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Automating away Democracy? Automation Risk, Union Membership and
Support for Democracy

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Abstract English

The aim of my master thesis is to investigate the relationship between automation risk and declining support for democracy among routine workers, as well as whether labour unions can mitigate this effect. Technological innovations disrupt conventional employment and wage structures, and consequently produce economic classes of winners and losers in postindustrial knowledge societies. A crucial question for political scientists is whether these fundamental developments also undermine support for the regime of liberal democracy. Wage stagnation, potential unemployment, and declining appreciation for routine occupations can all have an impact on an individual's perception of his or her social and economic status. With political parties and governments unwilling or unable to accompany technological implementation through (radical) policies, affected workers will lose trust in core democratic institutions and be less satisfied with the democratic system.

After looking at this individual level relationship between automation risk and support for democracy, I expect to find significant differences for these effects between members and non-members of labour unions. Unions can foster democratic values and behaviour in their members through horizontal structures and mass participation. Furthermore, unions primarily represent labour market insiders, who are less vulnerable to modern occupational risks including automation. Since unions not only have inward effects on their members, but also play a key role in developing social and economic policies, I also expect to find a moderating effect for union density on a national level. The hypotheses are tested with data from the ESS for 25 consolidated European democracies through a multilevel model.

On average, workers in routine heavy occupations show lower levels of trust and satisfaction with core democratic institutions, even when controlling for education and class. For all tested relationships, members of unions show higher levels of support for democracy. However, no moderation effect of union membership can be observed. Effects of union density on a national level are also mixed at best. Hence, it can be argued that unions do not have the power (anymore) to moderate antidemocratic tendencies among their members triggered by contemporary occupational risks. Nevertheless, it is shown that the transition to a knowledge society through technological innovations can have negative effects for the stability of democracies by undermining support from affected citizens.

Abstract Deutsch

Ziel meiner Masterarbeit ist es, den Zusammenhang zwischen dem Automatisierungsrisiko und der sinkenden Unterstützung für die Demokratie von Routinearbeiter*innen zu untersuchen und zu prüfen, ob Gewerkschaften diesen Effekt abmildern können. Technologische Innovationen unterminieren herkömmliche Beschäftigungs- und Lohnstrukturen und führen in postindustriellen Wissensgesellschaften zur Bildung von ökonomischen Klassen, die dadurch gewinnen, und welche, die dadurch verlieren. Eine entscheidende Frage für das Feld der Politikwissenschaft ist, ob diese Schaffung von „Automatisierungsverlierer*innen“ auch die Unterstützung für das Regime der liberalen Demokratie untergraben. Lohnstagnation, potenzielle Arbeitslosigkeit und eine sinkende Wertschätzung von Routinetätigkeiten können sich auf die Wahrnehmung des sozialen und wirtschaftlichen Status des Einzelnen auswirken. Wenn politische Parteien und Regierungen nicht willens oder in der Lage sind, die Automatisierung durch (radikale) Maßnahmen zu begleiten, werden die betroffenen Arbeitnehmer*innen das Vertrauen in die zentralen demokratischen Institutionen verlieren und weniger zufrieden mit dem demokratischen System sein.

Einen Moderierungseffekt durch Gewerkschaften erwarte ich, da diese durch horizontale Strukturen und Massenbeteiligung demokratische Werte und Verhaltensweisen bei ihren Mitglieder*innen fördern. Da die Gewerkschaften nicht nur nach innen auf ihre Mitglieder wirken, sondern auch eine Schlüsselrolle bei der Entwicklung der Sozial- und Wirtschaftspolitik spielen, erwarte ich auch einen moderierenden Effekt für den gewerkschaftlichen Organisationsgrad auf nationaler Ebene. Die Hypothesen werden mit Daten aus dem ESS für 25 konsolidierte europäischen Demokratien anhand eines Mehrebenenmodells getestet. Im Durchschnitt weisen Arbeitnehmer*innen in Routineberufen ein geringeres Maß an Vertrauen und Zufriedenheit mit den wichtigsten demokratischen Institutionen auf, selbst wenn für Bildung und Klasse kontrolliert wird. Es kann jedoch kein moderierender Effekt der Gewerkschaftsmitgliedschaft beobachtet werden, sowohl auf individueller als nationaler Ebene. Insgesamt wird gezeigt, dass der Übergang zu einer Wissensgesellschaft durch technologische Innovationen negative Auswirkungen auf die Stabilität von Demokratien haben kann, indem er die Unterstützung der betroffenen Bürger*innen untergräbt.

1 Introduction

Only recently have social scientists begun to examine the political implications of automation. From a supply-side perspective, scholars have investigated how digitalization affects the means of political communication during election campaigns (Stieglitz & Dang-Xuan 2013), or how social media algorithms can have an impact on voting behavior (Spierings & Jacobs 2014). A different approach looks at the issue of technological from the demand side, studying the economic and cultural preconditions for supporting or opposing opinions on the implementation of new technologies in daily life (Dekker et al. 2017). This thesis however adds to the body of research that uses worker-level vulnerability to automation as an independent variable and studies its effects on political attitudes and electoral behavior. Mostly using data from the United States and European countries, two individual-level relationships have been prominently studied to date. Firstly, do workers vulnerable to automation demand specific social policies and more redistribution as a reaction to wage stagnation and a threat of unemployment (e.g., Thewissen & Rueda 2019; Bergman 2022)? Secondly, several authors link the rise of technology in the labor market to the crisis of democracy, political polarization and the rise of populism (Boix 2019; Frey 2019). A central theme of many articles is the support for (mostly right-wing) anti-establishment parties among workers affected by automation (e.g. Im et al. 2019; Kurer 2020).

My master thesis adds to this research and aims to examine how automation risk influences support for democracy. Major developments in the fields of computing power, Artificial Intelligence (AI) and robotics increase the potential for human labor to be replaced by technology and disrupt conventional employment and wage structures (Autor 2015). The demand for routine occupations is declining in knowledge societies, which leads to workers vulnerable to automation losing trust in core democratic institutions and being less satisfied with democracy. A political desire for (radical) policies among workers in vulnerable industries is not met as major parties converge to the center of the economic policy space (Boix 2019). Affected workers feel alienated and are dissatisfied with the political sphere, and as a result they reduce support not only for a political party or certain actors in the government, but for democracy per se.

Building on this line of argumentation, I will investigate the relationship between automation risk and support for democracy and compare it for members and non-members of labor unions expecting significant differences in levels of democratic support. Besides their historical democratic heritage, unions provide contact with democratic ideas and practices in the daily world of work and can therefore influence political attitudes of their members, at least to a certain degree (Frymer & Grumbrach 2021; Turner & Ryan 2020). Since unions are still a (reliable) partner in negotiating social and economic policies compensating labor market risks in many countries, I also expect to find a moderating effect of union density on the country level (Hassel 2019).

Why is it relevant to know whether citizens have confidence in democracy? On the one hand, it is probably in the interest of all of us – going beyond scientific aims – that there will be more, and not less, democracy and democratic rights in the future. This will only work if most of the population continues to be convinced of the idea of a democratically organized government. Seen in this light, the first implication of declining political support of democracy is a possible drift into authoritarianism, as many bestsellers of recent years have argued (e.g. Levitsky and Ziblatt 2019). Secondly, there are also direct implications for the democratic process when more citizens lose trust in political institutions. For instance, studies have shown that voter turnout declines when people are dissatisfied with democracy, undermining the legitimization of elected governments (Devine 2022).

In addition to that, declining political support can create spaces for anti-system institutions – in the form of fringe parties or alternative information sources. This again can lead to more polarization and trigger a spiral of distrust (Dalton 2004). Another implication is the loss of effective policy implementation once broad parts of the population lose trust in core institutions and the political process per se (Zmerli 2012). Democracy functions with minimal force due to high legitimacy and voluntary compliance of the public (Dalton 2004). This legitimacy is threatened by the above presented shifts in public opinion. Dalton (ibid.) cites as an example the increase in cases of tax fraud in the United States as a result of distrust of institutions funded with taxpayer money. A more recent example would be the dismissal of public health measures during the Covid-19 pandemic among citizens dissatisfied with democracy (Eberl et al. 2021).

I test hypotheses using multilevel models with data from the European Social Survey. On average, workers in routine heavy occupations show lower levels of trust and satisfaction with core democratic institutions, even when controlling for education and class. For all tested relationships, members of unions show higher levels of support for democracy. However, no moderation effect of union membership can be observed. Effects of union density on a national level are also mixed at best. Hence, it can be argued that unions do not have the power (anymore) to moderate antidemocratic tendencies among their members triggered by contemporary occupational risks. Nevertheless, I show that the transition to a knowledge society through technological innovations can have negative effects for the stability of democracies by undermining support from affected citizens.

The thesis is structured as follows. In Section 2, I review literature on the economic impact of automation on the labor market citing research of labor market scholars and economists. In section 3, I present the most important scientific contributions in the field of automation of and politics, in which political scientists investigate how increasing labor market risks due to technological change affect political attitudes and electoral behavior. Section 4 covers the state of research on the question of economic change and democratic support, including a short discussion on contemporary forms of measuring support of democracy. After that in section 5, I formulate expectations regarding my research question and elaborate on the relationship between automation risk, union membership and density and support for democracy. In section 6 I explain the methodology of this analysis, as well as the used data set and the most important variables. Section 7 covers the empirical result of my research. Section 8 and section 9 present some concluding remarks as well as limitations and future research questions based on this thesis.

2 Automation and the labor market

In his famous 1932 essay, the economist John Maynard Keynes predicted a future world without enough labor for everyone due to technological innovations. Hence, debates about the impact of technology on employment structures and the labor market are as old as technology itself (for a summary see Frey & Osborne 2017: p. 255-258). Throughout history, struggles between technological progress and job conversation largely reflected the balance of power in a given society (Frey & Osborne 2017). Disrupting technological innovations

always existed, yet they could not always realize their full potential given social and economic interests promoting the status quo (Schumpeter 2013). Frey and Osborne (2017: 256) present an example of the struggle between social power and technology with the story of William Lee's invention of the stocking frame knitting machine in 1589. Clearly, the invention could have relieved workers and increased productivity had Queen Elizabeth I not forestalled it, as the guilds feared technological unemployment (Acemoglu & Robinson 2012: 182f.). Later, the Glorious Revolution of 1688 marked a shift in power: the craft guilds lost most of their influence, and Parliament, which had supreme authority over the Crown, was able to pass technology-friendly legislation. For instance, a law in 1769 made the destruction of machinery punishable by death (Mokyr 1990). In addition, the "Luddite" riots fifty years later, between 1811 and 1816, were shut down by a large contingent of soldiers (Mantoux 2006). Overall, property owning classes became the dominant force in 19th century England, which was a precondition for the Industrial Revolution and made technological advances more likely.

In contrast to modern technological revolutions, 19th century industrialization in England and later in continental Europe favored unskilled workers (Acemoglu 2002). Tasks were simplified and physical capital complemented for unskilled labor while making the work of skilled artisans redundant (James & Skinner 1985). In 1913, Henry Ford introduced an assembly line at the Ford Motor Company to produce the T-Ford, which contained machinery designed to be operated by unskilled workers (Frey and Osborne 2017). The modern pattern of machinery complementing skilled labor and substituting unskilled workers emerged with the switch to electrification from steam and water power, which increased the demand of skilled blue-collar production workers (ibid.).

Since then, the struggle between technological progress and employment structures has been complemented by the factor of education. Citing the expansion of the high school sector and the industrialization of offices, Goldin and Katz (1995) describe for the United States how reforms in the educational sector played a key role for the usage of technology. Innovations like dictaphones, calculators or address machines increased the demand for educated workers and boosted productivity in white-collar occupations (Frey & Osborne 2017). With the first commercial use of computers in the postwar period, and later the development of the Internet, the Computer Revolution unfolded, escalating the race between technology and

education even further. Subsequently, the impact of innovations in the information and communication sector triggered an ongoing scientific and non-scientific debate, which includes a wide range of perspectives, emphasizing the creation of new employment opportunities (e.g. Acemoglu & Restrepo 2019; Brynjolfsson & McAfee 2014), as well as the threat of mass unemployment (e.g. Ford 2015). In this section, I aim to provide a brief summary of the key arguments and studies that have been presented in this ongoing discussion about the impact of contemporary automation on the labor market.

Major developments in the fields of computing power, artificial intelligence (AI) and robotics since the 1980s increase the potential for human labor to be replaced by technology at a much higher scale than ever before (Autor 2015). However, the effect of technology on labor demand is not as straightforward as one might think. Technology can substitute for human labor, meaning that entire occupations will vanish. In contrast, technology can also have a complementary effect by assisting humans in their jobs, making processes more efficient and perhaps even creating more labor demand. A striking example to illustrate substitution and complementary effects of automation is the development of the banking sector since the invention of the automated teller machine (ATM) (Bessen 2016). ATMs in the United States were introduced in the 1970s and their number quadrupled from 100 000 to 400 000 up until 2010. Bank teller employment however also increased by 10% in roughly the same period (ibid.). Defining and writing a set of rules that allows machines to withdraw money from a bank account is manageable – doing the same for dealing with unsatisfied customers is not (Frey & Osborne 2017). Hence, although one part of bank tellers daily work was substituted by technology, they have been trained to do more nonroutine work such as advising customers on loans or financial products (ibid.). David Autor (2015: 9) elegantly summarizes this phenomenon by arguing that automation does not (on average) change the quantity of jobs, but greatly affects the quality of jobs. Another example is the job of a secretary, which has not disappeared, but which has dramatically changed due to the introduction of computers into the world of offices (Frey & Osborne 2017). Although their core responsibilities stayed the same, secretaries nowadays are responsible for a much broader set of tasks such as conducting research or providing training to new staff members (ibid.: p.233).

Automation might even trigger growing rates of employment, making the fear of mass unemployment exaggerated (Autor & Salomons 2018). Innovations that replace labor in one area and reduces prices of one good always also increases real income and demand for other goods (Frey & Osborne 2017). Hence, technological innovations in one sector leads to employment growth in a different sector. However, the changing nature of jobs and more importantly the decline of the labor share relative to the national income still impacts society in an uncertain way.

Substitution still does happen. Computers can follow procedures laid out by programmers in a very efficient manner. Hence, any task that can be fully understood by programmers and divided into logical steps is therefore in danger of being automated. In addition, since costs for computers and technical equipment generally have been falling since the 1980s, businesses have a growing incentive to use technology in the work process (Autor 2015). Even if technology (on average) does not reduce the number of jobs, substitution even only in certain segments of the economy can have major social implications for affected workers and their families, ranging from wage stagnation to potential unemployment. For instance, with the ability of computers to save and reopen files, the job of a typographer almost was made redundant. As a results, employment in the United States among typesetters fell by over 60% within twenty years, while median wages declined by over 15% in the same period (Bessen 2015), leaving thousands of families worse off economically and socially due to the technological impact on the labor market.

The question of which jobs are most affected by automation, and how the labor market responds, is therefore a pressing concern. Economic scholars initially posited that technological innovations would primarily increase labor demand for highly educated workers. This "Skill-Biased Technological Change" hypothesis suggested that only high-skilled or higher-skilled jobs would survive the technological revolution of the 21st century, while low-skilled jobs would disappear, triggering a race between technological innovations and education (Oesch, 2015). However, recent empirical findings on the labor market in the United States and Europe have challenged this view. Contemporary labor markets have seen high growth rates in both high-skilled and low-skilled occupations. The key variable for

understanding the impact of technology on the labor market is not skill (or education), but rather how routinized jobs are (Goos et al. 2014).

As many articles have noted, this development means a polarizing trend for the labor market, hence increasing growth rates for high- and low-income jobs, while middle-class jobs are being eliminated (Autor 2015; Oesch & Menes 2011; Cirillo 2018; Peugny 2019). In recent decades, high-income jobs have grown in number relative to overall labor market growth rates. Similarly, more people work in lower-income occupations (ibid.), making them also "winners" of the technological revolution in quantitative terms. Occupations with "middle" incomes, however, have shrunk relatively over the same period. Affected segments are for instance production and administration, but also transportation and logistics. They have in common that employees do not need a background in higher education, and tasks are often routinized and without social interaction (Levy 2018; Dengler & Matthes 2018).

An effort to quantify the process of job substitution through automation was undertaken by Frey and Osborne (2017). Using innovative methods, they calculated the vulnerability of jobs to computerization in the US labor market and arrived at the astounding figure of 47 percent of all jobs that could potentially be replaced by technology in the near future. Their approach has been replicated for other countries, finding lower estimates of job loss through automation (e.g. Bonin et al. 2015 in the case of Germany). However, critics of Frey and Osborne argue that occupations typically involve multiple tasks, and that further training in other tasks could offset the vulnerability of automation of one task (Busemeyer 2022). Using a more nuanced task-based approach, Arntz et al. (2016) also present lower numbers in their study of jobs at risk due to automation in OECD countries, which ranges from 6 percent in South Korea to 12 percent in Austria.

Overall, making a precise prediction about the impact of technology on the future of work and employment structures is nearly impossible due to the rapid nature of technological advancements. In their book "The New Division of Labor", Levy and Murnane (2004) argue that human perceptions are too difficult to replicate for computers making self-driving cars impossible. Six years later, Google announced that fully autonomous cars would be available soon (Frey & Osborne, 2017). Nevertheless, with costs for computers being in decline, the

economic incentive to use them over human labor will continue for employers. Moreover, new forms of technology (e.g. AI) made it much harder for humans to outpace technological progress through education (ibid.). It will become clear soon whether modern hypotheses about the effects of automation will prevail. What can be determined, however, is that automation increases income inequality, polarizes employment structures, make routine tasks less demanded and directly benefits individuals with high levels of skills and education – with direct and indirect political consequences.

For the individual worker in routine occupation, automation leads to wage stagnation and reduces upward mobility and opportunities of economic success in the future (Kurer & Parlier 2019). Although only a minority ends up unemployed as a direct consequence of automation, the risk is higher than for other occupations. Alternatives in non-routine jobs that are less vulnerable to automation often times mean economic downgrading and precarious working conditions (Kurer & Palier 2019). While the experience of economic hardship does not occur, the *“fear of falling down the social scale are certainly well-founded”*, making a political reaction in form of changing attitudes or forms of behavior of affected workers more likely (ibid.: p. 3).

3 Automation and politics

In this section I briefly present the ongoing scientific debate in the dynamic field of automation and politics. Two main approaches exist that link technological change to specific forms of political attitudes and political behavior: (1) changing preferences regarding social policies and welfare programs as a compensation for contemporary occupation risks, and (2) rising support for (mostly right-wing) anti-establishment and populist parties among those negatively affected by automation.

The first approach is based on the argument, that labor market risks caused by automation might increase the demand for redistribution and protectionist social policies. One of the first studies that investigated this relationship by Thewissen and Rueda (2019) used different measurements of automation risk conducted by labor market scholars and found for each of them a positive relationship with the demand for higher governmental redistribution.

Although the study was one of the first in its field and was able to provide important insights it failed to specify what respondents mean by the term “redistribution”. Kurer and Häusermann (2022) went beyond usage of abstract concepts and tried to analyze which social policies workers vulnerable to automation specifically demand. They differentiate between investment policies and consumption policies. While the former refers to welfare state activity that tries to promote and improve human capital (e.g. education and training), the latter includes mostly financial benefits (e.g. pensions or unemployment insurance). Using individual-level perception of automation risk as the independent variable, they find preferences for consumption policies over investment policies among the workers most worried about automation. Im (2021) challenges this narrative by showing workers negatively affected clearly support active labor market policies implemented by the government, which can be classified as investment policies. Other scholars use the same approach and find mixed results: Dermont and Weisstanner (2020) find demand for a universal basic income among routine workers. Im and Komp-Leukunnen successfully link automation risk to the support for workfare and Gallego et al. (2018) find no statistically significant relationship with holding attitudes for social policy preferences, but instead the desire to slow down automation.

Importantly, Gingrich & Kuo (2022) complement the findings above by including the factor gender. They argue that existing relationships between automation risk and social policy preferences have a strongly gendered component. Although women and men are affected the same by automation risk in the labor market, the former perceive this development with less stress. Occupational status – and a possible loss of it – is more important for men than for women. Historically, women only recently joined the labor market, which gave them less time to build an identity around their position. Furthermore, women are more able to dodge automation risk through upgrading into safer occupations. Gingrich and Kuo (2022) show how discourses about automation are heavily influenced by the male breadwinner paradigm. The reference points in alarming narratives are mostly white male workers. With their study they show how empirical evidence about automation risk and demand for redistribution is more substantive for men than for women.

Moving on from preferences and attitudes regarding the welfare state and social policies, political scientists have also started to investigate the political behavior of those negatively

affected by automation. As described above, technological change is seen as a driving force behind economic inequality, labor market polarization and the disruption of post-1945 employment and wage patterns, which formed the basis for economic and political stability (Acemoglu 2002; Autor 2015; Autor et al. 2015; Boix 2019; Goos et al. 2014). Social classes not benefiting from automation have a reason to challenge the political status quo and established political parties (Rodrik 2017). The theory behind populist rhetoric claims that contemporary societies are a struggle between an (allegedly) corrupt elite and the pure, suppressed people (Mudde 2015). Automation and its effect on economic inequality could be used in the same framing: big technology companies (the elite) benefit, while workers (the people) lose their jobs (Levy 2018). Furthermore, technological innovations in the 1980s triggered a transition to knowledge economies, in which the demand for workers with higher education and higher skills increased rapidly (Boix 2019; Iversen & Soskice 2019). Mostly male members of the old middle classes felt ‘encapsulated’ throughout this transition and started demanding political change. Iversen and Soskice (2019) do not describe them as antigrowth, nor anti-new technology, but as the backbone of a former industrialized economy that want the government to work for them (again). They want to resume a more central position in the political system (again) and feel a loss of pride. At the same time, center-right and center-left parties lost the ability to appear as a credible political alternative for those who feel alienated by automation. Boix (2019) accuses (with empirical evidence) established political parties of converging to the middle ground of economic policies, abandoning any form of political vision apart from the program of classical liberalism with free markets and free trade embedded within a welfare state. The real economic consequences of automation combined with a political class, which had become the manager instead of designer of democratic capitalism created opportunities for PRRPs. With a rhetoric of nationalism and former pride PRRPs are capable of appealing to many members of ‘the old middle class’ that perceive a loss of economic (and societal) status due to automation and globalization (Iversen and Soskice, 2019).

In their highly regarded article, Frey et al. (2018) first tried presenting empirical evidence for the relationship between individual economic status loss due to automation and voting for radical political change. With data from the 2016 US Presidential Election, they show that support for Donald Trump was significantly higher in local labor markets more exposed to the

adoption of robots. Controlling for factors such as offshoring and trade exposure did not negate this effect. Counterfactually, the democratic candidate Hilary Clinton would have won enough states to gain a majority in the Electoral College would it not have been for robot adoption in the years leading up to the 2016 election – based on the model of Frey et al. (2018).

With a similar approach, Anelli et al. (2019) and Milner (2021) replicated the results for European democracies. Measuring automation exposure both on the regional and individual level they find a robust relationship with voting behavior. As expected, automation exposure increases the probability to vote for populist radical right parties and decrease perceived economic conditions and satisfaction with democracy (Anelli et al. 2019). Similarly, Im et al. (2019) finds a positive relationship between economic insecurity due to automation and voting behavior. With survey data from the European Social Survey, it is shown that automation threat is likely to increase support for radical right parties. Kurer and Häusermann (2022) reproduce the same argument and procedure by linking automation risk to voting abstention.

In contrast, Gallego et al. (2018) show that the narrative around automation focuses mostly on “losers and superstars” but neglects the *“large share of skilled workers who benefit from new technology”*. Studying their political behaviors deconstructs the story of “the revenge of the left-behind” since they mostly support the political status quo. Schöll and Kurer (2021) take this argument and look at automation exposure and voting behavior on the regional level. Robot adoption changes the composition of a regional electorate due to a decline in manufacturing and routine jobs and employment growth in service sector and non-routine cognitive jobs. This benefits liberal and progressive parties more than their radical right counterparts. Hence, they show an opposite picture of the political reaction to automation than the paper by Frey et al. (2018). However, it should not go unmentioned that there are possible cofounders through case selection since West Germany and the United States show many differences in regional labor markets.

The most sophisticated approach on the political effects of technological change is presented by Thomas Kurer (2020) in his article on automation risk and voting for radical right parties.

He assumes that members of the lower middle class react differently to the shock of automation based on how they can deal with it personally. With panel data from Germany, Switzerland, and the United Kingdom, Kurer (2020) distinguishes four groups in the context of automation risk in the labor market: (1) upgrading, (2) survivors, (3) downgrading, and (4) dropouts. Depending on how the risk of automation is handled, there are different electoral implications. As the results also confirm, "survivors" are particularly susceptible to supporting radical right-wing parties. On the contrary, transitioning out of routinized work (up- or downgrading) and unemployment reduce the probability to vote for PRRPs. Since "survivors" are the biggest groups in all studied labor markets, the lower middle class negatively affected by automation is still an electoral game changer (Kurer & Palier 2019).

To conclude, two scientific approaches on the consequences of automation on the political sphere exist. First, researchers have been very interested in the relationship between automation risk and attitudes toward social policy. The background to this is primarily the assumption that economic losers created by automation (and globalization) make specific demands on the welfare state. Workers affected by automation do indeed demand more redistribution, but the effect on concrete policies remains unclear (e.g. Thewissen & Rueda 2019). Second, there is a distinct link between changes in the labor market due to automation and the rise of radical right parties in the United States and Europe (e.g. Frey et al. 2018; Anelli et al. 2019). The lower middle class in routine jobs seems to be particularly vulnerable to the protectionist rhetoric of anti-establishment parties. For different countries and periods, it is shown that economic shocks (such as automation and globalization) can shake up the political status quo.

4 Support for democracy

Democracy cannot survive without the support of its citizens. For several decades, however, political scientists have observed a decline in precisely this attitude: Citizens are losing trust in democratic elites and institutions and no longer believe that their voices are considered in the political decision-making process (Dalton 2004; Schäfer 2021). Exploring the roots of this development has become a core question in contemporary political science, with a variety of approaches, methods and lines of argumentation finding their place in the literature (for an

overview e.g. Perlot et al. 2022). A general starting point for most scholars is the analytical distinction of political support presented by Easton (1975): while specific support for democracy comprises (the lack of) satisfaction with certain – specific – policies and politicians, diffuse support refers to a more general belief in the democratic system. Pippa Norris (1999) goes even further and presents five different levels of political support. She also notes that it makes a difference whether a person is dissatisfied with current governments and laws, or generally feels left alone by the democratic system. Norris starts with support for or identification with the political community as the most general level. The next two levels refer to democracy as a preferable form of government and the feeling of satisfaction with how democracy functions. Building on the first three levels, Norris closes with support for the most important democratic institutions (e.g. parliament) and support for specific political actors (e.g. prime minister). In general, most studies on the support of democracy do not include all five levels mentioned. Instead, the diffuse support of democracy is seen as a given while satisfaction with regime performance and trust in institutions are used as a scientific tool.

However, what aspects influence individual level support of democracy? Some research focuses on economic developments, distinguishing between the macro level and the micro level. The first approach points to factors such as the GDP and income equality (Przeworski et al. 2000; Przeworski & Limongi 1997; Christmann 2018), or the existence of a strong welfare state as important aspects regarding democratic stability (Shore et al. 2019). Political institutions are perceived as trustworthy if they are able to provide political rights and economic prosperity for broad parts of society (Zmerli 2012). The second approach argues that decline in trust for and satisfaction with the democratic system is occurring mostly among parts of the society with a lower socio-economic status (Goubin & Hooghe 2020; Ceka & Magalhaes 2020; Schäfer 2010; Tormos 2019). Similarly, past experiences of economic hardship (Krishnajaran et al. 2022) and low economic perspective for the future also correlate with lower rates of political support for democracy (Nadeau et al. 2019). Schäfer's (2013) study shows that the two approaches also complement each other, with individual factors such as unemployment reducing satisfaction with democracy – moderated through the national unemployment rate. While most scholars understandably focus on national institutions and actors (parliament or head of government), a similar trend of declining trust can also be found for international

(democratic) organizations – such as the European Union or the United Nations (Arpino and Obydenkova 2019).

Both economic approaches connect globalization and deregulation of capitalism with (national) democracy being unfit to provide enough compensation, resulting in political instability (Norris and Inglehart 2019; Boix 2019). While this line of argumentation is inherently plausible and goes hand in hand with empirical evidence, part of the research on the crisis of democracy also focuses on shifts in cultural and educational values instead of economic developments (Inglehart 2000). Building on that argument, scholars repeatedly studied the relationship between the factor of age, year of birth and support for democracy (Foa et al. 2020; Wuttke et al. 2020). With the expansion of the educational sector, citizens became more critical of political elites and demanded change, resulting in an increased activity of social movements since the 1970s (Dalton 2004). Therefore, social rights for women, sexual and ethnic minorities were expanded, which leads to the conclusion, that dissatisfaction with the political status quo or certain policies does not always lead to the collapse of democracy but is an essential part of any democratic system.

A third way of thinking about democratic support, political trust and satisfaction with democracy is through individual partisanship (e.g. Anderson and Guillory 1997). Studied many times and for different cases, it has been shown that supporters and voters of parties that win elections are more satisfied with the political system than their counterparts are (Dahlberg & Linde 2017; Daeau et al. 2018). While some studies challenge this general “winner-loser-gap” (Daoust et al 2021), the question of which party is in the government and which party is in opposition matters for the public evaluation of democracy. Reinl and Schärfer (2021) even show that a new party (*Alternative of Germany* – AfD in Germany) entering parliament for the first time significantly increases satisfaction with democracy among its voters. Party alignment also affects the support of certain aspects of democracy, as shown through an experiment by Graham and Svobik (2020) in the United States: respondents prefer partisan choices over democratic principles like electoral fairness and civic liberties. Overall, there is no singular explanation on why support for democracy is in decline, although all three presented approaches go hand in hand with empirical evidence and a robust theory.

The research about the relationship between citizens and democracy is mostly based on surveys, which leads to the crucial question: are social scientists actually able to measure support for democracy (Inglehart 2001; Wuttke et al. 2020)? To date, the question on what survey items can and cannot do is content of a long-lasting scientific debate. Based on the concept of Easton (1975), support for democracy can be diffuse (long term) or specific (short term). The crisis of democracy implies a long-term decline in diffuse support, although it is not clear how this really can be measured. The term "democracy" has a very positive connotation, which means that comparisons with other forms of regime (e.g. autocracy) often fail because of lacking definitions (Dalton 2004). Democracy becomes an empty signifier for a wide variety of social issues or a synonym for patriotism (e.g. in the United States) (Slovik & Graham 2020). Democracy being the "best" political systems seems to be a fact universally accepted in OECD countries, making it redundant to analyze (Dalton, 2004). But also, conventional questions about trust in democratic institutions and elites or satisfaction with the democratic system run the risk of measuring the individual relationship to the current government rather than unconscious support for democracy and democratic norms (Linde & Ekman 2003; Canache et al. 2001). Studies have also found that values of satisfaction with democracy vary substantially between survey projects, undermining the usefulness of comparing results (Valgarosson & Devine 2022).

On the other hand, scholars investigating the crisis of democracy point out that the same survey items over a long period indicate a massive decline in trust and satisfaction among citizens – independent of election cycles, political scandals, or policy programs (Boix 2019; Dalton 2004). Besides individual attitudes, political scientists also see the electoral success of populist radical right parties such as Vox in Spain or the Freedom Party in Austria as a consequence of declining public support for democracy, since a key feature of populist rhetoric is a critique of democratic norms and institutions (Mudde 2015; Norris 2018). Nevertheless, producing proper tools to measure public support for democracy and its liberal elements will be a key task for future political scientists. Citing Wuttke et al. (2022: p.427), it will be necessary *"to avoid the embarrassment of being forced to announce that the patient dies years before without anybody noticing."*

5 Hypotheses and expectations

Based on the presented literature above, I argue that worker-level automation risk can have an influence on the individual-level support for democracy. A broad middle class is essential for democratic stability (e.g. Moore 1993). Historically, industrialization and mechanization increased the demand for political power among the bourgeoisie and the working class, which lead to the collapse of autocracies and the rise of democratic rule (Frey 2019). Augmenting technological change increased workers productivity and triggered the emergence of a broad middle class with rising wages, job security and decreasing political polarization (ibid.). However, major developments in the fields of computing power, AI and robotics since the 1980s have fundamentally changed the relationship between automation and democracy. The consequence of current technological change is economic inequality and labor market polarization, which leads to a polarizing political class and vice versa (ibid.). Furthermore, automation leads to an enormous concentration of wealth, which undermines the legitimacy of democracy through lobbying and campaign donations (ibid.).

On the individual level the construction of a knowledge society through policies and technological innovations produces economic winners and losers. Routine workers (the 'old middle class') fall into the latter category since their skills become less relevant in automated industries. Hence, they perceive a feeling of economic decline, experience wage stagnation and fear the possibility of unemployment. Rapid technological change in the past decades incentivize businesses to invest more into machines, software and AI and less into human labor. Similarly, innovations in the fields of transporting (e.g. standardized container) reduce the costs of shipping significantly and allow the existing of profitable production plants in developing countries. Hence, workers in routine-jobs face multiple risks in postindustrial societies. Beside automation risk and offshoring, workers also face employment threats such as migration of low wage labor or changing consumer preferences (Im et al. 2019). Mutz (2018) argues that group threat is politically speaking almost more relevant than objective economic downturn, because it is an issue of mindset instead of a precise misfortune.

In addition to the economic aspects, the cultural relationship to work itself is also changing. As the demand for routine workers declines, so does the social recognition for certain types

of work and professions. Since individual work is not only a source of income, but also part of someone's own identity, technological innovations lead to a feeling of cultural resignation and a decline of self-worth. Michele Lamont describes in her book "The Dignity of Working Men" the working culture and identity of men in routine jobs as disciplined (2000). Exactly this discipline of waking up every morning, going to work and fulfilling your contracted duty becomes less relevant in a world in which machines might not be better (yet) than humans in every regard, but are definitely more disciplined. Hence, employment offers collective purpose and social status and fosters psychological well-being (Kurer 2020). Traditional aspects of society, such as lifetime employment and secure retirement suffer from modern technologies, as they make certain types of employment redundant (ibid.). Almost endless social and economic possibilities enrich the lives of some, while others feel a sense of isolation and alienation in a world without a given structure – a status described as "risk society" (Beck, 1986).

In a way, economic hardship and a lack of societal appreciation alone should not be able to explain the decline of support for democracy. A rational consequence would be the creation of a new political cleavage between those who benefit and those who lose as a result of technological innovations. Political parties develop a language and policies regarding the issue of automation to attract certain voter groups in elections. Technological change will take place and generate massive amounts of wealth due to an increase in productivity. However, societal damage is mitigated as democratically legitimized governments enhance policies to protect and precisely support those parts of the workforce, that perceive technology more as a threat than as an opportunity. Consequently, democratic support should increase and not decline and democracy should prevail and not fail.

However, the relationship between democratic politics and economically dissatisfied citizens is not as straightforward. Boix (2019) argues that automation reduces the support for democracy for two major reasons. Firstly, as described above, technological innovations create a demand for political change due to their substitutive effects on routine heavy occupations. Secondly, this demand does not meet a political supply, which proposes radical policies to regulate the implementation of new technologies. The construction of a knowledge society goes hand in hand with major parties of the right and the left converging to the center

of the economic policy space (ibid.). Ultimately, both center-right and center-left parties propagate the political program of classical liberalism, which combines free markets and free trades with a welfare state that minimizes certain risks for citizens (ibid.). With Jeremy Corbyn of the British Labor Party calling for the taxation of robots or Andrew Yang building his entire 2020 presidential run in the United States around the issue of automation some exceptions to the rule exist (Frey 2019). The general political narrative about automation however emphasizes on the competitiveness in a globalized economy and possible shifts in political power based on shifts in technological supremacy (ibid.). Not without reason did the White House Office of Science and Technology Policy describe the developments of supercomputers as *“essential to economic competitiveness, scientific discovery, and national security.”* (ibid.: 2019). Routine workers who suffer from a lack of economic perspective in industries that become automated perceive a decline of appreciation for their (life) work and do not find a politically adequate solution for their situation. They feel alienated and are dissatisfied with the political sphere, hence losing support not only for a political party or certain actors in the government, but for democracy per se.

Based on these arguments, I formulate my first hypotheses:

H1: Workers more vulnerable to automation are less supportive of democracy than workers less vulnerable to automation.

5.1 Unions as moderators

The literature on economic developments and possible political implications emphasizes the importance of labor market institutions and actors on the relationship between capitalism and democracy (Iversen & Sosike 2019; Beramendi et al. 2015). During the twentieth century, trade unions were among such actors able to mediate between the capitalistic tendencies of accumulation of wealth and power in free market societies and general prosperity and democratic participation of the many (e.g. for Germany see Schönhoven 2014). They were the most important counterweight to businesses and the manager branch, gave workers a voice, and fought as political organizations for rising wages and better working conditions (Hassel 2015). Historically, unions were also always carriers of democratic values and ideas like mass participation and anti-authoritarianism (Schönhoven 2014). With the expansion of democratic

rights, unions helped implement radical improvements for working people in the form of redistribution programs, reduction in working time or an increase of wages (Hassel 2015).

Since the 1980s, however, unions have been steadily losing membership density and political influence in almost all of the OECD, with Scandinavian countries being an exception (ibid.). Automation, de-industrialization, a growing service sector, offshoring of manufacturing jobs, downsizing the public sector, and an increase in non-standard contracts are all trends undermining the ability for unions to attract new members and engage in political battles with governments or big corporations (Menz 2017). Furthermore, general value shifts towards individualization also hinder the work of unions, since traditional class boundaries and class identities are blurred, leading to a fragmentation of the working class (Trentini 2022).

Historically, labor unions supported and promoted center-left parties, but were also seen as reliable partners for center-right parties (Hassel 2015). With the end of Keynesian welfare states in the 1970s, this relationship came under pressure. During the new economic policy paradigm of liberalization, deregulation and supply-side reforms, unions were more seen as obstacles for reforms rather than political partners (Menz 2017). The public perception of unions suffered when they still tried to offer themselves as partners for governments regarding economic and social policies in the age of globalization. Flexible labor market policies became a standard for almost all Western countries, including those lead by center-left parties (e.g. the SPD under Gerhard Schröder or the Labour Party under Tony Blair) (Hassel, 2015). Reduced pension payments, cuts in social spending and privatization measures to reduce public debts were partly also negotiated by unions with the expectations of job security and more investments in education and training (Menz 2017). This in turn accelerated the loss of importance of trade unions. Nevertheless, unions are still important actors in a functioning labor market. To reverse their membership crisis, unions would have to be more successful with new labor market participants, such as women, migrant workers, younger age cohorts or workers in non-standard employment contracts (Hassel 2015; Oesch 2015; Menz 2017)

Although union density continues to decline and scientific interest in unions seems to have peaked in parallel with their political influence in the 1970s and 1980s (e.g. for Germany see

Schröder 2013: p. 18), there are recent studies that use union membership as an independent or as a dependent variable. For instance, Jensen (2017) shows for Scandinavian countries that left-wing political attitudes become more important for individual likelihood of joining a labor union. Trentini (2022) finds similar results but also includes political participation as a precondition for and as a possible consequence of union membership. In their paper, Turner and Ryan (2020) present a plausible causal mechanism on why unions still matter for the stability of democratic systems. Besides their historical democratic heritage, unions provide a contact with democratic ideas and practices in the daily world of work. Workplace authority structures shape political attitudes and behavior (Kitschelt & Rehm 2014). Unions are horizontal associations with equal membership (Putnam 2015). Turney and Ryan (2020) even describe them as democratic associations embedded in authoritarian entities (firms). They allow workers to challenge management and provide tools of collective representation, bargaining mechanisms or even strike action (ibid.). Unions furthermore provide contact with elements of opposition and distinctive political positions – both key features of liberal democracies, which have in their center the process of balancing different – even contradicting – interests, opinions, or lifestyle choices. Members of unions therefore obtain a feeling of efficacy without the fear of victimization or discrimination (ibid.). The authors conclude – all things considered – that a union makes their members more active in daily politics and increases their support for democratic principles and democracy as a political system.

Based on these arguments, I formulate the next two hypotheses:

H2: Members of labor unions are more supportive of democracy than non-members of labor unions.

H3: Union membership has a moderating effect on the relationship between vulnerability to automation and support for democracy.

Unfortunately, there is almost no scientific attention on the role of labor unions regarding the issue of automation and technological change. Generally speaking, substitution of labor through automation fundamentally undermines traditional power sources of unions, which are based on masses of paid workers and their ability to stop production (Nissim & Simon 2021). Furthermore, general trends in the labor market such as non-standard employment

correlate with the usage of technology and further decrease the strength of unions (ibid.). Historically, unions benefited from complementary automation since it increased the productivity of workers and hence bargaining powers with employers and the government (Frey 2019). Using a Korean business-level panel dataset, Lee and Kim (2023) show that unions protect senior skilled workers against hires of young, unskilled workers triggered by automation. Hence, they argue that labor market insiders benefit off unions when it comes to possible substitution. A more nuanced picture is drawn by Belloc et al. (2022), who also find a negative relationship between labor unions and automation risk. They argue that the presence of unions results in a strategic interaction between workers and capital owners when it comes to the emergence of new job designs, that are characterized by less routines and more engagement, which reduces the average employee's vulnerability to automation (ibid.: p.4). As an example, they cite Nordic countries like Sweden or Norway, which both show relatively low numbers on job automation risk and high union coverage together with other mechanisms that give workers efficacy in bargaining with capital owners (ibid.: p. 23). Furthermore, on the national level, unions do have a say in the implementation of social and economic policies, advocating for the improvement of working conditions and increasing salaries (Menz 2017).

Based on these arguments, I formulate my final hypotheses:

H4: Union density has a moderating effect on the relationship between automation risk and support for democracy.

To sum up, I expect to find a negative relationship between the variables automation risk and support for democracy. Major developments in the fields of computing power, Artificial Intelligence (AI) and robotics increase the potential for human labor to be replaced by technology and disrupt conventional employment and wage structures (Autor 2015). The demand for routine occupations is declining in knowledge societies, which leads to workers vulnerable to automation losing trust in core democratic institutions and being less satisfied with democracy. A political desire for (radical) policies among workers in vulnerable industries is not met with major parties converging to the center of the economic policy space (Boix 2019). Affected workers feel alienated and are dissatisfied with the political sphere, hence losing support not only for a political party or certain actors in the government, but for democracy per se. Building on this line of argumentation, I want to investigate the relationship

between automation risk and support for democracy and compare it for members and non-members of labor unions expecting significant differences in levels of democratic support. Besides their historical democratic heritage, unions provide contact with democratic ideas and practices in the daily world of work and therefore can influence to a certain degree political attitudes of their members (Frymer & Grumbrach 2021; Turner & Ryan 2020). Since unions are still a (reliable) partner in negotiating social and economic policies compensating labor market risks in many countries, I also expect to find a moderating effect of union density on the country level (Hassel 2019).

6 Case selection, data set and methods

6.1 Case selection

To investigate the relationship between automation risk, support for democracy and union membership, I use data from 25 European countries, which all can be classified as consolidated democracies¹. Based on scores of liberal democracy from the Varieties of Democracy project, I exclude countries with a value of 0.5 or lower. Democracy itself should as much as possible not be perceived as a partisan issue, which is the case in countries where democratic institutions themselves have not become the target of government decisions or political parties. The V-Dem liberal democracy index comprises several indicators such as the protection of individual and minority rights, strong rule of law and an independent judiciary, to measure the overall limitation of executive power. The higher the score, the stronger are political control mechanisms and civil liberties. Apart from Poland, North Macedonia, Hungary, Montenegro and Serbia, all countries in the data set show at least a score of 0.5. Sweden, Norway and Estonia show the highest score of liberal democracy. A visualization of the V-Dem scores for each selected country can be seen in Figure 1.

¹ Austria, Belgium, Bulgaria, Switzerland, Czechia, Cyprus, Germany, Estonia, Spain, Finland, France, Greece, Croatia, Iceland, Italy, Ireland, Latvia, Lithuania, Netherlands, Norway, Portugal, Sweden, Slovenia, Slovakia, United Kingdom

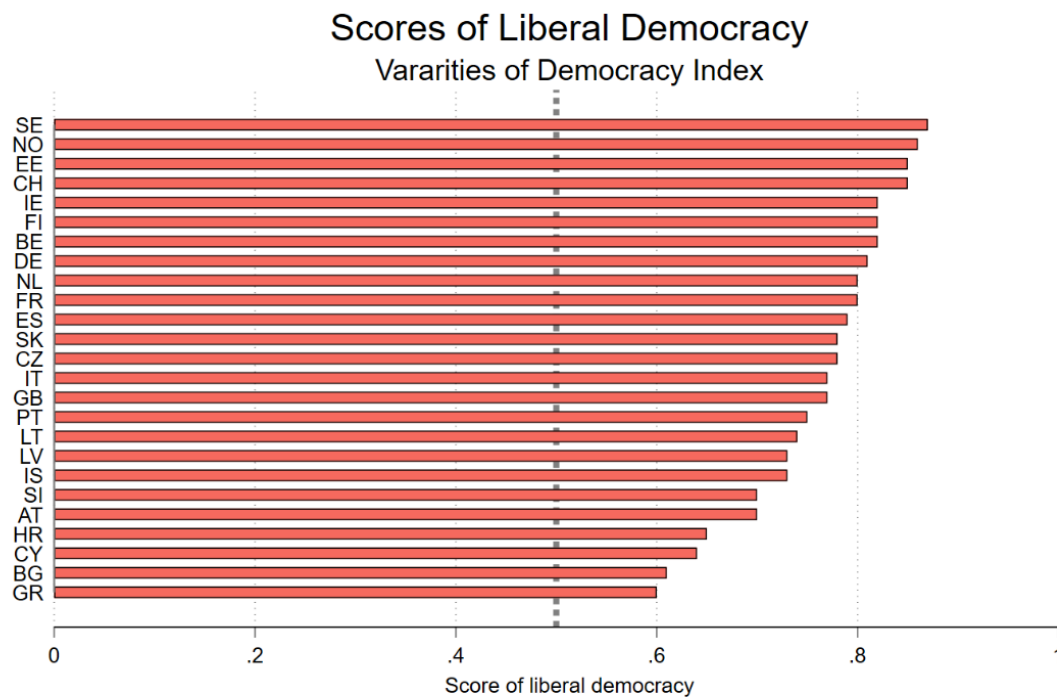


Figure 1: V-Dem Score "Liberal Democracy Index" 2021/2022

Furthermore, all countries used in this analysis are in the process of post-industrialization, which is characterized by a shrinking industrial sector, digitalization of work and the offshorability of jobs. Therefore, there is no reason to exclude any country due to the universal phenomena of automation and globalization. However, certain conditions and economic path dependencies influence their impact on individual countries. Even though technological innovations lead to labor market dislocations in all countries, the share of jobs at risk varies across countries. Depending on the size of different economic sectors, training opportunities for the population, and investment incentives, economies are better or worse "prepared" for the use of new technologies. For a precise analysis for OECD countries see e.g. Arntz et al. (2018).

A general exclusion of postcommunist countries does therefore not apply. Firstly, the main concept of interest - substitution through automation and changing occupational structures as a result – is not unique to Western European countries (Nchor & Rozmahel 2020). Secondly, as recent studies have shown, there is no significant gap (anymore) between Eastern and Western Europe in terms of democratic support (Wuttke 2020). Thirdly, union density or

declining influence of unions can also be observed, although at a different pace, equally in all countries and is not unique to postcommunist democracies (Hassel 2015). Figure 2 shows the differences in union density with data from the IWTCC. Only Scandinavian countries stand out with high membership rates. All other countries, independent from a postcommunist heritage, show lower rates. Nevertheless, it is relevant to note that due to their image as former pillar of communist dictatorships, unions in Eastern Europe are presented with even more difficulties in attracting new members, in addition to the general reasons of liberalization and supply side reforms.

6.2 Data set

To answer my research question, I use data from round 10 of the European Social Survey, which contains detailed questions about the current employment of respondents, socio-economic attributes as well as attitudes regarding democratic support². Data collection took place between September 2020 and September 2022. Due to pandemic constraints, the classic face-to-face survey process was not possible in some countries. For these six countries (Austria, Sweden, Germany, Cyprus, Latvia and Spain) respondents put in their answers online via self-completion. These differences must be considered during the analysis, since the mode of questioning can have an influence on the respondents' answering behavior (e.g. Snowball & Willis 2011).

6.3 Independent variable – Automation risk

The explanatory variable in this analysis is the individual level of automation risk, which refers to the probability of a worker being substituted by robots or other new forms of technology. Since there is no obvious tool of measurement, social scientists use different ways to estimate the precise level of automation risk, which can be categorized into subjective and objective assessment. For instance, Kurer and Häusermann (2021) use a subjective approach in their study about automation risk and social policy preferences by simply asking respondents about their feeling on their current jobs being eliminated through automation. Since the “don't know” answer was used only in less than one percent of cases, the authors argue that they *“have no indication of the cognitive burden of this specific item being overly high”* (Ibid.:

² ESS Round 10: European Social Survey Round 10 Data (2020). Data file edition 3.0. Sikt - Norwegian Agency for Shared Services in Education and Research, Norway – Data Archive and distributor of ESS data for ESS ERIC. doi:10.21338/NSD-ESS10-2020.

p.142). Nevertheless, they argue that it is not possible to rule out completely *“the possibility that our estimates of risk prevalence and especially the political impact of this automation anxiety, are somewhat underestimated.”* (Ibid.: p.142).

A form of objective form to measure automation risk was developed by Frey and Osborne (2017). They distance themselves from the routine-task-model of Autor et al. (2003) and argue that *“computerization can be extended to any non-routine task that is not subject to any engineering bottlenecks to computerization”* (Frey & Osborne 2017: p. 261). Instead of the importance of routines within an occupation, the authors base their model on variables like perception and manipulation, social intelligence, and creativity – aspects which all create a hurdle for full on computerization of a job (ibid.). On a scale from 0 to 1, they categorize over 700 occupations with recreational therapist being the least, and telemarketers being the most likely of falling victim to computerization. Importantly, political scientists (0.039) – according to Frey and Osborne’s model – are less likely to get automated away than sociologists (0.059) or economists (0.43).

In this thesis however, I use the routine task intensity index (RTI index) as a proxy for automation risk (e.g. Bergman 2022). The RTI index combines detailed occupational indicators to quantify the importance of routine tasks within a single occupation. For a precise explanation of the calculation of the RTI index see Bergman (2022: p. 529). The ISCO-08-categorization, which is used in the ESS round 10, allows for a structured classification of all jobs in the world. To create the variable *routine task intensity*, I merge data made available by Bergman (ibid.) by attaching the RTI to each occupation. For comparative reasons, the ISCO-08 codes must first be downgraded to ISCO-88 codes, which was made possible by using values provided by Kaihovaara and Im (2020). The lower the RTI value, the lower the chance of an occupation being automated away. In the ESS 10, the RTI index ranges from -2.12 (Religious professionals) to 2.49 (Metal moulder and core takers). Even critiques of the RTI-approach to measure automation risk praise its ability to describe general vulnerability of routines jobs but point out its inability to capture the high levels of automation risk in non-routine-heavy occupations like transportation (Kurer & Häusermann, 2021). Although not routine-heavy, these areas are still affected by current advances in artificial intelligence and deep learning (ibid.). Since ISCO-08 codes and RTI values can only be identified for individuals that are inside

the labor force, I exclude respondents that do not meet these criteria (e.g. due to unemployment or retirement).

6.4 Dependent variables

To test how automation risk – measured through the RTI index – affects individual political support for democracy, I look at four variables that capture democratic support in diffuse and specific ways. As described in section 4, there is no single obvious tool of measurement. The term democracy has become an empty signifier for freedom or patriotism and has (at least in the Western world) a very positive connotation. It is quite easy to support the general idea of democracy without agreeing to some of its precise aspects. Based on Easton's (1975) distinction of "diffuse" and "specific" support, I try to include multiple aspects as dependent variables that cumulate into a general meaning of support for democracy: satisfaction with democracy, trust, external political efficacy, and diffuse support.

6.4.1 Satisfaction with democracy

One of the most used survey items to measure the stability of democratic regimes is the question about the individual "satisfaction with democracy", which translates into the current support for regime performance of democratic governments (Schäfer 2013). Many international (ESS, Eurobarometer) and national (AUTNES, GESIS) survey projects include it, and social scientists use their data to make statements about the popular support for democracy in each country (e.g. Welsch 2022). Going back to Norris's (1999) continuum of democratic support ranging from a general level (political community) to specific political actors and policies (regime performance), satisfaction with democracy can be located at the center. Although the item has obvious flaws ("winner-loser-gap"), it is also shown that satisfaction with democratic practices correlates with higher levels of diffuse support of democracy (Klingemann 1999). Hence, it is still useful for answering research questions about the general support of democracy and is therefore included in this analysis together with other dependent variables such as trust and external political efficacy. The European Social Survey asks the following question to its respondents: *"How satisfied are you with the way democracy works in your country?"*. Respondents can answer on a scale from 0 (extremely dissatisfied) to 10 (extremely satisfied). Figure 2 shows the percentage score of each generated category for satisfaction with democracy for all countries used in the analysis. It becomes clear that there are significant differences between European countries regarding the satisfaction with regime

performance. Citizens are most satisfied in Switzerland, Iceland, Norway and Finland. The lowest scores can be seen for Bulgaria and Croatia.

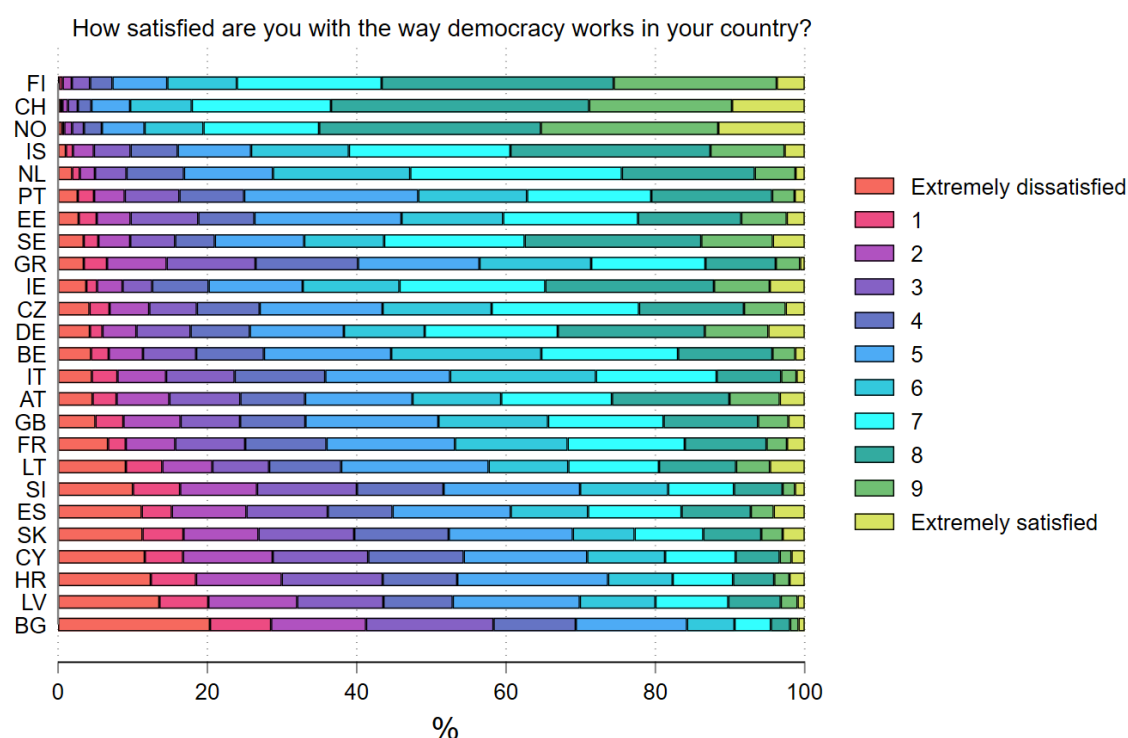


Figure 2: Distribution of Satisfaction with Democracy by Country (ESS10)

6.4.2 Trust in democratic institutions

Trust in political institutions can be described as a belief that said institutions will not act in an arbitrary or discriminatory manner, but treat citizens equally, reasonably, and fairly (Zmerli et al. 2007: 41). Levi and Stoker define political trust as a positive evaluation of features like credibility, fairness, competence, and transparency among political institutions. It is a central indicator to observe the publics feeling about its polity (Newton & Norris 2000). Low levels of political trust could lead to citizens not acting according to the rules, which forces democratic regimes to invest more resources into monitoring or sanctioning instead of “*more efficacious and effective institutional action*” (Zmerli 2013: 112). Although it is important to distinguish between party-state institutions, such as governments, political parties, parliaments and politicians, and institutions not aligned to a political party, such as courts, the police, or civil services (ibid.). Building on this distinction, party-state institutions are more affected by the current downward trend of political trust than their non-political counterparts (e.g. Klingemann 1999). In the ESS, respondents are asked how much they personally trust each of the listed institutions. Again, the scale ranges from 0 (no trust at all) to 10 (complete trust).

For this analysis, the score of trust in national parliaments, politicians and political parties are combined into a new variable called *trust*. Figure 3 shows the distribution of trust categories all countries used in the analysis. Similar to the scores of satisfaction with democracy, citizens in Switzerland, Norway, Finland and Iceland show the highest levels of trust, compared to Bulgaria, Slovenia and Croatia, which show an average score below 3.

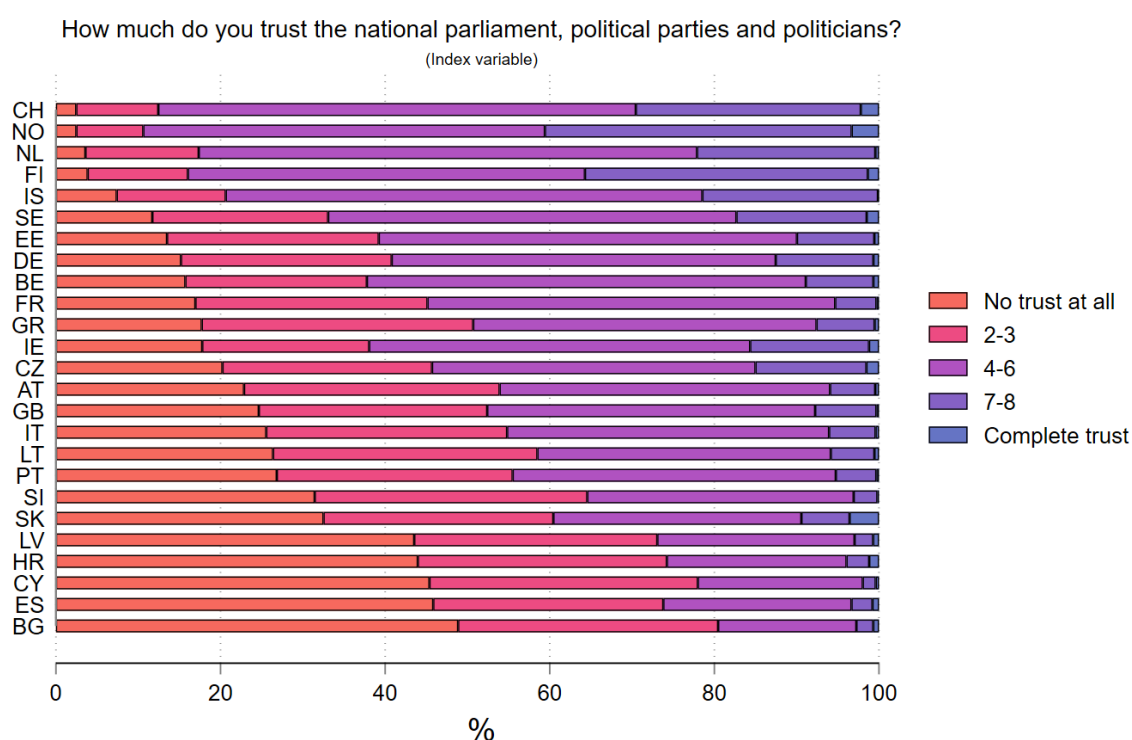


Figure 3: Distribution of political trust by country (ESS10)

6.4.3 External political efficacy

External political efficacy refers to the feeling of citizens not being heard by politicians or political actors in general. Hence, they do not feel represented by the government and do not think they have a say on what the government does. Low levels of external political efficacy are related to the anti-elitist component of populism (Geurkink et al. 2019) and increase support for anti-democratic populist parties and candidates (e.g. Rooduijn et al. 2016). It is therefore a useful tool to include when analyzing the general decline of democratic support since a lack of representation and a low political self-worth can lead to more extreme anti-democratic views (ibid.). In the ESS, respondents are asked if they agree on the statement that the political system allows people like them to have a say in what the government does. They can answer on a scale from 0 (= Not at all) to 5 (=A great deal). Overall, respondents of the ESS

round 10 show low levels of external political efficacy, with Slovenia, Croatia and Italy scoring all below 2 and only Switzerland and Norway show an average score of at least 3 (Figure 4).

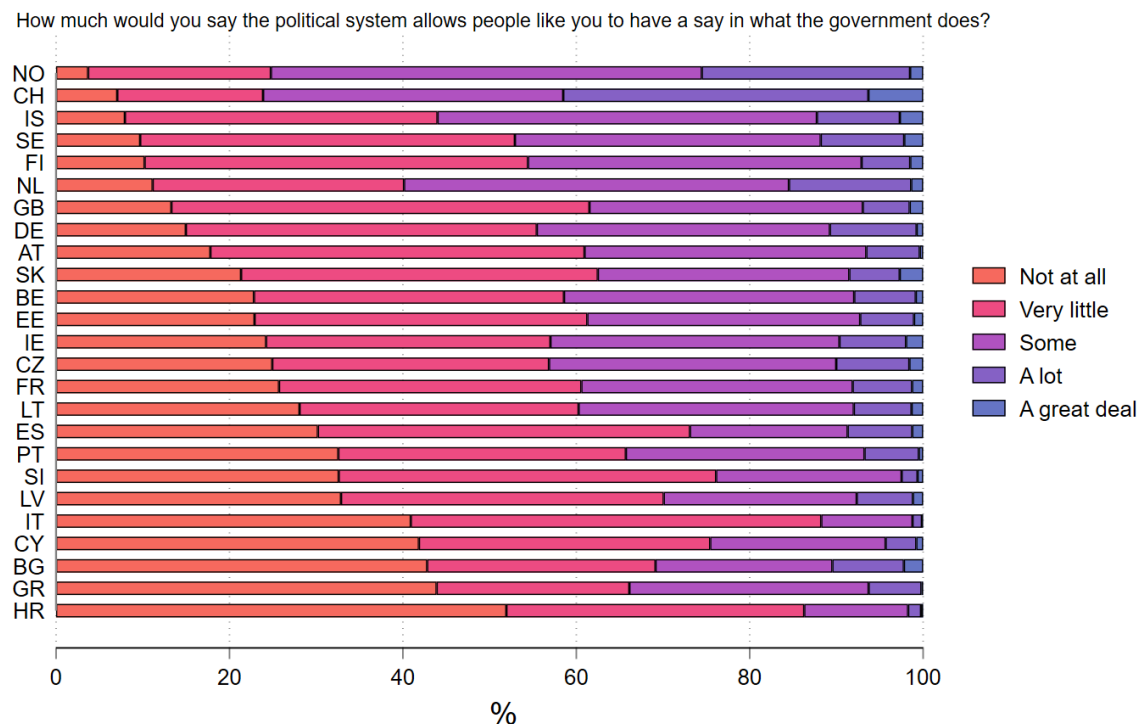


Figure 4: Distribution of external political efficacy by country (ESS10)

6.4.4 Diffuse support of democracy

Finally, to answer the relationship between automation risk, support of democracy and union membership, I include the survey question “importance to live in a democracy”. This item is used to refer to the genuine – hence diffuse – support of democratic regimes and ideals and therefore perfectly fits the given analysis, that wants to go beyond dissatisfaction with current political leaders or institutions. The ESS 10 asks its respondents the following question: “How important is it for you to live in a country governed democratically?”. One can choose a number on a scale from 0 (not at all important) to 10 (extremely important). Figure 5 shows the average score for each country used in the analysis. Compared to the items on satisfaction with democracy and political trust, there is much less difference between countries. Overall, apart from Czechia, all countries score at least an 8. Based on this simple visualization of means for each country, it can be concluded that workers can be distrustful of democratic institutions, lack satisfaction with the current performance of democracy, feel not capable to

influence actions by their democratic government, but still highlight the importance of living in country governed democratically.

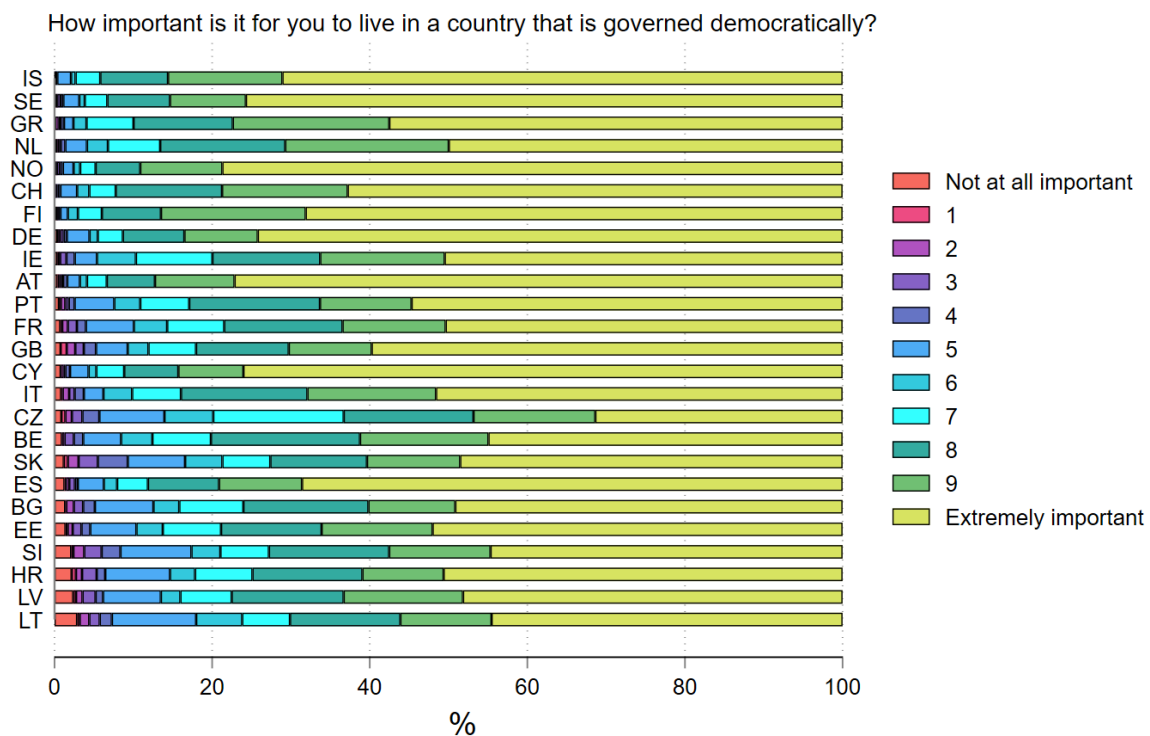


Figure 5: Distribution of diffuse support for democracy by country (ESS10)

6.5 Union membership as a moderator

The moderator variable “union membership” is based on the ESS question whether of not a person is currently or ever has been a member of a trade union or a similar organization (without specifying what a similar organization is). I dichotomise the variable, distinguishing between current members and respondents not being a member of a trade union during the time of data collection or in the past. Overall, 84% of respondents in my sample were not members of a trade union or similar organization, as can be seen in Figure 6.

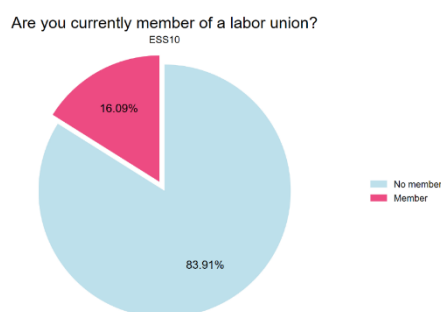


Figure 6: Distribution union membership (ESS10; N=39099)

6.6 Union density as a moderator

Union density refers to “the ratio of wage and salary earners that are trade union members, divided by the total number of wage and salary earners” (OECD Labour Force Statistics). Since the 1980s, unions have been steadily losing membership density and political influence in almost all the OECD countries, with Scandinavian countries being an exception (Hassel 2015). Automation, de-industrialization, a growing service sector, offshoring of manufacturing jobs, downsizing the public sector, and an increase in non-standard contracts are all trends undermining the ability for unions to attract new members and engage in political battles with governments or big corporations (Menz 2017). Furthermore, general value shifts towards individualization also hinder the work of unions, since traditional class boundaries and class identities are blurred, leading to a fragmentation of the working class (Trentini 2022). The numbers used in my analysis have been conducted through the OECD/AIAS database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (ICTWSS) and can be seen in Figure 7.

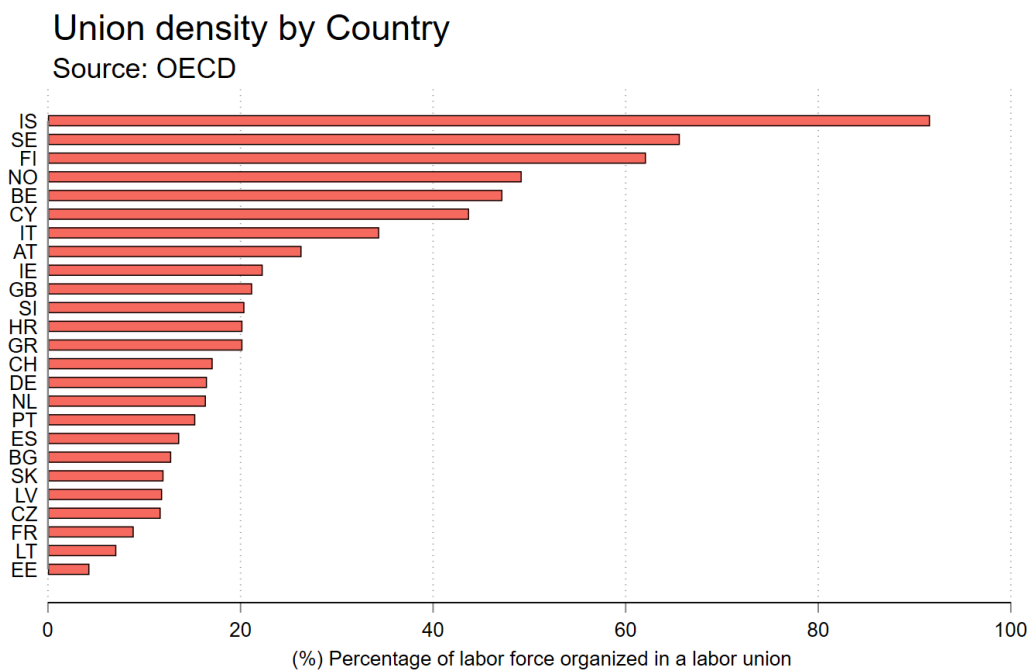


Figure 7: Union density by country (OECD)

6.7 Confounders

Confounding variables influence both the independent variable (automation risk) and the dependent variable (support of democracy). To have robust results, that show the actual relationship between the concepts of interest, it is necessary to identify and include as many confounders as possible. Besides the standard socio-demographic variables of age, formal education (four categories), gender, union membership (yes – no), citizenship (yes – no) and feeling part of the ethnic majority (yes – no), I include attributes, that are directly related to the workplace situation of respondents – and hence to their vulnerability to automation. Therefore, I include the variables employment relation (employee – self-employed – family business), employment contract (unlimited – limited – no contract), supervising position (yes – no) and whether one is allowed to independently decide how daily work is organized (0 = “*I have no influence*”; 10 = “*I have complete control*”). Although 21st century automation influences businesses of all sizes, it is still relevant to include the variable establishment size, since larger companies are usually quicker regarding the adoption of robots or new technologies in general (e.g. Sanchez 1995)

Political variables, such as left-right placement, partisanship, turnout and party choice are not included in this analysis since I expect them to be the result of workplace environment, and not the origin (post-treatment variables). Instead, I include class location as a final confounding variable to analyze the relationship between automation risk and support for democracy. Based on Oesch (2006) I use an eight-category measure that distinguishes hierarchically between privileged position in the labor market and horizontally between different work logics: (1) self-employed professionals, (2) small business owners, (3) technical (semi-) professionals, (4) production workers, (5) (associate) managers, (6) clerks, (7) socio-cultural professionals and (8) service workers. Individual work experience in the form of work logic, employment relationship and hierarchical order is essential in the formation of political attitudes (Kitschelt & Rehm 2004; Kriesi 1998; Beramendi et al. 2015). The starting point of this assumption is the establishment of a "New Middle Class" as a dominant socio-economic category in Western European and North American postwar societies. In terms of political attitudes and voting behavior, however, the "New Middle Class" cannot be considered homogeneous. In their paper, Kitschelt and Rehm (2004) show in detail that the differentiated work realities in the service sector lead to highly diverse political preferences. Depending on the logic of work (administrative-organizational, technical or interpersonal) and the degree of

autonomy and decision-making freedom at the workplace (high vs. low), there are substantial differences in opinions on key political issues (economic redistribution, social values, openness to immigration). Workers in the industrial and service sectors make up by far the largest group in post-industrial societies. These are white-collar workers and blue-collar workers with a low level of education and little expertise. In their everyday working lives, there is hardly any autonomy or freedom to make their own decisions. They are paid only a low salary for routine and physically demanding tasks. Globalization processes - automation, job mobility and migration - pose the highest risks for these strata. In general, a large parts of these occupational classes live in quite precarious conditions and are therefore also significantly dependent on labor regulations and welfare state benefits (ibid.).

Bivariate calculations make clear that vulnerability to automation and support for democracy differ when grouped by class location (Figure 8). In terms of automation risk, groups such as clerks, production and service workers all show an average routine task intensity score of higher than 0, while socio-cultural professionals and managers show much lower values. These differences continue when analyzing the mean score of democratic support for each group (Figure 9): managers and socio-cultural professionals show the highest values, while production and service workers score the lowest means. To sum up, there seems to be a correlation between contemporary occupational risks based on class and support for democracy. Table 1 summarizes the descriptive statistics of all used variables.

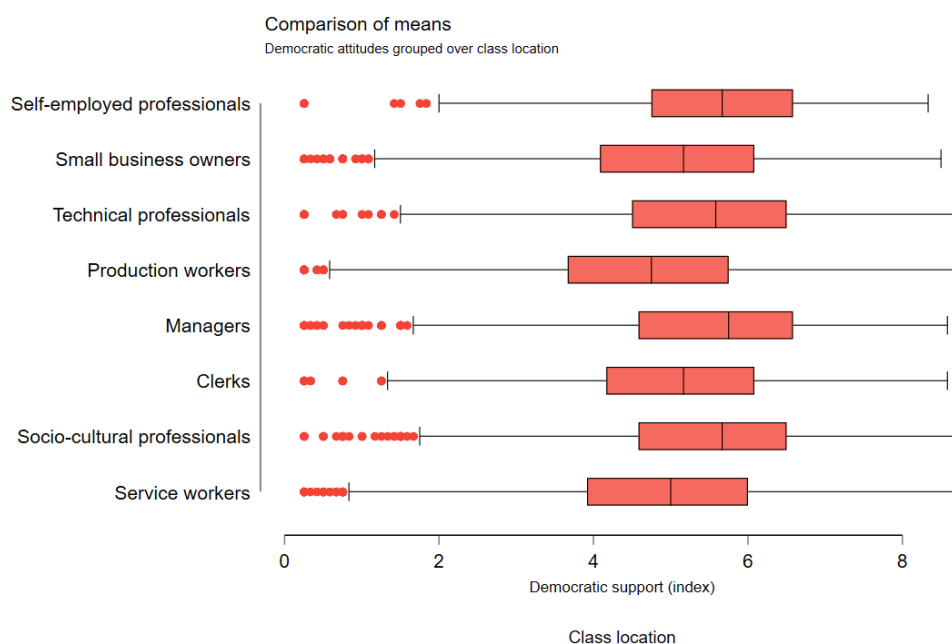


Figure 8: Mean scores of democratic support based on class location

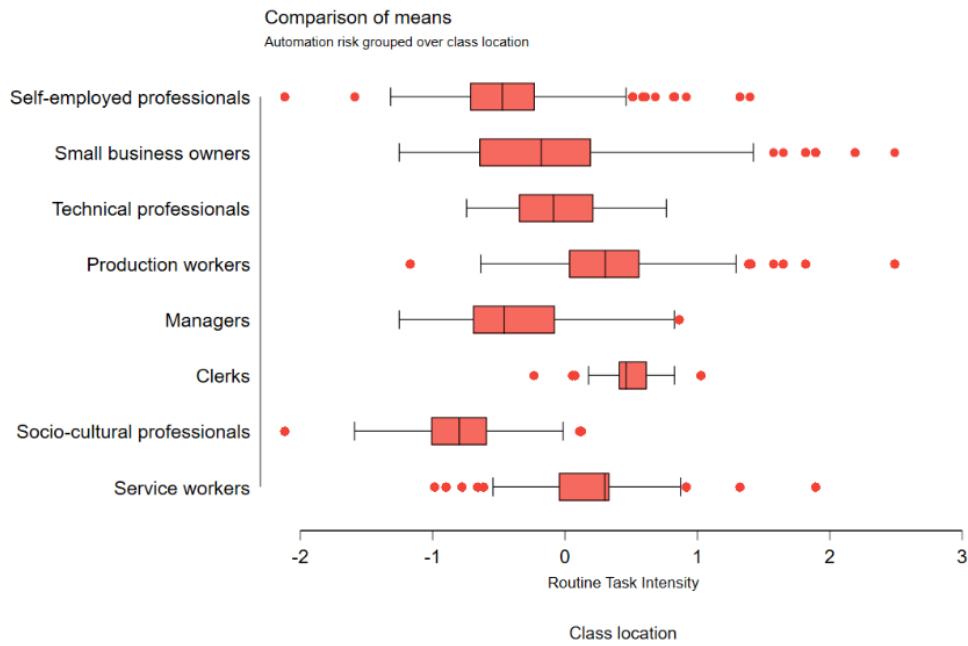


Figure 9: Mean scores of automation risk based on class location

Variable	Obs	Mean	Std. Dev.	Min	Max
Trust	38237	3.973	2.333	0	10
Satisfaction with Democracy	38466	5.474	2.597	0	10
External political efficacy	38568	2.275	.966	1	5
Diffuse democratic support	38710	8.886	1.839	0	10
Routine Task Intensity Index	39099	-.046	.608	-2.12	2.489
Union Membership	39099	.161	.367	0	1
Education	38881	2.689	1.142	1	4
Age	38795	51.478	17.468	15	90
Gender	38955	.527	.499	0	1
Feeling part of ethnic majority	38490	1.078	.268	1	2
Citizenship	38983	1.049	.216	1	2
Supervision	38820	1.706	.456	1	2
Work contract	34046	1.254	.553	1	3
Employment relation	38756	1.163	.426	1	3
Establishment size	37843	2.572	1.394	1	5
Work organization	38675	6.42	3.403	0	10
Class location	39099	5.174	2.082	1	8
Union Density	39099	23.98	18.574	4.3	91.6
V-Dem Score	39099	.765	.077	.6	.87

Table 1: Descriptive statistics of all variables used

7 Results

In this study I investigate the effects of automation risk on support for democracy and how labor unions can moderate this effect through individual membership and union density on a national level. Given the data structure and possible differences on the country level I conduct a multi-level regression model. In the following, I outline the main results of my study and make empirically based claims for each hypothesis stated in section 5.

Workers in routine occupations show – on average – lower levels of trust in core democratic institutions, less external political efficacy and even lower levels of diffuse democratic support (Hypothesis 1). A statistically significant effect on the variable satisfaction with democracy was not found. For each of the four dependent variables I conducted four multi-level regression models including a different number of confounding variables. An increase of the *routine task intensity index* leads to a statistically significant decrease in institutional trust, external political efficacy and even the importance of living in a country governed democratically. To be more precise, an increase of the RTI index by 1, leads to a decrease of 0.074 in trust, 0.026 in external political efficacy and 0.054 in diffuse support (as can be seen in Table 2). The original bivariate effect is higher and decreases if confounding variables are included, but the general direction and statistical significance stay the same. Nevertheless, the results show low substantive significance, as the difference in democratic support between workers in occupations affected by automation and workers in occupations not affected by automation at all is very small. If I calculate the difference in the outcome variable within one standard deviation of the explanatory variable, decline in trust is 0.04, in satisfaction with democracy 0.01, in external political efficacy 0.02 and 0.03 in diffuse support. The effect of automation risk on each dependent variable is plotted in Figure 11.

VARIABLES	(1) TRUST	(2) SWD	(3) EFFICACY	(4) DIFFUSE SUPP
Routine task intensity	-.074*** (.027)	-.022 (.03)	-.026** (.011)	-.054** (.022)
Union membership	.045 (.034)	-.05 (.038)	.016 (.015)	.085*** (.029)
Gender	-.093*** (.026)	-.129*** (.029)	-.092*** (.011)	-.025 (.021)
Formal education	.157*** (.013)	.103*** (.015)	.091*** (.006)	.165*** (.011)
Age	.005*** (.001)	.005*** (.001)	-.003*** (0)	.004*** (.001)
<u>Feeling part of ethnic majority</u>				
No	-.363*** (.045)	-.389*** (.05)	-.104*** (.019)	-.471*** (.037)
<u>Citizenship</u>				
No	.452*** (.058)	.608*** (.064)	-.145*** (.024)	-.111** (.047)
<u>Supervising position</u>				
No	.129*** (.029)	.142*** (.032)	.005 (.012)	-.001 (.024)
Work contract	.082*** (.023)	.012 (.026)	.042*** (.01)	0 (.019)
<u>Employment relation</u>				
Self-employed	-.261 (.433)	-.253 (.487)	-.007 (.187)	.11 (.363)
Family business	.35 (.296)	.508 (.33)	.262** (.127)	.255 (.246)
Establishment size	.018* (.009)	.018* (.011)	.017*** (.004)	.02** (.008)
Organizing daily work	.021*** (.004)	.01** (.005)	.01*** (.002)	.009*** (.003)
<u>Class location</u>				
Small business owners	-.244 (.301)	-.239 (.336)	-.224* (.129)	-.126 (.251)
Technical professionals	.121** (.049)	.17*** (.055)	.08*** (.021)	.172*** (.041)
Production workers	-.209*** (.039)	-.186*** (.044)	-.085*** (.017)	-.18*** (.032)
Managers	.268*** (.044)	.366*** (.049)	.148*** (.019)	.246*** (.036)
Clerks	.065 (.043)	.047 (.048)	.06*** (.019)	.236*** (.036)
Sociocultural professionals	.17*** (.049)	.185*** (.055)	.111*** (.021)	.179*** (.041)
_cons	2.873*** (.234)	4.656*** (.243)	2.027*** (.075)	8.055*** (.11)
Observations	31434	31594	31674	31779

Standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table 2: Multi-Level Regression Model

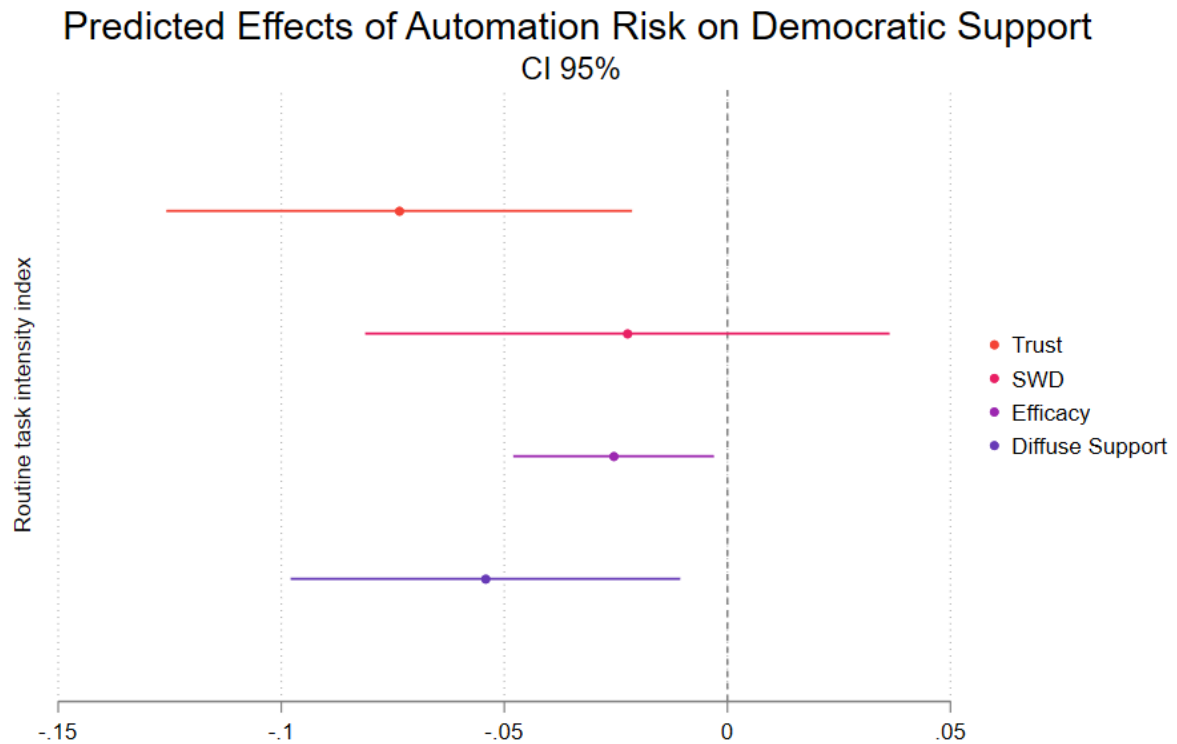


Figure10: Predicted effects of Automation Risk (RTI) on the dependent variables trust, satisfaction with democracy, external political efficacy and diffuse support; $p < 0.05$

To go into greater detail, there are interesting differences between some confounding variables and their effect on different dependent variables. Union membership only has a positive and statistically significant effect on diffuse democratic support. Formal education increases democratic support in all four models. An increase in age only shows statistically significant decrease in satisfaction with democracy and an increase in all the other dependent variables. Feeling part of the ethnic majority increases overall democratic support. Interestingly, owing citizenship highly increases trust and satisfaction with democracy, while having a negative effect when it comes to political efficacy and diffuse support. Supervising other employees only has a positive effect on democratic trust and satisfaction with democracy. Being able to decide on how daily work is organized shows a positive effect in all models, indicating a broader relationship between work logic and democratic attitudes (Kriesi 1998). This can also be seen when it comes to the variable class location. Being a member of a certain subgroup in the labor market clearly correlates with beliefs about society and democracy per se. Production workers have lower democratic support, while technical professionals, managers and socio-cultural professionals have higher levels of these attitudes.

The second hypothesis focuses on how unions shape democratic attitudes of its members due to their democratic heritage and the implementation of democratic ideas and practices in the daily world of work (Turner & Ryan 2020). Unions provide contact with elements of opposition and distinctive political positions – both key features of liberal democracies, which have in their center the process of balancing different – even contradicting – interests, opinions, or lifestyle choices. Members of unions therefore obtain a feeling of efficacy without the fear of victimization or discrimination (ibid.). Consequently, democratic attitudes should differ between members of unions and workers that are not in contact with organized labor. Bivariate analysis of union membership and democratic support shows that members are – average – more trustful in democratic institutions, more satisfied with democracy in general, show higher levels of efficacy and diffuse support than non-members (Figure 12).

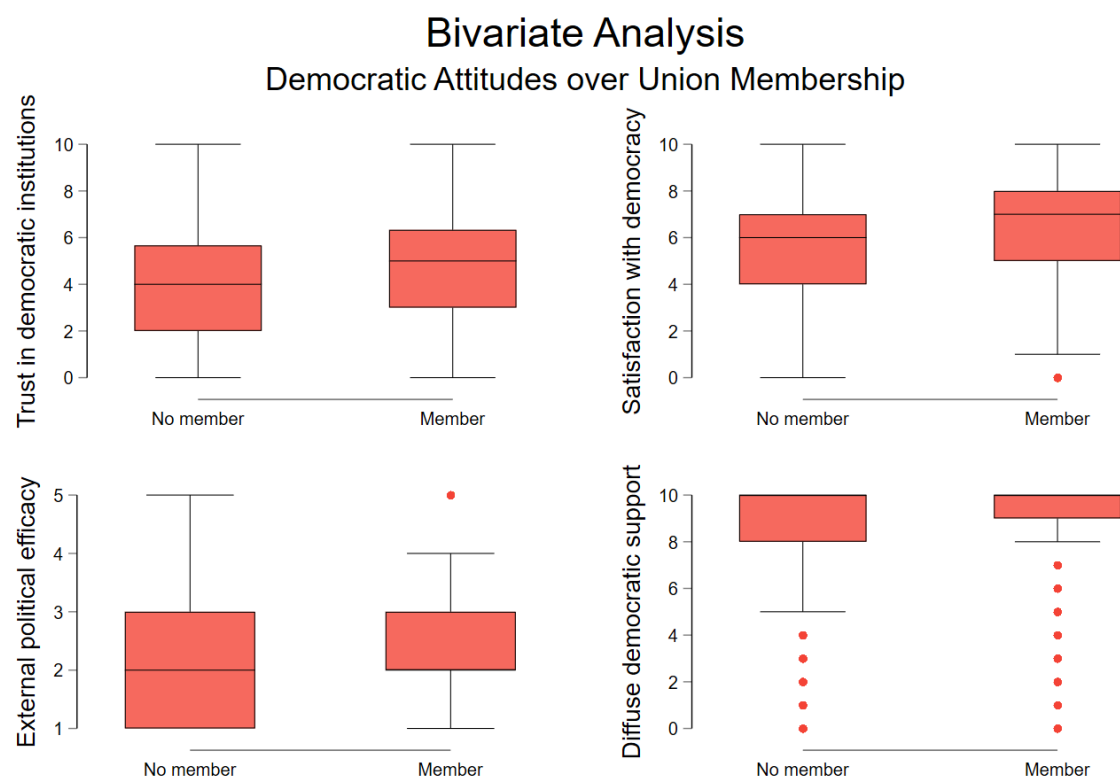


Figure 11: Democratic Attitudes (mean) by Union Membership

However, these differences cannot be replicated throughout a multivariate multi-level model. With the inclusion of the country-level as an own level of analysis, and confounding variables, there is no statistically significant difference anymore between members and non-members of unions (Figure 13). Furthermore, union membership is also not capable of moderating the negative relationship of automation risk and support for democracy. The coefficients of all interaction terms are either negative or not statistically significant. Results are presented in detail in regression Table 4 in the appendix.

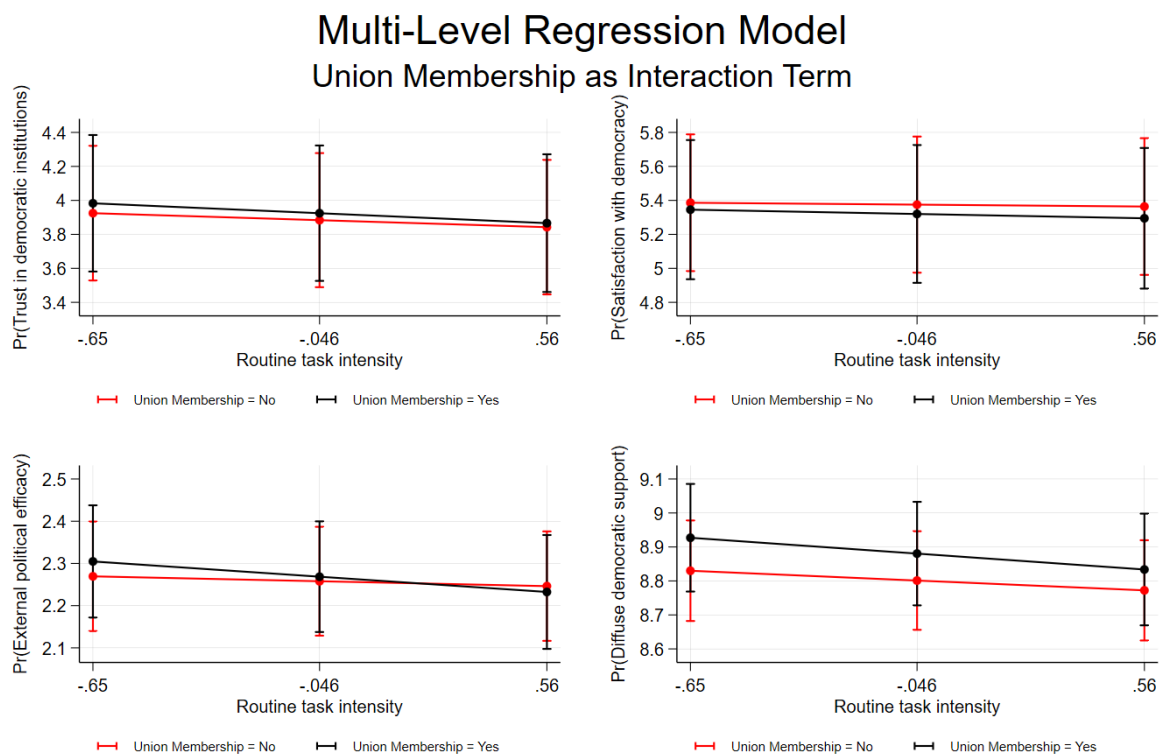


Figure 12: Multi-Level Regression Model; Predicted democratic attitudes by automation risk ($p < 0.05$); Moderated by Union membership (0-1)

Furthermore, as formulated in my expectations, I tested if union density on the national level has a moderation effect on the primary relationship between automation risk and support for democracy. Based on Belloc et al. (2022), the presence of unions results in a strategic interaction between workers and capital owners when it comes to the emergence of new job designs, that are characterized by less routines and more engagement, which reduces the average employee's vulnerability to automation (ibid.: p.4). This could mean, that a decline of democratic support might be different for different levels of union influence – measured through membership rate and density. If I include the variable union density in my multi-level

regression model, the interaction with routine task intensity is not statistically significant. That means that union density is not capable of moderating the relationship between automation risk and support for democracy. For details, see regression Table 5 in the appendix.

8 Conclusion and Limitations

The aim of my master thesis is to investigate the relationship between automation risk and declining support for democracy among routine workers, as well as whether labour unions can mitigate this effect. Technological innovations disrupt conventional employment and wage structures, and consequently produce economic classes of winners and losers in postindustrial knowledge societies (Autor 2015; Frey & Osborne 2017). A crucial question for political scientists is whether these fundamental developments also undermine support for the regime of liberal democracy. Wage stagnation, potential unemployment, and declining appreciation for routine occupations can all have an impact on an individual's perception of his or her social and economic status (Dalton 2004). With political parties and governments unwilling or unable to accompany technological implementation through (radial) policies, affected workers will lose trust in core democratic institutions and be less satisfied with the democratic system (Boix 2019). This thesis aims to find empirical evidence for the individual level relationship of this broader, more general development.

After looking at this individual level relationship between automation risk and support for democracy, I expect to find significant differences for these effects between members and non-members of labour unions. Unions can foster democratic values and behaviour in their members through horizontal structures and mass participation. Furthermore, unions primarily represent labour market insiders, who are less vulnerable to modern occupational risks including automation. Since unions not only have inward effects on their members, but also play a key role in developing social and economic policies, I also expect to find a moderating effect for union density on a national level. The hypotheses are tested with data from the ESS for all consolidated European democracies through a multilevel model.

On average, workers in routine-heavy occupations show lower levels of trust and satisfaction with core democratic institutions, even when controlling for education and class. For all tested relationships, members of unions show higher levels of support for democracy. However, no

moderation effect of union membership can be observed since the difference for members and non-members of unions is the same regarding all levels of vulnerability to automation. Effects of union density on a national level are also mixed at best. Hence, it can be argued that unions do not have the power (anymore) to moderate antidemocratic tendencies among their members triggered by contemporary occupational risks. Nevertheless, it is shown that the transition to a knowledge society through technological innovations can have negative effects for the stability of democracies by undermining support from affected citizens.

While my thesis provides valuable insights, it is important to acknowledge its limitations. The analysis is based on the research question whether automation risk can have a negative impact on democratic support among affected workers. Both concepts of interest – automation risk and support for democracy – are difficult to operationalize. Measuring the precise vulnerability of an individual occupation is quite frankly impossible due to the changing nature of technology. Indices offered by Frey and Osborne (2017) or Arnzt et al. (2018) are useful, but nonetheless only an estimation. They give us a general picture and more importantly the ability to answer research questions about automation risk, but never reflect the “truth”. This makes it difficult, but not impossible, to work with automation risk as an explanatory variable as an abstract concept becomes even more abstract with the usage of artificially conducted indices. Future research should address this limitation and find ways to overcome these inaccuracies when it comes to measuring vulnerability to automation.

The same goes for the concept of support for democracy. As can be seen in section, it can be challenging to estimate democratic support with ordinary survey methods, as the term democracy simply has an overwhelming positive connotation. Relying on one single survey can therefore be misleading, as it is not clear if reliability and validity are high enough. Asking respondents about precise democratic practices (e.g. Graham & Slovic, 2020) can give a clearer picture, yet often times cannot overcome the issue of partisanship. Hence, innovative tools of measuring democratic support are needed.

Furthermore, due to the necessity of merging individual level datasets, observations have been lost because either their ISCO-08 codes could not get downgraded to ISCO-88 codes, or no *routine task intensity* value existed for their occupation. This loss of observations does not make the overall results redundant, but of course imperfect. Although there is no clear answer

for this issue, it would be helpful if the issue automation finally would get its deserved recognition in the main survey programs, so merging data sets becomes hopefully obsolete.

External factors like the pandemic made collecting survey data in the researched time period difficult and actually lead to two different modes of answering in the ESS round 10 (face-to-face and self-completion). As there are no indicators that this fundamentally reduces the credibility of the conducted results, it nevertheless of course makes it more complicated to work with two different data set (one for each answering mode) compared to only one. Furthermore, the Covid-19-pandemic put pressure on democracy itself, since it lead to the success of anti-democratic fringe parties, the spread of conspiracy theories and political polarization over questions of pandemic measures such as vaccines or wearing masks (Eberl et al. 2021). This external factor was ignored during the analysis, but still can have an impact on the perception of democracy among respondents during the time of data collection (September 2020 – September 2022).

There are two possible future research questions that could be pursued based on this thesis. Firstly, democratic attitudes only tell us so much about a person's attachment to democracy since it does not cover any form of actual political participation. It would be feasible to replicate the presented analysis but with voting and other forms of participation as independent variables as well as party choice. The latter is also important since antidemocratic political actors, that might profit off workers being dissatisfied with democracy due to uncontrolled automation processes, can have a huge impact on the democratic system itself by – once in power – systematically weaken its institutions. The second research question goes beyond the general concept of this thesis and wants to look at the supply side of automation and politics. I argue that workers become distrustful, dissatisfied, lose efficacy and general support of democracy because major parties converge to the center of the economic policy space and neglect social groups negatively affected by automation (Boix 2019). This mechanism would be much more understandable if we had clear data about the actual policy positions of political parties on the issue of automation. I think with the rise of current AI, it will only be a matter of time for parties to formulate manifestos on technology and its impact on society, which then will increase the general salience of this issue. This should be used to

study automation from the supply side, to complement the existing results focusing on the demand side.

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10 Appendix – Multi-Level Regression Models

10.1 Standard model

VARIABLES	(1) TRUST	(2) SWD	(3) EFFICACY	(4) DIFFUSE SUPP
Routine task intensity	-.074*** (.027)	-.022 (.03)	-.026** (.011)	-.054** (.022)
Union membership	.045 (.034)	-.05 (.038)	.016 (.015)	.085*** (.029)
Gender	-.093*** (.026)	-.129*** (.029)	-.092*** (.011)	-.025 (.021)
Formal education	.157*** (.013)	.103*** (.015)	.091*** (.006)	.165*** (.011)
Age	.005*** (.001)	.005*** (.001)	-.003*** (0)	.004*** (.001)
<u>Feeling part of ethnic majority</u>				
No	-.363*** (.045)	-.389*** (.05)	-.104*** (.019)	-.471*** (.037)
<u>Citizenship</u>				
No	.452*** (.058)	.608*** (.064)	-.145*** (.024)	-.111** (.047)
<u>Supervising position</u>				
No	.129*** (.029)	.142*** (.032)	.005 (.012)	-.001 (.024)
Work contract	.082*** (.023)	.012 (.026)	.042*** (.01)	0 (.019)
<u>Employment relation</u>				
Self-employed	-.261 (.433)	-.253 (.487)	-.007 (.187)	.11 (.363)
Family business	.35 (.296)	.508 (.33)	.262** (.127)	.255 (.246)
Establishment size	.018* (.009)	.018* (.011)	.017*** (.004)	.02** (.008)
Organizing daily work	.021*** (.004)	.01** (.005)	.01*** (.002)	.009*** (.003)
<u>Class location</u>				
Small business owners	-.244 (.301)	-.239 (.336)	-.224* (.129)	-.126 (.251)
Technical professionals	.121** (.049)	.17*** (.055)	.08*** (.021)	.172*** (.041)
Production workers	-.209*** (.039)	-.186*** (.044)	-.085*** (.017)	-.18*** (.032)
Managers	.268*** (.044)	.366*** (.049)	.148*** (.019)	.246*** (.036)
Clerks	.065 (.043)	.047 (.048)	.06*** (.019)	.236*** (.036)
Sociocultural professionals	.17*** (.049)	.185*** (.055)	.111*** (.021)	.179*** (.041)
_cons	2.873*** (.234)	4.656*** (.243)	2.027*** (.075)	8.055*** (.11)
Observations	31434	31594	31674	31779

Standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table 3: Multi-Level Regression Model: Standard Model

10.2 Interaction Term Union Membership

VARIABLES	(1) TRUST	(2) SWD	(3) EFFICACY	(4) DIFFUSE SUPP
Routine task intensity	-.072*** (.028)	-.02 (.031)	-.02* (.012)	-.055** (.023)
Union membership	.044 (.035)	-.053 (.04)	.01 (.015)	.086*** (.029)
RTI x Union membership	-.008 (.051)	-.016 (.057)	-.035 (.022)	.002 (.042)
Gender	-.093*** (.026)	-.129*** (.029)	-.092*** (.011)	-.025 (.021)
Formal education	.157*** (.013)	.103*** (.015)	.091*** (.006)	.165*** (.011)
Age	.005*** (.001)	.005*** (.001)	-.003*** (0)	.004*** (.001)
<u>Feeling part of ethnic majority</u>				
No	-.363*** (.045)	-.389*** (.05)	-.104*** (.019)	-.471*** (.037)
<u>Citizenship</u>				
No	.452*** (.058)	.607*** (.064)	-.145*** (.024)	-.111** (.047)
<u>Supervising position</u>				
No	.129*** (.029)	.142*** (.032)	.005 (.012)	-.001 (.024)
Work contract	.082*** (.023)	.012 (.026)	.042*** (.01)	0 (.019)
<u>Employment relation</u>				
Self-employed	-.261 (.433)	-.253 (.487)	-.006 (.187)	.11 (.363)
Family business	.35 (.296)	.509 (.33)	.264** (.127)	.255 (.246)
Establishment size	.018** (.009)	.018* (.011)	.017*** (.004)	.02** (.008)
Organizing daily work	.021*** (.004)	.01** (.005)	.01*** (.002)	.009*** (.003)
<u>Class location</u>				
Small business owners	-.245 (.301)	-.24 (.336)	-.226* (.129)	-.126 (.251)
Technical professionals	.121** (.049)	.17*** (.055)	.081*** (.021)	.172*** (.041)
Production workers	-.209*** (.039)	-.185*** (.044)	-.084*** (.017)	-.18*** (.032)
Managers	.268*** (.044)	.366*** (.049)	.148*** (.019)	.246*** (.037)
Clerks	.065 (.043)	.048 (.048)	.06*** (.019)	.236*** (.036)
Sociocultural professionals	.17*** (.049)	.183*** (.055)	.108*** (.021)	.18*** (.041)
_cons	2.873*** (.234)	4.656*** (.243)	2.027*** (.075)	8.055*** (.11)
Observations	31434	31594	31674	31779

Standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table 4: Multi-Level Regression Model: Union Membership as Interaction Term

10.3 Interaction Term Union Density

VARIABLES	(1) TRUST	(2) SWD	(3) EFFICACY	(4) DIFFUSE SUPP
Routine task intensity	-.093*** (.036)	-.027 (.04)	-.025 (.015)	-.086*** (.03)
Union membership	.044 (.034)	-.052 (.039)	.015 (.015)	.082*** (.029)
Gender	-.093*** (.026)	-.129*** (.029)	-.092*** (.011)	-.025 (.021)
Formal education	.158*** (.013)	.103*** (.015)	.091*** (.006)	.165*** (.011)
Age	.005*** (.001)	.005*** (.001)	-.003*** (0)	.004*** (.001)
<u>Feeling part of ethnic majority</u>				
No	-.363*** (.045)	-.389*** (.05)	-.104*** (.019)	-.47*** (.037)
<u>Citizenship</u>				
No	.452*** (.058)	.608*** (.064)	-.145*** (.024)	-.109** (.047)
<u>Supervising position</u>				
No	.129*** (.029)	.142*** (.032)	.005 (.012)	-.001 (.024)
Work contract	.081*** (.023)	.012 (.026)	.042*** (.01)	-.001 (.019)
<u>Employment relation</u>				
Self-employed	-.26 (.433)	-.253 (.487)	-.007 (.187)	.114 (.363)
Family business	.349 (.296)	.507 (.33)	.262** (.127)	.255 (.246)
Establishment size	.018* (.009)	.018* (.011)	.017*** (.004)	.02** (.008)
Organizing daily work	.021*** (.004)	.01** (.005)	.01*** (.002)	.009*** (.003)
<u>Class location</u>				
Small business owners	-.244 (.301)	-.239 (.336)	-.224* (.129)	-.128 (.251)
Technical professionals	.12** (.049)	.17*** (.055)	.08*** (.021)	.172*** (.041)
Production workers	-.209*** (.039)	-.185*** (.044)	-.085*** (.017)	-.179*** (.032)
Managers	.268*** (.044)	.366*** (.049)	.148*** (.019)	.246*** (.036)
Clerks	.064 (.043)	.047 (.048)	.06*** (.019)	.235*** (.036)
Sociocultural professionals	.172*** (.049)	.185*** (.055)	.111*** (.021)	.182*** (.041)
Union density	.022** (.009)	.024** (.01)	.003 (.003)	.012*** (.003)
RTI x Union density	.001 (.001)	0 (.001)	0 (0)	.001 (.001)
_cons	2.274*** (.333)	4.026*** (.34)	1.939*** (.111)	7.742*** (.136)
Observations	31434	31594	31674	31779

Standard errors are in parentheses

*** $p < .01$, ** $p < .05$, * $p < .1$

Table 5: Mult-Level Regression Model: Union Density as Interaction Term