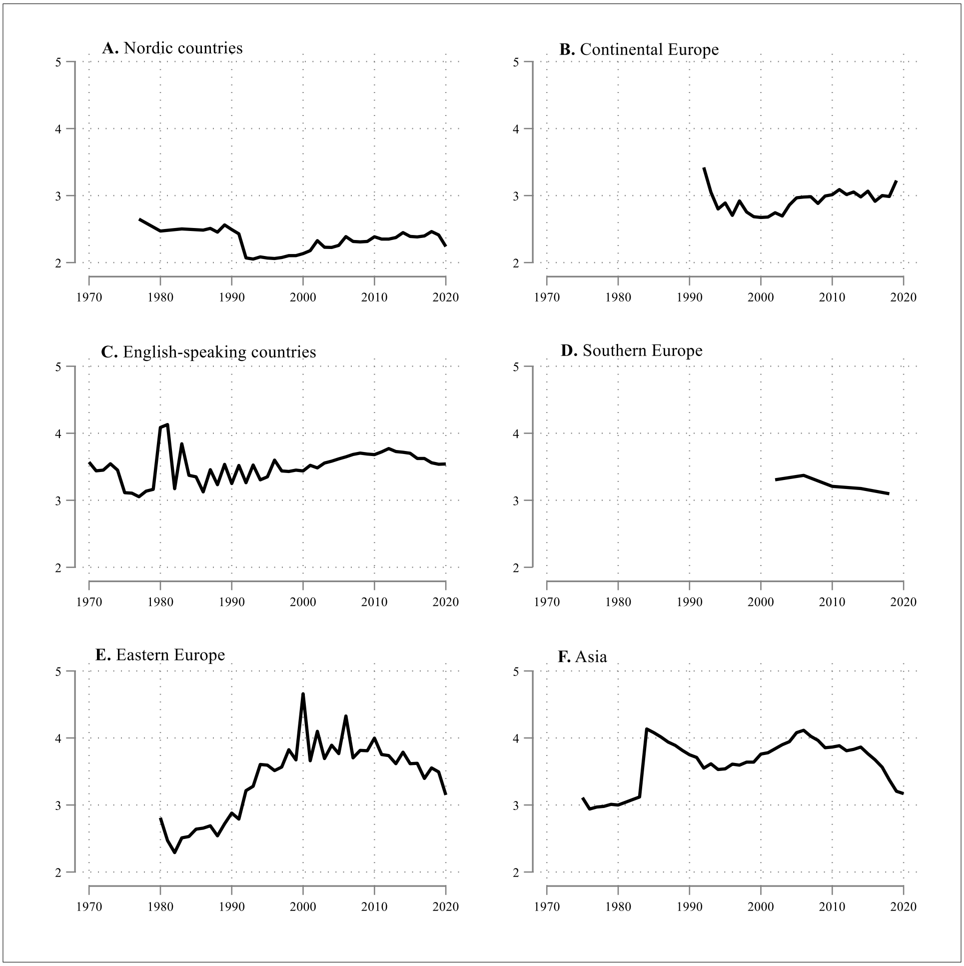
Figure 3. 90th-10th wage inequality in 2018 for women and men.



Source: OECD (2022a).

Wage inequality varies among different geographical regions and times. The Nordic countries have the most equal distribution, with the highest paid 10% earning an average of 2.3 times more than the lowest paid 10% from 1975 to 2020. However, as seen in Figure 4A, wage inequality in Nordic countries has increased since the 1990s. Continental Europe has also had low wage inequality, with an average of 2.9, but it has risen since the early 2000s (Figure 4B). In the middle position between the most equal and unequal regions lie Southern Europe and English-speaking countries, with an average of 3.2 and 3.5, respectively. However, their trajectories over time are very different. Figure 4D shows that wage inequality in Southern Europe has moderately decreased from 2001 to 2020. Figure 4C shows that wage inequality in English-speaking countries fluctuated from 1970 to the mid-1990s. From the mid-1990s, wage inequality steadily increased, and from 2012, it was relatively stable and had a slightly decreasing trend. Eastern Europe and Asia have the highest wage inequality, with an average wage inequality of 3.6 and 3.7, respectively. In Eastern Europe, wage inequality increased sharply from 1980 to 2000, then fluctuated until a steady decrease started in 2012. The Asian region consisting of Japan and South Korea experienced increasing wage inequality until 2005, when it began to decrease, as seen in Figure 4F. Figure 4 also demonstrates the difficulty in obtaining data for certain countries over time, particularly for Continental and Southern European countries.

Figure 4. 90th-10th wage inequality among OECD countries from 1970-2020.

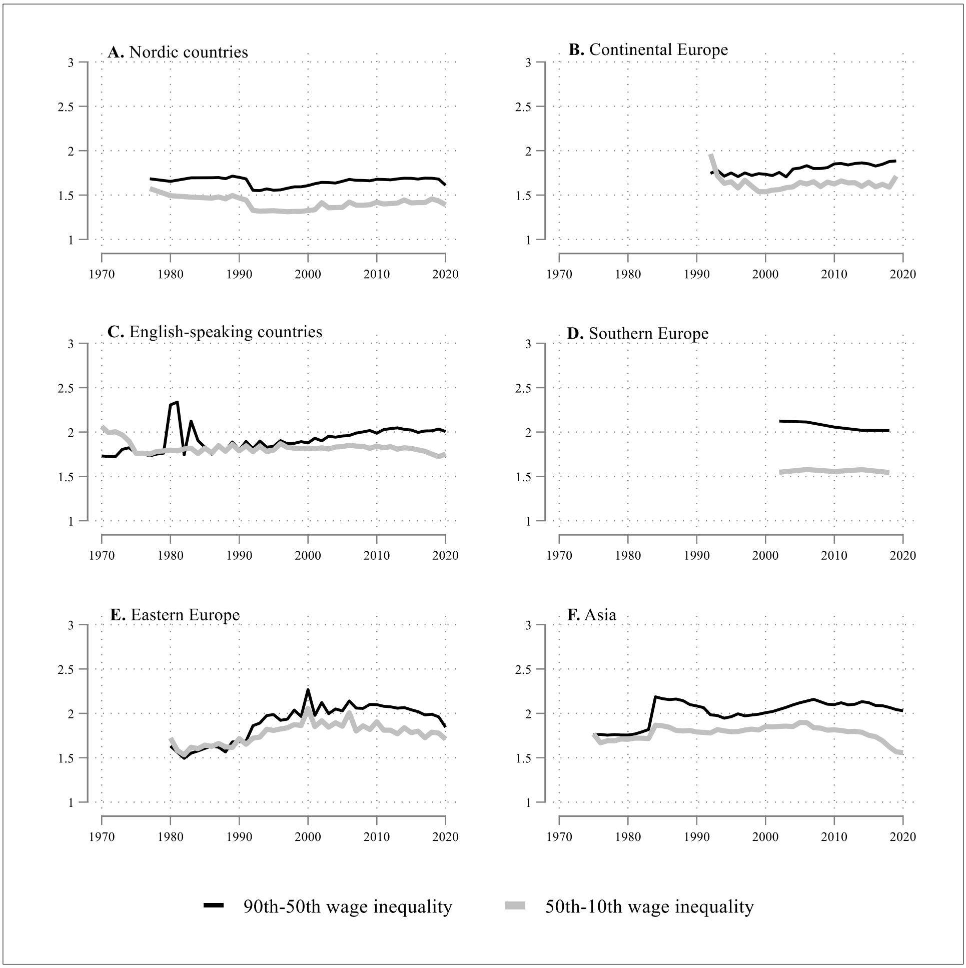


Note: Countries in the country groupings: Nordic countries are Norway, Sweden, Denmark, Finland and Iceland. Continental countries are Austria, Belgium, Germany, Luxembourg, Switzerland and the Netherlands. English-speaking countries are Australia, Canada, Ireland, New Zealand, the United Kingdom and the United

States. Southern Europe is Greece, France, Italy, Portugal and Spain. Eastern Europe is Estonia, Hungary, Czech Republic, Lithuania, Latvia, Poland, Slovak Republic and Slovenia. Asia is South Korea and Japan. Source: OECD (2022a).

Figure 5 displays the trend in wage inequality between the ten per cent highest-paid and median-wage workers, represented by the black line, as well as between median-wage and 10 per cent lowest-paid workers, represented by the grey line. Both measures show smaller wage gaps than overall wage inequality but follow a similar trajectory over time. Additionally, the gap between the highest-paid and median-wage workers is larger than the wage gap between the median-wage and lowest-paid workers. In the Appendix, Figure 1A shows all three wage inequality indicators for each country over time.

Figure 5. 90th-50th and 50th-10th wage inequality across OECD countries from 1970-2020.



Note: Countries in the country groupings: see note for Figure 4.
Source: OECD (2022a).

A prevalent approach in examining economic inequality and wage inequality is to explain the underlying factors contributing to cross-national patterns. Accordingly, article 1 of this dissertation further builds the literature on determinants of wage inequality across rich democracies. The subsequent section provides a concise overview of the outcomes from Article 1, while concurrently drawing links to relevant policies and their underlying political foundations.

Existing research

Various explanations for wage inequality

There are many explanations for the increasing wage inequality that focus on different aspects, such as individual, economic, and political factors. In Article 1, I provide a conceptualisation of the main drivers based on the existing literature. The theoretical arguments and empirical evidence are also outlined, and I will give a brief account of these and point to the main research gaps below. In the article, I identify three main categories of factors that may explain variation in wage inequality. These are factors relating to supply and demand, collective bargaining institutions and government and policy.

Supply and demand factors influence either the supply of or demand for labour. According to human capital theory, high-skilled workers are paid more than low-skilled workers because their different contribution to a firm's output affects wage distribution (Piketty, 2015). Skill-biased technological change starting with the deindustrialisation in the 1960s, has shifted the demand towards highly skilled workers (Piketty, 2015; Peterson, 2017). Globalisation has led to increased international trade, forcing low-skilled workers in wealthy countries to compete against cheap labour in developing countries (Piketty, 2015). Factors such as skill-biased technological change and globalisation have reinforced wage inequalities due to skill differences between workers. Although these theories are important in explaining the long-term evolution of wage inequality, they are also limited. Skill differentials cannot explain short-term changes in wage inequality within countries. Technological change does not explain why there are wage gaps between similar groups of workers with the same education and professional experience. Lastly, sectors not affected by globalisation and trade still experienced increases in wage inequality (Piketty, 2015). Therefore, internal structural differences and changes, such as collective bargaining institutions, are perceived to play an important role in explaining variations in wage inequality.

Both the structure and coverage of collective bargaining matter in influencing the "market price of labour". The structural feature of collective bargaining varies across countries. Some wage bargaining systems are centralised, and others decentralised, which describes the level at which the bargaining between unions, employees, and the state takes place – nationwide, at sector level or at the firm level. Nationwide bargaining, or centralised systems, are believed to promote more wage equality, because they reduce wage gaps within sectors or firms. To what degree wage bargaining is coordinated across the whole economy plays an important role. In coordinated systems, wage agreements are equal for all industries and sectors, which makes wages more equal across the economy. Coverage of agreements and unions, which represent the interest of a larger number of workers in terms of wages and working conditions, can play a significant role in wage bargaining. This is because strong unions may strengthen workers' bargaining power, and high coverage of these agreements means that they cover more workers. For example, in countries where union power has diminished, such as the United States and the United Kingdom, wage inequality has increased since the 1970s (Piketty 2015). When union-driven redistribution fails, often when there are weak unions and low bargaining coverage, governments may use policy tools, such as statutory minimum wages, employment protection law and social benefits to protect low-income workers (Bonoli, 2003). For example, the United States and the United Kingdom both have statutory minimum wage and in-work benefits. While countries with relatively strong collective bargaining institutions, such as Norway and Sweden, do not rely on these policies as heavily (Pedersen & Picot, forthcoming).

In addition to market forces and collective bargaining institutions, the state also plays a role in shaping wages through policies and regulations (Pedersen & Picot, forthcoming). The most direct form of wage regulation is statutory minimum wages, which increases the wages of low-paid workers. While the employment effect of minimum wages has been extensively studied (e.g., Card, Katz, & Kruger, 1993), less research has focused on the impact of minimum wages on the wage gap (Autor, Manning, & Smith, 2012). Most evaluations of national minimum wages come from single-country studies, most notably in the US context. The decline in the real value of the federal minimum wage in the US during the 1970s and 1980s contributed to an increase in wage inequality (DiNardo, Fortin, & Lemieux, 1999; Lee, 1999). A similar but less extensive trend was the case in the United Kingdom when the national minimum wage was implemented in 1999 (Dickens & Manning, 2004). Generally, higher statutory minimum wage levels across OECD countries go along with lower wage inequality (Broecke, Quintini, & Marieke, 2017; Joe & Moon, 2020). However, these studies are limited in terms of only considering countries with minimum wage legislation and discarding countries without, like the Nordic countries. Moreover, these studies do not include other policies that may influence low pay in their analytical framework.

Social and labour market policies, such as unemployment benefits, in-work benefits, employment protection legislation, and active labour market policies, may directly impact wage setting by altering incentives of both workers and employers for low-pay and low-paid work. A common factor for these policies is that they are policies, which through the labour market, serve as income protection for workers (Bonoli, 2003). For example, unemployment and in-work benefits are typical social policies that protect workers from loss of income or compensate for low income. Both these policies are redistributive measures, but as I argue in Article 2, they can also have predistributional consequences for wage gaps. Due to this, unemployment benefits are often researched in relation to employment incentives or income inequality, and less attention is given to their predistributional effects. However, the few studies that focus on unemployment benefits find mixed evidence, depending on how unemployment benefits are measured, either as the duration or replacement rate (Ayala, Martinez, & Ruiz-Huerta, 2002; Vlandas, 2018). Research on in-work benefits in relation to wage inequality is lacking. This is largely because this is a policy that is difficult to measure, especially comparatively. In-work benefits are often associated with English-speaking countries, and the most classic examples are the Tax Credit in the US and Working Families Tax Credit in the UK (Abbas, 2020). In-work benefits may take various forms, such as cash transfers, social benefits or tax deductions, and are targeted benefits towards low-income workers. The degree to which benefits aimed at low-income workers and families are advantageous is debated. On the one hand, in-work income supplements may compliment or a functional equal to minimum wages and benefits for workers. On the other hand, in-work benefits may create a scenario where low pay persists. Unlike higher minimum wages, in-work benefits may decrease the incentive for workers to increase their earnings, as their additional pay is dependent on their current income (Grimshaw & Rubery, 2020). Article 3 shows that these benefits are widely used in rich democracies with different policy designs. Further, using the in-work benefits measure developed by Pedersen and Picot (forthcoming) makes it possible to address this research gap. Employment protection is usually justified in terms of its contribution to the fair treatment of workers rather than earnings and income (Kenworthy, Jobs with equality, 2008). However, there is variation in employment protection and how strict it is, and stricter regulations tend to reduce wage inequality (Ayala, Martinez, & Ruiz-Huerta, 2002; Vlandas, 2018). Active labour market policies may help workers acquire skills, or they activate workers by incentivising the unemployed to accept jobs (Vlandas, 2013).

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According to classical welfare state literature, left-leaning governments tend to be more focused on workers' welfare and redistribution, and are therefore more likely to promote wage equality (Pontusson, Rueda, & Way, 2002). The idea that there is a relationship between government partisanship and wage inequality is based on the belief that the policy preferences of left-wing parties raise the wage floor and automatically improve wage distributions. However, it is important to note that governments cannot directly transform the wage distribution but rely on policy design and implementation (Rueda, 2008). Therefore, to fully understand the relationship between government partisanship and wage inequality, it is important to examine the specific policies implemented and how they are influenced by government partisanship.

Politics and policy

There has been an ongoing debate about the relationship between party politics and welfare state policies and reform. The traditional approach argues that left-wing and right-wing parties hold different positions on welfare state issues based on their respective electorates (Starke, 2006) (Häusermann, Picot, & Geering, 2013). This perspective is rooted in conflict-based perspectives in which left-wing parties, in alliance with unions, represent the working-class and shape and expand welfare provision. Right-wing parties representing the capitalist class would likely reduce taxes on higher-income groups and promote private enterprise (Loftis & Mortensen, 2017). Several studies supported the traditional conflict-based approach. However, the validity of government partisanship as a sole explanation for the variation in social policy and welfare state remains a subject of debate in the literature. The traditional view has been challenged by the "New politics" school. The main idea is that government partisanship has declined in relevance over time. Welfare state policies are not only shaped by government partisanship but suggest that existing welfare state institutions condition the policies adopted and that the changing preference of voters, which are out of alignment with traditional partisan politics, shape welfare policies (Pierson, 1994; Starke, 2006;).

Socio-economic changes and new risks in post-industrial societies have influenced the preferences and behaviour of voters and evolving political parties (Häusermann et al, 2013). Voter behaviour is influenced by changing demographic structure, where the traditional working-class base is declining, and the amplification of “new risks” has altered voters’ demands, such as the need for support with childcare among working families, while ‘old’ social risks, like unemployment and old age, continue to drive demands. In response, parties adapt their policies to appeal to a wider voter base in order to maximise their vote share. Government policy-making may involve trade-offs as parties try to navigate conflicting preferences among traditional and new voters. An example of this is social democratic parties pursuing a “third way” approach, which combines retrenchment with policies to appeal to middle-class voters who do not support high expenditure on “passive” income supplements and who may stand to gain from “social investment” type policies.

The empirical evidence on whether partisanship influences policy outcome is inconclusive. Studies have shown that the impact of partisanship has weakened or faded in some policy areas. The mixed findings may also occur due to empirical measures of the policy and time period studied. Moreover, there are also lively debates regarding the measurement of government partisanship which also influences empirical studies (Döring & Schwander, 2015).

Although there is a wide body of literature on how government partisanship influences social and labour market policy, very few comprehensive studies explore the politics of statutory minimum wages and in-work benefits. As I point out in Article 2, statutory minimum wages and in-work benefits are the two most prominent policies influencing wage inequality. Kozák and Picot (2022) explain the lack of research due to the focus on the effects of a minimum wage. Their study is the first to comprehensively assess how government partisanship influences the introduction and the levels of statutory minimum wages. Their study finds that left-wing governments are more likely to increase minimum wage levels. Moreover, left-wing governments are more likely to adopt minimum wages when bargaining is low (Kozák & Picot, 2022). Regarding in-work benefits, Abbas and I argue in Article 3 that the lack of research is because they are seen as a response to structural factors (deindustrialisation and globalisation), and party politics was not perceived as important or relevant. A small set of case studies from Germany and the UK suggest that these types of policies have received cross-party support because they appeal to centre-left and centre-right preferences (Clegg, 2015; Clasen, 2019). However, there are no cross-country studies on the topic. The following section discusses the theoretical framework of the thesis, which links wage inequality, government policy and politics together.

Theoretical Considerations

How can government influence the distribution of wages? This can be approached in two ways. One perspective is that the political alignment of parties in government can influence wage distributions (Rueda, 2008). This is based on the idea that different political parties have different policy preferences and ultimately influence a county's wage distribution. This hinges upon the proposition that left-wing parties in government generally have more egalitarian policy preferences than right-wing governments (Rueda, 2008). The assumption is that left-wing governments use policies that promote greater equality, such as higher minimum wages and generous welfare policies and have close ties with unions to support workers. However, empirically the evidence for a direct association between government and wage inequality is limited (Pontusson, Rueda, & Way, 2002; Rueda, 2008). The main explanation for this is that governments cannot automatically transform the wage distribution, but to accomplish any kind of redistribution, they rely on policies (Rueda, 2008). Therefore, to better understand how government can influence wage inequality, it is crucial to examine how different policies impact it and, thereafter, how government partisanship shapes the use of these policies.

Wage inequality, policy, and politics

There is a wide range of government policies that can impact wages and income. But how can public policy influence wage inequality? In this context, it is useful to distinguish between predistribution and redistribution. Predistributive policies are those that shape the distribution of wages and income before market forces. The focus is on what the state can do to prevent unequal outcomes (Chwalisz & Diamond, 2015; Stigwell, 2019). Examples of predistribution policies include statutory minimum wages and employment protection legislation, which creates wage floors and strengthens workers' bargaining positions (Bazillier, 2015). Even further, policies that may create equal opportunities for individuals, such as good-quality education and active labour market policies (Stigwell, 2019). Redistribution policies, on the other hand, transfer and redistribute resources to individuals in a society. They are concerned with what the state can do to make unequal outcomes more equal (Chwalisz & Diamond, 2015). Examples are social transfer and insurance programmes, such as unemployment benefits, in-work benefits, and income and wealth taxes (Blanchard & Rodrik, 2021). In addition, various policies may also be more targeted at different groups along the wage distribution. For example, statutory minimum wages are a policy that aims at supporting workers at the bottom of the wage distribution and has little consequences for middle and high-wage earners.

Arguably, the most effective way for governments to address wage inequality is to use already existing policy instruments. Although there is a wide range of policies that may be used, there are especially a few policies that are relevant for wages, particularly at the lower end of the distribution. Primarily these are predistributive policies, but some redistributive policies may also have implications for workers' wages (and not just income). When it comes to policies that may impact wages at the bottom of the distribution, they can do so either directly or through economic incentives. Direct regulation implies that the state can directly regulate wages, which is the case with statutory minimum wages (Pedersen & Picot, forthcoming). In contrast, policies that influence wage inequality through economic incentives influence the behaviour of workers or employers with regard to low pay. Depending on how the policy is designed, it may encourage or discourage certain actions among workers and employers. For instance, a social policy such as unemployment benefits provides workers with a reservation wage, depending on how generous this is, it may incentivise workers not to accept low pay because the unemployment benefits provide certain economic security.

My focus is on five policies which are clearly related to wages and low-wage work: statutory minimum wages, in-work benefits, unemployment benefits, employment protection legislation and active labour market policies. I develop the theoretical expectations between policy and wage inequality in-depth in Article 2. Three of the five policies may reduce wage inequality, while two may increase wage inequality.

The policies that may reduce wage inequality are statutory minimum wages, unemployment benefits and employment protection legislation. Statutory minimum wages can help to promote wage equality by increasing the wages of low-wage workers. However, the effects of minimum wage policies are not uncontroversial. Supporters of minimum wages argue that they help to limit labour market excess and the wage of the lowest-paid workers to an acceptable level. Those against minimum wages argue that they can increase unemployment (Rueda, 2008). Additionally, minimum wage policies may not significantly reduce wage gaps as employers may decrease wages to just above the minimum wage threshold. When it comes to unemployment benefits, these may serve as a reservation wage and may incentivise workers and employers regarding wages. Firstly, if the generosity of unemployment benefits is higher, workers may be less willing to accept low-paid work because they are secured economically through the benefits. As a result, employers have more incentive to pay wages higher than the amount an unemployed worker receives through unemployment benefits (Esping-Andersen, 1990; Vlandas, 2018). How protected workers are by law may influence wage inequality. The simplest rationale is that when employment protection is high, which strengthens workers' bargaining position, this may reduce wage inequality because low-wage workers may be less willing to accept low pay (Bazillier, 2015). The last two policies that would most likely increase wage inequality are in-work benefits and active labour market policies. In-work benefits may incentivise employers to pay low wages because low-paid workers are compensated by the state through in-work benefits (Pedersen & Picot, forthcoming), hence increasing wage inequality. Some types of active labour market policies, especially programmes pushing the unemployed into work, may incentivise workers to accept low-paid jobs. Additionally, these programmes may incentivise employers to promote low-pay work (Vlandas, 2013).

Understanding the political conditions which may promote wage equality can provide insight into the circumstances under which more equal wages are likely to be achieved. Several conditions are important, such as voter mobilisation and demand around wage inequality issues (Berman, 2021). But in this thesis, the political orientation of governments is the main focus because governments are those who ultimately provide policies. Political parties are likely to hold different views about policy choices. This is because parties are often anchored within a specific set of ideas and discourses about how society should be structured and work, shaping the policies they prioritise in pursuing their goals (Piketty, 2020). In addition, political parties are also dependent on formulating policies that appeal to the broader constituency to win an election. In simpler terms, are policies that reduce wage gaps more likely to be applied under left-wing or right-wing governments? Although this seems like a relatively easy question, the answer is far from obvious.

In the field of welfare state research, two main theoretical approaches discuss the relationship between government partisanship and welfare policy. The traditional conflict-based approach and the new social policy tradition (Starke, 2006; Häusermann, Picot & Geering, 2013). The former argues that partisan politics matter, while the latter argues that politics matter less.

Underlying power resource theory is a political struggle about welfare state policies (Korpi, 2006). The power resources of different economic classes manifested in political allegiances. Traditionally, the Left comprises social democratic parties and trade unions and clearly represents the working class. Left-wing control of governments tends to increase welfare state spending and protect the working class. On the other hand, affluent workers' interests would be protected by the Right, and right-wing governments would focus more on boosting private enterprises (Loftis & Mortensen, 2017). From this perspective, policies that supposedly protect workers, like minimum wages, employment protection, in-work benefits, unemployment benefits and active labour market policies, could seemingly be viewed as typical left-wing policies.

However, the "new politics" tradition argues that the link between policy and governments is not as straightforward, because government partisanship influencing welfare state policy has declined over time (Pierson, 1994; Starke, 2006). This literature classifies social policies as either "old" or "new" social policy instruments (Häusermann, 2012), where old policies operate within the frontiers of income and job protection, and new alternative approaches deal with activation and needs-based social benefits.

Changes in the socio-economic structure and a declining working-class base, which was the core constituency for left-wing parties, influenced the range and balance of policy preferences between the traditional Left and Right (Häusermann, Picot, & Geering, 2013). The core electorate of left-wing parties is no longer the traditional working-class voter, the average male production worker. The new constituency consists of middle-class voters who are driven more by cultural rather than economic issues and demand a different set of policies, relating to education, universalism, social investment and gender equality, and who are less interested in traditional welfare policies (Häusermann, Picot, & Geering, 2013) which implies that the Left would rely less on traditional welfare policy and promote a more market-liberal social investment policy agenda. Because of the changing electorate and changing preferences, the Left does not merely represent the "working-class", but has to adapt policies to their new electorate. At the same time the Right, and especially the populist Right, has gained many working-class and low-income voters and needs to take into account their preferences too.

Methodological Considerations

To answer the central research question of this dissertation on, *how states can address wage inequality,* in rich democracies, I use a comparative approach. Each article focuses on one of my three research questions, utilising different data and methodologies to gain a more comprehensive understanding. Article 1 undertakes a systematic literature review to investigate the determinants of wage inequality across rich democracies. The systematic review focuses on studies using comparative design, collects data from these studies and uses a distinct method to analyse these. Article 2 examines the policies that influence wage inequality, while Article 3 analyses the politics behind the most significant policy. Both articles (2 and 3) use regression modelling with data collected from a broad sample of rich democracies. The next section discusses the research design and data collection procedures employed in the dissertation overall. Afterwards, I present the method used in Article 1, which is a less commonly used method in political science. Finally, I outline the two observational studies and their methodological choices.

Comparative design, sample, and data

The overarching research design is comparative in nature and involves a large number of countries. The main advantage of a comparative approach is that this enables comparisons of phenomena, i.e., wage inequality and policies, relatively to something (e.g., between countries or over time). The dissertation aims at covering as many rich democracies as far back in time as possible. Rich democracies are often members of the Organisation for Economic Co-operation and Development (OECD). There are 38 OECD countries, and they consist mainly of high-income countries where democratic principles are strong and have a high degree of human development. However, because Chile, Mexico and Turkey have relatively lower GDP per capita and have distinct institutional contexts, they are excluded from the sample (Pedersen & Picot, forthcoming). Colombia and Costa Rica joined in 2020 and 2021, and are therefore not included in the sample (OECD, 2023c).

The dissertation uses data from multiple sources. In Article 1, I collect data from research articles using a comparative design to investigate determinants of wage inequality across rich democracies. The data is extracted from 25 studies. Information about study characteristics and empirical findings of determinants of wage inequality are categorised and coded. Articles

2 and 3 use data from various sources that are openly available. In Article 2, data is collected for 29 rich democracies[4] between 2001 and 2017. The dependent variable in Article 2, wage inequality (P50/P10), was collected from the OECD dataset on "Gross earnings: decile ratios" (OECD, 2021). Furthermore, the five main policy indicators are collected from different sources. The level of the statutory minimum wage (OECD, 2020), generosity of in-work benefits (OECD, 2022c) and unemployment replacement rate (OECD, 2022b) are collected from OECD statistics and the OECD tax-benefit model. Indicators of policy presence of both statutory minimum wage and in-work benefits are collected from Kozák & Picot (2022) for SMW and Pedersen & Picot (forthcoming) for IWB. I collected indicators on employment protection legislation and active labour market policy from the Comparative Political database (Armingeon, Engler, & Leemann, 2021). The third article covers 30 rich democracies between 2001-2013. The dependent variable, in-work benefit generosity, is collected from OECD's tax-benefit model (OECD, 2022c). The independent variable, government partisanship, is collected from the Seki and Williams - Government Minister Data (Seki & Williams, 2016). Each article consists of a more detailed account of the data collection and indicators. Table 3 provides an overview of the cases and data for each article.

Table 2. Cases and data for each article

Article	Cases	Unit of analysis	Time	Data
1	Rich democracies	Research articles (n=25)	1999-2020	Study characteristics (n=25)
2	Rich democracies	Country (n=29)	2001-2017	Cross-national time-series (n= 317)
3	Rich democracies	Country (n=30)	2001-2013	Cross-national time-series (n= 367)

Systematic literature review as research design

A systematic literature review is a research design that employs a rigorous and transparent methodology to analyse the existing literature on a specific topic. This design minimises bias

[4] Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia. Spain, Sweden, Switzerland, United Kingdom and United States (and Lithuania for Article 3).

in the review process and thus provides a more reliable and comprehensive summary of the current knowledge compared to other approaches to literature reviews. It enables researchers to identify gaps in knowledge and inform future research agendas (Dacombe, 2018). I adhere to specific guidelines provided by the "Preferred Reporting Items for Systematic Reviews and Meta-Analyses" (PRISMA) to ensure transparency in the review process (Moher, Liberati, Tetzlaff, & Altman, 2009).[5] These guidelines are used to provide an accurate account of the entire review process. While systematic literature reviews are traditionally used and highly valued in the biomedical sciences, they have only recently gained traction in political science (Dacombe, 2018).

Narrative or "traditional" literature reviews are an alternative to systematic literature reviews, but they lack a structured and systematic approach to selecting and evaluating relevant literature. As a result, this approach may introduce bias in the selection and interpretation of studies. Moreover, there is a potential risk of cherry-picking studies that support a particular argument or claim while disregarding others. The absence of transparency regarding study selection makes it challenging to know why certain studies are included. Replicating traditional literature reviews is often demanding due to the lack of clarity in the review process. Despite these limitations, traditional literature reviews generally provide valuable insights and background information on a specific topic. However, employing a systematic approach can address some of the challenges of traditional literature reviews by providing a transparent and rigorous methodology for selecting and evaluating literature, thereby minimising bias, and enhancing the reliability and validity of the review.

> *Why add to the literature on the distribution of earnings? On my account, there have been some 200 articles on this topic in leading economic journals since 1990.* (Atkinson, 2008, p. xxi).

Anthony Atkinson's (2008) statement illustrates why a systematic literature review is needed: the literature is vast and there is a lack of systematic literature reviews. Indeed, Atkinson found it necessary to add to the literature himself. This statement was in his introduction to a book of almost 500 pages about the changing distribution of earnings in OECD countries. Moreover, many scholars have devoted whole academic careers to accumulating knowledge on this topic. The primary motivation behind the systematic literature review is that there is a sizeable body

[5] An updated version of the PRISMA guidelines was published in 2021 (Page, et al., 2021).

of existing literature on wage inequality, and currently, no such review exists. In relation to the dissertation, I was particularly interested in finding out what empirical research has been done on the determinants of wage inequality. In addition to shedding light on what we know about the determinants of wage inequality, understanding the determinants may also further inform what can be done to address these. The existing literature does tell us about potential explanations of wage inequality. Katz and Autor's (1999) book chapter on the "Changes in the wage structure and earnings inequality" provided a useful framework pointing out possible explanations. Article 1 further builds on this framework by extending it and providing empirical evidence. Furthermore, the review is a useful tool in guiding the next steps of the research in the dissertation. I believe this demonstrates why this methodology is highly valuable and useful within social sciences. Article 2 explicitly builds on the synthesis by addressing a research gap identified in the review.

In order to ensure a comprehensive inclusion of a wide range of publications on determinants of wage inequality, the research question for the article was formulated broadly: "What are the determinants of wage inequality across advanced democracies?" This was done because the research question guides the inclusion criteria, ultimately guiding which studies are eligible for the review. The search terms were also broad and general, to maximise the coverage of relevant articles. I also used a set of quality criteria (Simpson, Albani, Zoe, Clare, & Brown, 2021) to ensure that the studies met a certain methodological standard.

While systematic literature reviews provide a transparent approach to synthesising knowledge on a particular topic, it is important to acknowledge their limitations. The underlying assumption is that "all knowledge" is gathered on a specific topic. However, this assumption hinges on defining the inclusion criteria because these ultimately guide which studies are included. For example, the studies included were restricted to a specific study design; studies had to be comparative and quantitative. Thus, studies that were either qualitative or assessed mechanisms within single countries were excluded from the selection process. Consequently, the review has a quantitative perspective on the existing literature, which the review to some extent compensates for by explicitly assessing the theoretical arguments in the literature. On the other hand, these exclusion criteria are necessary from an "economic" point of view (Grant & Andrew, 2009). This is evidenced by the time-consuming process of screening the 1965 abstracts retrieved from the search, where 169 articles were selected as eligible for full-text assessment. Moreover, only peer-reviewed journal articles were included, excluding so-called "grey literature", such as books, conference papers, and reports. The main rationale for only including peer-review articles is that this also works as a quality control of the studies, although it comes at the cost of excluding relevant empirical studies from the review.

To analyse the data collected from the different studies, I use a thematic analysis to identify the main topics related to the determinants of wage inequality. The thematic analysis also made it possible to convert the main themes into numerical categories. The numerical categories were then presented in a descriptive overview. This was considered the best approach due to the heterogeneity of the studies. Meta-analysis is often used to analyse data collected from these types of reviews. A meta-analysis would combine all the effect sizes of the independent variable (determinant) and predict it on the dependent variable (wage inequality). This was not viable, though, as the independent variables collected from the review were diverse (12 different independent variables), with some having only effect sizes from one or two studies. I regarded this as insufficient for reliable estimates and thus opted for a more descriptive synthesis of the findings.

Observational studies and statistical methods

The data collected for Articles 2 and 3 are observational data that come from "real-world" observations. This stands in contrast to experimental data where some form of manipulation is done to evaluate treatment or policy. Drawing causal inference from observational data is a major challenge (Stock & Watson, 2020). However, statistical methods have been developed to alleviate or overcome some challenges related to this. One of the most common statistical methods is regression analysis. which is often the alternative route to causal knowledge when experimental or quasi-experimental approaches are not feasible (Angrist & Pischke, 2015). Regression-based causal inference depends on the assumption that when key observable variables (also known as control variables) are made equal across countries, issues with selection bias are reduced (Angrist & Pischke, 2015). Regression-based modelling is a commonly used empirical strategy to test hypotheses and explain phenomena. In both Articles 2 and 3, the hypothesis to be tested is theory-driven and builds on existing theories. The hypothesis is then tested using the regression model approach on observational data. Regression models also represent the most common method in large-N comparative study designs (Ferragina & Deeming, 2023).

The type of data collected can be characterised as time-series cross-section data (Beck, 2001). The advantages of time-series cross-section data are that it is possible to identify differences between countries and trends over time. In addition, this data type has greater generalisability than cross-section data, which improves the external validity of the research findings (Rabe-Hesketh & Skrondal, 2012). However, there are two main challenges with this type of data: missing data and unobserved confounding (or the omitted variable problem). Both issues can potentially make estimates biased (either over- or underestimated) (Bartels, 2008; Wooldridge, 2010). Missing data are often a problem when dealing with longer time periods, which may lead to loss of representativity in the data. Unobserved confounding may be a problem because it is difficult to distinguish between the effects of time-varying covariates and the effects of unobserved factors that correlate both with the dependent and independent variable (Wooldridge, 2010).

In both Articles 2 and 3, some countries do not have observation over the full-time range. In Article 2, 176 country-year observations are missing. In Article 3, 23 country-year observations are missing. The main source of missing values comes from a lack of data on the dependent variables; wage inequality and in-work benefits. These missing values were handled using a conventional approach of complete-case analysis, meaning that observations with missing values were excluded from the statistical analysis (Allison, 2001). This approach was chosen because a very small part of the sample is missing in Article 3 and is thus considered unproblematic. However, Article 2 may be a bit more problematic since a large set of observations is missing. There is, however, no apparent bias in the missing data that systematically impacts results in one way or another. Nonetheless, this is an important consideration to keep in mind when interpreting the results, drawing conclusions, and considering implications.

Secondly, unobserved confounding refers to characteristics of countries that are not directly observable or included in a statistical model. In terms of statistical inference, the presence of unobserved confounding can lead to a biased estimate since all factors influencing the outcome are not accounted for leading to incorrect conclusions about the relationship between the independent variable and dependent variable. These may be country-specific factors that are not easily observed (Wooldridge, 2010). This may have implications for model parameters such as the size of coefficients, standard errors, and incorrect conclusions about statistical significance. These are also suitable approaches to this issue because a special feature of time-series cross-section data is that observations over time are clustered within countries. Various models are designed for this type of data (Rabe-Hesketh & Skrondal, 2012, p. 227; Bryan & Jenkins, 2014). To overcome this issue, I adopt a fixed-effect model (and random), and a mixed-effect model (multilevel model) approach.

In Article 2, I use a fixed-effect model as the foundation of the main empirical results. There are two reasons for this. The first is that fixed-effect models efficiently deal with endogeneity issues. They do so by controlling for the effect of unobserved time-invariant effects, which in practice means that each country serves as its own control (Wooldridge, 2010). Furthermore, fixed-effect models may encounter challenges which make the estimate biased. Potential problems are heteroscedasticity (unequal variance of residuals), autocorrelation (residuals are correlated over time) and correlation of observations within clusters. To address these issues, the fixed-effect model is estimated with country cluster robust standard errors (Wooldridge, 2010). The fixed-effect model should now obtain unbiased estimators, meaning it should not over or underestimate. The fixed-effect estimator estimates the average treatment effect of a policy on wage inequality within each country. While, the fixed-effect model is preferred because it does not have any time-invariant variables or very few observations in one group, I also estimate a random-effect model. This deals with the issue of heterogeneity differently by allowing country-specific effects to randomly varying (Rabe-Hesketh & Skrondal, 2012). Robust standard errors are used to deal with heteroskedasticity and autocorrelation (Wooldridge, 2010). The random-effect estimator encompasses both average trends between countries and individual differences within countries (while the fixed-effect estimator only looks at individual differences). I compared the two models, and they gave identical results, suggesting that the average change over time within countries is most relevant for how policies influence wage inequality. Moreover, I also standardise the policy variables to investigate which policy has the largest impact on wage inequality. In addition, I address the issue of reverse causality by lagging the policy variables when estimating the model, giving similar results as the model without. Reverse causality may be a problem because it is not unlikely to think that increases in wage inequality are influencing how governments use policies.

Secondly, in Article 3 co-authored with Abbas, we used a mixed-effect model to obtain estimates for both within-country changes and between-country effects (Bartels, 2008; Wooldridge, 2010). We wanted to investigate how changes in government partisanship over time, and differences in government partisanship between countries, influence the generosity level of in-work benefits. In other words, we wanted to obtain the within-effect and between-effect of government partisanship, which mixed-effect models allow for. The mixed effect model is also estimated with robust standard errors to correct for potential heteroscedasticity and autocorrelation. The results from the mixed effect model show that it is the within-estimates of partisanship that most strongly shape wage inequality. As sensitivity analysis, we estimate fixed-effect models which corroborate findings from the mixed-effect model.

In both Article 2 and 3, the fixed-effect estimator lays the foundation for the empirical evidence. Using a fixed effect estimator allows inferences only about the observed units, while random effect estimators allow inferences about a unit which is a sample for a larger (hypothetical) population (Beck, 2001). More precisely, the papers tell us how changes within countries over time are associated with an outcome. The theoretical framework in both articles explains why the observed links occur in rich democracies. However, there is a debate about the extent to which it is possible to infer about the world from the observed relationship using these statistical methods. Moreover, these statistical methods have limitations in their ability to examine causal mechanisms – since causality is invisible (Moses & Knutsen, 2012). Large-N designs cannot assess particular cases and contexts in which causal connections are embedded. To do so, the statistical approach would have to be combined with comparative case studies to triangulate policy effects on wage gaps, and the politics of these policies, and this is a limitation of the thesis.

Results

The following section provides a summary of the results from each article. This section then highlights how findings relate to the broader research question of what states can do to reduce wage inequality. In particular, I put the findings in each article in context and illustrate how the articles relate to each other.

Explanations of wage inequality

The first aim of the thesis is to investigate what we know about what explains wage inequality. The first article addresses this by systematically searching the literature and providing a comprehensive overview of the current knowledge on the topic. As the literature review section above previously delves into the potential explanations of wage inequality, the following section will go further into detail about what the review points to as the main determinants of wage inequality in rich countries.

The primary aim of the systematic literature review is to map out the current understanding of the drivers of wage inequality in rich democracies. Further, I provide a framework for how to think about these drivers. The framework is based on 25 quantitative-oriented studies and is therefore limited to the knowledge produced by these studies. Nevertheless, it remains a useful road map for understanding mechanisms behind growing wage gaps in rich democracies. The framework identifies three broad categories that explain wage gaps. The first category is supply and demand factors, the second is collective bargaining institutions, and the third is government and policy.

The supply and demand category includes explanations such as skill levels, technology, trade and globalisation. The most widely researched explanation within this category is how skill differentials influence wage gaps. The consistent findings from these studies suggest that skill differentials play a role in observed inequality. One potential way to address this issue could be to empower workers through policy, such as providing high-quality education from an early age or skill development programmes. Additionally, technological change and trade also influence the supply and demand for labour, but the empirical evidence hinges on a few studies. However, despite theoretical expectations that technological change and trade openness should increase wage gaps, this is not the case (or there is no effect). Capital control is also one of the main factors driving wage inequality in the literature.

The second category of explanations is collective bargaining institutions, which have a vast body of literature exploring these institutional features, where the evidence is consistent. Strong unions and high coverage of collective agreements promote equal wages. Two structural features of collective bargaining institutions – a centralised bargaining system and high wage coordination across the economy – are found to promote wage equality. Because of the consistent findings in the literature, these findings are highly reliable and strongly support the fact that collective bargaining institutions are an essential factor in explaining wage gaps in rich democracies. Changing these institutional features to achieve equal outcomes is not feasible for governments. However, the state may support unions and incentivise workers to join unions through policy.

The last category of drivers of wage inequality relates to governments and public policy. Within this category, relatively few studies explore specific drivers, weakening the empirical evidence due to a lack of consistent findings. Government partisanship is one of the explanatory factors, which indicates, in general, that left-wing government in rich democracies tends to produce more equal outcomes. However, Rueda (2008) suggests that these findings are cloudy in terms of actually understanding which mechanism within the left-wing government promotes equal or unequal outcomes. Another governmental feature associated with lower wage inequality is a higher share of public sector employment. The literature focuses less on the policy side. The main focus is on statutory minimum wages, which consistently show that higher minimum wages reduce wage inequality. For unemployment benefits, the evidence is mixed, and there is no effect of employment protection and active labour market policy on wage inequality.

The review points to several areas in the literature that can be further studied to understand cross-national variation in wage inequality. However, the thesis's contribution is situated within the literature on government and policy, which is explicitly examined in Article 2 by investigating which public policy influences wage inequality.

Public policy

The second object of the thesis is to investigate the various public policies that states can use to address wage inequality. The second article delves into the effectiveness of these policies in reducing wage inequality, focusing on five policies that influence wages for low-wage workers. As these policies are targeted at wages or low-wage workers, the analysis in Article 2 focuses on inequalities at the lower end of the distribution (the 50/10 ratio as described above). The five policies include statutory minimum wages, in-work benefits, unemployment benefits, employment protection and active labour market policies. The theoretical expectations and results of how these policies influence wage inequality are summarised in Table 3.

In short, generous statutory minimum wages effectively reduce wage inequality in rich democracies. Conversely, generous in-work benefits and strong employment protection tend to exacerbate wage inequality.

Table 3. Summary of theoretical expectations and empirical findings policy influence on wage inequality.

	How does the policy influence wage inequality at the lower end of the distribution	
Policy	**Theoretical expectation**	**Empirical findings**
Statutory minimum wage	Reduce	Reduce
In-work benefits	Increase	Increase
Unemployment benefits	Reduce	No influence
Employment protection legislation	Reduce	Increase
Active labour market policy	Increase	No influence

Further, the analysis offers a more nuanced understanding of statutory minimum wages. It is found that while having a high statutory minimum wage reduces wage gaps, it does not necessarily mean it is more effective than not having a statutory minimum wage. The study includes countries with and without statutory minimum wages (like the Nordic countries), and models the effect of not having minimum wages or having a certain minimum wage level. The findings show that not having or having a relatively high minimum wage promotes wage equality. In comparison, low minimum wages are the least efficient way to address wage inequality. These findings also support previous research, as discussed in Article 1.

On the other side, are the two policies that increase wage gaps. The study finds that countries with explicit in-work benefit policies, such as the Earned Income Tax Credit in the US, are more likely to experience higher levels of wage inequality. Furthermore, more generous in-work benefits increase wage inequality, regardless of having an explicit in-work benefit. This is, to my knowledge, the first analysis of this policy in relation to wage inequality and offers novel insight into how the benefits targeted at low-income workers may influence their wages. Lastly, the study found that employment protection for regular workers increases wage inequality, but there is no evidence that employment protection for temporary workers has any effect on wage distributions.

The findings of this study were obtained from a sample of 29 wealthy democracies, with data collected between 2001-2018. The statistical analysis utilises both fixed and random effect models, and the results are consistent across both models. By comparing the effect size, statutory minimum wages were found to be the most crucial in explaining wage differentials, followed by employment protection and in-work benefits. To ensure the credibility of the findings, the researcher also estimated a model with lagged independent variables to examine if the policy occurred after wage inequality had already taken place.

Consequently, these findings indicate that it is essential to grasp the political influence behind minimum wages, in-work benefits and employment protection. While studies have been conducted on the political aspect of minimum wages and employment protection, there is a shortage of cross-national research on the politics of in-work benefits.

Government partisanship

The last objective of this thesis is to assess the political conditions contributing to reducing wage inequality. Article 3 specifically addresses this, but is limited to the partisan profile of governments in relation to policies promoting wage equality. In-work benefits are a type of social policy targeted at low-income households, often either tax or cash transfer. These allow governments to adjust living standards for low-income workers by “topping up” their income. They are perceived to have dual aims in promoting employment and reducing in-work poverty, making them appealing to a broad range of political parties. However, this makes it less clear which government profile is more likely to expand on these benefits.

Article 3 provides an overview of the relationship between government partisanship and in-work benefits. The traditional conflict-based perspective suggests that left-wing governments are more likely to promote policies that protect workers. In contrast, right-wing governments may be hesitant to expand these due to their small state agenda. However, within the “new social policy” theory, it is still reasonable to believe that left-wing governments may expand on these. Still, right-wing governments may be just as likely to do so with the argument of promoting employment. Table 4 shows the theoretical expectation and the empirical findings. Based on a sample of 30 rich democracies from 2001-2013, using a mixed effect model, the results indicate that, over time, right-wing governments in rich democracies tend to expand in-work benefits.

Table 4. Simplistic summary of theoretical expectations and empirical findings of how government partisanship influences policy.

	Which government promotes the policy?	
Policy	**Theoretical expectation**	**Empirically**
In-work benefits	Left-wing	Right-wing
Findings from other studies:		
Statutory minimum wage	Left-wing	Left-wing
Employment protection legislation	Left-wing	Left-wing

Note: For SMW; Kozák and Picot (2022). EPL; Zohlnhöfer and Voigt (2021) and Rueda (2005).

Recalling the findings from Article 2, statutory minimum wages and employment protection are also important policies influencing wage inequality, the former reducing it and the latter increasing it. Table 4 also shows which governments are more likely to expand these policies established by the literature (Kozák & Picot, 2022; Zohlnhöfer & Voigt, 2021; Rueda, 2005)

The theoretical expectations are relatively straightforward, as they are both policies that protect worker’s income and employment, often associated with left-wing ideology. However, Rueda (2008) argues that looking at the direct effect of government partisanship on wage inequality loses some of its nuances, because it is assumed that left-wing governments promote policies that create more equal outcomes. In the case of employment protection, this is particularly noteworthy because this policy expands the wage gap and protective employment legislation is a preferred strategy by left-wing governments.

From a theoretical perspective, it is possible to expect that right-wing governments are more likely to expand on these targeted benefits and they can be perceived as a form of activation or incentivising policy strategy. However, the less fortunate side of these policies is that they make workers more dependent on work to get by (recommodifying). Furthermore, these benefits may have positive implications for workers' disposable income in terms of being redistributed. But their effectiveness may be undermined by the fact that they drag down wages in the first place. Consequently, they shift the financial burden from employers to pay decent wages, to the state in paying out benefits to workers who do not have a decent wage.

The second contribution of the article is to examine whether other institutional factors, such as collective bargaining coverage, statutory minimum wages or traditional welfare benefits such as childcare provision, influence governments' choice in expanding in-work benefits. For example, left-wing governments are more likely to reduce support for in-work benefits when collective bargaining is strong – suggesting that left-wing governments favour unions and collective bargaining institutions to redistribute income to low-income families rather than providing in-work benefits.

Conclusions

The unequal distribution of economic resources is a feature in all rich democracies, albeit to varying degrees. This inequality poses significant challenges by undermining democratic institutions, economic growth, and individuals' well-being. Although some degree of inequality is inevitable, empirical patterns indicate that certain rich democracies are better able to limit inequality than others. Specifically, the Nordic countries have the most equitable wage distribution, followed by Continental European and Southern European countries. Conversely, English-speaking and Eastern European countries exhibit the highest levels of wage inequality. The overall question in this dissertation is, "what can democratic states do to address wage inequalities"? By using a comparative design, it is possible to assess which factors influence wage inequality and draw knowledge about different policy approaches to reduce wage inequality and the political environment these policies are created.

The answer to the question, "what can a democratic state do to address wage inequality" remains complex, and the dissertation offers important insight into the question. This dissertation provides valuable insights into this issue by drawing on multidisciplinary literature that examines why wage disparities vary between countries. Findings from this literature suggest that differences largely influence wage inequality in workers' skills, collective bargaining institutions, and government policies related to wages. To develop effective policies to address wage inequality, it is first important to understand the underlying causes. This information can then be used to identify potential solutions. Democratic states can target the three identified causes through the implementation of policies aimed at improving workers' skills and providing high-quality education and training. Another approach involves supporting collective bargaining features that promote more equitable pay or incentivise unionisation among workers. Government policies that directly impact the labour market can also influence wage inequality. For instance, Article 2 identifies three such policies: statutory minimum wages, in-work benefits, and employment protection. Implementing effective policies in these areas can help reduce wage disparities and promote greater income equality. Overall, addressing wage inequality is a complex and multifaceted issue that requires a range of policies and interventions to achieve meaningful progress.

Moreover, the findings in Article 2 demonstrate a highly interesting trade-off between wage floors determined by law or collective bargaining with regard to wage inequality. Higher statutory minimum wage levels and wage floor set through collective bargaining tend to compress the wage structure, while low statutory minimum wage levels promote higher wage gaps. Left-wing governments are more likely to promote two policies influencing wage inequality: statutory minimum wages and employment protection. How statutory minimum wage influences wage inequality is somewhat complex, but countries with high statutory minimum wages tend to have lower wage inequality. However, countries that rely on a wage floor set by collective bargaining institutions also experience low wage inequality. This suggests that minimum wages are effective policy instruments states can use to address wage inequality if they do not have a well-established collective bargaining system. Statutory minimum wages are most effective when their level is sufficiently high. The interplay between the strength and coverage of collective agreements and minimum wage legislation matters (Dingeldey, et al., 2021). If collective bargaining fails, minimum wages may be considered the best option to support low-wage workers. At the same time, Left-wing governments are also more likely to promote stronger employment regulations, which tend to increase wage inequalities. This illustrates the policy complexion and how possible policy combinations of policy preferences by Left-wing governments may be in a clinch with each other in terms of addressing wage inequality.

While on the other hand, right-wing governments are more likely to promote in-work benefits which are associated with higher wage inequality. This is not necessarily surprising because it goes along with the liberal way of thinking to reduce welfare spending and support targeted societal groups. Right-wing governments, on the other hand, are more likely to promote in-work benefits rather than statutory minimum wages. These benefits, targeted at working households, are more likely to increase wage differences at the bottom of the wage distribution. This also raises the question of to what extent different governments would rather raise the wage floor or use wage substitutes (as in-work benefits) for low-income workers (Grimshaw & Rubery, 2020), and the interaction between these two policies.

There are several promising avenues for future research in the growing literature on solutions and the politics behind wage inequality. It is important to gain more insight into the relationship between statutory minimum wages and policies aimed at strengthening unions and collective bargaining. While institutional settings often shape collective bargaining practices, states can use policies to encourage unionisation or support collective bargaining (Pedersen & Picot, forthcoming). Moreover, public policies do not exist in a vacuum. Since public policies operate in complex and dynamic contexts, understanding the trade-offs between policies and their combined effects is essential. This could be done in a more simplistic statistical manner or by comparing of few countries. Additionally, it is important to explore public attitudes towards policies that affect wage inequality, such as statutory minimum wage or in-work benefits, to gain a more comprehensive understanding of the political conditions that shape policy choices. However, more comprehensive data is needed to investigate the popularity and effectiveness of in-work benefits.

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Appendix

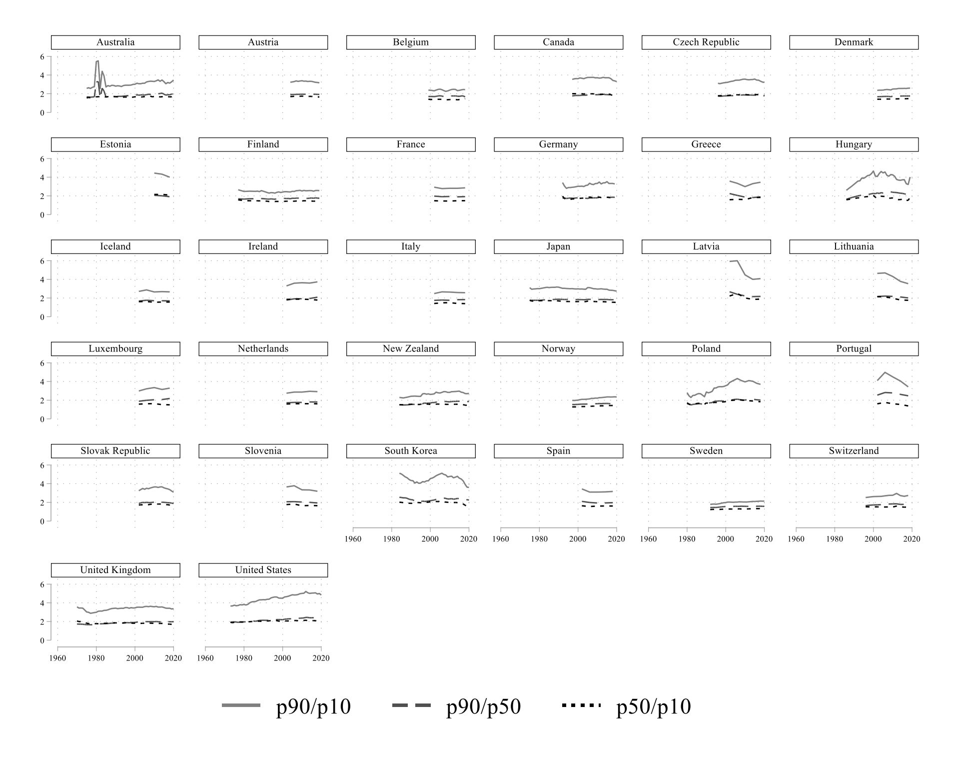
Table A1. List of original data source(s) and wage concept for each country used to calculate the main measures of wage inequality, 90^{th}-10^{th}, 90^{th}-50^{th} and 50^{th}-10^{th} decile ratios.

Country	Original data source(s)	Wage concept
Australia	Australian Bureau of Statistics, Weekly Earnings of Employees (Distribution).	Gross weekly earnings in main job (all jobs prior to 1988) of full-time employees.
Austria	Statistics Austria, Wage Tax Statistics - Social statistical analysis	Gross annual income (excluding casual payments) for full-year employees working full time.
Belgium	Structure of earnings survey. Communiqué «Quel salaire pour quel travail». SPF Économie - Direction générale Statistique et Information économique.	Gross monthly earnings of full-time employed wage earners in NACE sectors C-K.
Canada	Labour Force Survey, Statistics Canada, V0902_06.	Gross weekly earnings distribution for full-time workers
Czech Republic	Enterprise survey (Periodic Census of Employers). Czech Statistical Office.	Gross monthly earnings of full-time, full-year employees.
Denmark	Structure of earnings survey carried out annually comprising all enterprises in the private sector with 10 or more employees.	Gross hourly earnings of full-time workers.
Estonia	National Structure of Earnings Survey.	Gross monthly earnings of full-time employees.
Finland	Household survey (Income Distribution Survey).	Gross annual earnings of full-time, full-year workers.
France	European Union Structure of Earnings Survey (EU-SES). Eurostat calculations based on the microdata.	Gross monthly earnings of full-time employees.
Germany	Household survey (German Socio-Economic Panel, GSOEP), *Deutsches Institut für Wirtschaftsforschung* (DIW Berlin) [German Institute for Economic Research].	Gross monthly earnings of full-time workers.
Greece	European Union Structure of Earnings Survey. Eurostat calculations based on the microdata.	Gross monthly earnings of full-time employees.
Hungary	Enterprise survey (Survey of Individual Wages and Earnings). National Labour Centre, Ministry of Labour.	Gross monthly earnings of full-time employees in May of each year.
Iceland	European Union Structure of Earnings Survey. Eurostat calculations based on the microdata.	Gross monthly earnings of full-time employees.
Ireland	European Union Structure of Earnings Survey. Eurostat calculations based on the microdata.	Gross monthly earnings of full-time employees.
Italy	European Union Structure of Earnings Survey. Eurostat calculations based on the microdata.	Gross monthly earnings of full-time employees.
Japan	Enterprise Survey (Basic Survey on Wage Structure). Planning Division, Statistics and Information Department, Minister's Secretariat, Ministry of Health, Labour and Welfare, Yearbook of Labour Statistics.	Scheduled gross monthly earnings of regular, full-time employees.

South Korea	Entreprise Survey (Wage Structure Survey). Korean Ministry of Labour ,Yearbook of Labour Statistics and data provided directly by the Korean authorities.	Gross monthly cash earnings, including overtime and one twelfth of annual bonuses, of all regular workers
Latvia	European Union Structure of Earnings Survey. Eurostat calculations based on the microdata.	Gross monthly earnings of full-time employees.
Lithuania	European Union Structure of Earnings Survey. Eurostat calculations based on the microdata.	Gross monthly earnings of full-time employees.
Luxembourg	European Union Structure of Earnings Survey. Eurostat calculations based on the microdata.	Gross monthly earnings of full-time employees.
Netherlands	European Union Structure of Earnings Survey. Eurostat calculations based on the microdata.	Gross monthly earnings of full-time employees.
New Zealand	New Zealand Income Survey, a supplement of the Household Labour Force Survey (HLFS). Estimates provided by the New Zealand Department of Labour.	Gross hourly earnings of full-time employees. Monthly earnings include basic salaries, variable additional allowances, bonuses, excluding payment for overtime work.
Norway	Census of employees reporting to the Tax and Welfare administrations.	Gross monthly earnings for full-time equivalents.
Poland	Structure of Wages and Salaries by Occupations survey.	Gross monthly earnings of full-time equivalent employees (data refer to all workers, including part-timers expressed in full-time equivalents).
Portugal	European Union Structure of Earnings Survey. Eurostat calculations based on the microdata.	Gross monthly earnings of full-time employees.
Slovak Republic	Monthly Structure of earnings Survey (SES), Statistical Office of the Slovak Republic (SOSR).	Gross monthly earnings of full-time workers, reported in Euros.
Slovenia	European Union Structure of Earnings Survey. Eurostat calculations based on the microdata.	Gross monthly earnings of full-time employees.
Spain	European Union Structure of Earnings Survey. Eurostat calculations based on the microdata.	Gross monthly earnings of full-time employees.
Sweden	Statistics Sweden.	Average monthly earnings of full-time equivalent employees.
Switzerland	Office fédéral de la statistique, Enquête suisse sur la structure des salaires.	Gross monthly salary of full-time employees (occupancy rate equal to or greater than 90%). This is the gross salary less compulsory / ordinary social contributions payable by the employee.
United Kingdom	Annual Survey of Hours and Earnings (ASHE) for year 2011 (2010 consistent with 2011). Data based on SOC_2010. Office for National Statistics.	Gross weekly earnings of all full-time workers on adult rates of pay. Weekly earnings refer to a full-week pay during the survey reference week.
United States	Household survey (Current Population Survey)	Gross usual weekly earnings of full-time workers.

Source: OECD (2022), "Earnings: Gross earnings: decile ratios", *OECD Employment and Labour Market Statistics* (database), https://doi.org/10.1787/data-00302-en (accessed on 28 December 2022).

Figure A1. Different wage inequality measures across OECD countries.



Source: OECD (2022), "Earnings: Gross earnings: decile ratios", *OECD Employment and Labour Market Statistics* (database), https://doi.org/10.1787/data-00302-en (accessed on 28 December 2022).

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