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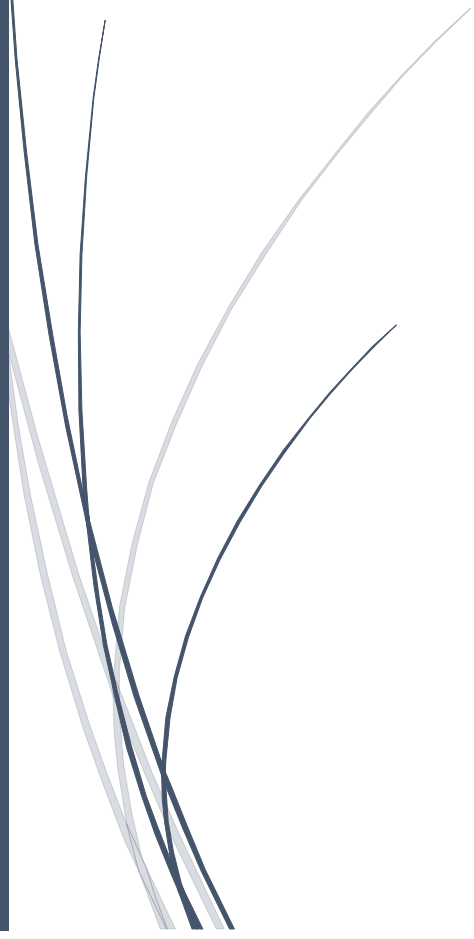
High-risk workers and their political response to the threat of automation



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Abstract

This research will be focused on automation of work, and the political action that workers in high-risk sectors take. The research question is, *To what extent does the risk of automation of one's job have an effect on organized and unorganized political action?*

With the term political action, we will focus on trade union membership (organized), and the participating in protests in the form of signing petitions and joining demonstrations (unorganized). Our four hypothesis are,

H1: Compared with low automatization risk workers, high automatization risk workers have a higher tendency to be a labour union member.

H2: Compared with low automatization risk workers, high automatization risk workers have a lower tendency to be a labour union member.

H3: Compared with low automatization risk workers, high automatization risk workers are more inclined to join collective action such as protests and petition signing.

H4: Compared with low automatization risk workers, high automatization risk workers are less inclined to join collective action such as protests and petition signing.

We drew our conclusions based on the European Social Survey data of 2018. We have found that people with high-risk jobs are less inclined to be union members, and to participate in protests.

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1. Introduction

This bachelor thesis will focus on the automatization of jobs and the political actions of workers following this development. This is a relevant topic for anyone who is, or is expecting to work in the future. It is a subject that everyone will be confronted with at some point in their lives, and therefore it is important to learn from our current situation in order to better adapt in the (near) future.

With political action, we will look at organized and unorganized political action such as labour union membership, signing petitions and joining protests or demonstrations. In the theory part, this will be explained more extensively.

Before we will further look at this issue, the topic in general will be explored a bit more. Automation in general is a concern of many people. This issue has been a concern throughout different periods in modern history, with the most notable case the Luddites in the 19th century. They destroyed machines that they perceived as threatening their job security (Andrews, 2019). In 2019, there were protesters at the Port of Los Angeles, dockworkers protesting against automation. The dockworkers were angry about approval for introducing driverless electric cargo handlers, resulting in an unnamed amount of unemployment. Union members marched through the streets, and some 11.000 people signed petitions against the automation project, in addition to elected officials opposing the project (Roosevelt, 2019). Currently, computers and machines have developed in such a way as to be able to mimic and outdo humans in different skills, especially the cognitive skills such as driving cars (Premebida, Ludwig & Nunes, 2009). The fact that machines and computers are increasingly capable of outperforming humans in realms thought uniquely human, makes people worried about future job prospects. A poll in the UK shows that 37% of the workers are worried that their job will turn out for the worse in the next ten years (Partington, 2018). The future of part of the labour market being automized comes with broader societal problems and concerns such as the inequality and the distribution of wealth in a society.

The rise of Artificial Intelligence, Internet of Things, and deep-learning, are terms commonly heard in connection with either doomsday scenarios, or the new opportunities scenarios. When these concepts are tied to work, and particularly, the future of work, the doomsday scenario tends to be dominating.

The literature on this topic is mostly speculative with lots of forecasts of what is in store for current workers and workers of the future (Wiener, 1999) (Ansell, 2016). Some of the literature covers the history of automation and makes deductions based on this history (Brown, 2012) (Mokyr, Vickers & Ziebarth, 2015), other literature speculates based on the technologies available today, and the technologies in development (Cappelli, Keller, 2013) (Acemoglu & Restrepo, 2018). Newspapers, websites and books mostly paint a rather bleak picture about the future of work with regards to automation, where they talk about job losses and a lot of people not being skilled enough to work in the new jobs created (Naughton, 2019) (Porter, 2019). These websites and newspapers bring the fears people have about automation in the limelight and urges policy-makers, employers, employees and prospective workers to think about employment in the (near) future.

There has been done some research regarding jobs, their risk of automation, and the political action workers undertake in response of this. Specifically studies studying the effect of risk of job loss due to automation on redistribution preferences (Thewissen & Rueda, 2019), and voting for the radical right (Im, Mayer, Palier & Rovny, 2019). These studies will be addressed more in-depth later in this thesis.

Job automation is a complex phenomena to judge while it is happening, the consequences are hard to accurately predict. It isn't until after automation has been implemented that we can look back and see where our predictions were wrong, what was surprising and how we can make better predictions the next time around. This makes the current literature and theories hard to pin down and back-up with empirical research. With this thesis we hope to shed some light on the organized and unorganized political actions of employees in anticipation of automation of their jobs as described in the beginning of the introduction.

Research concerning automation has pointed out that automation will replace some jobs partly. This however, means that there is a group that is more at risk of losing their job due to the tasks they have to execute that is easily replaced by algorithms and machines. A lot of research concerning the topic of automation is focused on alternative ways of work, and what work in the future will look like. Less research has been done towards the political action workers take in anticipation of their jobs being automated. Previous studies have shown that people at risk of losing their job due to automation tend to vote for the radical right more often than people who are not at risk of losing their job due to automation (Im, Mayer, Palier & Rovny, 2019). It has also shown that people with a high job insecurity prefer welfare distribution (Thewissen & Rueda, 2012).

This study hopes to add another dimension to this topic viewed from a more political perspective in the form of organized and unorganized political actions. Besides voting behaviour and a distinct preference for wealth distribution, it is important to look at how proactive workers are who are concerned about losing their job, seen from a political view. This kind of action is something that they will have to actively look for and join on their own initiative. Another important thing to look at is the ability of concerned citizens to come together to undertake action. If this is not the case, the problem of automation and specifically the problem for high-risk workers, could be underestimated as of yet. Under high-risk workers or sectors, we file jobs and the workers doing that job that have a high-risk of being automated.

As for the practical relevance of this thesis, knowing more about this topic can help all relevant stakeholders in improving strategies, policies and expectations of how to handle and adapt to automation, workers and their needs. Governments can get a better grasp of what their citizens want from them, and are thus better equipped at helping them.

2. Research question

My research question is this: *To what extent does the risk of automation of one's job have an effect on organized and unorganized political action?*

This question will focus mainly on the differences of political action between people with a low degree of job security and people with a high degree of job security in a selected amount of EU countries.
Political action in this thesis will focus on organized and unorganized political action, and specifically labour union membership as organized action, and signing petitions and protests as unorganized action. Henceforth the latter will be indicated as participating in protests. We hope to discover how well the risk of automation explains the political action that a person undertakes. Thus, the type of question answered in this thesis will be an explanatory one.
There have been some studies done to blue-collar workers and automation, but these have not concentrated much on the political actions that these workers have taken in response to this development. In this study,
Data collection will be done via second-hand data from the European Social Survey (ESS) and will be based partly on the recodification of the data that other researchers with a similar question, have done. This thesis will make use of all the EU countries that the ESS has taken surveys in, in order to say something about European blue-collar workers. With blue-collar workers we mean workers in high-risk sectors, that are most typically blue-collar workers.

3. Theory framework

The future of work

At the time of the Industrial Revolution, many people feared mass unemployment as a consequence of machines being introduced. And while the Revolution led to job losses in certain sectors, especially the agricultural sector, it led to an increase in jobs in factories, and white-collar jobs. The automation we are facing today will most likely lead to a loss of jobs in certain sectors, but this does not mean that there will not be new jobs taking its place (Bush, 2016).

One concept describing the automation and its effects on the labour market would be skill-biased technological change. It claims that technological change, including automation, makes jobs focus on different skills, and thus, the demand for low-skill jobs will decrease (Berman, Bound & Machin, 1998). This will shrink the opportunities for workers who are not able to work with new technologies to earn a living. With this difference in demand of skill and wages for high- and -low skilled workers, the income gap will only increase with time, and the inequality will rise (Jaumotte, Lall & Papageorgiou, 2013) (Chui, Manyika & Miremadi, 2016). The new skills needed to keep people employed, the so-called human capital should be at the core of a long-term strategy to keep people employed. The skills attained would be best put to use by working alongside machines, instead of trying to outsmart machines (Autor, 2015).

Since the topic of automation has a high degree of speculation, there are also researchers who take a different approach. The reasoning that, in the past, jobs have been eliminated, but more jobs have been created, and therefore there will be more jobs created in the future, is criticized by Brown (2012), who uses two arguments. The first one being that in the past, disruption happened in only one sector, the agriculture sector, but over the last decade and in the (near) future, technology and automation has and will virtually disrupt all sectors. A remark can be made here that besides the agricultural sector, the craft production sector also has been highly influenced by automation (Autor, 2015). The second argument concerns the speed of technological development. Technology has accelerated at an incredibly high speed, a speed that has not been anticipated until it had already taken place. Not all is bleak however, he argues that if humans learn to work with machines, instead of against them, the economy, and thus a possible job shortage, can win (Brown, 2012).

Citizens armed with the knowledge of jobs being reallocated instead of eradicated, have a better chance of making more informed decisions about what political action to take, if any. It could also help make clearer for people what they stand for, and what parties actually represents their interest. Based on the amount of knowledge people have about automation and what it means, their political action might be affected which could result in a different approach toward technological change and automation.

The future of automation and political action

Few studies have been dedicated to bringing the automation of jobs, and specifically the people whose job is most likely to be automated, together with political action that these people undertake. The study by Thewissen and Rueda (2019) looks at people whose job is under imminent threat of becoming automated, and their reaction regarding welfare

distribution. They expect that people who have a job that is under imminent threat due to automation, prefer public insurance in the form of wealth distribution. The reason for this expectations is that individuals want to protect themselves from future unemployment or wage loss due to the automation of their job. These workers expect the government to protect them in some form if they lose their jobs. This insurance motivation is one of the most significant determinator for the redistribution preference. Thewissen and Rueda (2019) measured routine task intensity (RTI) in order to determine which kinds of jobs are at a higher risk of automation, the welfare distribution preference was measured in a survey asking people to indicate how much they agree with a certain statement. The study found that people at a higher risk of automation tend to be in favour of welfare distributions.
A study by Im, Mayer, Palier and Rovny (2019), looked at automation risk and its effect on voting for the radical right. They found that the workers who are "barely managing", and who are afraid of downward mobility, are the ones who are swayed most easily by the radical right. The workers who are in a high-risk job fit these descriptions, since they usually are not high earners, and due to automation, have a real chance at downward mobility. The radical right often reminisces at an idealistic past. They focus on issues that they frame as the reason for the threat of jobs and promise their voters to go back to the "good old times". This appeals to a significant amount of economically coping workers who fear losing what they have. In order to decide what automation risk entails, they rely on data from another study. People were asked what party they voted for in the last national election, and these parties were classified in different groups (radical right, major right, etc.). They concluded that people under threat of automation were more inclined to vote for the radical right.

This thesis will focus on the people in jobs at risk of automation and their political action. Political action is something citizens can engage in, in an effort to change certain policies. The goal usually is to change the status quo, or at least part of it, or to prevent a certain phenomena from happening. In the case of workers in high-risk jobs, the aforementioned studies showed that there is a reason for those workers to show a particular kind of preference (wealth distribution) or attitude (voting behaviour). The most defining commonality is their economic position. The workers showing a certain preference or attitude are economically on the brink of poverty, or "barely managing", and are under threat of losing their job due to automation. As for the other aspect, there are many ways of undertaking political action, but we have settled for two types of action: organized action and unorganized, or unconventional action. The term organized action, in this thesis, will mean action that is regulated via an institution, and is not ad hoc organized. The idea is that a political organization could make a real difference for the people it represents, because the governmental system is open for interest groups (Soss, 1999). Unorganized action, while it is of course organized, is not classified as such because it is a more or less ad hoc kind of organization with no long-term vision of steps needed to be taken to which they are committed (Pollert, 2010). In this thesis we will look at organized action in the form of trade union membership, and as for unorganized action, this will include petition signing and partaking in demonstrations or protests. That union membership is a form of organized action is visible in an alternative popular name for it, "Organized Labour", pointing out that unions are essentially labourers who have organized themselves (Liberto, 2019).
What these two types of political action have in common is that both are a type of collective action. For both types it is imperative that there are a lot of people to join, to become effective. If a group wants to see change, they will have to collectively fight for this change

to happen. Group solidarity is an important aspect of collective action, it is integral to the sense of belonging together and commitment to a cause (Casquete, 2007). For unions, the more members, the more power they have at the negotiation table, the more inclusive they can be, and the more funds they have for central services (Bryson & Forth, 2010). For the demonstration and protests, numbers are needed to draw attention to their cause, to commit themselves to this cause and to visualize their solidarity with one another (Casquete, 2007). Of course, there are other ways of doing political action that would fall under these two types, but we considered these types the most practical for this study.

Trade unions

The first type of political action we will look at is trade union membership. Of course, this is not the only way of participating in organized political action, but since we will look at a group of people based mainly on their occupation, it seems a logical choice for analysing their membership of trade unions. Trade unions are often based on a branch of work, this means that people in a branch that have a high-risk of being automated can become a member of the same trade union. When people in the same branch have a collective concern, they can express this through the union. In the case of automation, unions that represent workers in high-risk sectors can make their wishes and concerns known to employers and government. The union can represent the workers in a way they could not be represented in another way, because their line of work is the common denominator (Bivens et al, 2017). Therefore, while we look at people in a union, we will focus on the unions themselves in the following paragraph.

Trade union membership is a way of political action, because trade unions have a part in negotiating workers' agreements on behalf of its members and the branch in which they work. They are one of the biggest organized ways of undertaking political action. In the past, factories, and therefore automation, has proven to be a sound foundation for the creation and development of labour unions, with new worker conditions a basis for employees to unionize and demand certain rights for themselves. Unions are organized representatives of a part of the population in a country, and because of might in numbers, have a certain influence on the government (Volti, 2017). Political action by unions comes in two forms, party-political involvement, and interest group activity. In the former, unions associate lightly with, and support a political party in hopes of beneficial legislation, once that party comes into power. The latter means that unions are an interest group who are involved in the policy-making process, however, they are not on equal footing with government, as government is the dominant partner (Taylor, 1989). Although unions seem to have a diminished amount of influence, this does not mean that they are obsolete. A study has found that around 33% of the workers across the OECD have been covered by collective agreements, which have been negotiated by unions (Cazes, Garnero & Martin, 2017). This might not look like much, but 33% of the working population in all of the OECD still covers millions of people who otherwise might not have a voice at all. Additionally, a study has found that members of a union actually benefit more than non-union workers. The authors argue that members are in a position to make certain exchanges regarding productivity and higher wages that non-unionized workers don't have the means for (Eaton & Voos, 1989).

As for the workers in high-risk sectors, typically blue-collar workers, they historically were the ones who were unionized the most to protect themselves from all kinds of harm

(Hamermesh, 1971). Especially in current circumstances regarding automation, they might be the ones who need protection through unions the most again (Parietti, 2019). And while there are different opinions amongst different blue collar workers about their job being automated in the near future, there are definitely workers who see automation as an imminent threat and want to protect themselves from the negative consequences of this (Kinder, 2020). One of the ways this could be done is to become a trade union member.

Unions' reaction to automation

Unions themselves have different reactions to technological changes, some unions are further in developing their reaction and strategies than others. A few examples are Teamsters, Christelijk Nationaal Vakverbond (CNV), European Trade Union Confederation (ETUC), and the International Longshore and Warehouse Union (ILWU). All of these are not against automation, but demand that workers be treated properly, and that they are not dumped as soon as jobs can be fully automated. Teamsters said that public policy is necessary in the fight for protecting jobs. Next to that, automation should serve only to enhance people's jobs (Teamsters, 2018). CNV wants to keep automation out of the sole hands of the market, and instead wants multiple parties to be involved in making hefty decisions about automation and its development (Van der Eijk, n.d.). The ETUC instead focuses on a just transition to support the most vulnerable sectors, to give social protection and training opportunities to workers in transition, and to keep an effective social dialogue throughout this process (ETUC, 2020). The ILWU representing the dockworkers in L.A., referenced to in the introduction, have signed a contract allowing the employer to automate, in exchange for higher wages (Roosevelt, 2019). These are all different strategies unions have employed to deal with automation and the threat thereof on their workers.
Not everyone in the dockworker case opposed automation, the non-unionized, independent contractor truck drivers supported the automation. These contractors are typically not organized in any way besides private Facebook pages. In these pages, they made their dislike of dockworkers and local politicians known, and some even went as far as to hope that "all lazy longshoremen start collecting unemployment". Union officials of the ILWU stated that, were truckers unionized, they would not object to dockworkers' breaks (Roosevelt, 2019). This shows that unions are still relevant, and that workers, especially in high-risk jobs, can benefit a great deal from unionizing themselves. Not doing so, as the example of the truckers have showed, can lead to a lower quality of work. Furthermore, if truck driver jobs were to be automated, they would have even less means of trying to stop this automation from happening. Knowing the potential risks of one's job could give certain groups, such as these truck drivers, an incentive to organize themselves in unions.

De-unionization

There is a general concern about de-unionization, because despite unions still being a highly relevant organisation, there is also a steady decline in union membership across a significant amount of countries (Vandaele, 2019). One study has found that automation impacts union decline because of the displacement of low-skilled workers, who have historically been more often a member of a union. Next to that, as there is a higher demand

for high-skilled workers, the wage benefits received through unions no longer outweigh the costs of wage compression (Kristal, 2019). As for the high-risk workers themselves, they can perceive job insecurity, defined as a 'subjectively perceived likelihood of involuntary job loss' (Sverke, Hellgren & Näswall, 2002). Union membership is seen as a low-effort action, this, of course, is not true for active union members. One of the main motivations for workers to join unions are classified as 'instrumental' motivations. This entails the support and protection of workers in case they experience difficulties at work (Waddington & Hoffman, 2000). From this, it can be concluded that workers join these unions because they see it as an insurance, and trust them to successfully protect them. This insurance motivation has been mentioned before in the reason for the preference of wealth redistribution (Thewissen & Rueda, 2019).

An explanation for the declining memberships of labour unions is the psychological contract. This means that both parties, in this case unions and union members, have expectations from their 'relationship'. One of the core expectations that employees have is that unions ensure the highest level of job security possible. When members feel like their union is inadequately handling this protection, they feel this as a breach of the psychological contract and this can lead to an intention to resign. Thus, job-insecurity can be linked with a decline in union membership (De Witte, et al., 2008). The imminent threat of job loss due to automation could make people lose faith in the usefulness and effectiveness of being a member of a union. It has to be noted that this study only looked at union members, not at possible prospective members, this means that no conclusions can be drawn about why people will not join unions in combination with job insecurity.

Theories that underlies collective action in general might also explain why people won't join trade unions. This is the free-rider theory, where people receive benefits regardless of whether they have put any effort in receiving these benefits (Olson, 1965) (Booth, 1985). Which can apply to trade unions, where workers in a specific branch can receive benefits, that the unions have fought for, without even being a member of said trade union.

If less people are member of a union, the union loses part of its negotiation power. This can result in more distrust in the union, resulting in even less members, and follow a self-fulfilling prophecy that results in unions losing most if not all of their power (Kristal, 2013). If that is the end result, there will be no organization fighting for the rights of workers in high-risk jobs. It can be argued that workers in high-risk sectors stand stronger together and would benefit from having a strong union with a large membership. However, studies indicate that union membership in general is declining (Vandaele, 2019).

To summarize, there are a few theories with opposite expectations. On the one hand there is the idea that blue collar workers would want to organize themselves in unions in order to protect themselves from the negative consequences of automation. Being a member also comes with additional benefits that non-members do not have. Historically, they have been the workers that have been unionized the most. On the other hand, there is the idea that union members feel like they are not being protected enough, and as a consequence of this, rescind their membership. Additionally, free riding could also play a role in people deciding against paying the membership fee costs and becoming a member.

To test both predictions, we have developed two hypotheses:

H1: Compared with low automatization risk workers, high automatization risk workers have a higher tendency to be a labour union member.

H2: Compared with low automatization risk workers, high automatization risk workers have a lower tendency to be a labour union member.

Protests and petition signing

The second type of political action we will look at, are the unconventional and unorganized community initiatives. Specifically, protests and signing petitions will be looked at, where signing petitions is a form of protests. This type of action is unconventional and unorganized in the sense that it is not organized with a long-term strategy at heart, but is born out of unrest and is essentially an ad-hoc response. It can also be seen as a high-effort action, because it involves planning, time and travelling.
Protests usually happens because citizens disagree with certain decisions made by governments and organizations or they disagree with the status quo, and they want to show their disapproval in hopes of changing their circumstances (Denters, 2016). These protests come in all kinds of sorts, local, national and international, examples include the Arab Spring, the Women's march, and the Black Lives Matter movement.

Why high automation risk workers will not protest

Despite the fact that there are enough examples of collective action in the forms of protests, the majority of the people who perceive a problem or injustice will not engage in high-effort participation such as protests (Klandermans, 2002). Scholars have debated about the question of why people will not participate. A popular theory is the free rider theory. This theory states that collective action rarely depends on one individual, but the benefits are reaped by all. Therefore, for the rational thinker, it makes sense to reap the benefits without putting any effort in (Kim &Walker, 1984). Another way of analysing this phenomena is the idea that people make individually rational choices, but these choices can lead to collectively irrational outcomes. The way to fight the free-rider problem is the organisation of a small group. In a small group it is harder to free-ride because there is a strong social control (Olson, 1965) (Booth, 1985). Additionally, there is also a belief that people will not join protests if they believe that it will not be effective in influencing decision-makers (Hornsey, et al., 2006). This idea is most prevalent in small groups, because of the belief that a few people will not have much of an impact in the political scene.
A more specific theory that might apply especially for high-risk workers concerns education, which also has an effect on attitude towards protests. When a person is highly educated, they will, when an issue is class-related, care less for the issues of the blue-collar groups. However, education will increase the support for protests that do not have an immediate impact on the person in question. Blue-collar workers in general will identify less with protest issues and protesters (Hall, Rodeghier & Useem, 1986). Based on this study, it can be theorized that people whose job is under threat of automation, which usually are blue-collar workers, do not have the attitude or knowledge to organize themselves and form a protest.

Why high automation risk workers will protest

These problems would indicate that people don't protest at all, which, as multiple protest movements prove, is not true. According to a study done in 2011, there are a few important things that make people willing to participate in collective action, such as motivation, people's own belief, emotion and identity. However, in order for people to actually engage in collective action, something more is needed, mainly networks, and especially informal linkages. The idea is that as long as informal linkages support and reinforce commitment to the relevant cause, collective action participation is much more likely (Van Laer, 2011).
As for protests regarding automation, the L.A. dockworker protest is a good example. Workers marched through the street with banners, 11.000 people signed a petition, and elected officials wrote to oppose the automation of cargo drivers (Roosevelt, 2019). Besides this protest against automation, we have been unable to find other, similar protests against automation. However, the dockworker example gives a visual of how such a potential protest could go. Workers did all they could as far as protesting goes, they marched through the street, signed petitions and asked local officials to speak up on their behalf. It has to be said that these protests were union-led, and thus, were well-organized, and could be seen as organized political action. At the same time, being a union member does not obligate one to attend a march or sign a petition, but it is easy to imagine that social control in such a group could have a positive influence on people joining a protest.

Based on the theories stated above, in combination with the knowledge that there have barely been any protests against automation, we expect to find that there is a reluctance to join protests. To test this prediction, we will be testing for a positive and a negative effect, like with the trade union membership variable.
The two hypotheses will be as follows:

H3: Compared with low automatization risk workers, high automatization risk workers are more inclined to join collective action such as protests and petition signing.

H4: Compared with low automatization risk workers, high automatization risk workers are less inclined to join collective action such as protests and petition signing.

These theories suggest that people in general are inclined to abstain from taking action if they perceive their efforts as futile. This can help us more accurately interpret the results that may be found in this thesis. It cautions us against believing that low collective action is equal to low levels of concerns. Widespread concern could lead to action being taken to make sure that people in high-risk sectors will not be unemployed long-term, or be appropriately guided through a transition. What's more, people in high-risk sectors are not willing or able to undertake political action, while this is the group that would most benefit from the consequences of political action. This poses a problem for the societal concern about automation, because if it seems that there is no concern, the problem might be underestimated, and no preventative measures will be taken, or even considered.

4. Data

The secondary data that will be used in this thesis originates from the European Social Survey. The ESS is an academically driven, cross-national survey, it was established in 2001 and has been conducting surveys and interviews with people in more than 30 countries (ESS, n.d.). The ESS has used a probability proportional to size (PPS) sampling, which makes sense from a representative perspective. Because some areas have more citizens than others, it is only fair to ask a proportional amount of people to fill in the survey. The data from the ESS will be used to draw conclusions regarding the hypotheses and eventual conclusion. The data is collected from twenty seven countries in Europe, including four non-European countries, Montenegro, Norway, Serbia, and Switzerland. In this thesis, the four non-European country will be excluded in order to only focus on EU countries and thus minimize the chance of more influencing factors than necessary. Next to that, member states share history (partly) in which they were a member of the Union, and this could have an effect on the way workers think, or the expectations they have. The latest survey they published, Round 9, stems from 2018, this is the one used in this thesis. They asked respondents in twenty seven countries in Europe to fill in a survey. The criteria for the respondent was that they had to be over 15 years of age, and living within a private household. And although the working age population is defined by the OECD as 15 – 64 (OECD, 2019), we are looking to set the threshold a little higher and have chosen to take an 18 – 64 working population. The reason for this is that in most countries, the legal age is 18, meaning that people under 18 years of age can legally only work side jobs, and no full-time job.

In total, 47.086 people have filled in the survey, and the ESS data was created based on these completed surveys. Of these, the amount of people that adhere to the RTI criteria used in this thesis is 29.776.

For this thesis, we will look at the people who are currently on the labour market, and who are between 18 – 64 years old at the time of the survey.

5. Operationalization

The relevant variables for this thesis, in the large, cross-national survey, consist of the following:

1. The risk of automation the respondent has in their current occupation. Occupation will be recoded into an RTI score later on.
2. If the respondent is, or ever has been a member of a trade union.
3. If the respondent has protested in the last 12 months either via signing a petition, or partaken in a public demonstration.
4. The age of the respondent.
5. The gender of the respondent.
6. The level of education of the respondent
7. The country the respondent lives in.

Occupation

As for the occupation, the ESS has coded different jobs, with each type of job subdivided more specifically. They are divided in accordance with the International Standard Classification of Occupations (ISCO). In this thesis, we will focus on people who have a job that is considered to be highly likely to be automated, and people in jobs that are not likely to be automated anytime soon. The jobs in the ESS are not marked as such, but Thewissen and Rueda used the ESS data from 2002 to 2012 to code certain jobs as high-risk (Thewissen & Rueda, 2019). The original dataset used 4 digits to indicate a specific field, for the recoding of the jobs to high-risk and low-risk, the authors used only 2 digits. Using 2 digits made the description of the jobs less specific (i.e. from "finance manager" to "administrative and commercial manager"), but specific enough to draw conclusions about the risk of automation. This risk of automation is assigned a Routine Task Intensity (RTI) score, with a higher score indicating a higher risk of automation. RTI scores are given to jobs, based on the kind of tasks that are dominant in that job. Tasks that are mainly routine work are seen as easier to automate and thus given a higher score.

The way the jobs are classified (ISCO score), has been changed in 2008 from ISCO-88 to ISCO-08 (International Labour Office, 2012). Thus, since our data is taken from a 2018 study with the ISCO-08 coding, we have to adjust the classification used in the Thewissen and Rueda study (ISCO-88 coding) to the ISCO-08 code. In order to decide which occupations belong in the highest and lowest risk categories, we will use the categorization that Thewissen & Rueda (2019) have used in their study (Appendix A).
Appendix B shows the old ISCO score, the new score, and the RTI score. Furthermore, Thewissen and Rueda have six more categories of occupations of which an RTI score is missing, they have included these, and given them an average score of routine or nonroutine jobs. We will do the same here in order to prevent the unnecessary redundancy of respondents with jobs that can, and have been, categorized. Two of the six categories were merged, this were the "teacher professionals", and the "teaching associate professionals", there was only one category concerning teaching professionals. Thus, we will work with five, instead of six, additional categories. These five occupations have no ISCO score, yet, so we

will determine which scores best fit the description. These will also be included in Appendix B. The ISCO scores will receive their corresponding RTI score in the SPSS file.

Union membership and protest behaviour

The other main variables are relatively straightforward. The union membership could be answered with "yes, currently", "yes, previously" and "no". These will have to be recoded into a "yes"/"no" variable, in which the original answers of "no", and "yes, previously", will be merged. The "no" answer will get a 0 value, and the "yes" answer a 1 value.
Protest behaviour is measured via two ways, the first is via the signing of petitions, and the second is the participation in a demonstration. These variables will be merged together first, after which they will be recoded into a simple "yes"/"no" variable. In this new variable, "no" will mean that the respondent has participated in neither and will receive a value of 0. And "yes" will be defined as having participated in either one and receive a value of 1.

Control variables

In this research, besides looking at the variables such as occupation, participating in protests, and union membership, it is also important to look at control variables. The usage of control variables is necessary to better understand the variables we focus on. These control variables have some effect on the main variables, but they are not our main point of interest.
A few control variables we will explore in this thesis are age, gender, education and country. As for age, in general, younger people are less likely to join trade unions (Vandaele, 2019). And with social media attracting a younger public to participate in offline demonstrations (Enjolras, Steen-Johnsen & Wollebæk, 2012), there is a possibility that younger people in general more often participate in demonstrations.
Women are less likely than men to join trade unions, relatively to the industry in which they are employed (Fiorito & Greer, 1986) (Kumar & Cowan, 1989).
People with a higher education are usually working in a higher paid job, and thus, in a less routine intense and high automation risk job. With this control variable, we want to control for the political action people undertake, and make sure that education is not the deciding variable. There will most likely be some sort of overlap due to more educated people working in lower risk jobs.
As for different countries, we will look at a West-, East-European divide. Since there is no clear definition of which countries belong to which category, we have opted to choose for countries belonging to Eastern Europe when they have become part of the European Union after the year 2000. A study has found that These Eastern European countries have, on average, a lower productivity rate than Western European countries (Stephan, 2002). This could have an effect on the amount of workers in high-risk sectors, and subsequently, on their involvement in trade unions. Since the EU enlargement, trade unions in Eastern Europe have seen huge declines in membership (Kohl, 2008).
By looking at these variables we can also find out in our data if there is a difference in age, gender and country regarding high-risk jobs, and the joining of protests and demonstrations.

Of the control variables, we will keep the gender and country variable as they are now. With the gender value 0 being male, and 1 being female. The country variables are

indicated with two letters corresponding to the country.
The age variable will be split up into "young" and "old", with "young" an age between 18 and 39, and "old" an age between 40 and 64. The category "young" will receive a value of 0, and "old" a value of 1.
The education variable will be split into lower education, middle education, and higher education. The lower education category will exist of "less than lower secondary" and "lower secondary", since these are considered basic education. As middle education we will take "lower and upper tier upper secondary", together with "advanced vocational, sub-degree". As higher education we will take "lower and higher tertiary education", which consist of bachelor and master level. The lower education category will receive a value of 0, middle education a value of 1, and higher education a value of 2.

Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
RTI	29.776	-1,52	2,24	-0,18	0,87
Member of a trade union	39.471	0,00	1,00	0,13	0,34
Participating in protests	39.446	0,00	1,00	0,26	0,44
Gender	39.719	0	1	0,55	0,50
Young & Old	39.554	0,00	1,00	0,72	0,45
Education	39.598	0,00	2,00	1,00	0,69
Valid N (listwise)	29.255				

As can be seen from the RTI variable, there are a lot of cases missing (from the total of 47.086 respondents, to 29.776 valid cases). There are 2995 people who have filled in either a "not applicable", "refusal", "don't know" or "no answer". The remainder of the missing cases are people in jobs not assigned an RTI score.

6. Data analyzation

RTI, union membership and participating in protests analysis

In our data analysis, we first looked at the RTI score in relation to being a union member and participating in protests with an independent samples t-test. For union membership, the RTI score was -0,30 for members, and -0,15 for non-members. This means that union members have a lower risk of automation compared to non-union members. Our 2-tailed significance test proves this as well (Appendix C). For protest behaviour, the results are the same, albeit with different RTI scores, -0,29 for people having participated in a demonstration in the last 12 months, and -0,13 for people who have not participated (Appendix C). This means that people who have participated in protests, have a lower risk of automation than people who have not participated.

After this, we have done the same analysis, but we looked at different countries by using a split file, and if the results for each individual country differed significantly from the overall result. In most countries the result was the same. In every country the RTI of union members is tied to low risk occupations, and the same goes for participants in protests. When looked at the descriptive statistics, we can see that there is an overrepresentation of workers in nonroutine (low risk) jobs. If we compare the RTI scores between members and non-members, we can see that the RTI score for non-members is higher, meaning that non-members are in non-routine jobs, but these occupations have a higher automation risk than the occupations of union members. For the significance level, we took a 0,05 alpha level, and when looking at the table, there are ten countries (Belgium, Cyprus, Czechia, Germany, Spain, Finland, UK, Croatia, Netherlands and Slovenia) of which the significance is above the alpha level, meaning that in these eight countries, there is a 5% risk that the conclusions drawn from this particular data is not accurate.

When we look at the protest behaviour, there are more people not participating in protests that have positive RTI scores, meaning that people in high-risk jobs do not participate in protests as often as people in low risk jobs. In nearly every country, the non-participants have higher scores than the participants. Meaning that people with an occupation that has a slightly higher risk of automation are less inclined to join protests. Most results are significant, with seven countries (Czechia, Estonia, Spain, Finland, Croatia, Hungary and Lithuania) not having significance levels under the 0,05 alpha level. This means that most of the results from the participating in protests variable are accurate.

Country	RTI union members	RTI non-union members	Sig. union members	RTI participating protests	RTI not participating protests	Sig. participating protests
Austria	-0,11	**0,01**	***0,01***	-0,18	**0,05**	***0,00***
Belgium	-0,23	-0,31	0,12	-0,37	-0,24	***0,01***
Bulgaria	-0,57	-0,17	***0,00***	-0,34	-0,16	***0,04***
Cyprus	-0,17	-0,01	0,14	-0,33	**0,01**	***0,01***
Czechia	-0,07	-0,07	0,99	-0,07	-0,07	0,97
Germany	-0,33	-0,24	0,10	-0,33	-0,19	***0,00***
Estonia	-0,57	-0,36	***0,04***	-0,41	-0,36	0,43
Spain	-0,11	-0,12	0,85	-0,14	-0,12	0,74

Finland	-0,29	-0,22	0,09	-0,29	-0,22	0,09
France	-0,24	-0,04	***0,02***	-0,14	**0,00**	***0,00***
United Kingdom	-0,44	-0,38	0,27	-0,49	-0,31	***0,00***
Croatia	-0,16	-0,05	0,21	-0,06	-0,06	0,88
Hungary	-0,29	**0,02**	***0,01***	-0,17	**0,01**	0,12
Ireland	-0,35	-0,12	***0,00***	-0,30	-0,09	***0,00***
Italy	-0,36	-0,04	***0,00***	-0,29	-0,01	***0,00***
Lithuania	-0,46	-0,19	***0,03***	-0,32	-0,18	0,06
Latvia	-0,64	-0,28	***0,00***	-0,53	-0,27	***0,00***
Netherlands	-0,39	-0,28	0,09	-0,40	-0,26	***0,01***
Poland	-0,53	-0,21	***0,00***	-0,50	-0,17	***0,00***
Portugal	-0,64	-0,12	***0,00***	-0,36	-0,08	***0,00***
Sweden	-0,40	-0,30	***0,02***	-0,41	-0,31	***0,02***
Slovenia	-0,24	-0,17	0,43	-0,39	-0,14	***0,00***
Slovakia	-0,51	-0,10	***0,01***	-0,33	-0,04	***0,00***

Bold = Positive RTI scores indicating high-risk occupations.
Bold Italic = Significant score, there is a significant difference between the RTI scores.

Logistic regression union membership

The data from the ESS dataset will be analysed with a regression analysis, in which the relationship between one independent variable, and one or more dependent variables is tested. Regression is used for prediction, in this case of our hypotheses, and can sometimes be used to find causal relationships between the independent and dependent variables. For this type of analysis we will make use of bivariate variables. With this, we will check the control variables and see if they could have influenced the eventual outcome. To do this, we first need to make dummy variables out of the country and education variables because they are a nominal variable. After this, we will make a logistic regression analysis for each main variable. As can be seen in the table, the Nagelkerke R square is 0,21, which means that 21% percent of the variance in union membership can be explained by the variables in the model. The B result gives us information about the direction, and the strength of this direction of the different variables. When we look at the score for RTI, we see a weak, negative score. This means that workers with a low RTI score, will be slightly less inclined to join a trade union. This result fits best with the H2, *Compared with low automatization risk workers, high automatization risk workers have a lower tendency to be a labour union member.*
Next to this finding, the control variables gender and age (young & old) also have a negative effect on union membership. As for the variable education, we took the variable "low education" as the reference group. Both education levels displayed in the table have a strong positive effect on union membership. When we look at the variable country, we took the variable "Germany" as a reference. There is a difference amongst countries, there are positive and negative effects, but most can be considered strong. There is no obvious common denominator, so we cannot draw conclusions based on the difference between countries regarding positive and negative effects.

Logistic regression participating in protests

The logistic regression for the participation of protests shows a 0,17 Nagelkerke R square. This means that 17% percent of the variance in participating in protests can be explained by the variables in the model.
When we look at the B results, the RTI has a moderate negative effect. Meaning that people with a lower RTI score, tend to not participate in protests. This result fits with H4, *Compared with low automatization risk workers, high automatization risk workers are less inclined to join collective action such as protests and petition signing.*
Gender has a positive effect on participating in protests, while age seems to have a negative effect. Education, middle as well as high education, both have a strong positive effect. However, when we look at countries, almost all countries, except five (Finland, UK, Croatia and Sweden), have a negative effect on participating in protests. We cannot think of one clear-cut difference between these five and the other countries in this model, so no conclusion can be drawn regarding their difference.

	Trade Union membership		Participating protests	
	B	S.E.	B	S.E.
Constant	-2,65	0,10	-1,15	0,07
RTI	-0,08	0,02	-1,0	0,02
Gender	-0,07	0,04	0,14	0,03
Young & Old	-0,07	0,04	-0,20	0,03
Education (low = ref.)				
Middle education	0,67	0,06	0,75	0,04
Higher education	1,11	0,06	1,36	0,05
Country (Germany = ref.)				
Austria	0,82	0,09	-0,36	0,07
Belgium	1,40	0,09	-0,57	0,08
Bulgaria	-1,50	0,16	-2,24	0,12
Cyprus	0,44	0,14	-1,58	0,15
Czech	-1,02	0,13	-0,87	0,08
Estonia	-1,26	0,15	-1,67	0,09
Spain	0,01	0,12	-0,17	0,08
Finland	1,81	0,09	0,04	0,08
France	-0,55	0,12	-0,05	0,07
UK	0,10	0,10	0,19	0,07
Croatia	-0,48	0,12	0,04	0,08
Hungary	-0,92	0,14	-2,51	0,14
Ireland	0,14	0,10	-0,36	0,07
Italy	-0,23	0,11	-0,73	0,08
Lithuania	-1,27	0,16	-1,62	0,10
Latvia	-0,86	0,17	-1,69	0,13
Netherlands	0,32	0,10	-0,58	0,08
Poland	0,62	0,14	-1,09	0,10
Sweden	1,88	0,09	0,01	0,08
Slovenia	0,08	0,12	-1,24	0,10

Slovakia	-1,19	0,18	-0,49	0,09
R^2	0,21		0,17	

Regression country specific

To check the results of control variables for different countries, we have made a split file of the countries in our data. We made a new regression model, to check for each country the specific results of the RTI when accounting for the control variables. We have not included this regression model in the thesis due to it being too large to put in, but it can be found in the syntax and output of SPSS.

As for RTI score, there were no significant differences between countries besides what we have seen in the table above, with different countries having positive and negative values. Meaning that countries with positive and negative scores do not seem to share one characteristic. This is also the case for all control variables, a difference in positive and negative outcomes. There is no one discernible factor that binds countries with a positive or negative result for one variable, with another country with a positive or negative result for the same variable.

In conclusion, we found that there are differences between countries in Europe, but we were not able to find a factor that binds certain countries with each other, nor could we make an estimate as to the reasons for this difference.

7. Conclusion

In our conclusion, we will look at the research question again, and try to answer this as concise as possible. We will base our answer on the theory explored, and the data we have gathered and analysed.

Our research question was, "*To what extent does the risk of automation of one's job have an effect on organized and unorganized political action?"*

The simple answer is that our analysis shows that the risk of automation of one's job decreases the likelihood of joining a trade union, or participating in protests.

This conclusion has mainly been drawn based on our data. The theory was used for prediction, forming our hypothesis, and understanding why people with high-risk jobs do or do not become union members, or participate in protests. While the theory only provides a possible explanation for why people would or would not undertake any political action, we can only speculate on their reasoning and motivations.

This thesis stated two pairs of contradicting hypotheses, meaning that at least two of those four were to be false. The following two hypotheses we found to be unable to reject, and fits with our findings.

H2: Compared with low automatization risk workers, high automatization risk workers have a lower tendency to be a labour union member.

H4: Compared with low automatization risk workers, high automatization risk workers are less inclined to join collective action such as protests and petition signing.

Despite the right hypothesis being predicted in a certain sense, the answer is still surprising. Not because we expected a different result, but more so because of the content and its implications. The result that people in high-risk jobs less often become union members and join protests, seems counterproductive. Since workers in high-risk jobs are in the most vulnerable occupations, it seems that they have all the more reason to join unions for protection and better agreements with their employers in case of redundancy of their skills, and join protests to show their displeasure with the current and near-future situation. The assumption that people will join unions to protect themselves from future harm does not hold when we look at the group that is most at risk.

There have been studies focused on political party preference, and the distribution of wealth preference, but there has not been a lot of research to the relationship between high-risk workers and their political action. And much less attention was paid to the relation between high- and low-risk occupations and union membership and participation of protests.

There have been studies done with similar counterproductive results, that seem in line with the results of this thesis. One of those studies has concluded that people wo stand the most to support labour parties, actually vote for populist parties.

In regards to automation, people speak of winners and losers, losers being the ones whose jobs will be lost due to new technological developments. This study, taken together with the wealth distribution preference and voting patterns, indicates that the potential "losers" make political decisions counterproductive to their position on the labour market.

With this thesis, we hope to make people aware of the multiple options with regards to political action. We also hope to see further research being done to explore the causes, effects and attitudes of high-risk workers towards union membership and protests, and to investigate mechanisms that restrict the engagement between high-risk workers and unions.

This thesis and specifically the data method has strong and weak points.

One of its main flaws lies in the fact that this thesis is based on data done by the ESS,

meaning that the questions asked were not specifically tailored to our research. This has implications for the union membership and the participation of protests. The fact that people are a union member (or not) does not necessarily have anything to do with their idea about automation risk in their job. A simpler explanation could be that none of their colleagues are members, they cannot pay the member fee, or they do not know enough about it.
As for the people participating in protests, these protest do not have to be tied to protesting against automation, but could also be protests of Black Lives Matter, Women's issues etc. Even if people do protest, it does not have to be tied to their occupation or perceived threat of automation.
A second point is that the scope of political action was fairly limited in this research, we included only three different variables, of which we merged two: union membership, petition signing, demonstrating. Besides voting, this seemed the easiest measurable form of political action.
A third point was that Thewissen and Rueda (2019), gave only a few occupations an RTI score, this reduced the amount of respondents. In addition, the RTI is a very rudimentary way of measuring automation risk. Finally, this study did not ask respondents directly about their perceived risk of automation, and if they were concerned about losing their job because of it.
A strength of this study is its many respondents, because a study with more cases tends to be more representative of the situation. This takes away part of the doubt about our results.
A second strong point is that the respondents come from a host of different countries, different age groups and different backgrounds. In short, the great variance of social backgrounds reduced the risk of bias in our thesis.

Further research into this topic is recommended, because with automation developing as quickly as it does, this will affect many people and their job security. Studying the ways in which high-risk workers protect themselves from negative consequences of automation, is insightful and could be used to find new - political - ways that can help them. This thesis is a quantitative study, but for this topic, qualitative data is very useful to find the motivation for people to undertake political action or not, and their fears and worries about the future of their jobs. It would be helpful to investigate to what extent people are afraid to lose their jobs, how they see the future of work, and what their place would be in it. Asking people what, in their opinion, would be the best course of action for companies, workers and government would provide practical insight and support thinking about solutions and ways to help these people.
Thus, a more extensive study is recommended in conjunction with qualitative research. It is important to understand the motivation behind people's action, which is why I would give greater importance to a more in-depth study as a further research direction. Next research could solve the confusion, the problem of membership and protest not being per se relevant to the topic of high-risk occupation. As for the limited RTI score problem, more occupations would have to be given an RTI score. And more political actions could be included in a new research.
For practitioners and politicians, it is suggested to pay more attention to people who are threatened by automation, as they appear to be underrepresented in existing forms of participation, and their position is believed to enrich the debate on the future of work.

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