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SOCIAL POLICY 4.0?

EMPIRICAL INSIGHTS INTO THE FUTURE OF WORK
AND SOCIAL POLICY IN THE DIGITAL ECONOMY

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ABSTRACT

Technological revolutions have transformed the labour market and surrounding societies throughout the industrial era. As a response to the witnessed transformations, social policy measures have been developed and the societal outcomes resulting from technological changes have largely been positive in the long term. In the 2010s, advances in digital technologies and artificial intelligence (AI) have sparked a wide-ranging debate on how social policy should be reformed so that the Fourth Industrial Revolution can benefit both people and the economy. The aim of this thesis is to contribute to a deeper understanding of the future of social policy by examining how socio-economic conditions, public opinion and ideas may drive social policy change in the digital economy. To mitigate the fundamental uncertainty involved in anticipating the future, the thesis has adopted a mixed-methods approach combining microsimulation, survey methodology and qualitative content analysis.

From a functionalist perspective, welfare states are expected to implement rational policies that serve the interests of society as a whole. Hence, sub-study I focused on the role of socio-economic conditions to explain future social policy. The analysis utilised the EUROMOD microsimulation model and EU-SILC-based microdata to examine the socio-economic implications of technology-induced hypothetical employment scenarios for the EU-28 countries. The specific objective of the sub-study was to illustrate social and economic pressures for social policy change in ideal-type scenarios identifiable in recent debates.

Since policymakers are highly responsive to public opinion, it is expected that besides socio-economic conditions, public opinion may also have a major role in explaining social policy change in the digital economy. Consequently, sub-study II explored the Finnish view on the future of work and preferred policy ideas utilising unique population-level survey data collected for this thesis. The sub-study investigated whether public opinion drives change in the principles of social policy within the context of the Nordic welfare model.

To find a 'policy window', ideas must be economically feasible and supported by the public. Due to unprecedented interest in universal basic income (UBI) in recent social policy debates, three sub-studies of this thesis focused specifically on the feasibility of the idea. While sub-study III examined public support for basic income in Finland based on seven population-level surveys conducted in the past decade, sub-study IV extended the analysis to an international context, with a focus on Finland and the UK. The economic feasibility of providing a basic income was analysed in sub-study V, exploiting microsimulation calculations conducted in Finland. The objectives of this investigation were twofold: first, to strengthen evidence-informed debate on

the feasibility of the idea; second, to illustrate the fragility of public support for social policy ideas that are discussed at an abstract level.

The microsimulations of hypothetical employment scenarios showed that the Nordic and Benelux countries in particular, but also France, are clearly more resilient to technological unemployment than the countries of Southern and Eastern Europe. In an optimistic employment scenario, the biggest beneficiaries would be Belgium, Croatia, Finland and Slovenia. If mass unemployment materialised, there would be a significant need to reduce poverty and inequality, but paradoxically, budget deficits might force countries to implement harsh austerity measures. The survey results indicate that the vast majority of Finns are not worried about permanent technological unemployment, although most assume volatility will increase in the labour market. The results also suggest that Finns are not in favour of a significant change in the guiding principles of social policy. Interestingly, pessimistic views about the future of work do not predict higher support for radical ideas.

Content analysis of seven Finnish and six British nationally representative basic income surveys showed that the divergent frames used in the surveys explain the great variation in measured support. The results suggest that detailed definition of basic income and its characteristics decrease identified support. Further, loaded framings, such as reference to increases in taxation or negative dynamic effects, decrease support. Vague definitions of basic income together with favourable assumptions concerning subsequent labour force participation are likely to increase identified support. Regression analysis exploiting the Finnish and British survey data also indicated that the socio-economic determinants of support for basic income are dependent on the frames used in the surveys. Taken together, the results suggest that the social legitimacy of concrete basic income models is not strong enough to make basic income a feasible policy idea in Finland or the UK in the near future.

The feasibility of basic income can also be questioned from the perspective of economic efficiency, as analysed in sub-study V. Contrary to common beliefs, it is difficult to consistently improve work incentives by implementing an economically realistic basic income and without weakening social security. Based on the available evidence, it is also unclear whether a basic income can improve the bargaining position of those already in a weak labour market position. Even if basic income reduces harmful benefit bureaucracy, it is disputable whether a basic income is an effective measure to promote part-time work, entrepreneurship or lifelong learning in the digital economy. The results from all five sub-studies of this thesis suggest that under current circumstances, the likelihood of a radical social policy change resulting from digital transformation is relatively small.

TIIVISTELMÄ

Teknologiset vallankumoukset ovat muovanneet työmarkkinoita ja niitä ympäröiviä yhteiskuntia läpi teollisen historian. Sosiaalipoliittisia toimenpiteitä on kehitetty vastaukseksi koettuihin muutoksiin ja teknologisten muutosten yhteiskunnalliset vaikutukset ovatkin olleet pääasiallisesti myönteisiä pidemmällä aikavälillä. 2010-luvulla edistysaskeleet digitaalisissa teknologioissa ja tekoälyssä ovat synnyttäneet laajaa keskustelua, miten sosiaalipoliittikkaa tulisi uudistaa, jotta neljäs teollinen vallankumous hyödyttäisi sekä taloutta että ihmisiä. Tämän väitöskirjan tavoitteena on lisätä ymmärrystä tulevaisuuden sosiaalipoliitikasta tarkastelemalla, kuinka sosio-taloudelliset olosuhteet, julkinen mielipide ja ideat voivat vaikuttaa sosiaalipoliittikan muutokseen digitaalisessa taloudessa. Tulevaisuuden ennakoimiseen liittyvän perustavanlaatuisen epävarmuuden vähentämiseksi tämä tutkielma hyödynsi monimenetelmällistä lähestymistapaa, jossa yhdistettiin mikrosimulointia, kyselytutkimuksen menetelmiä ja laadullista sisällönanalyysia.

Funktionaalista näkökulmasta hyvinvointivaltioiden oletetaan toimeenpanevan rationaalisia politiikkatoimenpiteitä, jotka palvelevat koko yhteiskunnan etua. Tästä syystä väitöskirjan ensimmäinen osatutkimus keskittyi sosio-taloudellisten olosuhteiden rooliin tulevaisuuden sosiaalipoliittikan selittäjänä. Analyysi hyödynsi EUROMOD-mikrosimulointimallia ja EU-SILC -pohjaista mikroaineistoa tarkastelussa, jossa arvioitiin vaihtoehtoisten hypoteettisten työllisyyskenaarioiden sosio-taloudellisia vaikutuksia EU-28 maissa. Osatutkimuksen tavoitteena oli havainnollistaa viimeaikaisista keskusteluista tunnistettujen ideaalityyppisten skenaarioiden sosiaalipoliittikalle synnyttämiä sosiaalisia ja taloudellisia muospaineita.

Koska kansalaismielipiteen tiedetään vaikuttavan poliitikkoihin, sosio-taloudellisten olosuhteiden lisäksi myös julkinen mielipide voi selittää huomattavasti sosiaalipoliittikan muutosta digitaalisessa taloudessa. Tähän oletukseen perustuen väitöskirjan toinen osatutkimus tarkasteli suomalaisten näkemystä työn tulevaisuudesta ja parhaina pidetyistä politiikkaideoista hyödyntämällä väestötasoisista kyselytutkimusaineistoa, joka kerättiin tätä väitöstutkimusta varten. Osatutkimuksessa selvitettiin, lisääkö kansalaismielipide painetta sosiaalipoliittikan periaatteiden muutokseen pohjoismaisen hyvinvointimallin viitekehyksessä.

Ideoiden täytyy olla taloudellisesti toteuttamiskelpoisia ja suuren yleisön kannattamia, jotta ne voivat löytää 'politiikkaikkunan'. Koska universaalia perustuloa kohtaan on kohdistunut ennennäkemätöntä kiinnostusta viimeaikaisissa sosiaalipoliittisissa keskusteluissa, kolme tämän väitöskirjan osatutkimuksista keskittyi tarkemmin idean toteuttamiskelpoisuuteen. Kolmas osatutkimus tarkasteli perustulon kannatusta Suomessa perustuen

seitsemään viime vuosikymmenellä toteutettuun väestötason kyselyyn, kun taas neljäs osatutkimus laajensi analyysia kansainväliseen viitekehukseen keskittyen kuitenkin Suomeen ja Yhdistyneeseen kuningaskuntaan. Viides osatutkimus analysoi puolestaan perustulon taloudellista toteuttamiskelpoisuutta hyödyntäen Suomessa tehtyjä mikrosimulointilaskelmia. Perustuloa koskevilla osatutkimuksilla oli kaksi tavoitetta: Ensiksikin vahvistaa näyttöön perustuvaa keskustelua perustulon toteuttamiskelpoisuudesta. Toiseksi havainnollistaa, kuinka aillahtelevaa kansalaisten kannatus voi olla sosiaalipoliittisille ideoille, joista keskustellaan vain hyvin yleisellä tasolla.

Hypoteettisia työllisyyskenaarioita koskevat mikrosimulointilaskelmat osoittivat, että erityisesti Pohjoismaat sekä Benelux-maat, mutta myös Ranska sopeutuisivat teknologiseen työttömyyteen selkeästi Itä- ja Etelä-Euroopan maita paremmin. Optimistisessa työllisyyskenaariossa suurimpia hyötyjiä olisivat puolestaan Belgia, Kroatia, Slovenia ja Suomi. Massatyöttömyyden toteutuessa köyhyyden ja eriarvoisuuden vähentämiselle olisi huomattava tarve, mutta paradoksaalisesti budjettialijäämät saattaisivat pakottaa valtiot harjoittamaan leikkauspolitiikkaa. Kyselytutkimuksen tulokset osoittivat, että selvä enemmistö suomalaisista ei ole huolissaan pysyvästä teknologisesta työttömyydestä, vaikka enemmistö ennustaakin epävarmuuden työmarkkinoilla lisääntyvän. Suomalaiset eivät myöskään kannata huomattavaa muutosta sosiaalipoliittikan periaatteissa. Edes teknologiseen kehitykseen liittyvä työllisyyspessimismi ei nosta radikaalien ideoiden kannatusta.

Seitsemän suomalaisen ja kuuden Britanniassa toteutetun kansallisesti edustavan perustulokyselyn sisällönanalyysi osoitti, että erilaiset kyselyissä käytetyt kehystykset selittävät suurta vaihtelua havaitussa kannatuksessa. Tulokset viittaavat siihen, että perustulon ja sen ominaisuuksien yksityiskohtainen määrittely vähentää mitattua kannatusta. Myös arvolutautuneet kehystykset, kuten viittaukset verotuksen korottamiseen tai kielteisiin dynaamisiin vaikutuksiin laskevat kannatusta. Perustulon monitulkintainen määrittely ja myönteiset oletukset koskien työmarkkinavaikutuksia ovat omiaan lisäämään kannatusta. Suomalaisella ja brittiaineistolla tehdyt regressioanalyysit myös osoittivat, että perustulon kannatukseen vaikuttavat sosio-ekonomiset taustatekijät riippuvat käytetystä kehystyksestä. Yhteenvedona voidaan todeta, että tulosten perusteella konkreettisten perustulomallien sosiaalinen legitimitetti ei ole riittävän vahva, jotta perustulosta voisi tulla toteuttamiskelpoinen Suomessa tai Yhdistyneessä kuningaskunnassa lähitulevaisuudessa.

Perustuloidean toteuttamiskelpoisuus voidaan kyseenalaistaa myös taloudellisen tehokkuuden näkökulmasta, jota analysoitiin viidennessä osatutkimuksessa. Toisin kuin usein väitetään, taloudellisesti realistisilla perustulomalleilla on hankalaa parantaa työnteon taloudellisia kannustimia johdonmukaisesti ilman sosiaaliturvan heikentämistä. Olemassa olevan

näytön perusteella on myös epäselvää, parantaako perustulo heikossa työmarkkina-asemassa olevien neuvotteluasemaa. Vaikka perustulo vähentäisi haitallista etuusbyrokratiaa, näytön perusteella on vaikea sanoa, olisiko perustulo tehokkain tapa edistää osa-aikaista työskentelyä, yrittäjyyttä tai elinikäistä oppimista digitaalisessa murroksessa. Kaikkien viiden osatutkimuksen tulokset viittaavat siihen, että digitaalisesta murroksesta aiheutuvan radikaalin sosiaalipoliittisen muutoksen todennäköisyys on nykyisten olosuhteiden vallitessa suhteellisen pieni.

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When I first became interested in the future of work debate back in 2014, I was still writing my master's thesis at the University of Jyväskylä. In retrospect, it is embarrassingly easy to say that at that time I did not have much understanding of what it might take to conduct scientifically solid, empirical research on the topic. Later, it has become crystal clear.

I dare say, writing a doctoral thesis is a continuous learning process for most PhD researchers. This thesis has been no exception: Not much (if anything) is left from the initial research plan drafted at the beginning of the journey. Although exposing oneself to academic peer-review can occasionally be distressing, it is also an unavoidable step in comprehending what it takes to conduct critical social scientific research. During the four years of my full-time PhD research (2017–2020), I have had the chance to discover what genuine academic integrity truly means.

What has made my doctoral learning process mostly a pleasant journey is the fact that I have received support from exceptionally many people during the past few years. Self-evidently, I wish to thank my supervisor, Professor Heikki Hiilamo, for all the useful comments made on my work from the very beginning. Your support and insights have been invaluable. I would also like to express my sincerest thanks to the pre-examiners of this thesis, Professor Mikko Niemelä and Docent Satu Ojala. Your constructive comments helped me to clarify the aims of this study and strengthen its integrity. Moreover, I feel privileged that Docent Jan Otto Andersson agreed to be my opponent in the public defence.

Before beginning my full-time PhD research, I had the opportunity to work at Kela Research, participating in the research group responsible for designing the Finnish basic income experiment (2017–2018). I wish to thank all the colleagues at Kela Research with whom I had the opportunity to work during that year. During that year, I learned valuable lessons concerning academic integrity, interdisciplinary research, collaborating with the media and, most importantly, communicating with economists. During my brief visit at Kela Research, I also had the opportunity to get know two great minds, both of whom I have had the privilege to continue working with afterwards. My special thanks go to Professor Olli Kangas and my co-author, Miska Simanainen. I want to thank you Olli for the countless times you have encouraged me in my academic path and shared your broad expertise in social policy analysis. I also want to thank you for your always entertaining company and the numerous anecdotes you have shared with me and other colleagues. Miska, your contribution to this thesis has been invaluable. It was a great pleasure to work with you – as always. I hope that our collaboration continues in one form or another in the future.

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During the past five years as a full-time social policy researcher, I have nurtured my critical thinking through several discussions with a diverse group of scholars. I have benefitted greatly from these discussions, and I am grateful for having been invited to participate in so many different book projects and research projects along with intriguing conferences and seminars.

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LIST OF ORIGINALS ARTICLES

This thesis is based on the following original articles:

- I Pulkka V-V. and Simanainen, M. (2021), ‘Socio-Economic Performance of European Welfare States in Technology-Induced Employment Scenarios’, *Journal of Social Policy*, 1–25.
- II Pulkka, V-V. (2019), “‘This time may be a little different’ – exploring the Finnish view on the future of work’, *International Journal of Sociology and Social Policy*, 39(1/2), 22–37.
- III Pulkka V-V. (2021), ‘Perustulon kannatus Suomessa’, *Yhteiskuntapolitiikka*, 86(1), 60–74.
- IV Chrisp, J., Pulkka, V-V. and Rincón, L. (2020), ‘Snowballing or wilting? What affects public support for varying models of basic income?’, *Journal of International and Comparative Social Policy*, 36(3), 223–236.
- V Pulkka, V-V. (2017), ‘A free lunch with robots – can a basic income stabilise the digital economy?’ *Transfer: European Review of Labour and Research*, 23(3), 295–311.

The publications are referred to in the text by their Roman numerals.

Authors’ contributions in co-authored publications

In *sub-study I*, I was responsible for the core idea of the setting, specifying the simulated scenarios, conducting the simulations with EUROMOD and calculating changes in the studied indicators. My co-author, Miska Simanainen, was responsible for constructing the specified scenarios using a non-parametric micro imputation technique and R programming tool. In the article, Simanainen contributed to the sections ‘*Constructing the scenarios with a micro imputation technique*’ and ‘*Critical perceptions of the micro imputation technique*’, while I wrote the other sections.

In *sub-study IV*, I conducted the analyses concerning Finland, while the corresponding author, Joe Chrisp, was responsible for the analysis on the UK together with reviewing 110 basic income surveys from 34 countries. Distribution of the work when writing the article has been as follows: Introduction (Chrisp, Pulkka and Rincón), A multi-dimensional basic income: support for which basic income? (Chrisp, Pulkka and Rincón), Methods (Chrisp and Pulkka), Basic income surveys in Finland (Pulkka), Basic income surveys in the UK (Chrisp) and Discussion (Chrisp, Pulkka and Rincón).

1 INTRODUCTION

Technological revolutions have transformed societies throughout the industrial era (e.g. Perez, 2010). Due to the unprecedented productivity growth resulting from mechanisation, automation and, most recently, the computerisation of work tasks (e.g. Baumol, 1986), basic human needs are now being satisfied with a fraction of the labour input that was required two centuries ago. Simultaneously with the reduction in working hours (e.g. Lee, 2007, pp. 24–27), an individual's standard of living has substantially increased throughout the industrialised world and beyond (e.g. Easterlin, 2000). While the prospect of technological unemployment has provoked fears ever since the invention of the steam engine (Miller and Atkinson, 2013, pp. 6–8; Mokyr et al., 2015), employment has developed positively in the long term (e.g. Baumol, 1986, pp. 1082–1083; Feldmann, 2013; Miller and Atkinson, 2013; Autor, 2015; Bessen, 2015, 2019). At the same time, transition periods have had severe negative implications for some workers and required social policy measures for them to adapt (Mokyr et al., 2015; Allen, 2017).

In the past decades, the automation of routine-tasks has resulted in the hollowing out of middle-class jobs in advanced economies (e.g. Autor et al., 2003; Autor and Dorn, 2013; Goos et al., 2014; Michaels et al., 2014). While the prospect of 'routine-biased technological change' still arouses political debate regarding adequate policy responses, breakthroughs in digital technologies and artificial intelligence (AI) (e.g. Brynjolfsson and McAfee, 2014, 2017) have accelerated the debate on the future of work and social policy. Automation is now expected to spread beyond routine tasks, causing further disruptions in the labour market. Besides futurists, technologists and social scientists, political actors and the media have actively participated in the discussion concerning the implications of the 'Fourth Industrial Revolution' (a term popularised by Schwab, 2015) for labour. Illustrating the societal significance of the topic, all major intergovernmental actors, including the European Union (EU) (EC, 2020a), the International Labour Organisation (ILO) (ILO, 2019), the Organisation for Economic Co-operation and Development (OECD) (OECD, 2020) and the World Bank (2019), have added the promotion of an economically and socially sustainable digital transformation to their agendas.

Scholarly debate on the future of work and social policy has been dominated by the discipline of economics. Still, as Urry has argued (2016, p. 12), ignoring social scientific (referring to sociology and social policy) research and concepts in futures thinking is problematic since almost all future visions concern the transformation of social life and social institutions. The aim of this study is to contribute to a deeper social scientific understanding of the future of social policy by examining how socio-economic conditions, public opinion and ideas may drive social policy change in the digital economy. Since anticipating the

future is fundamentally uncertain, this thesis has adopted a mixed-methods approach combining microsimulation, survey methodology and content analysis.

Despite widespread debate on the future of work, the socio-economic implications of the digital transformation have remained hazy for several obvious reasons. First, regardless of extensive empirical research on previous technological transformations, no unambiguous evidence exists on the implications of digital technologies and AI for labour (section 3.1). Second, while statistical offices and social scientists are developing new approaches to measure digital transformation (e.g. Warhurst et al., 2019), conventional statistics do not provide direct information about technology-induced unemployment, underemployment, self-employment or gig jobs (e.g. Mitchell and Brynjolfsson, 2017). Third, since technological transformations are not linear processes, it can be expected that implementation and restructuring lags will occur, thereby continuing to blur the *de facto* automation potential of recent technologies (Brynjolfsson et al., 2017; Manyika et al., 2017, pp. 75–79). Fourth, further uncertainties derive from political and societal factors, which are expected to affect the pace and magnitude of the digital transformation (e.g. Bakshi et al., 2017; Manyika et al., 2017, pp. 65–68). As summarised in a recent Eurofound report, the risks of anticipating the socio-economic implications of the still unfolding technological revolution entail ‘unwarranted optimism, undue pessimism and mistargeted insights’ (Eurofound, 2018, p. 23). Hence, examining the socio-economic conditions of social policy change requires exploring divergent scenarios (section 3.1.3).

Social and economic development set the preconditions for social policy change from a functionalist perspective. However, contemporary empirical research also indicates that policymakers are highly responsive to public opinion (e.g. Brooks and Manza, 2006). While the future of work discussion may shape policy preferences to some extent, previous studies point to the importance of sociodemographic characteristics, values and socio-economic conditions in predicting social policy attitudes (section 3.2). Further, it is necessary to note that framing can play a crucial role in the formation of public opinion (e.g. Chong and Druckman, 2007). Recognising this fact is particularly important when survey data are exploited to examine the social legitimacy of competing policy ideas.

Scholars have increasingly begun analysing the role of ideas in recent policy change literature (section 3.3). In the context of the digital economy, the policy ideas being promoted are often intertwined with an advocate’s view on the future of work – with optimists arguing for conventional measures and pessimists calling for radical changes. Undeniably, one of the most debated ideas in recent social policy discussions has been universal basic income (UBI) – ‘a periodic cash payment unconditionally delivered to all on an individual basis, without means-test or work requirement’ (Basic Income Earth Network [BIEN], 2020). Besides basic income experiments launched in several countries (Widerquist, 2018, pp. 61–70), influential intergovernmental organisations, such as the OECD (Pareliussen et al., 2018) and the World Bank

(Gentilini et al., 2020), have provided in-depth analyses of the policy, illustrating the increased level of interest in the idea.

Due to the unprecedented interest in basic income in recent social policy debates, this thesis specifically focuses on the feasibility of the idea. According to Kingdon (1995[2013], pp. 131–144), to find a ‘policy window’, ideas must be budgetary and technically feasible, fit dominant values and be supported by the public. In other words, feasibility analyses of competing ideas should explore public opinion but also the plausible economic effects of a policy. Recent experimentations with basic income, together with the increased importance of microsimulation-based *ex ante* policy analyses, imply that evidence on economic feasibility may further strengthen its role in explaining social policy change in the future.

As summed up by Thelen (1999, p. 400), ‘what moves politics is the intersection and interaction of different ongoing processes.’ Hence, it is understandable that studies have proposed several competing theories for explaining policy change (for a partial review, see, e.g. Cerna, 2013). This thesis focuses on three determinants commonly analysed in previous studies, i.e. socio-economic conditions, public opinion and ideas.

The socio-economic conditions of social policy change in the digital economy are examined by assessing the implications of hypothetical technology-induced employment scenarios for state budgets, poverty and income inequality in the EU-28 countries (sub-study I). The aim of this exploration is to illustrate social and economic pressure for social policy change in ideal-type scenarios identifiable in the recent debates. The microsimulation study is followed by an analysis exploring the Finnish public view on the future of work and preferred policy ideas (sub-study II). The specific objective of this analysis is to examine whether public opinion drives major change in the principles of social policy in the context of the Nordic welfare model. Sub-studies III, IV and V focus on the feasibility of basic income. While sub-studies III and IV examine the social legitimacy of basic income in Finland and the UK utilising survey data, sub-study V exploits microsimulation calculations conducted in Finland and examines the idea’s feasibility from the perspective of economic efficiency. The three sub-studies focusing on basic income have two objectives. First, they facilitate a more evidence-informed debate on the feasibility of the idea. Second, they demonstrate how fragile public support for social policy ideas can be if the ideas are only discussed at an abstract level.

The rest of this integrative article has been organised in the following way. Section 2 begins by laying out the conceptual dimensions of the research, and it looks at how the present technological transformation has been conceptualised and periodised in the literature and public discussions. This section discusses the key concepts and their adaptation to this study. Section 3 then reviews potential determinants of social policy change in the digital economy. Section 4 focuses on the data and methodology, while section 5 presents the principal findings of the thesis. Having presented the findings of

the study, section 6 draws conclusions based on the results, discusses the implications for the future of social policy and presents certain critical perceptions of the study.

2 THE CONCEPTUAL FRAMEWORK OF THE STUDY

The following section reviews the key concepts used in the study. The first subsection focuses on the periodisation of the current technological transformation under the concept of the Fourth Industrial Revolution and the technological features of the transformation. After discussing the periodisation and technological characteristics of the digital transformation, the second subsection clarifies how the concepts of digital economy, the future of work, technological unemployment and social policy change are understood in this thesis.

2.1 THE FOURTH INDUSTRIAL REVOLUTION

According to Perez (2010, p. 189), ‘technological revolution’ is ‘[...] a major upheaval of the wealth-creating potential of the economy, opening a vast innovation opportunity space and providing a new set of associated generic technologies, infrastructures and organisational principles that can significantly increase the efficiency and effectiveness of all industries and activities’. In other words, the key feature of a technological revolution is its capacity not only to transform the rest of the economy but also surrounding society.

Industrial revolutions build on ‘general-purpose technologies’ (GPTs) or ‘big bang’ innovations, as defined by Perez (2010, p. 189). GPTs are pervasive new ideas and techniques that significantly boost productivity in many sectors of the economy. They also improve over time and are able to generate further innovations. Alongside the steam engine and electricity, most economic historians maintain that information and communication technologies (ICTs) meet these criteria. (Brynjolfsson and McAfee, 2014, p. 76.) Despite such a broad consensus, the view is not unanimous. Gordon (2012), most famously, has pointed out that computers, the web and mobile phones have only created a short-lived productivity growth in comparison to previous GPTs.

Regardless of the pessimistic trends in productivity statistics (e.g. World Bank, 2016, p. 3; OECD, 2018c, p. 27), many scholars believe that ICT will eventually lead to considerable productivity growth as independent ICT innovations are combined with each other. This ‘innovation-as-building-block’ point of view (Brynjolfsson and McAfee, 2014, pp. 79–81) highlights that the limitations to ‘recombinant growth’ deriving from ICT innovations are still far away. Digital innovations are extending into the realm of physical innovations, computing devices and sensors are becoming cheaper, and digitalisation makes masses of data available for productive uses. Brynjolfsson and McAfee (2014) refer to this new transformative era as the ‘Second Machine Age’.

According to a periodisation proposed by Perez (2010), we have witnessed five industrial revolutions to date: the First Industrial Revolution (1771–), the Age

of Steam and Railways (1829–), the Age of Steel, Electricity and Heavy Engineering (1875–), the Age of Oil, the Automobile and Mass Production (1908–), and finally, the Age of Information and Telecommunications (1971–). Although the dividing of industrial revolutions into five phases may be justified from the author’s neo-Schumpeterian perspective, it has not been very widely adopted in the current official parlance (for a further discussion on disagreements over the periodisations, see, e.g. Eurofound, 2018, p. 2; Warhurst et al. 2019, p. 12). The title of this thesis (Social Policy 4.0) primarily reflects mainstream discourse on the current technological revolution. In other words, the title does not make any valuations of divergent periodisations *vis-à-vis* each other. This integrative article also refers to a ‘digital transformation’ interchangeably with the Fourth Industrial Revolution in the subsequent pages.

The dividing of industrial revolutions into four phases has most notably been popularised by the World Economic Forum’s founder, Klaus Schwab (e.g. Schwab, 2015). According to Schwab, the Fourth Industrial Revolution builds on the Third Industrial Revolution, or the ‘Digital Revolution’, which has used electronics and ICT to automate production since the middle of the last century. Apart from technological similarities with the ICT revolution, Schwab argues that the Fourth Industrial Revolution should be considered a distinct phase because the pace of the change is historically unique (exponential instead of linear), the industrial and geographical scope is more comprehensive than ever before, and it has the capacity to transform all of society, not merely production. At a national level, the periodisation has become particularly popular in Germany, where discussion on ‘Industry 4.0’ has been widespread (Hirsch-Kreinsen, 2016).

Schwab (2015) argues that technological breakthroughs in artificial intelligence (AI), robotics, the Internet of Things, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, materials science, energy storage and quantum computing are the key drivers of the current transformation. The role of artificial intelligence and machine learning in particular as core technology of the transformation has been repeatedly highlighted by technologists (e.g. Brynjolfsson and McAfee, 2014). Kaplan and Haenlein (2019) define artificial intelligence as ‘a system’s ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation’.

Digital applications have become increasingly important in organising economic activities in the past decade. This trend has commonly been discussed under the umbrella concept of ‘platform economy’. In a wider sense, platform economy simply refers to online structures that enable human activities. This implies new ways of working, socialising and creating value in the economy. Often-cited textbook examples of such platform-based reorganisations of human activities include the world’s largest online marketplace Amazon, the social media giant Facebook and the ride hailing app Uber. Technological drivers behind the rise of the platform economy are the

availability of big data, new algorithms and cloud computing. (Kenney and Zysman, 2016; Urzı Brancati et al., 2019.)

Since this thesis explores the implications of future of work for social policy change, it is specifically interested in digital labour platforms – i.e. ‘digital networks that coordinate labour service transaction in an algorithmic way’ (Urzı Brancati et al., 2019, p. 4). Apart from ‘platform work’, reorganising paid employment through online structures has sometimes been discussed under the concept of ‘uberisation’ (e.g. Warhurst et al., 2017), reflecting the visible role of Uber in reorganising taxi markets based on an efficient digital platform. Additionally, ‘gig economy’ (see, e.g. Graham et al., 2017; Stewart and Stanford, 2017; Kässi and Lehdonvirta, 2018; Wood et al., 2018) has widely been used in recent discussions to highlight the fact that platforms help businesses optimise their production by dividing job tasks into smaller units.

Obviously, the implications of digital technologies and AI for labour differ from one technology to another. Certain innovations may have substantial potential to transform the future labour market, while others may only remain hype among technologists. The technological capabilities of independent technologies to automate work are not discussed in more detail in the present thesis. Later on, ‘digital technologies and AI’ refer to an aggregate of unspecified technologies with divergent potentials to transform society.

2.2 THE FUTURE OF WORK AND SOCIAL POLICY IN THE DIGITAL ECONOMY

Besides the Fourth Industrial Revolution, the title of this thesis refers to the future of work and social policy in the digital economy. In this thesis, the term ‘digital economy’ refers to a future state in which digital technologies and AI have automated a considerable number of current work tasks and digital platforms have become a common method of allocating work tasks (for a similar conceptual approach, see, e.g. Valenduc and Vendramin, 2016; Eurofound, 2018). While digital economy refers to the future in this thesis, it is necessary to note that the concept has also been used to refer to earlier phases of technological development. At the same time, it can also be argued that from an empirical standpoint (section 3.1.1), it may still be premature to conclude that digital technologies and AI will certainly dominate the future economy and production.

Although it is not necessary to determine an exact year, or even decade, at which point an economy can be described as ‘digital’ to study the future of social policy, this thesis explicitly refers to two time frames in its sub-studies. First, sub-study I assumes that the simulated scenarios could be actualised ‘over a decade or two’ from 2013. This reflects a probable time span of the digital transformation suggested by Frey and Osborne (2013), whose evaluations of engineering bottlenecks have been used as the basis for the automation risk estimates exploited in the microsimulations. Second, the Finnish public view on the future of work (sub-study II) is explored by asking

respondents to predict future labour market developments ‘within the next ten years’ (i.e. by 2027, since the survey was conducted in autumn 2017). Hence, the ‘digital economy’ can be interpreted as occurring somewhere around 2030.

The catchphrase ‘the future of work’ has repeatedly been used in recent debates concerning the digital economy. While the definition of ‘work’ has been debated for decades in the social sciences, in the digital economy debate it usually refers to assumed changes in the official labour market while, for instance, ignoring value-creating activities in households and voluntary organisations. This thesis has adopted the same conventional approach. Here, the catchphrase simply refers to the future of employment.

One of the key concepts used in describing plausible future trends in the labour market is ‘technological unemployment’. Keynes (1930[2010]) coined the term in his widely cited essay ‘Economic Possibilities for Our Grandchildren’, in which he predicted that governments could introduce a 15-hour workweek by 2030 to address technological development. Keynes (1930[2010], p. 325) defines technological unemployment as ‘unemployment due to our discovery of means of economising the use of labour outrunning the pace at which we can find new uses for labour’. In this thesis, technological unemployment refers to both permanent and temporary technology-induced unemployment resulting from automation or platform work.

Social policy as a practice can refer to manifold governmental efforts to improve people’s social or economic wellbeing. Both the main and the sub-title of this thesis imply that adaptation to the Fourth Industrial Revolution has generally been expected to lead to a major change of principles in social policy, although this is highly uncertain – as underlined by the question mark in the main title. In the literature, the concept ‘policy change’ can refer interchangeably to both independent reforms and a major change in principles (e.g. Cerna, 2013, p. 2). In this thesis, policy change is primarily understood as a major change of principles in social policy-making, including the implementing of individual policies such as universal basic income, examined in this thesis.

3 EXPLORING THE FUTURE OF SOCIAL POLICY

This section reviews potential determinants of social policy change in the digital economy. The section begins by exploring empirical evidence on how digital technologies and AI are expected to shape the labour market, and consequently, the socio-economic conditions of social policy change in the future. To facilitate a more comprehensive understanding of the mechanisms shaping the future of work, it will then proceed to discuss political factors that may have an impact on the future labour market. Finally, to illustrate the polarised nature of the proposed future predictions, the first subsection formulates ideal-type scenarios deriving from the recent debate. Having discussed the role of socio-economic conditions, the following subsection examines public opinion and social policy attitudes as potential determinants of future social policy. This is followed by a subsection exploring how ideational processes may drive change in the future – in particular, how ideas can find a ‘policy window’. After reviewing the determinants examined in this thesis (i.e. socio-economic conditions, public opinion and ideas), the last subsection provides a brief review of complementary factors commonly analysed in the policy change literature (i.e. power resources and institutions). Given the range of competing theories on policy change, a thorough discussion of each potential determinant is beyond the scope of this thesis. The potential determinants of social policy change explored in the following sections are summarised in Figure 1.

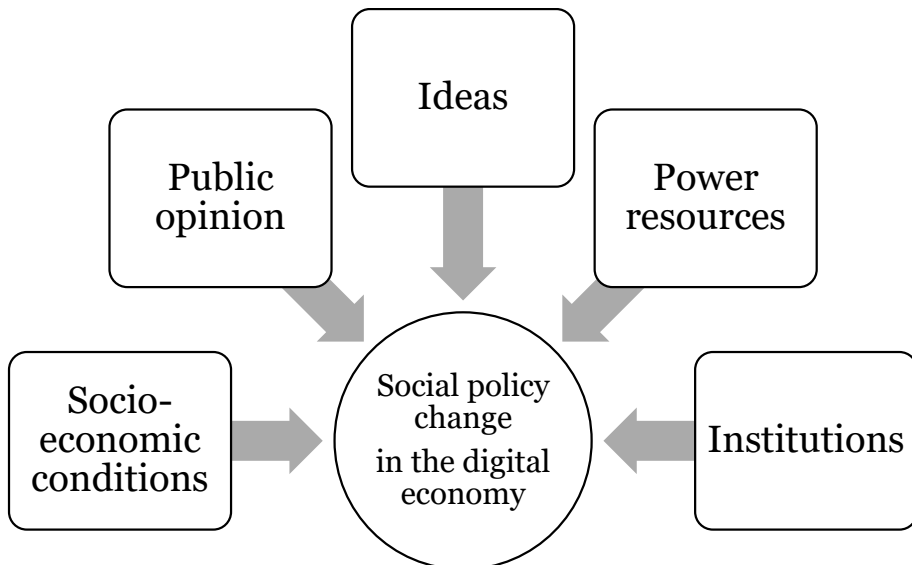


Figure 1 Potential determinants of social policy change in the digital economy

3.1 SOCIO-ECONOMIC CONDITIONS IN THE DIGITAL ECONOMY

3.1.1 EMPIRICAL EVIDENCE ON THE IMPLICATIONS OF TECHNOLOGICAL CHANGE FOR LABOUR

From a functionalist perspective, welfare states are expected to implement rational policies that serve the interests of society as a whole. Reflecting this view, socio-economic conditions such as the level of gross domestic product (GDP) and unemployment, the size of the aging population as well as female labour force participation have become established control variables in comparative studies explaining differences in welfare state spending. When it comes to anticipating the future of social policy in the digital economy, employment development and its socio-economic implications for labour are obvious factors to consider. If employment develops positively, welfare states would presumably have more fiscal resources to invest in social policy, whereas permanent technological unemployment might imply aggravating budgetary constraints.

In the past decades, computerisation has displaced a vast number of manual and cognitive routine work tasks, while the level of input demanded by cognitive non-routine tasks has simultaneously increased. A widely discussed implication of this ‘routine-biased technological change’ has been a decrease in middle-skill (and income) jobs, leading to polarisation in the labour market in advanced economies: while the number of middle-income jobs has shrunk, low- and high-paid jobs have increased. This job polarisation has been documented in several countries, giving rise to political concerns over the future of the middle class. (e.g. Autor, 2003; Goos et al., 2014; Michaels et al., 2014.)

Despite the fact that computerisation has displaced many routine-tasks in the past decades, it is the technological breakthroughs in digital technologies and AI witnessed in the 2010s – the Fourth Industrial Revolution – that explains the increased amount of academic and public debate on the future of work and social policy. From a scholarly perspective, the single most significant implication of this development is that previous observations about routine-biased technological change may no longer apply if automation spreads beyond routine tasks.

The first quantitative attempt at estimating the scope of automatable tasks beyond routine tasks was a widely debated study by Frey and Osborne (2013, 2017). The study assessed job automatability based on the task content of standardised occupational categories deriving from the O*Net-SOC system developed by the US Department of Labor/Employment and Training Administration (USDOL/ETA). To explore the technological capabilities of recent technologies to automate work tasks, the study exploited evaluations by the authors themselves and views presented at an interdisciplinary expert workshop, hosted at the University of Oxford in March 2013 (FHI, 2013). The study famously concluded that half of jobs in the US are at high risk of being

automated over the course of a decade or two. Unsurprisingly, this conclusion sparked widespread, global debate on the future of work. Concerns over technological mass unemployment further increased as the study was later replicated in other countries, with the results similarly suggesting a high automation risk for a considerable number of jobs (e.g. Bowles, 2014; Pajarinen and Rouvinen, 2014; Deloitte, 2015; World Bank, 2016).

Fears of emerging technological mass unemployment diminished to some extent when Arntz et al. (2016) published a competing study indicating that ‘only’ 9% of jobs in the OECD included a high risk of being automated in the near future. The study questioned the approach of Frey and Osborne, highlighting that automation risk should be assessed based on the task content of individual jobs. To do so, Arntz et al. utilised data from the OECD’s Survey of Adult Skills (PIAAC). Nedelkoska and Quintini (2018) further developed their methodological approach using a less aggregated occupational classification. They concluded that a high risk of automation pertained to, on average, 14% of jobs in the OECD countries.

Given that the within-occupation variation in tasks can be considerable (e.g. Autor, 2015), it is reasonable to argue that the methodological approach taken by Arntz et al. (2016) may provide a more realistic view on the number of jobs with a high risk of being automated. However, as Arntz et al. (2016) and Nedelkoska and Quintini (2018) point out, a great number of tasks are still expected to be automated. This implies that even if certain occupations are not fully automatable, the demand on labour can still become more volatile in many occupations. It is also necessary to note that there are major regional differences in the automatability of jobs (OECD, 2018b). Additionally, the automation risk varies by gender – with jobs done by women presumably being more automatable in the short term and jobs done by men in the longer term (WEF, 2016; PwC, 2018). Hence, even if the digital transformation has no major impact on aggregate employment, precarious employment may increase and polarisation between regions and genders widen.

Historically speaking, technological transformations have led to positive labour market outcomes in the long term (e.g. Baumol, 1986, pp. 1082–1083; Feldmann, 2013; Miller and Atkinson, 2013; Autor, 2015; Bessen, 2015, 2019). In other words, the demand placed on human labour has not decreased regardless of the widespread automation of work tasks since the First Industrial Revolution. This can be explained by the dynamic effects of technological change that economists often call ‘positive spillover effects’ (henceforth, ‘positive spillovers’).

Positive spillovers of technological change derive from productivity growth and increased efficiency in production. As companies implement new technologies, productivity is expected to grow and efficiency to increase, which enables the further expansion of production. The expansion of production strengthens demand for labour in the sectors investing in new technologies, while increased efficiency makes it possible to lower consumer prices. With

decreased prices, consumers can reallocate their resources to other sectors, which again strengthens demand in those sectors. (e.g. Miller and Atkinson, pp. 10–11; Stewart et al., 2015; Gregory et al., 2016; Graetz and Michaels, 2018; Autor and Salomons, 2018; Bessen, 2015, 2019.)

Goos et al. (EC, 2019, p. 23) conclude in their recent report that in the light of existing research, technological change ‘does not lead to significant negative, but instead mostly even to positive effects on net aggregate employment once adjustment processes between firms and sectors have been taken into account’ (for a comprehensive review of empirical studies, see also Feldmann, 2013, pp. 1103–1105). For instance, Gregory et al. (2016) estimate that routine-biased technological change has accounted for 11.6 million new jobs across 27 European countries between 1999 and 2010, while total employment growth in the period has included 23 million new jobs. In analysing the effects of robot adoption in 17 advanced economies from 1997 to 2007, Graetz and Michaels (2018) found no significant effect on total employment. However, the authors report that the share of jobs done by low-skilled workers has diminished. Feldmann (2013) analysed the ratio of triadic patent families to population from 1985 to 2009 in a study representing 21 industrial countries and discovered no long-term effect on unemployment. Nevertheless, Feldmann notes that technological change can increase unemployment substantially during transition periods.

Although most empirical studies indeed point to positive or neutral labour market effects in the long term, the evidence is not unambiguous. Acemoglu and Restrepo (2020) found in a recent study that automation technologies have thus far reduced the aggregate employment-to-population ratio by 0.2 percentage points in the US. Moreover, Acemoglu and Restrepo remark (2020, p. 2242) in their study that the negative effect can be more substantial in the future if technological development accelerates, as tech experts predict. In a similar fashion, Graetz and Michaels (2018) have pointed out that their observation period of 1997 to 2007 may not reveal much about future trends should technological development spread to service sectors. Building on the methodological approach devised by Acemoglu and Restrepo (2020), Chiacchio et al. (2018) found that in six European Union countries (Finland, France, Germany, Italy, Spain and Sweden), one additional industrial robot per thousand workers has reduced the employment rate by 0.16–0.20 percentage points.

Although the reliability and validity of employer surveys can be questioned as a data source for estimating future labour market outcomes (Bakshi et al., 2017, p. 18), results from recent employer and employee surveys provide further support for optimistic predictions. According to a survey aimed at 19 000 employers in 44 countries, 87% of employers are planning to increase the number of employees due to automation (ManPowerGroup, 2019). Exploiting employer survey data from 26 countries throughout the world, a recent World Economic Forum (2020) report concludes that the net

employment effect is expected to be modestly positive by 2025. In similar fashion, Hunt et al. (2019) conclude, based on employer surveys in the UK, that the digital transformation will create better and more fulfilling jobs for employees instead of technological unemployment. According to a Statistics Finland Quality of Work Life Survey (2019) aimed at Finnish employees, respondents reported that the number of employees had decreased at workplaces by 5 per cent in the past three years because of digitalisation or robotisation. However, respondents also reported that the overall number of employees had simultaneously increased at workplaces by six per cent, suggesting a modest positive employment effect.

When it comes to platform work, the labour market effects can theoretically be twofold. On the one hand, platforms may increase work opportunities through more efficient matching procedures and flexible working conditions. On the other hand, employers may attempt to avoid regulation through platform work and by redefining working conditions, meaning aggregate demand can thus weaken. While most platform workers find themselves working as employees, in most cases they are considered self-employed. If platforms are only considered intermediaries, employers are not required to provide employment protection for the platform workers. Besides transportation and delivery services, clerical and data-entry tasks, professional services, creative and multimedia work, sales and marketing support work, software development and technology work, writing and translation work, micro tasks, interactive services and on-location services are now organised through digital platforms. Platform workers are most commonly young highly educated males, but the sociodemographic characteristics of platform workers significantly vary between performed tasks. (Urzí Brancati et al., 2019.)

Currently, European statistics offices do not provide comparable datasets on the extent of platform work, not to mention the socio-economic conditions of the work. However, according to an online survey conducted in 14 EU member states among 16–74 year olds (Pesole et al., 2018), platform work remains a somewhat marginal phenomenon. In 2017, platform work constituted the main source of income for only around 2% of the adult population in the studied countries (Table 1). Other, less comprehensive surveys (for a review, see Urzí Brancati et al., 2019, p. 6) confirm this finding. Nevertheless, the automatically updated Online Labour Index developed by Kässä and Lehdonvirta (2018) indicates that employers' use of online platforms has increased rather steadily since 2016. The index tracks all the projects/tasks on the five largest English-language online labour platforms.

Table 1 Platform work as main source of income in 14 EU countries (source: Urzı Brancati et al., 2019)

Country	Share of population from 16 to 74 years
United Kingdom	3.6%
Spain	2.7%
The Netherlands	2.8%
Germany	2.6%
Lithuania	2.4%
Italy	2.4%
Portugal	2.1%
France	1.9%
Hungary	1.8%
Sweden	1.7%
Romania	1.4%
Croatia	1.4%
Slovakia	0.9%
Finland	0.9%

3.1.2 POLITICAL FACTORS SHAPING THE FUTURE OF WORK

The debate concerning the future of work has mainly focused on technology-induced changes in the labour market. In other words, many analyses have ignored or at least diminished the importance of political factors in shaping the future labour market (as an exception, see Bakshi et al., 2017). This section briefly discusses political factors that potentially have an impact on the labour market with respect to digital transformation. They involve innovation policies, economic policies, labour market and social policies, and legislation reflecting ethical issues connected to digital technologies and AI. Self-evidently, the extent of governmental and intergovernmental efforts, which potentially will have an impact on the labour market, is broad. Therefore, not every potential factor can be discussed here in detail (for a review of variables that have been found to determine unemployment rate, see, e.g. Feldmann, 2013, pp. 1106–1115).

What is often disregarded as unavoidably affecting the pace of the digital transformation are the investments made in research and development (R&D) in the area of digital technologies and AI. Here, the role of governmental and intergovernmental actors can be important via the adopted innovation policies. As shown by Mazzucato (2013), the state is not only a major financier of R&D, but also a strategic leader in many fields of technological development (see also Block and Keller, 2009). As Mazzucato's (2013, pp. 108–116) widespread example illustrates, all key technologies related to the smart phone – the Internet, GPS, touch-screen display and voice recognition – are based on innovative developments that have relied on the state to a significant degree. Hence, the range of future digital technologies that potentially have implications for the labour market are dependent on the political decisions

that governmental and intergovernmental actors make regarding innovation policies.

Besides innovation policies, the macroeconomic environment in which companies make their decisions as to whether to invest in digital technologies also affects the pace of technological change. If aggregate demand – i.e. consumption, investments, government spending and net exports – is volatile, companies have less incentives to invest in new technologies. Since competing political ideologies pose divergent views on the state's optimal role in coordinating the economy, economic policies are sensitive to political upheavals. As the EU's COVID-19 recovery package has concretely manifested (EU, 2020), the economic policies being promoted are fluid particularly during times of crisis. Given the political nature of the adopted economic policies, it is difficult to predict just what economic paradigms governmental and intergovernmental actors will choose to follow if the digital transformation begins causing significant changes in the labour market. Still, it is somewhat evident that the adopted economic policies can either accelerate or hinder technological transformation and later cushion or deepen plausible disruptions in the labour market (see also Servoz, 2019, p. 38).

In the past decades, labour market and social policy goals have increasingly become intertwined as governments have highlighted the importance of stimulating labour supply through social policy reforms. The effectiveness of different activation measures in the light of labour market outcomes has varied significantly. (e.g. Bonoli, 2010; Kenworthy, 2010; Card et al., 2018.) It is likely that future governments will aim to implement reforms that facilitate active participation in the labour market. Obviously, the effectiveness of the implemented measures will impact future labour market outcomes (for a further discussion on active labour market policies regarding digital transformation, see, e.g. Greve, 2017, pp. 32, 86–87, 97–98).

Besides activation measures, labour market and social policy legislation measures are also developed separately. Potential reforms in labour legislation may concern issues such as employment contracts, working hours, annual holidays or non-discrimination. In the context of the digital economy, the (de)-regulation of platform work in particular has become a topical issue (e.g. Drahoukoupil and Fabo, 2016; Berg et al., 2018; Florisson and Mandl, 2018). The rights of platform workers have given rise to debates in many countries, and the situation with food delivery and transportation service workers has constantly been making headlines. It is, hence, to be expected that governments will increasingly regulate platform work in the coming years. The nature of such regulations may determine how widely and under what conditions digital platforms can be utilised to organise work processes in the future.

As with labour legislation, adjusting social policy to the digital economy can similarly involve a wide spectrum of reforms with plausible impacts on labour market dynamics. Reforms that potentially may have implications for the

labour market concern day care opportunities, adult education, access to health services or consolidating social benefits with work income. As repeatedly highlighted in recent discussions, reforms in education especially may be required to increase the prospects for workers displaced by digital technologies (e.g. Autor, 2015, p. 27; Bessen, 2015; Bakshi et al., 2017; Deming, 2017; OECD, 2018a, 2018c; WEF, 2018, 2020; PwC, 2018, p. 34; Servoz, 2019, pp. 56–75; EC, 2019, pp. 31–37).

Legislation shaping the future of work may also reflect manifold ethical issues concerning the new technologies (see, e.g. Bartneck et al., 2020). If artificial intelligence is increasingly used for automating non-routine work tasks, the independence of technology from human consideration will simultaneously grow. This implies that algorithms controlling the machines need to be programmed in advance to reflect human will in various decision-making situations. When it comes to human lives, such decision-making can be ethically challenging. An often-used textbook example of such a situation concerns the decisions that autonomous vehicles are expected to make in potentially lethal situations (Bartneck et al., 2020, pp. 83–92). Although autonomous vehicles supposedly have the potential to decrease road accidents substantially, certain ethical issues still need to be resolved before robot buses, taxis or trucks can operate in the streets on a large scale.

Another regularly discussed ethical issue concerns the ethics of care technologies (Bartneck et al., 2020, pp. 72–76). Although demand for care technologies is evident in an industrialised world struggling with the problem of ageing populations, ethical considerations may hinder the implementation of such technologies. According to Sharkey and Sharkey (2012), care technologies may be confronted by the following six ethical concerns: 1) potential reduction in the amount of human contact; 2) an increase in feelings of objectification and a loss of control; 3) a loss of privacy; 4) a loss of personal liberty; 5) deception and infantilisation; and 6) the circumstances in which elderly people should be allowed to control robots. As the list illustrates, automating care involves multiple ethical issues that may be difficult to tackle. It is thus likely that most care jobs will never be fully automatable. In fact, most recent commentaries (e.g. Bakshi et al., 2017; WEF, 2018; Servoz, 2019, pp. 56–75) have highlighted that the role of occupations requiring interpersonal skills will increase in the future labour market.

3.1.3 IDEAL-TYPE SCENARIOS

Since the empirical literature does not provide unambiguous evidence of the socio-economic implications of the digital economy, it is understandable that most recent analyses have relied on theoretical deductions. Hence, formulating ideal-type scenarios based on the arguments presented in recent debates may facilitate a more comprehensive understanding of how digital technologies and AI might shape the future labour market. Since the implications of technological change for employment will have a crucial role in shaping socio-economic conditions in the digital economy, the recent

debate has been concerned with the question of whether this time will be different in comparison to previous technological revolutions. In other words, the question is whether technological (mass) unemployment will constitute a permanent problem. To reflect this concern, the ideal-type scenarios formulated here are entitled ‘this time is different’ (the pessimistic scenario), ‘this time is no different’ (the optimistic scenario) and the ‘conservative scenario’ (a synthesis). For instance, Greve (2017, pp. 124–126) has analogously discussed ‘the bright’ and ‘the dark side’ of possible futures.

Advocates of the pessimistic ‘this time is different’ scenario highlight the qualitative difference between the digital transformation and previous technological revolutions. Pessimists have pointed out that the pace of the change is exponential (e.g. Brynjolfsson and McAfee, 2014, pp. 39–56), that the extent of automatable work tasks is unprecedented (e.g. Davidow and Malone, 2014; Schwab, 2015; Susskind and Susskind, 2015) and that digital production is highly capital intensive (e.g. Ford, 2015, pp. 175–176). Due to the exceptional pace of development, pessimists do not believe that co-operation with machines will last long in many sectors (e.g. Ford, 2015, pp. 121–126). Moreover, after first moving to service and information-based sectors, workers may simply have ‘nowhere left to run’ (Miller and Atkinson, 2013, p. 20). It has also been noted that digital platforms make it effortless for employers to dismantle work processes into smaller units, leading to a more volatile demand for labour (e.g. Kenney and Zysman, 2016, p. 63; Stern, 2016, pp. 91–118; Greve, 2017, pp. 34–49). Given the expected rapid and comprehensive nature of the change, the scenario maintains that increasing the employability of workers through education or reskilling is an inadequate measure for tackling technological unemployment (for an economic model of technological unemployment, see also Susskind, 2017). As a result of permanent technological (mass) unemployment, poverty and inequality are expected to increase substantially.

Followers of the optimistic ‘this time is no different’ scenario point to positive spillovers deriving from technological change (e.g. Bessen, 2015; Stewart et al., 2015; Gregory et al., 2016; Autor and Salomons, 2018). Additionally, the optimists also highlight historical evidence (e.g. Atkinson and Miller, 2013; Autor, 2015; Mokyr et al., 2015; Bessen, 2015, 2019), which in their view shows that despite major societal transformations, industrial revolutions do not cause permanent technological unemployment – or the impact is at least societally insignificant. The optimists may also emphasise that certain tacitly understood skills, such as flexibility, judgment and common sense, are simply too difficult to codify by programmers, and hence, technologies are expected to complement labour and businesses to adopt an ‘augmentation strategy’ (Autor, 2015, WEF, 2018, pp. 10–12). Since positive spillovers are believed to stabilise or even increase the demand for labour, more widespread automation and increased productivity are expected to increase wages and create more fulfilling jobs in the longer term.

The ‘conservative scenario’ highlights the fundamental uncertainty involved in long-term forecasts. Since implementation and restructuring lags (Brynjolfsson et al., 2017; Manyika et al., 2017, pp. 75–79) are integral to technological transformations, the scenario maintains that it is likely that the *de facto* potential of digital technologies and AI may not have been realised yet. The scenario also points to the many uncertainties deriving from political and societal factors: adopted innovation (e.g. Block and Keller, 2009; Mazzucato, 2013) and economic policies (e.g. Servoz, 2019, p. 38), the (de)-regulation of platform work (e.g. Urzı Brancati et al., 2019, pp. 16–17) and ethical considerations (e.g. Bartneck et al., 2020) can either accelerate or hinder digital transformation. Besides technological change, for instance ageing societies, climate change and economic crises are also expected to have major implications for the future labour market, and consequently, for adopted social policy (Gough et al., 2008; Bakshi et al. 2017, pp. 25–28; Eurostat, 2020).

Since the studies assessing the technological capabilities for automating work tasks (Arntz et al., 2016; Frey and Osborne, 2017; Nedelkoska and Quintini, 2018) indicate that low-educated workers are at greatest risk of being replaced by automation in the digital transformation, the required educational leap may be challenging if the new jobs demand a particularly high education level. According to the European Commission’s Digital Economy and Society Index (EC, 2020b), there is a major shortage in digital skills among the European Union population, and participation in adult education varies significantly across the EU countries (e.g. Hofheinz et al., 2019, pp. 49–50). Hence, the conservative scenario assumes – analogously with previous technological revolutions (Allen, 2017; Eurofound, 2018, p. 18) – that volatility in the labour market is expected to increase at least during the transition period. However, the scenario also maintains that it may be premature to conclude that technological unemployment cannot constitute a permanent problem, at least for certain employees. Following the conservative scenario, the risk of poverty among labour market outsiders, i.e. the unemployed, underemployed and workers with temporary contracts, is expected to increase.

Figure 2 summarises the implications of divergent ideal-type scenarios for the socio-economic conditions impacting social policy change in the digital economy.



Figure 2 Socio-economic conditions of social policy change in divergent ideal-type employment scenarios (Elaborated from sub-studies I, II & V)

3.2 PUBLIC OPINION

Contemporary empirical research on the determinants of social policy has found strong evidence of policymakers responding to taxpayers' and voters' preferences (e.g. Brooks and Manza, 2006). Brooks and Manza (2006, p. 475) refer to this as 'social policy responsiveness', which they define as an 'incentive to take into account the public policy preferences of voters so as to reduce the risk of electoral loss' and 'the possibility of public reprisals in the form of civil disobedience or protests'. Hence, it is highly likely that public opinion will shape social policy in the digital economy.

Presumably, an individual's view on the future of work and preferred social policy responses is at least to some extent affected by public discussion. As Urry (2016, pp. 33–53) has noted, dystopian narratives have become peculiarly compelling in social science writing, policy interventions and filmic and literature thinking in the past two decades. According to Urry, this 'new catastrophism' discourse reflects the emergence of systemic global risks – most recently illustrated by the COVID-19 pandemic. It is reasonable to argue that the catastrophism discourse has also been represented in recent discussions concerning the precarisation of work. While certain statistical findings indicate a somewhat stable development for working-age populations (e.g. Pyöriä and Ojala, 2016), several authors (e.g. Standing, 2011) have maintained that precarious employment is becoming increasingly common in advanced economies. Moreover, as Goos et al. (EC, 2019, p. 22) point out, some of the early analyses of digital transformation have been based on methodologically questionable assumptions, which may have caused further concerns among the public.

With respect to the catastrophism discourse, alarmist academic analyses and the hollowing out of middle-class jobs in the past few decades (e.g. Autor, 2003; Goos et al., 2014; Michaels et al., 2014), it would be unsurprising if pessimistic labour market predictions gained in popularity. Results from a Special Eurobarometer (EU, 2017, pp. 74–82) suggest that this might indeed be the case. According to the 2017 survey, a clear majority (72%) of EU citizens

believe that ‘robots and artificial intelligence steal people’s jobs’, while 74% of respondents are convinced by that ‘due to the use of robots and artificial intelligence, more jobs will disappear than new jobs will be created’. The variation in levels of technological anxiety (46%–93% for the first survey item and 57%–89% for the second item) between the EU countries is considerable, though. Whereas the number of concerned citizens in the Nordic countries, the Netherlands, the UK, Belgium, Czech Republic, Romania and Bulgaria are below the EU average, Southern European and Baltic citizens in particular have disarmingly pessimistic views on the future of work.

Although most EU citizens believe that technological unemployment will pose a problem in the future, the view is rather opposite when it comes to assessing one’s own prospects. When EU citizens were asked to respond to the question ‘Do you think your current job could be done by a robot or by artificial intelligence in the future?’, 53% responded that their job would not be made redundant by recent technologies. At the same time, only 5% believed that their job could entirely be automated.

At about the same time as the Eurobarometer study, Helsingin Sanomat (2016) – the largest subscription newspaper in Finland – and the Finnish technology company Solita (2017) explored Finns’ expectations concerning future job security. According to the survey commissioned by Helsingin Sanomat, 74% of Finns assume that their work tasks will not disappear in the future due to technological developments. The survey by Solita concluded in a similar fashion that a clear majority of Finns (68%) do not fear that robots will replace jobs in their field. A 2016 study by the Pew Research Center in the US reported similar findings. While 65% of the US adult population reportedly believe that in the next 50 years robots and computers will do much of the work currently performed by humans, only 18% of employed respondents feel that their current jobs will be threatened in the same time span. Taken together, the survey results indicate that people may generally have a pessimistic view regarding the future of work, but they view their own prospects rather optimistically.

When it comes to assessing the impact of public discussion on social policy attitudes, it is necessary to note that framing inevitably shapes public opinion (e.g. Chong and Druckman, 2007). According to Entman (1993, p. 52), to frame is to ‘select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation’. Due to the political significance of framing, it is understandable that politicians in particular have an incentive to frame policy ideas in a manner that they assume will reflect the public view on appropriate policy responses (e.g. Campbell, 2002, pp. 26–28). For politicians, it may also be wise to use communications strategies that do not provide exact information on the reform that they are promoting. Kangas et al. (2014), in a case study exploiting Finnish survey data concerning a past social assistance reform, demonstrated that the vaguer the information given to the public, the

higher the measured support for the policy. In light of previous studies, it is surprising that a framing experiment conducted in the US (Zhang, 2019) found that highlighting automation risk for survey respondents did not affect social policy attitudes.

Although it is evident that framing can play a major role in the formation of public opinion, it is also clear that socio-demographic characteristics and values shape social policy attitudes in a significant manner. Studies concerning social policy attitudes have consistently shown that self-interest and ideology in particular are important predictors of social policy preferences (e.g. Meier Jæger, 2006; Marx, 2014; Roosma et al., 2014). In other words, if one assumes that a policy is likely to improve one's wellbeing or that it reflects one's ideological viewpoint, there is a higher probability that the individual will support the policy in question. When it comes to values more generally, social policy attitudes are affected by one's moral evaluation of deservingness (e.g. van Oorschot, 2006). Interestingly, recent studies have also provided some evidence that vulnerability to automation (Frey et al., 2018; Im et al., 2019; Thewissen and Rueda, 2019) may affect political preferences. According to Thewissen and Rueda (2019), working in routine-task intensive occupations predicts higher support for redistribution.

Apart from framing, socio-demographic predictors and values, socio-economic conditions can also shape social policy attitudes. Several researchers have shown that high unemployment predicts, for instance, higher support for social policy measures and the welfare state (Blekesaune and Quadagno, 2003). At the same time, a study from Finland indicates that people are more willing to support investments in social policy during economic upturns, while during recessions such support decreases (Sihvo and Uusitalo, 1995). These findings further highlight the role of socio-economic conditions as a potential determinant of social policy change in the digital economy.

Determinants of social policy attitudes may vary from one country to another. Since this thesis explores social policy attitudes in Finland, it is reasonable to discuss the Finnish case separately. As in other countries, self-interest and ideology have been identified as consistent predictors; a lower educational attainment and income level, a weaker position in the labour market and a leftist ideology are generally connected to higher levels of support for social policy (for a review, see, e.g. Forma et al. 2007, pp. 11–16). Surveys focusing on whether social assistance recipients deserve the received help (Kallio and Niemelä, 2017; Kallio et al., 2020.) show that Finns view social security in a positive manner and that any differences in sociodemographic characteristics affecting perceptions of deservingness are somewhat small. Positive perceptions have also increased in the past years. Kangas and Andersson (2002, pp. 294–295) argue that the surveys demonstrate Finns support policies that guarantee basic security for everyone, but also policies that incentivise hard work. This has at least been the case previously. Social policy attitudes can obviously evolve over time.

Since this thesis examines the feasibility of basic income in more detail, it is also reasonable to review recent findings concerning the social legitimacy of basic income. According to Roosma and van Oorschot (2020, p. 191), scholars cannot deduce support for basic income based on previous studies concerning social policy attitudes since such a policy has not yet been implemented anywhere. In other words, people do not have much experience with a policy guaranteeing a basic income. Still, their European-level study as well as a study by Kangas and Andersson (2002) focusing on the Finnish population both conclude that support for the idea follows somewhat similar patterns as support for other policies that aim to improve social policy.

Using population-level Finnish survey data, Kangas and Andersson (2002) found that being young, a student, unemployed or voting for the Left Alliance and the Green League indicate greater support for basic income, while higher incomes, high educational attainment and voting for the National Coalition (a Finnish right-wing party) predict declining support. The results also indicate that people who do not blame the individual for poverty or unemployment are generally supportive of the policy. In a similar fashion, Roosma and van Oorschot (2020) used European Social Survey (ESS) Round 8 data from the year 2016 representing 23 European countries and found that a weaker socio-economic position and leftist ideology predict support for basic income. Moreover, a willingness to decrease income inequality indicates greater support for the policy. Paradoxically, individuals who support explicit targeting are also supportive of a basic income paid universally to everyone. Using the same ESS data, Martinelli and Chrisp (Martinelli, 2019, pp. 35–38) found that there is only ‘scant’ evidence that the risk of automation (in this case, routine task intensity in one’s job) drives support for basic income. A published study by Dermont and Weisstanner (2020) confirms this result.

3.3 IDEAS

Analysing ideational and discursive processes has become increasingly common in policy change literature (for a review, see Camic and Gross, 2004). According to Béland (2009), ideas affect policy change by constructing problems and issues that enter the policy agenda, shaping social and economic assumptions about institutions and policies (on policy paradigms, see also Hall, 1993) and providing powerful ideological ‘weapons’ through framing and value amplification processes (i.e. ‘social construction of the need to reform’, as Cox [2001] defines it). Ideas are intrinsically connected to public opinion. Campbell (1998, pp. 392–394), for instance, argues that public assumptions (‘public sentiments’) constraining the normative range of solutions that elites are likely to consider should actually be defined as a type of ideas.

The digital economy debate concretely illustrates how ideational processes may influence social policy change. If technological (mass) unemployment is considered a potential threat in the mainstream discourse, it is logical to argue that radical ideas, such as guaranteeing an unconditional basic income for everyone (e.g. Berg et al., 2016; Santens, 2017), work sharing (e.g. Bregman, 2016, pp. 44–47), public job programmes (e.g. Meyer, 2014) or employee

ownership (e.g. Freeman, 2015) are inevitable. At the same time, if employment is assumed to develop positively, such conventional ideas as investing in education or initiating moderate benefit system reforms will most likely be considered adequate measures for increasing labour's adaptability to the digital economy. In other words, efforts at constructing problems, shaping social and economic assumptions, and steering ideological framing processes are constantly present in current debates concerning the future of social policy.

In the past few decades, governmental and intergovernmental actors have highlighted the idea of stimulating employment through social policy reforms that increase the labour supply. Since the 1980s and 1990s, the 'activation paradigm' has become dominant in social policy, and it has materialised as manifold measures ranging from retraining to harsh sanctions. (e.g. Bonoli, 2010; Kenworthy, 2010; Card et al., 2018.) Although the ideational foundation of the current activation paradigm lies in neoclassical economics, active labour market policies (ALMPs) have a much longer tradition in the Nordic context and the idea has historically been intertwined with Keynesian macroeconomic regulation and solidaristic wage policies (see, e.g. Erixon, 2010).

In the digital economy debate, the ideational emphasis of the activation paradigm has been on highlighting the urgency to retrain and reskill the labour force. It has been argued that STEM (science, technology, engineering and mathematics) skills together with social skills, flexibility and systemic thinking will be in high demand in the digital economy, implying that the content of education must be adjusted to match these requirements. Moreover, it has repeatedly been noted that the role of lifelong learning will increase in the future, implying that employees should be prepared to retrain and update their skill set possibly several times during their career. (e.g. Autor, 2015, p. 27; Bessen, 2015; Bakshi et al., 2017; Deming, 2017; OECD, 2018a, 2018c; WEF, 2018, 2020; PwC, 2018, p. 34; Servoz, 2019, pp. 56–75; EC, 2019, pp. 31–37.)

Although the activation paradigm has maintained its focal role in recent discussions concerning the future of social policy, increased global interest in basic income indicates that there is demand for competing ideas. According to Widerquist (2019), universal basic income (UBI) is experiencing by far its largest wave of support. Although several factors can be identified behind the current wave of support, it is evident that the future of work debate has inspired several activists, academics and even tech entrepreneurs to advocate basic income as a much-needed response to the assumed challenges deriving from technological change. Some have poetically referred to it as 'an idea whose time has come' (Reed and Lansley, 2016).

As pointed out by Widerquist (2019, p. 39), arguing for basic income as a response to technological change is not a novel framing of the issue, but instead mirrors a similar discussion taking place already in the 1960s. Whilst some commentators such as Martin Luther King Jr. proposed a guaranteed income as a pragmatic measure to reduce poverty resulting from technological change, others combined the idea with post-productivist visions of reducing

working hours and widening the sphere of social economy. In the 2010s, the automation-driven arguments for a basic income have combined both elements of the previous discussions (e.g. Ford, 2015, pp. 264–273; Berg et al., 2016; Stern, 2016; Reed and Lansley, 2016; Santens, 2017).

The political actors promoting such ideas – ‘policy entrepreneurs’ (Minstrom, 1997) – differ in terms of political, cultural and material resources, implying that the diffusion of ideas is affected by the capacity of the actors to promote them. According to Hansen and King (2001), it is their interaction with powerful institutional forces and political actors that makes ideas influential. Several case studies (e.g. Somers and Block, 2005; Kuivalainen and Niemelä, 2010) have focused on how the ideas advocated by high-profile actors have affected social policy legislation. The role of transnational actors is often highlighted as a major explanation behind the diffusion of ideas, although national actors have remained central as well (Béland, 2009, pp. 708–712). Increased interest in a basic income by such influential intergovernmental actors as the OECD (2017) and the World Bank (Gentilini et al., 2019) indicates that the idea is now being taken seriously in social policy debates. As noted by Campbell (2002, pp. 30–31), institutions influence the degree to which intellectuals, and thus, new policy ideas can access policy-making arenas (i.e. ‘institutional filtering’).

According to Kingdon (1995[2013], pp. 131–144), ideas can find a ‘policy window’ when they are budgetarily and technically feasible, when they fit with dominant values and when they are supported by the public. In other words, besides public opinion, available evidence on the economic feasibility of divergent policies can be expected to have implications for social policy change. In addition to the idea of ‘evidence-based policy-making’ popularised by the Blair government (Sanderson, 2002), numerous basic income experiments launched in the 2010s (Widerquist, 2018, pp. 61–70) and microsimulation-based *ex ante* policy analyses (e.g. Bourguignon and Spadaro, 2006) illustrate that policymakers are increasingly demanding scientific evidence before policy ideas can become politically feasible.

Although social policy experimentations and *ex ante* policy analyses may facilitate more informed policymaking in the future, they will not diminish the role of politics. As noted by critics, the concept of *evidence-based* policymaking is an exaggeration of what can realistically be expected from political decision-making. Hence, it might be better to refer to *evidence-informed* policymaking (for further discussion, see, e.g. Head, 2015). In the case of policy experimentation, political decision-making may affect the process from the very beginning (e.g. De Wispelaere et al., 2019). If politicians determine the aims (i.e. studied indicators) of the experiment, important aspects of the studied policy may be ignored. Allocated budgets determine how comprehensively various populations can be studied, and consequently, the representativeness of the results. Moreover, since politicians may demand results faster than scientific research can reliably provide them (i.e. during a

political cycle), time constraints constitute additional pitfalls for conducting scientifically solid social policy experiments.

3.4 POWER RESOURCES AND INSTITUTIONS

Power resource theory has become influential in explaining the development of the welfare state since the 1970s (e.g. Stephens, 1979; Korpi, 1989, 2006; Esping-Andersen, 1990). In brief, the theory assumes that the distribution of power between classes affects political decision-making. Historical and statistical observations (e.g. Hicks and Swank, 1984; Bradley et al., 2003; Korpi and Palme, 2003; Allan and Scruggs, 2004) have found strong evidence of a connection between left party rule and redistributive politics. Besides partisan politics, there is convincing evidence (e.g. Freeman, 1980; Rueda and Pontusson, 2000) indicating that unions have been capable of reducing wage inequality. The empirical research offers good reasons to assume that power resource theory will still be applicable in the future, at least to some extent. Hence, it can be expected that political upheavals will potentially influence social policies adopted in the digital economy.

Alongside power resource theory, institutionalism constitutes another influential stream of policy change literature not examined in this thesis. As the name suggests, institutionalism studies the role of institutions as the determinant of policy change. The approach is conventionally divided into three streams: rational choice institutionalism, historical institutionalism and sociological institutionalism. However, diversity exists among the schools of thought and scholars have crossed the borders separating the approaches. (e.g. Koning, 2015.)

Pierson's thesis on welfare state retrenchment (Pierson, 1996) in particular has been widely discussed in the social sciences over the past two decades (for a literature review, see, e.g. Levy, 2010) and may still be relevant in discussions concerning the future of social policy. Pierson famously argued that welfare state retrenchment is exceedingly difficult for three reasons. First, people are risk averse, and hence, resist programme cuts. Second, the average citizen has much to lose in the form of social benefits or services. Third, past policy commitments 'lock in' certain welfare policies, such as pensions, and powerful constituencies intent on defending their benefits mobilise against the cuts. These constituencies may consist of both recipients of the benefits and providers of the social services, whose employment is dependent on retaining welfare services. Pierson argues that in the era of retrenchment, policy 'lock-in' and powerful constituencies play a more crucial role than the power resources of labour. To implement welfare cuts, governments practice blame avoidance to hide the actual implications of the reforms.

Besides the 'new politics of welfare state' theorisation, Pierson's (2000) path dependence theory has been influential in explaining both changes and continuity in social policy. Although notions of path dependency have been present in institutional theories for a longer time, the concept was only vaguely defined before Pierson's work. In brief, the theory assumes that once a certain

policy path has been chosen, the path is self-reinforcing, and it may be difficult to leave the chosen path. While the theory can be useful for exploring how changes in political developments within institutions become concrete and a matter of fixed policy over time, such changes are complex and difficult to test over time via path dependence hypotheses. Understandably, debates have emerged among institutionalists as to whether certain approaches can be justified empirically (Thelen, 1999, pp. 372–374). Although the role of institutions is difficult to test particularly in the context of a still unfolding technological revolution, it is reasonable to assume that institutions do play a role in shaping future social policy legislation. Both the ‘new politics of welfare state’ and path dependency theses suggest that radical social policy reforms may be difficult to implement even if socio-economic conditions change.

3.5 CONCLUDING REMARKS

The above review of potential determinants of social policy change in the digital economy highlights the complex nature of explaining policy change. The complexity is expected to increase in the future. As Kenney and Zysman (2016, p. 69) accurately remark: ‘We will be making choices in an inherently fluid and ever-changing environment shaped to some degree by unpredictable technical change and social reactions to these changes.’

From a scholarly point of view, a major issue stems from the fact that there is no consensus on what determines policy change and at what level. As noted by Burstein (2020), many factors hypothesised as determinants of policy change are not supported by data, and studies often focus on statistical significance while rarely analysing substantive significance. Moreover, as Capano and Howlett (2009) stress, studies of policy change have been methodologically and theoretically inconsistent, which has led to isolated, incompatible and non-cumulative research results. Evidently, most theories of policy change are better at explaining the past than predicting the future (Cerna, 2013, p. 16). Hence, it is fair to note that even the most comprehensive analyses exploring the determinants of future social policy are susceptible to numerous uncertainties and may at best provide educated guesses on future trends.

Despite the fundamental uncertainty involved in predicting the future and the inconsistency of policy change literature, it is reasonable to assume that socio-economic conditions deriving from the digital transformation play a major role in explaining the future of social policy. However, as the above review shows, based on available empirical evidence it is still highly speculative to anticipate labour market outcomes resulting from the Fourth Industrial Revolution. Moreover, as the review of political factors has illustrated, technological capabilities alone will not determine employment outcomes in the future. Hence, exploring divergent scenarios is reasonable to facilitate a better understanding of the role of socio-economic conditions in future social policy change.

Besides the ‘evidence deficit’ (a term coined by Warhurst et al., 2019, p. 47) concerning future labour market outcomes, the above review has pointed out

the extent to which policymakers are highly responsive to public opinion. It was also emphasised that public opinion is shaped through interactions between framing, sociodemographic characteristics, values and socio-economic conditions. Comprehending this fact is particularly critical when exploiting survey data to analyse the role of public opinion in social policy change. This point is also highlighted in sub-studies III and IV.

The discussion on the role of ideas in social policy change pointed out that ideational processes construct the issues that enter the policy agenda and shape social and economic assumptions about institutions and policies. In the digital economy debate, ideas on reforming social policy have been intertwined with proponents' views on the future labour market – with optimists arguing in favour of conventional policies increasing employability in the future and pessimists arguing in favour of radical ideas guaranteeing an adequate income when technological unemployment poses a major problem. Partly due to the digital economy debate, the idea of an unconditional basic income is now receiving major global interest by activists and scholars as well as governmental and intergovernmental actors. As noted by Kingdon (1995[2013], pp. 131–144), to find a 'policy window', an idea needs to be both economically feasible and supported by the public. Recent policy experimentations with basic income and the established role of microsimulation calculations in *ex ante* policy analyses indicate that social policy ideas are now subject to an increased burden of proof regarding their economic feasibility before policymakers consider implementing them.

4 EMPIRICAL SPECIFICATIONS

4.1 AIMS OF THE STUDY

As discussed in the previous section, empirical research confronts major challenges in anticipating the future of social policy measures due to data constraints concerning the impending digital transformation (Mitchell and Brynjolfsson, 2017; Warhurst et al., 2019, p. 47) and complex interdependencies between the competing determinants. Hence, it is understandable that most recent analyses concerning the implications of the digital economy for social policy have relied on theoretical deductions (e.g. Greve, 2017). Although theoretical work can increase understanding of the dynamics of social policy change in the digital economy, the lack of empirical research in the field has been evident.

The aim of this study is to contribute to a deeper empirical understanding of the potential determinants of social policy change in the digital economy. To do so, this thesis focuses on the three potential determinants of future social policy discussed in the previous section: socio-economic conditions, public opinion and ideas.

The socio-economic conditions for social policy change are examined by conducting a microsimulation analysis of the implications of ideal-type employment scenarios for European welfare states (sub-study I). By assessing the implications of hypothetical counterfactual employment scenarios for state budgets, poverty and income inequality, it is possible to anticipate plausible social and economic pressure for social policy change in the digital economy. At the same time, the microsimulation method makes it possible to compare the adaptability of divergent welfare states to technology-induced scenarios. Illustrating the socio-economic implications of ideal-type scenarios for divergent welfare states may provide a more informed basis for policy debates in the context of the digital economy.

The role of public opinion in future social policy change is examined utilising unique population-level survey data collected in Finland. The purpose of analysing the Finnish view on the future of work and preferred policy ideas is to examine whether public opinion drives change in the principles of social policy within the context of the Nordic welfare model. Furthermore, the investigation examines whether pessimistic future views or certain sociodemographic characteristics drive support for social policy change.

The analysis concerning policy ideas has a specific focus on universal basic income (UBI). As discussed in section 3.3, global interest in basic income has increased in the wake of the future of work debate (e.g. Widerquist, 2019). Hence, an in-depth feasibility analysis of basic income is justified when policy ideas are explored as a potential determinant of social policy change in the digital economy. Besides assessing the social legitimacy of basic income in Finland and the UK (sub-studies III & IV), the thesis investigates the feasibility of basic income from the perspective of its economic efficiency in improving

the position of labour market outsiders (sub-study V). The purpose of this feasibility analysis is twofold: first, it facilitates a more evidence-informed policy debate on the feasibility of universal basic income; second, the analysis illustrates the fragility of public support for social policy ideas if an idea is only discussed at a very abstract level.

4.2 RESEARCH QUESTIONS

The specific research questions answered in the sub-studies of this thesis are as follows:

- Sub-study I
 1. What are the possible implications of a technological mass unemployment scenario and an optimistic employment scenario for government revenues, social expenditures, budget balances, population-level poverty rates and Gini coefficients for disposable income in the EU-28 countries?
- Sub-study II
 1. Which ideal-type labour market scenario do Finns follow?
 2. What are the essential differences in sociodemographic characteristics in views on the labour market development?
 3. What are the essential differences in sociodemographic characteristics in views on the preferred policy responses?
- Sub-study III
 1. How does framing affect the social legitimacy of basic income in Finland?
 2. Which sociodemographic characteristics predict support for basic income in Finland?
- Sub-study IV
 1. To what extent does the precise model of basic income affect the level and determinants of support for basic income?
- Sub-study V
 1. Is basic income an efficient policy for increasing the disposable income of unemployed, underemployed and precarious workers in the digital economy?

4.3 DATA

The study utilises the following datasets:

- Sub-study I: The European Union Statistics on Income and Living Conditions (EU-SILC)-based EUROMOD microdata
- Sub-study II: *Finnish Views on the Future of Work in Digital Economy 2017* survey data (Pulkka and Hiilamo)
- Sub-study III: Research reports of seven Finnish basic income surveys and *Finnish Views on the Future of Work in Digital Economy 2017* survey data
- Sub-study IV: *Finnish Views on the Future of Work in Digital Economy 2017* survey data, IPSOS-Mori survey data and collated results from 110 different basic income surveys in 35 different countries with 24 different survey items
- Sub-study V: Microsimulation results from Kangas and Pulkka (2016, pp. 179–212)/Kela (2016 pp. 16–49).

This thesis examines the socio-economic conditions of social policy change in the digital economy (sub-study I) by assessing the socio-economic implications of a technological mass unemployment scenario and an optimistic employment scenario for the EU-28 countries. The EU-SILC-based microdata utilised in the microsimulations provide cross-sectional comparable and representative information on incomes, labour market statuses, household structures and other individual characteristics of EU citizens. The data exploited in sub-study I are from the year 2016 for all countries apart from Luxemburg and the United Kingdom (data from 2015), but the data have been updated to match with the policy year (2018). Eurostat has made the data available under contract RPP/151/2018-EU-SILC.

The exploration of the Finnish view on the future of work and preferred policy ideas (sub-study II) together with public support for a basic income in Finland (sub-studies III & IV) utilises data from the *Finnish Views on the Future of Work in Digital Economy 2017* survey. The data were collected by TNS Gallup Oy in August and September 2017. The sample (n=1004) represents 15–79 year olds in the Finnish population (excluding the autonomous region of Åland). Data collection utilised a multiphase sampling method (Gallup Catibus), and the interviews were conducted by telephone. The survey was part of a research project entitled the *Finnish Work After the Transformation*, and hence, some of the results have also been reported in a publication on the government's analysis, assessment and research activities (Annala et al., 2018). The survey data are openly accessible for further analyses in the Finnish Social Science Data Archive (Pulkka and Hiilamo).

The UK survey data used in sub-study IV to analyse the framing effect in basic income surveys in the UK were similarly collected in August 2017. The sample consists of 1111 adults aged 18–75 and were collected exploiting the IPSOS-Mori online survey by researchers from the University of Bath’s Institute for Policy Research.

Research reports of the Finnish basic income surveys analysed in sub-studies III and IV were to a large extent found using the Google search engine and by surveying colleagues. Conventional library searches were inadequate for the purpose since the results from previous Finnish basic income surveys have not been reported in peer-reviewed journal articles, with three notable exceptions (Kangas and Andersson, 2002; Linnanvirta et al., 2019; Stadelmann-Steffen and Dermont, 2019). Given the limitations of conventional search methods for exploring previous surveys, it is possible – though not very likely – that sub-studies III and IV may not have identified all the population-level surveys carried out in Finland since 2015. However, fourteen identified surveys in a four-year period provide a comprehensive review of Finnish basic income surveys in the past decade. Joe Chrisp, who received help from basic income activists in several countries, collated the review of 110 basic income surveys in 34 countries (sub-study IV).

Sub-study V, which examines the economic feasibility of providing a basic income, exploits results from microsimulation calculations conducted when preparing the Finnish basic income experiment (Kangas and Pulkka, 2016, pp. 179–212; Kela, 2016, pp. 16–49). Pertti Honkanen and Miska Simanainen made the calculations based on SISU and JUTTA microsimulation models utilising 2013 income distribution service data from Statistics Finland.

4.4 METHODS

To mitigate the fundamental uncertainty involved in anticipating the future, this thesis adopts a mixed-methods approach that includes the following methods:

- Sub-study I: a non-parametric, micro-imputation technique and European Union microsimulation model EUROMOD
- Sub-study II: cross-tabulations
- Sub-study III: content analysis, cross-tabulations, bivariate regression analysis, logistic regression analysis, linear regression analysis
- Sub-study IV: cross-tabulations, bivariate regression analysis
- Sub-study V: no specified method.

Sub-study I develops a novel methodological approach to compare the socio-economic implications of hypothetical counterfactual employment scenarios for various European welfare states. The first scenario (reflecting the ‘this time is different’ scenario, see section 3.1.3) assumes that technological mass unemployment will constitute a permanent problem, while the second scenario (reflecting the ‘this time is no different’ scenario) assumes unemployment will be reduced by half in each country. To best specify the

technology-induced mass unemployment scenario, we matched mean automation risk estimates by occupation (Nedelkoska and Quintini, 2018, p. 51) with occupational information available in the EU-SILC-based EUROMOD microdata. Since there are no applicable ISCO-08-based estimates for specifying the optimistic scenario, the study illustrates substantial positive spillovers by assuming an equal reduction in unemployment in each country.

After specifying the scenarios, we constructed the scenarios according to the specifications using a non-parametric, micro-imputation technique and R programming tool (co-author Miska Simanainen was responsible for the coding process). In brief, we shifted individuals in the EUROMOD microdata from employment to unemployment, or vice versa. This procedure involves defining the transition population that will be shifted and a model population that serves as a model for the labour market transitions. To implement the shifts, we imputed incomes, labour market variables and social benefit variables from the model population using age, gender and education as matching variables. The imputed attributes include data on employment/self-employment income, employment/unemployment spells (months), working hours, unemployment benefits and social assistance. The shifting shares were chosen using a simple random sampling procedure.

Following the previous procedure, we simulated income transfers using EUROMOD version 3.0.2. and compared the results from the baseline scenario (no imputation) to the hypothetical scenarios. We compared the results from the EU-28 countries with each other and ranked the countries according to their performance in terms of the socio-economic indicators. To illustrate socio-economic conditions in the simulated scenarios, we analysed budgetary implications, population-level poverty rates and Gini coefficient on disposable income.

In sub-study II, the reported results are presented as cross tabulations, although the connection between a belief in permanent technological unemployment and preferable policy ideas was also explored using bivariate correlation, factor analysis and regression analysis. In retrospect, it would have been reasonable to report some of the interpretative analyses in the original article. Hence, I acknowledge that sub-study II erroneously states that the analyses ‘did not provide further information on the data’. To reflect this error, the analyses conducted in sub-studies III and IV also report the results derived from the regression analyses.

Sub-study III employs both qualitative and quantitative methods to analyse the framing effect of basic income surveys. To examine the connections between different frames used in basic income surveys and the reported results, it uses qualitative content analysis. In this thesis, framing refers to different rhetorical devices, but also to the information provided for respondents in surveys. The study identifies how population-level Finnish surveys have defined basic income, the specific model and its plausible dynamic effects, and it explores which characteristics may explain the great

variation identified in the results. To obtain a deeper understanding of the framing effect in basic income surveys, sub-study III exploits the *Finnish Views on the Future of Work in Digital Economy 2017* survey data and analyses how detailed information on policy ideas and specific model definitions affect understandings of the social legitimacy of basic income. Besides exploring the frequencies of the different frames in basic income surveys, the study uses two regression models to identify sociodemographic predictors of support. The first model conducts a bivariate analysis while the second model controls for independent variables. In addition to conventional sociodemographic variables, the second model includes a belief in permanent technological unemployment variable (dummy and a five-scale variable) in the analysis.

In sub-study IV, the approach of sub-study III is extended to analyse the framing effect of basic income surveys in an international context. We reviewed results from 110 different surveys in 34 countries, with a focus on Finland and the UK. The observations concerning the Finnish surveys draw from sub-study III, but they are now compared with survey results from the UK. The socio-demographic determinants of support for different basic income models were compared using bivariate regression analysis based on gender, age group, education, income group and party preference. It is necessary to note that sub-study IV adopted a different conceptual approach *vis-à-vis* sub-study III. While sub-study III interprets additional information in basic income surveys as frames, sub-study IV only discusses the effects of divergent definitions and basic income models.

Sub-study V analyses the economic efficiency of basic income. First, the analysis defines the problem addressed by the proposed policy, i.e. guaranteeing an adequate income for labour market outsiders in a volatile digital labour market. Second, the analysis identifies arguments in the basic income literature suggesting that a basic income would be an efficient policy idea from the perspective of the defined problem. Third, the identified arguments are analysed one by one based on available evidence. Finally, after assessing the plausible effects of a basic income, the study concludes by assessing whether basic income is an efficient policy from the perspective of the defined problem and whether alternative policies exist to address the problem.

Table 2 summarises the key facts presented in the sub-studies.

Table 2 The key facts presented in the sub-studies

	Sub-study I	Sub-study II	Sub-study III	Sub-study IV	Sub-study V
The specific objective	To illustrate social and economic pressure for social policy change in divergent ideal-type scenarios.	To examine whether public opinion drives social policy change in the context of the Nordic welfare model.	To illustrate the fragility of public support for abstract social policy ideas.	To illustrate the fragility of public support for abstract social policy ideas.	To strengthen evidence-informed debate on the feasibility of a universal basic income.
Research question(s)	What are the possible implications of a technological mass unemployment scenario and an optimistic employment scenario for government revenues, social expenditures, budget balances, population-level poverty rates and Gini coefficients for disposable income in the EU-28 countries?	Which ideal-type labour market scenario do Finns follow? What are the essential differences in sociodemographic characteristics in views on the labour market development? What are the essential differences in sociodemographic characteristics in views on the preferred policy ideas?	How does framing affect the social legitimacy of basic income in Finland? Which sociodemographic characteristics predict support for basic income in Finland?	To what extent does the precise model of basic income affect the level and determinants of support for basic income?	Is basic income an efficient policy idea for increasing the disposable income of unemployed, underemployed and precarious workers in the digital economy?
Context	European Union	Finland	Finland	A sample of 35 countries/Finland/UK	Finland/International
Data	EU-SILC	<i>Finnish Views on the Future of Work in Digital Economy 2017</i>	<i>Reports of seven Finnish basic income surveys and Finnish Views on the Future of Work in Digital Economy 2017</i>	<i>Data collated from 110 basic income surveys/Finnish Views on the Future of Work in Digital Economy 2017 survey/Ipsos MORI survey</i>	Microsimulation results from Kangas and Pulkka (2016)/Kela (2016)
Methods	A non-parametric, micro-imitation technique and European Union microsimulation model EUROMOD	Cross-tabulations	Content analysis, cross-tabulations, bivariate regression analysis, logistic regression analysis, linear regression analysis	Cross-tabulations, bivariate regression analysis	No specified method

4.5 ETHICAL CONSIDERATIONS

The primary ethical considerations of this thesis concern how the survey was conducted, the survey items validated and the Eurostat microdata managed. In the customary manner, the TNS Gallup interviewers were asked to inform the respondents about the corresponding researchers and how the collected data would be utilised (see Appendix 1 for exact wordings). Since collection of the research data was funded by a public agent (the Prime Minister's Office), the author of the present thesis has made it a top priority to ensure that the original data is openly accessible. Open data also facilitates replicating the analyses carried out in this thesis, which increases the transparency of the research.

Validation of the survey items is a key ethical issue in quantitative research (e.g. Carrig and Hoyle, 2011). The first version of the survey questionnaire was drafted by the author of this thesis, exploiting established and validated surveys (most importantly, previous European Social Survey questionnaires) as benchmarks for the scales and wordings. Regarding the survey items measuring support for competing policy ideas, previous basic income surveys designed by researchers at the Social Insurance Institution of Finland (Airio et al., 2015a, 2015b, 2015c; Airio et al., 2016) provided additional pre-tested benchmarks to further develop the questionnaire.

To enhance the content and construct validity of the survey items, several useful comments were received from Professor Heikki Hiilamo and other researchers involved in the research project. Additionally, a survey expert, Joni Vallenius from TNS Gallup, tested the questionnaire and offered further comments on how to make the design more respondent friendly. During the process, certain descriptive texts were shortened and some of the response scales were redesigned. An earlier online version of the questionnaire was also sent to Finnish trade union leaders in May 2017, but due to response drop-off (response rate 32%, n=28), the data have not been exploited in this thesis. Nevertheless, this pilot study helped us identify some weaknesses in the initial design.

Although the validating process involved the above-mentioned phases, further testing with different socio-demographic groups might have been useful to further improve the validity of the survey. It is fair to note that certain questions, particularly those concerning future employment developments, may have been overly complex for average citizens.

Utilising the EU-SILC-based microdata requires contracts with the data supplier(s) (i.e. Eurostat and certain national statistical offices). These contracts are used to guarantee ethical research procedures and adequate data management. The data provided by the data suppliers have been anonymised. To guarantee ethically solid data management, the data files have been shared using secure emails and password-secured zipped files. Further, the files have

been kept on secured hard discs. The data files were deleted from the authors' hard discs after sub-study I had been accepted on 18 February 2021.

5 FINDINGS

5.1 SOCIO-ECONOMIC PERFORMANCE OF EUROPEAN WELFARE STATES IN TECHNOLOGY-INDUCED EMPLOYMENT SCENARIOS (SUB-STUDY I)

From a functionalist perspective, social and economic development sets the preconditions for social policy change. Hence, it is expected that socio-economic conditions, i.e. fiscal resources, poverty and economic inequality, will shape the future of social policy at least to some extent. While some microsimulation-based research has been carried out on the resilience of European welfare states to unemployment (e.g. Jara et al., 2015), no single study to date has attempted to investigate between-country differences with respect to the socio-economic implications of hypothetical technological (un)employment scenarios before this thesis. Sub-study I set out to fill in this knowledge gap.

To compare the socio-economic implications of divergent scenarios in the EU-28 countries, we constructed two ideal-type scenarios reflecting the polarised digital economy debate (section 3.1.3). The scenarios were simulated utilising the European Union's tax-benefit microsimulation model EUROMOD. The pessimistic scenario assumed technological mass unemployment would constitute a permanent problem over the next decade or two, while the optimistic one assumed unemployment would be reduced by half due to positive spillovers.

The simulations show that socio-economic resilience to technological unemployment and the benefits of reduced unemployment vary considerably between the European Union member states. Predictably, technological unemployment would have a drastic negative impact in all EU-28 countries. Certain welfare states, however, are clearly more resilient to negative shocks than others. In light of the simulations, social policy systems in the Nordic and Benelux countries together with France could adjust to a negative shock with less socio-economic damage, while many Eastern and Southern European welfare states would be confronted with severe socio-economic consequences. That said, it is fair to also note that the more resilient welfare states would face a fiscally unsustainable situation if technological mass unemployment constituted a permanent problem. Furthermore, considerable baseline budget deficits in certain countries would undeniably shape the political implications of technological unemployment for social policy.

To illustrate the differences in resilience of the European welfare states to technological unemployment, Table 3 divides the EU-28 countries into three groups based on their socio-economic performance in the simulated scenario. Countries in the high-performance category performed above average (unweighted country average) on all three socio-economic indicators, while those in the moderate-performance category did so on one or two indicators

and those in the low-performance category did not perform well on any of the indicators. M1 refers to Model 1, while M2 refers to Model 2.

As with the technological mass unemployment scenario, between-country differences in socio-economic implications are also substantial in the optimistic scenario. Slovenia, Finland, Belgium and Croatia performed above average on all indicators, while Italy, Malta, United Kingdom, Hungary, Estonia, Lithuania, Latvia and Romania performed below average on each assessed indicator in the same scenario. Table 4 classifies the EU-28 countries based on the optimistic scenario.

Table 3 Classification of the EU-28 by socio-economic implications in the technological mass unemployment scenario

Category	Country	Budgetary implication* (M1/M2)	Poverty (M1/M2)	Inequality (M1/M2)
High performance^a	1. Denmark	-48%/-39%	27%/24%	0.28/0.28
	2. The Netherlands	-46%/-37%	28%/24%	0.31/0.30
	3. France	-49%/-42%	29%/27%	0.31/0.31
	4. Sweden	-42%/-36%	35%/32%	0.33/0.32
Moderate performance^b	1. Finland	-56%/-47%	19%/17%	0.24/0.24
	2. Luxembourg	-75%/-63%	19%/17%	0.24/0.24
	3. Belgium	-60%/-50%	26%/23%	0.25/0.25
	4. Ireland	-66%/-56%	30%/28%	0.29/0.29
	5. Austria	-54%/-46%	32%/29%	0.27/0.27
	6. Slovenia	-57%/-48%	34%/30%	0.26/0.26
	7. Czech Republic	-56%/-47%	36%/33%	0.31/0.31
	8. United Kingdom	-56%/-46%	36%/33%	0.35/0.35
	9. Slovakia	-52%/-45%	40%/35%	0.27/0.27
	10. Italy	-37%/-31%	38%/35%	0.41/0.39
	11. Poland	-42%/-35%	39%/35%	0.36/0.35
	12. Germany	-45%/-38%	40%/37%	0.37/0.36
	13. Greece	-44%/-37%	41%/38%	0.40/0.39
	14. Malta	-44%/-37%	42%/37%	0.36/0.35
	15. Lithuania	-39%/-31%	43%/39%	0.41/0.41
	16. Spain	-48%/-40%	42%/40%	0.42/0.41
	17. Latvia	-44%/-37%	43%/39%	0.40/0.39
	18. Bulgaria	-45%/-39%	44%/41%	0.42/0.41
	19. Hungary	-49%/-42%	45%/41%	0.39/0.37
	20. Estonia	-47%/-39%	46%/42%	0.36/0.36
Low performance^c	1. Cyprus	-77%/-64%	38%/34%	0.35/0.35
	2. Portugal	-54%/-45%	40%/37%	0.39/0.38
	3. Croatia	-52%/-44%	45%/40%	0.38/0.36
	4. Romania	-52%/-45%	47%/44%	0.42/0.41
Unweighted country average		-51%/-43%	37%/33%	0.34/0.34

Note: * (Change in government revenue - change in government expenditure) / Baseline government revenues; (a) performs better than average on all three indicators; (b) performs better than average on one or two indicators; (c) performs weaker than average on all three indicators. Countries performing above average on two indicators are in italics in the moderate-performance category. In the within-category rankings, social indicators are weighed over the economic indicators and the poverty rate over the Gini coefficient. This is a somewhat arbitrary valuation, and it is fair to say that moderate performers with less negative budgetary implications might have more resources to tackle poverty and inequality than countries confronted by particularly severe budgetary implications. Moreover, it is also necessary to consider budget balances (Appendix 2 in the original article) when examining economic performance in more detail.

Table 4 Classification of the EU-28 by socio-economic implications in the optimistic employment scenario

Category	Country	Budgetary implication*	Poverty	Inequality
High performance^a	1. Slovenia	9%	8%	0.23
	2. Finland	11%	9%	0.24
	3. Belgium	8%	11%	0.22
	4. Croatia	8%	12%	0.27
Moderate performance^b	1. <i>Slovakia</i>	7%	8%	0.21
	2. <i>Czech Republic</i>	6%	8%	0.24
	3. <i>The Netherlands</i>	7%	9%	0.25
	4. <i>Denmark</i>	3%	10%	0.25
	5. <i>Luxembourg</i>	3%	10%	0.24
	6. <i>Austria</i>	7%	11%	0.25
	7. <i>France</i>	7%	12%	0.27
	8. <i>Poland</i>	5%	13%	0.28
	9. <i>Cyprus</i>	23%	11%	0.30
	10. <i>Ireland</i>	11%	12%	0.28
	11. <i>Greece</i>	9%	12%	0.31
	12. <i>Sweden</i>	3%	14%	0.26
	13. <i>Germany</i>	6%	14%	0.27
	14. <i>Portugal</i>	12%	14%	0.32
	15. <i>Spain</i>	19%	15%	0.31
	16. <i>Bulgaria</i>	11%	19%	0.36
Low performance^c	1. Malta	2%	15%	0.28
	2. United Kingdom	3%	15%	0.31
	3. Italy	7%	16%	0.30
	4. Hungary	5%	18%	0.29
	5. Lithuania	6%	18%	0.34
	6. Estonia	4%	19%	0.30
	7. Latvia	6%	20%	0.33
	8. Romania	2%	23%	0.33
Unweighted country average		8%	13%	0.28

Note: * (Change in government revenue – change in government expenditure) / Baseline government revenues; (a) performs better than average on all three indicators; (b) performs better than average on one or two indicators; (c) performs weaker than average on all three indicators. Countries performing above average on two indicators are in italics in the moderate-performance category. In the within-category rankings, social indicators are weighed over the economic indicators and the poverty rate over the Gini coefficient. This is a somewhat arbitrary valuation, and it is fair to say that moderate performers with less negative budgetary implications might have more resources to tackle poverty and inequality than countries confronted by particularly severe budgetary implications. Moreover, it is also necessary to consider budget balances (Appendix 2 in the original article) when examining economic performance in more detail.

5.2 ‘THIS TIME MAY BE A LITTLE DIFFERENT’ – EXPLORING THE FINNISH VIEW ON THE FUTURE OF WORK (SUB-STUDY II)

Sub-study II was designed to investigate whether public opinion drives social policy change in the context of the Nordic welfare model with respect to the digital economy. The sub-study explored the Finnish view on conceivable changes in the labour market and competing policy ideas framed as ‘measures to improve labour’s adaptability to the digital economy’. One purpose of this investigation was to identify whether the Finnish population follows for any of the ideal-type scenarios discussed in section 3.1.3.

Sub-study II examined the Finnish view on employment development with divergent predictions concerning the labour market in general. Since it was assumed that people may have difficulties in making predictions over decades (Pew Research Center, 2016), the given time frame of the predictions was ‘within the next ten years’ (i.e. by 2027, since the survey was conducted in August 2017). The Finnish view on conceivable changes in the labour market is summarised in Table 5.

Table 5 The Finnish view on conceivable changes in the labour market

Prediction	Agree	Disagree	No opinion
Technological unemployment will constitute a permanent problem.*	28%	71%	2%
Jobs will become more precarious.	85%	13%	2%
Number of self-employed persons will increase significantly.	82%	16%	2%
Changes in the labour market will lead to increased inequality.	69%	27%	4%
Wages will decline as a consequence of increasing competition over jobs.	49%	48%	3%

* Note: Recoded from the following presented options: 1) unemployment increases temporarily but stabilises with new jobs; 2) unemployment stabilises permanently at 1–10% higher than the current level; 3) unemployment does not increase with the automation of work tasks; 4) unemployment decreases with automation; 5) unemployment stabilises permanently at more than 10% the current level; 6) no opinion.

As can be seen from the table above, 71% of Finns do not believe that technological unemployment will constitute a permanent problem by 2027. Still, approximately one-third (28%) of the respondents are convinced that such a development will occur. Furthermore, the data suggest that almost half the population (45%) predict that technological unemployment will increase temporarily. The results indicate that the youngest age group, consisting of 15–24 old year respondents, has a particularly optimistic view on employment development in the long term. Only 1% of persons in this age group find a mass unemployment scenario plausible. Interestingly, a clear majority of Finns (81%) presume that implemented policies will shape employment development in the future.

To capture the Finnish view on the future of work in a more nuanced manner, the respondents were also asked to provide their views on other conceivable changes in the labour market. Taken together, the results show that volatility in the labour market is commonly expected to increase. The same optimistic outlook among the younger generation can be identified in the complementary labour market predictions, albeit with a clear majority of the youngest age group also predicting that precarious jobs, self-employment and inequality will increase as a result of the digital transformation. It is interesting that respondents unanimously assume that self-employment in particular will increase. Plausible explanations for this assumption might have to do with the growth in the number of self-employed persons in the 2000s and 2010s (Sutela and Pärnänen, 2018) and widespread entrepreneurial education in Finland. The polarised view on wage development could be partly explained by the internationally high unionisation rate in Finland (OECD.stat, 2020) and the broad coverage of collective agreements negotiated by the unions.

In the past years, particularly the taxi service Uber and food delivery services have been in headlines both in Finland and globally due to many uncertainties related to workers' rights. This was the case already in 2017, when the survey data for this study were collected. Despite the negative discussion concerning platform work, sub-study II indicates that Finns do not see banning platforms that weaken workers' rights a reasonable way to address the potential problems of platform work (only 28% of respondents agreed with the idea). Younger respondents, who expectedly have many experiences with platforms, are most firmly against banning platforms (18% agreed). Unsurprisingly, older generations had difficulties in forming an opinion on the issue (13% among the age group +65), although platform work was described for the respondents in a somewhat unambiguous manner (see Appendix 1). What also stands out in the results is that higher education decreases a willingness to ban platforms. In the Greater Helsinki area, where platforms have a more established role, people are less willing to ban them.

The results concerning public views on employment developments within the next ten years and other conceivable changes in the labour market suggest that a clear majority of Finns follow the conservative scenario that assumes volatility will increase in the labour market. This observation is further supported by the analysis of preferred policy ideas. While Finns support streamlining social policy, the most popular measures are rather conventional ideas, such as incentivising work, active finance policies, increasing activation measures and investing in education. With respect to unemployment benefits, respondents expressed a clear tendency to support moderate reforms (particularly among persons with a higher education). When it comes to the generosity of the benefits, maintaining the status quo received much support.

Although belief in technological unemployment is a statistically significant predictor of certain welfare attitudes, taken together the effect is notably small. The differences compared employment optimists are as follows: increasing

social skills and creativity in education (-6pp), entrepreneurial education (-13pp), activation measures (-14pp), using unemployment benefits as start-up grants (-8pp), lowering the level of unemployment benefits (-3pp), cutting the eligibility period for unemployment benefits (-2pp), benefit sanctions (-11pp) and limiting immigration (+14pp). To put it another way, the effect of employment pessimism on welfare attitudes should not be exaggerated, although more critical views on immigration in particular proved interesting and are in line with other studies exploring the connection between automation risk and populist right-wing support (Frey et al., 2018; Im et al., 2019). Surprisingly, belief in permanent technological unemployment does not predict higher support for the radical social policy ideas of providing a basic income, employee funds or work sharing often advocated by employment pessimists.

5.3 SOCIAL LEGITIMACY OF BASIC INCOME (SUB-STUDIES III & IV)

Given the focal role of universal basic income (UBI) in recent social policy debates, it is not surprising that the idea's social legitimacy has gained broad attention among scholars and many organisations. Just in Finland alone, at least fifteen independent surveys have attempted to identify public support for basic income since 2014 (Airio et al., 2015a, 2015b, 2015c, 2015d; Apunen et al., 2015; Airio et al., 2016; ESS Round 8, 2016; Haavisto and Heikkinen, 2017; Haavisto, 2019; Pulkka, 2019; Stadelmann-Steffen and Dermont, 2019; ePressi, 2019; Rincón and Hiilamo, 2019; Kangas et al., 2020). Measured support for the idea has varied between 20% and 79%.

The inconsistency in the measured support raises a question about the generalisability of the results. Despite the discrepancies, very little attention has been paid to the role of framing in basic income surveys. The purpose of sub-studies III and IV was to address this research gap. While sub-study III examines the framing effect in Finnish surveys via content and regression analysis, sub-study IV provides a review of 110 surveys from 35 countries and discusses Finland and the UK as case studies. The review of 110 surveys carried out between 1987 and 2019 found that support for basic income has been high over time and across countries, with the mean total support in the surveys being 54.9%. At the same time, total support has varied between 19% and 90%.

Both sub-studies highlight the crucial role that framing plays in legitimising the idea of basic income. Sub-study III indicates that frames that provide more information on how best to define basic income (i.e. explicit mentions of the unconditional and non-means-tested nature of the idea) on and the characteristics of the model (i.e. references to level, replaceable benefits or taxation) have a tendency to decrease identified support. At the same time, imprecise definitions of basic income and assumptions related to positive dynamic effects, such as an increase in employment, strengthen support for basic income. Unsurprisingly, assumptions related to negative dynamic effects are connected to lower identified support. References to an increase in taxes

in particular appear to weaken support. This is in accordance with previous welfare attitude studies in Finland, suggesting that survey questions concerning taxation are quite sensitive to the framing effect (e.g. Forma et al., 2007, p. 19).

Sub-study III explores the socio-demographic predictors of support for different framings using regression analysis and data from the *Finnish Views on the Future of Work in Digital Economy 2017* survey (Pulkka and Hiilamo). The survey studied support for basic income and the cognate idea of participation income using seven divergent frames (see Appendix 1 for exact wordings). The aim of providing divergent frames was to examine how a precise definition of basic income and specified models affect the identified support for it. Identified support for six divergent basic income frames varied between 20% and 51%, while a participation income frame garnered a dedicated support rate of 78%.

Results from the regression analysis show that with the exception of a household's income level, the predicting power of socio-demographic characteristics is highly dependent on framing. That is to say, sociodemographic characteristics explaining support can be expected to vary from one model to another. For instance, being unemployed does predict support for basic income, but only for frames that refer to a model increasing the level of social benefits. Similarly, while support for a basic income corresponding to the current net level of basic security benefits gathers dedicated support (72%) among the age group 15–24, only 14% of respondents support for a full basic income of €1000 a month. Sub-study IV found a similar dynamic with the UK data. The sociodemographic determinants of support in Finland are presented in Table 6.

The findings of both sub-study III and IV suggest that studies measuring support for basic income with only one type of framing do not provide definitive conclusions on the level of public support for basic income nor the sociodemographic determinants predicting such support. While studying support for the general characteristics of the idea (most importantly, unconditionality) may provide interesting insights into the feasibility of basic income, identifying such 'qualified support' (Stadelmann-Steffen and Dermont, 2019, p. 10) does not provide much information on the social legitimacy of a concrete model that might actually be implemented. Therefore, one can argue that recognising the multidimensional nature of basic income is inevitable when designing basic income surveys and interpreting the results. Given the great variations in measured support between divergent models, political actors are expected to be confronted with great difficulties in creating united support for the policy idea.

Since the debate on the future of work has increased interest in basic income, it is plausible that the future framing ('measures to improve labour's adaptability to the digital economy') used in the *Finnish Views on the Future of Work in Digital Economy 2017* survey may have affected the results.

However, considering that the level of support for all basic income frames used in the study was relatively low in comparison to competing ideas studied in the survey, the framing may not have boosted the support much, if at all. Interestingly, technological anxiety (predicting permanent technological unemployment) does not explain greater support for basic income. In other words, not even the Finnish employment pessimists consider basic income an ‘idea whose time has come’ (see Lansley and Reed, 2016).

The relatively low level of support for divergent basic income models (20–51%) suggests that public support for basic income does not question the guiding principles of targeted, conditional and means-tested income security in Finland. Moreover, the high level of support identified for a participation income whose framing emphasised conditionality – albeit a rather mild version of it – provides further evidence that support for income security will remain conditional in the near future. As sub-study IV shows, the case is rather similar in the UK (support for divergent frames vary between 22% and 62%). Nevertheless, given that a weaker socio-economic position (i.e. living in a low-income household, or being unemployed, young or a woman) predicts greater support for certain models, it is possible that support for an unconditional basic income might strengthen should the labour market become more volatile in the digital economy.

Table 6 Sociodemographic determinants predicting support for various basic income framings

	Partial basic income ^a of €560	Partial basic income ^a > €560	Partial basic income ^a < €560	Full basic income ^b 1500 €	Partial basic income ^a 1000 €	Full basic income ^b 1000 €	Participation income ^c
Support (Net support) (n=1004)	51% (+30)	33% (-6)	27% (-10)	25% (-41)	24% (-27)	20% (-31)	78% (+71)
Gender: female	.087*	.152***	-	-	.128***	-	.110**
Age	-.097*	-	-	-.092*	-	-.100*	-
Household's income (Scale 1–7)	-.187***	-.185***	-	-.179***	-.124**	-	-
Party pref.: vas	.146***	.190***	-	.095*	.125***	-	-
Party pref.: vihr	.111**	-	-	-	-	-	-
Party pref.: kok	-	-.124***	-	-	-.100*	-	-
Party pref.: kesk	-	-	-	-	-	.081*	-
Party pref.: non-parliament party	-	-	-.079*	-	-	-	-.190***
Lower clerical worker	.114**	.081*	.094*	-	-	-	-
Upper clerical worker	-	-	-	-	-	.083*	-
Entrepreneur	-	-	-	-	-	.108**	-
Pupil/student	-	-	.151***	-.156***	-	-	-
Unemployed	-	.152***	-	.147***	.211***	-	-.176***
Employment pessimism (Scale 1–5)	-	-	-	-	-	-	-.097*
Constant	3.555	2.846	2.771	3.291	2.365	2.765	3.876
R ²	.104	.166	.031	.075	.126	.026	.095
N	919	920	913	918	927	918	957

- P > 0.05 * P ≤ 0.05, ** P ≤ 0.01, *** P ≤ 0.001

^a Maintains eligibility for housing allowance and earnings-related benefits.

^b Withdraws eligibility for housing allowance and earnings-related benefits.

^c Eligibility for social assistance and basic security benefits requires participating in activation measures that can be defined by the unemployed in a more autonomous manner than currently (e.g. voluntary work, studying, caring for close relatives or leisure activities).

5.4 A FREE LUNCH WITH ROBOTS – CAN A BASIC INCOME STABILISE THE DIGITAL ECONOMY? (SUB-STUDY V)

To find a ‘policy window’, policy ideas need to be economically feasible. The main aim of sub-study V was to analyse the feasibility of universal basic income (UBI) from an economic standpoint. In other words, the study examined arguments identified in basic income literature to assess whether the idea would be an efficient way of guaranteeing an adequate income for labour market outsiders. As discussed in sub-study V, the efficiency argument in favour of basic income relies on four factors, which are believed to enhance labour market outsiders’ livelihood. They are as follows:

- 1) Implementing a full basic income (i.e. raising the level of social security by replacing all other benefits with a single universal payment that would alone guarantee an adequate income),

2) Reducing poverty traps (i.e. making work always pay by abandoning means testing),

3) Strengthening the negotiation power of precarious workers (i.e. facilitating wage development via a genuine exit option from the labour market)

4) Increasing labour market flexibility (i.e. raising work incomes by reducing bureaucracy, making it easier to work on a part-time basis, increasing self-employment and facilitating re-training in the case of an actualised or increased risk of unemployment).

From a technical standpoint, the simplest way to increase the disposable income of labour market outsiders, and the unemployed in particular, is to increase the level of social benefits. While static microsimulation calculations carried out in several countries (e.g. Kangas and Pulkka, 2016, pp. 179–212/Kela, 2016, pp. 16–49; Martinelli, 2017, 2020; OECD, 2017; Martinelli and, O'Neill, 2019; Morgan et al., 2019; Viitamäki, 2019) have proved that a basic income is an economically viable policy if it does not substantially decrease labour supply (and hence, state revenue), microsimulations have also shown that a substantial increase in the current benefit levels with a revenue neutral basic income requires unfeasibly high marginal tax rates (Kangas and Pulkka, 2016, pp. 179–212/Kela, 2016, pp. 16–49; Martinelli, 2017).

Basic income advocates have proposed several innovative funding options ranging from money creation to robot taxes to relieve the income taxation burden (see, e.g. Berg et al, 2016; Andrade et al., 2019). Regardless of the chosen future scenario or the benefit system put into place, personal income tax will most likely still play a significant role in the years to come. Moreover, from the efficiency point of view, it is necessary to note that alternative funding resources would also strengthen the funding of current systems – not only the funding of basic income.

Given that the activation paradigm has emphasised the significance of work incentives in social security reforms, it is understandable that basic income advocates have been willing to frame their proposal as a pragmatic measure to reduce or even eradicate poverty traps. Especially in Finland, this strategy has had concrete political manifestations. Framing the policy as a compatible choice within the activation paradigm has not only made the idea of a basic income mainstream (Perkiö, 2019), but it can also be identified as one of the key factors behind the world's first nationwide basic income experiment carried out in Finland in 2017–2018 (De Wispelaere et al., 2019).

Intuitively, it may sound reasonable that monetary incentives to participate in the labour market would automatically improve if beneficiaries would remain eligible for their benefits. However, microsimulation calculations show that the reality is somewhat different (Kangas and Pulkka, 2016, pp. 179–212/Kela, 2016, pp. 16–49). As pointed out above, full basic income models face serious financial constraints. Due to required high marginal tax rates, work incentives do not improve in a logical manner. At the same time, partial models need to

be supplemented with other benefits, most importantly housing allowances and earnings-related benefits, if the level of social security is to be maintained. As highlighted in sub-study V, improving work incentives is difficult if not impossible with both full and partial models.

Although the microsimulation results from Finland cannot automatically be transferred to other countries, partial models also face the same dynamics elsewhere. A revenue-neutral, partial basic income that retains or improves the level of social security is not a particularly efficient measure for improving work incentives. Martinelli (2017) has shown, based on microsimulation calculations in the UK, that certain models could improve incentives among lower income quintiles, but they would also imply losses for a great number of poorer households.

The concept of decommodification introduced by Esping-Andersen (1990, pp. 35–54) has played an important role in comparative welfare state studies in the past few decades. The Marxist concept refers to an observation according to which labour is a commodity that is dependent on income from the labour market. The welfare state decreases this dependency by providing welfare services and benefits for labour. Again, the decommodification rate describes differences in the generosity of the welfare state.

Following this framework, particularly left-leaning basic income advocates have been eager to emphasise that the unconditional nature of basic income would enable precarious workers to refuse weak conditions of employment or even negotiate better ones (e.g. Wright, 2006). According to Esping-Andersen's index, the decommodification level is dependent on the replacement rates, coverage and conditions of the social benefits. When market-dependency is discussed, it is also necessary to consider the coverage of welfare services. In the case of basic income, both the level of income and supplementing the benefits will also be of importance. It is rather clear that the most liberal versions of basic income, which aim at replacing the welfare state, would not decrease the market dependency of the most vulnerable. However, if implementing a basic income would increase the disposable income of labour market outsiders without weakening welfare services, the decommodification framework suggests that the negotiating power of the outsiders might well be strengthened.

Still, as pointed out in sub-study V, it is justified to question whether even an adequate, unconditional money transfer alone would strengthen the negotiating power of outsiders who may also have skill shortages and face fierce competition in the labour market. Birnbaum and de Wispelaere (2020) have argued that given existing 'structural' conditions, the most vulnerable workers in the labour market might just end up fully exiting the labour market instead of being able to negotiate better conditions. The authors (2020, pp. 13–14) argue that particularly in the context of the volatile digital economy, the employer might just replace the striking worker with another worker instead of paying better wages.

'Bureaucracy traps' resulting from explicit targeting, conditionality and means testing – e.g. inappropriate meeting and reporting obligations for beneficiaries, delays in benefit payments, recoveries of overpayments or falling through the safety net when combining paid work and self-employment – constitute challenges for labour market flexibility should non-standard employment increase as a result of digital transformation. Still, identifying 'inappropriate' bureaucracy can be somewhat difficult because one purpose of benefit bureaucracy is to guarantee that beneficiaries are treated equally. Moreover, in the case of activation measures, it is also assumed that the provided services and motivational effect of sanctions will increase the labour supply, and ultimately, the well-being of beneficiaries (e.g. Kensworthy, 2010).

Sub-study V concludes that although a basic income clearly has the potential to increase labour market flexibility, it is an empirical question as to whether such flexibility would fit its purpose. It is evident that besides the potential benefits, there are certain risks involved in the 'full flexibility' provided by a basic income. First, it is plausible that certain beneficiaries would benefit from participating in activation measures. Second, from the perspective of productivity and guaranteeing an adequate income for individuals, subsidising self-employment is not necessarily the most economically efficient alternative to unemployment or precarious work. Third, although adult education may play a more crucial role in the future, it remains unclear whether a basic income is the most efficient measure to facilitate it. Moreover, there is always the risk that certain individuals would prioritise studying over participating in the labour market as a long-term choice, which would pose challenges for the social legitimacy and economic feasibility of basic income. Taken together, and based on the available evidence, a basic income is not necessarily the most efficient policy to guarantee an adequate income for labour market outsiders within the context of the digital economy.

6 CONCLUDING REMARKS

6.1 SUMMARY OF THE FINDINGS

The objective of sub-study I was to illustrate social and economic pressure for social policy change in divergent ideal-type scenarios. To do so, the sub-study assessed the socio-economic implications of a technological mass unemployment scenario and an optimistic scenario for the European Union member states and the United Kingdom (i.e. the ‘EU-28’). The study developed a novel methodological approach combining automation risk estimates, a micro imputation technique and the European Union microsimulation model EUROMOD. The hypothetical counterfactual scenarios were constructed based on two ideal-type scenarios deriving from the digital economy debate. The results of this investigation showed that resilience to technological unemployment varies substantially between European countries. While Nordic welfare states together with France can adapt to negative employment shocks with less socio-economic costs, Eastern and Southern European welfare states would be more vulnerable in the event of permanent technological unemployment. However, the negative impact of mass unemployment would be substantial throughout the EU-28 countries and would most likely require the member states to adopt harsh austerity measures to tackle considerable budget deficits. This again could weaken the social indicator results.

Investigation of the optimistic hypothetical scenario indicated that European welfare states would experience a substantial budgetary gain from major reductions in unemployment. However, while the static budgetary impact would be considerable throughout the EU-28 countries, the static positive impact on social indicators would be relatively moderate in comparison to the major negative impact of increased unemployment in the pessimistic scenario. Still, if the digital transformation led to a major reduction in unemployment, the European Union member states would have clearly better fiscal resources to tackle poverty and inequality than they do currently.

The aim of sub-study II was to examine whether public opinion drives social policy change in the context of the Nordic welfare model. This was studied by conducting a population-level survey, which focused on Finns’ views on conceivable changes in the labour market within the next ten years and preferred policy ideas for increasing labour’s adaptability to the digital economy. The study showed that the Finnish view on the future of work is somewhat optimistic, albeit people do expect volatility to increase in the labour market. A clear majority believe that the number of precarious jobs and self-employment will increase in the future. Hence, as the title of the sub-study suggests, there are certain cracks in the optimistic outlook. Moreover, it should not be ignored that one-third of Finns do predict that technological unemployment will constitute a long-term problem.

The research also revealed that a clear majority of the Finnish population support rather conventional policy ideas. Views on radical ideas such as basic income, employee funds or work sharing remain polarised. These findings further suggest that most Finns believe in following the conservative ideal-type scenario. At the same time, it is necessary to note that Finns do expect that reforms are required to improve labour's adaptability to the impending changes. Taken together, the findings suggest that public opinion does not drive major change in the principles of social policy in Finland.

Sub-studies III and IV were designed to assess the social legitimacy of one of the most discussed policy ideas in the past decade – universal basic income (UBI). The objective of the sub-studies was to illustrate the fragility of public support for social policy ideas that are discussed at an abstract level. This investigation explored basic income surveys with divergent frames utilising content and regression analysis. While sub-study III focused on basic income surveys in Finland, sub-study IV analysed the cases of Finland and the UK and also conducted a meta-analysis of 110 surveys from 35 countries. Determinants of support for divergent frames in Finland and the UK were analysed by exploiting data gathered via surveys designed by the authors. In the Finnish case, this refers to the *Finnish Views on the Future of Work in Digital Economy 2017* (Pulkka and Hiilamo) survey data, also exploited in sub-study II.

Content analysis of seven Finnish and six British nationally representative basic income surveys showed that the divergent frames used in the surveys explain the great variation in measured support. In brief, a detailed definition of basic income and its characteristics decreases identified levels of support. Further, loaded framings, such as references to increases in taxation or negative dynamic effects, decrease support. At the same time, a vague definition of basic income and the model together with favourable assumptions concerning labour market activity are likely to increase identified levels of support. Regression analysis exploiting the Finnish and the British survey data collected by Pulkka and Chrisp indicated that the determinants of support for basic income are also dependent on the chosen frames. Moreover, the Finnish survey data suggested that support for alternative ideas to reforming social security legislation is considerably higher than support for concrete basic income models. To conclude, sub-studies III and IV suggested that the social legitimacy of concrete basic income models is not strong enough to make basic income a feasible policy idea in Finland or the UK in the near future.

The purpose of sub-study V was to strengthen evidence-informed debate on the feasibility of universal basic income. To do so, sub-study analysed the economic efficiency of basic income to increase disposable income of the unemployed, underemployed and precarious workers (i.e. labour market outsiders) in the digital economy. Besides theoretical deductions, the feasibility analysis assessed the plausible cost and work incentive effects of

basic income based on microsimulation results from Finland. The study found that implementing a full basic income – a model that alone could guarantee adequate income for its recipients – would most likely not be economically feasible. The study also concluded that, contrary to common expectations, realistic revenue-neutral basic income models do not improve work incentives to participate in the labour market in a coherent manner. Although certain basic income models could decrease the dependence of labour market outsiders on employers, there is no unambiguous evidence on whether a basic income would *de facto* strengthen the negotiating power of precarious workers. Reduced bureaucracy when consolidating work income and social benefits or starting a business could enhance the economic position of labour market outsiders, but in the light of available evidence, the impact is unclear. In brief, the efficiency argument for basic income is confronted with serious empirical and theoretical complications.

6.2 DISCUSSION

6.2.1 SOCIO-ECONOMIC CONDITIONS AS A DETERMINANT OF SOCIAL POLICY IN THE DIGITAL ECONOMY

Socio-economic conditions such as the level of GDP and unemployment are established control variables in comparative welfare state studies. Hence, it is reasonable to assume that changes in a country's socio-economic situation may play a crucial role in explaining social policy change in the digital economy. To test this assumption, sub-study I examined the socio-economic implications of two divergent ideal-type employment scenarios for the EU-28 countries.

Most importantly, the microsimulations emphasised the pivotal role of positive employment developments on a socio-economically sustainable digital transformation. Although a mass unemployment scenario is not the most probable scenario in the light of available evidence (section 3.1), the simulated scenario shows that there are major socio-economic risks involved should unemployment – technology-induced or not – increase substantially in Europe. Given that the social and economic developments will also be shaped by the COVID-19 crisis, climate change and demographic challenges, the European Union should pay special attention to promoting employment in the coming years. Yet, as negotiations over the COVID-19 recovery package (European Parliament, 2020) have illustrated, finding effective measures to tackle the socio-economic issues deriving from cross-national economic shocks can be quite challenging.

The microsimulations also highlighted major differences between the EU member states in terms of their resilience to technological unemployment. Moreover, sub-study I highlighted that substantially increased unemployment would widen the gap between the strong and weakly performing member states. This finding raises concerns about member states whose socio-economic performance is comparatively weak in the baseline situation. If the gap in socio-economic indicators between the EU member states widens

further, it could constitute a major risk for the cohesion of the union. Given the abovementioned future challenges requiring active measures at a supranational level, cracks in the cohesion of the EU is without a doubt an undesirable future view.

While the simulated unemployment scenario illustrated the risks of technology-induced (mass) unemployment, the results of the optimistic scenario, on the other hand, showed that a substantial reduction in unemployment would provide much-needed fiscal resources for new social policy investments in those countries struggling with high unemployment in the current situation. Tackling unemployment alone may not reduce poverty or economic inequality considerably if working conditions in the labour market are weak, but from a budgetary perspective the implications of substantially reduced unemployment would be quite beneficial for many EU member states. This observation further stresses the urgency of promoting effective employment policies in response to future digital transformation.

The implications of the simulated scenarios for social policy are clear-cut. If technological mass unemployment should constitute a permanent problem in the EU, preventing poverty and inequality would require major investments in social policy. At the same time, it is evident that the fiscal resources for such investments would be scarce. Although adopting unconventional monetary measures, such as direct central bank funding or 'functional finance' (Lerner, 1943), might change the available policy options, under the current economic paradigm harsh austerity measures might be the reality in many countries. Hence, permanent mass unemployment might imply a farewell to social Europe. If positive spillovers of technological change boosted employment in the EU, the available policy options would obviously be quite different. Considering the socio-economic implications of the simulated scenarios, the current debate on the future of work and social policy appears somewhat paradoxical. While the pessimistic commentators predicting technological unemployment recommend investments requiring major fiscal resources, advocates of the optimistic scenario favour moderate reforms.

The simulated scenarios in sub-study I were based on the two ideal-type scenarios discussed in section 3.1.3. It is, however, plausible that the impact of the digital transformation will be much less dramatic. In such a case, the socio-economic conditions of future social policy may not differ much from the current situation, although increased volatility in the labour market might increase the number of labour market outsiders. That said, and while writing this article in the middle of the COVID-19 pandemic, it is likely that increased unemployment, poverty and economic inequality will pose a major global challenge for social policy in the coming years regardless of how the technological changes develop. If digital transformation reinforces the negative socio-economic impact of the pandemic, welfare states may witness harsh times – a 'double disruption', as put in a recent World Economic Forum report on the future of jobs (WEF, 2020).

6.2.2 THE FINNISH VIEW ON THE FUTURE OF WORK AND SOCIAL POLICY

Despite the relatively widespread discussion on the digital transformation, an impending ‘robocalypse’ was not the number one public concern in Finland in autumn 2017. Although sub-study II showed that a clear majority of the Finnish public assumes that the labour market will become more volatile, the view is somewhat optimistic in the big picture. Surprisingly, the Finnish view on labour market developments on a general level did not differ in the responses from the optimistic views reported in previous Finnish surveys (*Helsingin Sanomat*, 2016; Solita, 2017) exploring people’s views on their own jobs. Taken together, the evidence from the Finnish surveys suggests that a clear majority of Finns not only believe that their own jobs are safe, but that employment in general will develop positively in the long term. Interestingly, studying the public view with more nuanced employment predictions indicated a more optimistic outlook on the future labour market in comparison to the Eurobarometer survey (EU, 2017), which referred to conceivable changes in a more unambiguous manner. According to the Eurobarometer data (EU, 2017, p. 80), two-thirds (66%) of Finns believed that ‘due to the use of robots and artificial intelligence, more jobs will disappear than new jobs will be created’.

Although sub-study II indicates that technological unemployment may not be the most alarming issue in the minds of most Finns, one-third of the population still expects technological unemployment to constitute a permanent problem. This viewpoint, when taken in connection with the common expectation that the labour market will become more volatile, implies that the public view of the future may well affect the dynamics of the future labour market. As Urry (2016, p. 189) has highlighted, future visions are at least partly performative and can prove to be self-fulfilling prophecies. Previous studies (e.g. Stephens, 2004) also suggest that expectations of job losses may have implications for people’s behaviour in the labour market. Still, in the aftermath of the COVID-19 crisis it is presumable that digital transformation will remain a secondary concern when it comes to people’s labour market expectations or policy preferences – unless the crisis leads to an acceleration of the transformation.

Since this thesis has explored the implications of technological change for social policy, one of the main interests of sub-study II was whether negative perceptions of the future predict higher support for radical policy ideas. In light of the digital economy debate, one could assume that individuals, who predict permanent technological unemployment would also favour policies that guarantee an adequate income regardless of one’s labour market status. The predicting power of employment pessimism is, nevertheless, rather insignificant. Perhaps surprisingly, framing policy initiatives as ‘measures to improve labour’s adaptability to the digital economy’ do not boost support for unconventional measures on a general population level. Taken together, studying Finnish social policy attitudes with a digital economy framing

suggests that public opinion will not increasingly demand the implementation of radical policy ideas in the future. As discovered in previous studies (see, e.g. Boeri et al., 2001), people tend to support the status quo when it comes to reforming social policy – including within the context of the digital economy.

Since social policy attitudes can evolve over time and are dependent on contextual factors, such as the level of unemployment (Blekesaune and Quadagno, 2003), it is important to bear in mind that the survey year (2017) represented a somewhat stable and positive situation in the Finnish labour market. As a result of the COVID-19 crisis in particular, the public view on suitable social policy measures may have changed as more people have become aware of the potential socio-economic risks deriving from economic shocks and a precarious employment situation. It is also necessary to note that public opinion can be greatly influenced by the framings that policymakers choose to adopt when promoting social policy measures, as shown in sub-studies III and IV. In the aftermath of the crisis, it is presumable that politicians will favour a crisis discourse when both promoting austerity policies and social investments. This is likely to have concrete implications for the social legitimacy of competing policy ideas.

6.2.3 THE FUTURE OF INCOME SECURITY?

Due to its focal role in recent social policy debates, this thesis has examined the feasibility of universal basic income (UBI) by focusing on its social legitimacy (sub-studies III & IV) and economic efficiency (sub-study V). The cost and work incentive analyses, based on microsimulations, showed that revenue-neutral basic income models fail to consistently reduce poverty traps. Considering the crucial role of the work incentives discourse in the basic income debate (e.g. Perkiö, 2019), this is a major complication for the feasibility of the idea. The unfavourable cost and work incentive calculations, combined with fragile public support, may impede the chances of basic income finding a ‘policy window’ in the near future.

Furthermore, the lack of evidence concerning the labour market effects of basic income poses another obstacle for the political feasibility of basic income. If a policy produces perverse or counterproductive effects, it can be presumed that the policy will not gather dedicated support from strong political coalitions or the public. In the case of basic income, its labour market impacts play a particularly crucial role since the key argument against unconditional basic income concerns its potential negative effects on employment (e.g. White, 1997). Under the current activation paradigm (e.g. Bonoli, 2010; Kenworthy, 2010), it is not expected that unconditionality could become a politically feasible idea without creating enough representative, randomised, controlled trials showing positive, or at the very least, neutral effects on labour supply. Thus far, there has not been enough political commitment for such trials. Although the Finnish basic income experiment (2017–2018) showed a neutral employment effect among the study population, mainly consisting of long-term unemployed (Kangas et al., 2020),

the exclusive study population, the economically unrealistic model and simultaneous unemployment benefit reforms for the control group narrowed the representativeness of the results (De Wispelaere et al., 2019).

Apart from the revival of the basic income discussion, concrete proposals to reform income security as a means of addressing future challenges have been sparse – apart from one competing idea, the UK’s new working-age benefit Universal Credit (UC). UC has gathered attention in the past few years, and it has been framed as *the* alternative to basic income in many discussions (see, e.g. Pareliussen et al., 2018). UC, first announced in 2010 and still in its implementation phase, aims to make the benefit system simpler, improve work incentives, smooth the transition to work and support people in becoming economically independent. In practice, UC replaces six existing benefits, introduces a constant taper rate of 63% and collects wages data directly from employers. The scheme includes work allowances for certain groups of people and additions for children, disability and housing. (e.g. Millar and Bennett, 2017.)

Simplifying complex benefit systems into a single working-age benefit that covers the self-employed and makes the consolidation of work income and benefits more understandable are reasonable first steps in making working-age benefits better fit their purpose. Given that digitalisation facilitates exploiting real-time information on work income, technical conditions for more flexible means testing should be made available in many countries.

The key features of the UC’s design – combining benefits, introducing a constant taper rate and utilising digital systems to automate means testing – are somewhat easily importable to other countries and have been widely shared in the UK. However, certain contradictory features also characterise the UK’s reform effort. Such features include household-based means testing, more extensive work requirements and waiting periods of five weeks at the start of a claim. These features reflect the Anglo-Saxon workfare tradition and explain much of the criticism that the scheme has faced in the UK. It has, for instance, been argued that household-based means testing discriminates against women by design since it ignores work allowances for second earners (mainly women), entrenches traditional divisions of labour by dividing a couple with children into a ‘main earner’ and ‘main carer’, and penalises single parents under 25 years of age by providing 25% lower benefits. Moreover, most of the claimants subject to the benefit cap are women, and the rate of sanctioning for single parents is high due to reasonable work restrictions, such as a lack of childcare. (Garnham, 2018.) Besides the criticism concerning undesirable gender impacts, the criterion of harsh in-work conditionality, i.e. requirements to search and apply for additional work to meet an earnings threshold, has been questioned for being unfair and ineffective (Abbas and Jones, 2018).

Due to its contradictory features and major implementation problems, the scheme has faced serious criticism for weakening the situation of many low-income households (e.g. BBC, 2020). However, since the criticism can mainly

be traced to freezing the value of payments and cuts in work allowances, the scheme's workfare features and its implementation problems, it is reasonable to argue that the single benefit-single taper rate structure itself appears justified. If the Anglo-Saxon parameters, i.e. the low level of benefits, strict conditionality and fierce sanctions, are ignored, then the UC's main principles might facilitate a feasible and gradual strategy for providing income security, one that reduces harmful bureaucracy and enhances individuals' opportunities to be guaranteed an adequate livelihood based on their own activities.

Despite the clear potential of a single working-age benefit to streamline social security systems, the promises of considerably improved work incentives may be far-fetched. Although incentive structures might be more consistent than in the case of basic income (Pareliussen et al. 2018), improving work incentives cannot be the primary motivation for a politically challenging, structural social security reform. Implementing a single taper rate might make work incentives more transparent for the recipients, but it is not expected that this alone could considerably improve monetary incentives. Heikki Viitamäki, one of the authors of the OECD report on assessing the key features of UC (Pareliussen et al., 2018), has concluded the following in a recent study on basic income: Building a tax-benefit system that ensures work will always pay is probably practically impossible. It would require considerable change in the essential structures of the system, above all to the benefit levels and eligibility criteria (Viitamäki, 2019, p. 67). In other words, improving work incentives without diluting the level of social security or lowering income taxation is practically impossible.

Although taking gradual steps towards a single benefit/single taper rate structure seems a more feasible strategy to reform social security than implementing a universal basic income, adopting such an approach is not necessarily a deathblow to basic income. Since the structure resembles the features of a negative income tax (apart from conditionality), advocating gradual tax-benefit integration might facilitate a 'low road' to basic income (Jordan, 2012). At the end of the day, what makes the difference is whether the benefit is conditional or not.

6.2.4 THE IMPLICATIONS OF THE FUTURE OF WORK FOR SOCIAL POLICY

The future of work and its implications for social policy are determined by several factors, which interact with each other and form complex interdependencies. In other words, it is evident that the future will not solely be shaped by technological development. This also makes long-term forecasting a 'hazardous activity', as put by Kaushik Basu, a former chief economist of the World Bank (World Bank, 2013, p. xi). Obviously, the evidence deficit concerning the *de facto* automation potential of digital technologies and AI further increases the uncertainty.

The fundamental uncertainty involved in anticipating the future was highlighted throughout this thesis. The thesis has demonstrated that several assumptions are needed to even provide educated guesses concerning the implications of the future of work for social policy. Besides the complexity of predicting employment developments in the future, social policy change itself is a multidimensional process, and it is difficult to deduce from previous literature what factors might play the most crucial role in the impending digital transformation.

Being aware of the fundamental uncertainty underlying such a transformation, this thesis has focused on empirical observations and adopted a mixed-methods approach. The microsimulation method utilised here facilitated developing an approach to study the socio-economic conditions of several counterfactual scenarios based on EU-SILC microdata, while the unique survey data collected for this thesis shed some light on Finnish social policy preferences in the context of the digital economy. Moreover, a feasibility analysis concerning the idea of a basic income was possible by exploiting the survey data and previous cost and work incentive microsimulation calculations conducted in Finland.

Based on the empirical work done in this thesis, the following conclusions can be drawn regarding the implications of the future of work for social policy change in the digital economy. First, should technological mass unemployment constitute a permanent problem in Europe, welfare states across the EU-28 would face a severe socio-economic crisis. While pessimistic commentators often call for radical ideas, such as a basic income, to tackle socio-economic issues resulting from technological unemployment, the budgetary reality informing pessimistic scenarios might in fact force many countries to implement harsh austerity measures – particularly in countries confronted with major budget deficits in the baseline situation. On the other hand, if the digital transformation substantially improves employment in countries struggling with high unemployment, the budgetary implications for social policy change would be the opposite. Hence, facilitating a positive employment development in Europe should be a top priority for the impending digital transformation.

Second, the case study of Finland indicates that public opinion supports maintaining the status quo and moderate social policy reforms. The results also suggest that technology anxiety may not considerably affect social policy change since pessimistic views are relatively insignificant predictors of social policy preferences. However, it is necessary to note that the COVID-19 pandemic may have changed public perceptions regarding the role of social policy in economic shocks. Additionally, if the digital transformation causes labour market disruptions in the coming years, it is plausible that public opinion will develop simultaneously. Still, it is somewhat safe to say that the Finnish public will not enthusiastically opt for radical social policy ideas should the socio-economic conditions remain relatively unchanged.

Third, the case studies of Finland and the UK suggest that despite the global hype, the social legitimacy of an unconditional basic income may not be firm enough for making the case for a basic income in the shorter term. Furthermore, the great variance in measured support depending on how basic income is framed indicates that mobilising a united political movement for a concrete basic income model appears difficult. Additionally, apart from fragile public support for the idea, available evidence suggests that basic income would not necessarily be an economically efficient manner to reform income security as a means of adapting to the digital economy. Therefore, it is expected that policymakers will seek other ideas in their social policy efforts. As discussed above, Universal Credit-type single benefit-single taper rate benefit structure is currently the most competitive idea to basic income.

6.3 CRITICAL REFLECTIONS

The most important limitation of this thesis lies in the fact that the study only focused on specific determinants of social policy change. If the debate is to move forward, a better understanding of complementary determinants needs to be developed. This thesis has only provided brief remarks on the role of institutions and power resources in policy change but, considering the wealth of literature focusing on such determinants, it is evident that they will need to be discussed in more detail in the future. Most importantly, the interconnectedness of competing determinants and different policy feedback mechanisms (e.g. Béland, 2010) needs to be further explored. Alongside analyses concerning the role of institutions and power resources, studying policy diffusion and transfer (e.g. Shipan and Volden, 2008; Marsh and Sharman, 2008) might provide one fruitful area of future research. Additionally, since the significance of policy experimentations may increase in the future, exploring the implications of recent social policy experiments for implemented policies is important in facilitating a better understanding of what drives social policy change in the digital economy.

Although this thesis has analysed ideas as a potential determinant of social policy change, the focus was limited to the feasibility analysis of universal basic income (UBI). As discussed in section 3.3, complementary ideas such as guaranteed job programmes, work sharing and employee ownership have also been discussed as alternatives and supplements to basic income in recent debates. The feasibility of these ideas could be analysed in more detail. It is also clear that studying the role of ideational processes cannot be reduced to feasibility analyses.

It is necessary to remember that the generalisability of the results is subject to certain limitations. First, despite the meta-analysis conducted in sub-study IV, the analysis concerning public opinion primarily focused on Finland and the UK. Although the results may indicate general trends in public opinion in advanced welfare states, they cannot automatically be interpolated to other countries. Further comparative research is required to understand better the

role of public opinion as a determinant of social policy change in the digital economy.

This thesis utilised a mixed-methods research setting consisting of microsimulation, a micro imputation method, a survey methodology and qualitative content analysis. Adopting a mixed-methods approach reflects the fact that conducting a future-oriented social policy analysis requires methodological flexibility. Most notably, the lack of established future study methods in the discipline of social policy was illustrated in sub-study I, which developed a novel methodological approach to study divergent employment scenarios.

As discussed in the original article, the imputation method utilised in sub-study I leads to certain inaccuracies in the results, and hence, the microsimulation results are more illustrative in nature. Moreover, the EU-SILC data for the year 2016 (and 2015 in the case of Luxemburg and the UK) and the tax-benefit systems for the year 2018 imply that the results would have been quite different if the analysis had been carried out in the aftermath of the COVID-19 crisis. Understandably, the limitation of out-dated data is always present when microsimulation methods are used in empirical studies.

It should also be made unequivocally clear that simulating a mass technological unemployment scenario does not imply that such a development is as probable as other ideal-type scenarios identified in recent debates. In fact, in the light of evidence concerning previous technological transformations, the likelihood of such a scenario seems rather small. However, as highlighted in the original article, utilising the applicable automation risk estimates in the simulation illustrated relative between-country differences in the resilience of European social policy systems to technology-induced unemployment. Relative between-country differences would not change when using estimates that are more moderate if we assume that the estimates reveal something about the automatability of different occupations. At the same time, other estimates based on the ISCO-08 occupational classification are needed if one wants to construct scenarios that would also consider the political factors (section 3.1.2) shaping the future of work. Moreover, it is evident that further interpretative analyses are needed to facilitate a better understanding of the differences in socio-economic adaptability of European welfare states to technology-induced employment shocks.

Given the data constraints concerning digital transformation and the complexity of trying to anticipate the future, it is understandable that the discipline of social policy has not been able to make many empirical contributions to the future of work debate. This thesis has addressed this problem, but obviously one thesis cannot alone unravel all the mysteries surrounding the topic. Several questions still remain to be answered. Still, it is hoped that this work contributes to a better understanding of what may drive social policy change in the digital economy.

REFERENCES

- Abbas, J. and Jones, K. (2018), 'In-work conditionality is based on weak evidence – but will the policy sink or swim?', *British Politics and Policy Blog*, The London School of Economics and Political Science, <https://blogs.lse.ac.uk/politicsandpolicy/in-work-conditionality-public-opinion/>, [accessed 21.9.2020].
- Acemoglu, D. and Restrepo, P. (2020), 'Robots and jobs: evidence from US labor markets', *Journal of Political Economy*, 128(6), 2188–2244.
- Airio, I., Kangas, O., Koskenvuo, K. and Laatu, M. (2015a), 'Kansa kannattaa perustuloa 1/3: Perustulolla suuri kannatus. *Kelan Tutkimusblogi* 29.9.2015, <http://blogi.kansanelakelaitos.fi/arkisto/2759>, [accessed 21.9.2020].
- Airio, I., Kangas, O., Koskenvuo, K. and Laatu, M. (2015b), 'Kansa kannattaa perustuloa 2/3: Perustuloa kannatetaan kaikissa sosioekonomisissa ryhmissä, mutta erojakin löytyy', *Kelan Tutkimusblogi* 1.10.2015, <http://blogi.kansanelakelaitos.fi/arkisto/2773>, [accessed 21.9.2020].
- Airio, I., Kangas, O., Koskenvuo, K. and Laatu, M. (2015c), 'Kansa kannattaa perustuloa 3/3: Kannatuksessa vaihtelua poliittisen suuntauksen mukaan', *Kelan Tutkimusblogi* 5.10.2015, <http://blogi.kansanelakelaitos.fi/arkisto/2791>, [accessed 21.9.2020].
- Airio, I., Kangas, O., Koskenvuo, K. and Laatu, M. (2015d), 'Perustulon kannatus Suomessa', Presentation at Social Policy Conference on 22 October 2015, <https://www.slideshare.net/kelantutkimus/markku-laatu-ym-perustulon-kannatus-suomessa>, [accessed 21.9.2020].
- Airio, I., Kangas, O., Koskenvuo, K. and Laatu, M. (2016), 'Tasaveroon pohjautuviin perustulomalleihin suhtaudutaan varauksellisesti', *Kelan Tutkimusblogi* 1.2.2016. <http://blogi.kansanelakelaitos.fi/arkisto/2942>, [accessed 21.9.2020].
- Allan, J.P. and Scruggs, L. (2004), 'Political Partisanship and Welfare State Reform in Advanced Industrial Societies', *American Journal of Political Science*, 48, 496–512.
- Allen, R.C. (2017), 'Lessons from history for the future of work', *Nature* 7676(550), 321–324.
- Andersson, J.O. and Kangas, O. (2002), 'Perustulon kannatus Suomessa', *Yhteiskuntapolitiikka* 67(4), 293–307.
- Andrade J., Crocker G. and Lansley S. (2019), 'Alternative Funding Methods', in M. Torry (ed.), *The Palgrave International Handbook of Basic Income. Exploring the Basic Income Guarantee*, Cham: Palgrave Macmillan, 175–190.

Annala, M., Anttila, J., Dufva, M., Eranti, V., Halonen, M., Hiilamo, H., Honkatukia, J., Jousilahti, J., Järvensivu, A., Kari, M., Koponen, J., Koskinen, M., Kuosmanen, J., Leppänen, J., Malho, M., Malkamäki, M., Myllyoja, J., Neuvonen, A. and Pulkka, V-V. (2018), 'Pitkän aikavälin politiikalla läpi murroksen – tahtotiloja työn tulevaisuudesta', *Valtioneuvoston selvitys- ja tutkimustoiminnan julkaisusarja*, 34/2018, Helsinki: Valtioneuvoston kanslia.

Apunen, M., Haavisto, I., Sipola, J. and Toivonen, S. (2015), 'Ken on maassa jämäkin? EVAn Arvo- ja asennetutkimus 2015', *EVA Raportti*, 1/2015, Helsinki: Taloustieto.

Arntz, M., Gregory, T. and Zierahn, U. (2016), 'The risk of automation for jobs in OECD countries: a comparative analysis', *OECD Social, Employment and Migration Working Papers*, 189, Paris: OECD.

Autor, D.H., Levy, F. and Murnane, R.J. (2003), 'The skill content of recent technological change: an empirical exploration', *The Quarterly Journal of Economics*, 1279–1333.

Autor, D.H. and Dorn, D. (2013), 'The growth of low-skill service jobs and the polarization of the US labor market', *American Economic Review*, 103(5), 1553–97.

Autor, D.H. (2015), 'Why are there still so many jobs? The history and future of workplace automation', *Journal of Economic Perspectives*, 29(3), 3–30.

Autor, D.H. and Salomons, A. (2018), 'Is automation labor-share displacing? Productivity growth, employment, and the labor share', *Brookings Papers on Economic Activity*, Spring 2018, 1–63.

Bakshi, H., Downing, J., Osborne, M., and Schneider, P. (2017), *The future of skills: Employment in 2030*, London: Pearson and Nesta.

Bartneck, C., Lütge, C., Wagner, A., and Welsh, S. (2020), *An Introduction to Ethics in Robotics and AI*, Cham: Springer.

Basic Income Earth Network (BIEN) (2020), 'About basic income', <https://basicincome.org/about-basic-income/>, [accessed 21.9.2020].

Baumol, W. J. (1986), 'Productivity Growth, Convergence, and Welfare: What the Long-run Data Show', *American Economic Review*, 76(5), 1072–1085.

BBC (2020), 'What is universal credit – and what's the problem?', <https://www.bbc.co.uk/news/uk-41487126>, [accessed 21.9.2020].

Béland, D. (2009), 'Ideas, institutions, and policy change', *Journal of European Public Policy*, 16(5), 701–718.

Béland, D. (2010), 'Reconsidering Policy Feedback: How Policies Affect Politics', *Administration & Society*, 42(5), 568–590.

- Berg, A., Buffie, E.F. and Zanna, L-F. (2016), 'Robots, growth and inequality', *Finance & Development*, 53(3), 10–13.
- Berg, J., Furrer, M., Harmon, E., Rani, U., and Silberman, M. S. (2018), *Digital labour platforms and the future of work: Towards decent work in the online world*, Geneva: International Labour Office.
- Bessen, J. (2015), 'Toil and technology', *Finance & Development*, 52(1), 16–19.
- Bessen, J. (2019), 'Automation and jobs: when technology boosts employment', *Economic Policy*, 100(34), 589–626
- Birnbaum, S. and de Wispelaere, J. (2020), 'Exit strategy or exit trap? Basic income and the 'power to say no' in the age of precarious employment', *Socio-Economic Review*, Epub ahead of print 5 February 2020.
- Blekesaune, M. and Quadagno, J. (2003), 'Attitudes toward welfare state policies: A comparative analysis of 24 nations', *European Sociological Review*, 19(5), 415–427.
- Block, F. and Keller, M.R. (2009), 'Where do innovations come from? Transformation in US economy, 1970–2006', *Socio-Economic Review*, 7(3), 459–483.
- Boeri, T., Börsch-Supan, A., and Tabellini, G. (2001), 'Would you like to shrink the welfare state? A survey of European citizens', *Economic Policy*, 16(32), 8–50.
- Bonoli, G. (2010), 'The Political Economy of Active Labor-Market Policy', *Politics & Society*, 38(4), 435–457.
- Bourguignon, F., and Spadaro, A. (2006), 'Microsimulation as a tool for evaluating redistribution policies', *The Journal of Economic Inequality*, 4(1), 77–106.
- Bowles, J. (2014), 'Chart of the week: 54% of EU Jobs at Risk of computersation', <https://www.bruegel.org/2014/07/chart-of-the-week-54-of-eu-jobs-at-risk-of-computerisation/>, [accessed 21.9.2020].
- Bradley, D., Huber, E., Moller, S., Nielsen, F., and Stephens, J. (2003), 'Distribution and Redistribution in Postindustrial Democracies', *World Politics*, 55(2), 193–228.
- Bregman, R. (2016), *Utopia for realists – the case for a universal basic income, open borders and a 15-hour week*, The Correspondent.
- Brynjolfsson, E. and McAfee, A. (2014), *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*, New York: W. W. Norton & Company.

- Brynjolfsson, E. and McAfee, A. (2017), *Machine, platform, crowd. Harnessing our digital future*, New York: W.W. Norton & Company.
- Brynjolfsson E., Rock, D. and Syverson, C. (2017), 'Artificial intelligence and the modern productivity paradox: a clash of expectations and statistics', *NBER Working Paper*, 24001.
- Brooks, C. and Manza, J. (2006), 'Social policy responsiveness in developed democracies', *American Sociological Review*, 71(3), 474–494.
- Burstein, P. (2020), 'The determinants of public policy: What matters and how much?', *Policy Studies Journal*, 48, 87–110.
- Camic, C. and Gross, N. (2008), 'The New Sociology of Ideas', in J.R. Blaus (ed.) *The Blackwell Companion to Sociology*, Blackwell, 236–249.
- Campbell, J.L. (1998), 'Institutional Analysis and the Role of Ideas in Political Economy' *Theory and Society*, 27(3), 377–409.
- Campbell, J.L. (2002), 'Ideas, politics, and public policy', *Annual Review of Sociology*, 28, 21–38.
- Card D., Kluve, J. and Weber, A. (2018), 'What works? A meta analysis of recent active labor market program evaluations', *Journal of the European Economic Association*, 16(3), 894–931.
- Carrig, M. M. and Hoyle, R. H. (2011), 'Measurement choices: Reliability, validity, and generalizability', in Panter A. T. and Sterba S.K. (eds) *Handbook of ethics in quantitative methodology*, New York/London: Routledge, 127–158.
- Chong, D. and Druckman, J.N. (2007), 'Framing theory', *Annual Review of Political Science*, 10(1), 103–126.
- Cox, R.H. (2001), 'The social construction of an imperative: why welfare reform happened in Denmark and the Netherlands but not in Germany', *World Politics*, 53, 463–98.
- Dalia Research (2017), 'The EU's growing support for basic income. Measuring the change in European support for basic income from April 2016 to March 2017', <https://basicincome.org/wp-content/uploads/2017/05/DR-2017-survey.pdf>, [accessed 21.9.2020].
- Davidow, W. H., and Malone, M. S. (2014), 'What happens to society when robots replace workers?', *Harvard Business Review*, December 10.
- Deloitte LLP (2015), 'From brawn to brains: the impact of technology on jobs in the UK', London: Deloitte.
- Deming, D.J. (2017), 'The Growing Importance of Social Skills in the Labor Market', *The Quarterly Journal of Economics*, 132(4), 1593–1640.

De Wispelaere J, Halmetoja, A. and Pulkka, V-V. (2019), 'The Finnish basic income experiment. A primer', in Torry M (ed.) *The Palgrave International Handbook of Basic Income. Exploring the Basic Income Guarantee*, Cham: Palgrave Macmillan, 389–406.

Dermont, C., and Weisstanner, D, (2020), 'Automation and the future of the welfare state: basic income as a response to technological change?', *Political Research Exchange*, 2(1), 1757387, 1–11.

Drahokoupil, J., and Fabo, B. (2016), 'The platform economy and the disruption of the employment relationship', *ETUI Research Paper-Policy Brief*, 5.

Easterlin, R. A. (2000), 'The Worldwide Standard of Living since 1800', *Journal of Economic Perspectives*, 14(1), 7–26.

Entman, R.M. (1993), 'Framing: Toward Clarification of a Fractured Paradigm', *Journal of Communication*, 43(4), 51–58.

ePressi (2019), 'Kyselytutkimus: Suomalaiset haluavat perhevapaiden jakautuvan tasaisemmin ja lisää ulkomaista työvoimaa Suomeen', <https://www.epressi.com/tiedotteet/talous/kyselytutkimus-suomalaiset-haluavat-perhevapaiden-jakautuvan-tasaisemmin-ja-lisaa-ulkomaista-tyovoimaa-suomeen.html>, [accessed 21.9.2020].

Erixon, L. (2010), 'The Rehn-Meidner Model in Sweden: Its Rise, Challenges and Survival', *Journal of Economic Issues*, 44(3), 677–715

Esping-Andersen, G. (1990), *The Three Worlds of Welfare Capitalism*, Cambridge: Polity.

Eurofound (2018), *Automation, digitisation and platforms: Implications for work and employment*, Luxembourg: Publications Office of the European Union.

European Commission (EC) (2019) *Report of the high-level expert group on the impact of the digital transformation on EU labour markets*, Report for the European Commission, Luxembourg: Publications Office of the European Union.

European Commission (EC) (2020a), 'The European Digital Strategy', <https://ec.europa.eu/digital-single-market/en/content/european-digital-strategy>, [accessed 21.9.2020].

European Commission (2020b), 'Digital economy and society index (DESI) 2020'. <https://ec.europa.eu/digital-single-market/en/human-capital> [accessed 21.9.2020].

European Social Survey (ESS) Round 8 (2016), <https://www.europeansocialsurvey.org/data/download.html?r=8>, [accessed 21.9.2020].

European Union (EU) (2017), 'Special Eurobarometer 460 Wave EB87.1 – March 2017 Attitudes towards the impact of digitisation and automation on daily life', TNS opinion & social Report.

European Union (EU) (2020), 'Covid-19: the EU plan for the economic recovery',

<https://www.europarl.europa.eu/news/en/headlines/economy/20200513STO79012/covid-19-the-eu-plan-for-the-economic-recovery> [accessed 21.9.2020].

Eurostat (2020), 'Old-age dependency ratio increasing in the EU',

<https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20200713-1>, [accessed 21.9.2020].

Feldmann, H. (2013), 'Technological unemployment in industrial countries', *Journal of Evolutionary Economics*, 23(5), 1099–1126.

Florisson, R. and Mandl, I. (2018), 'Platform work: Types and implications for work and employment - Literature review', *Eurofound Working paper*, WPEF18004.

Ford, M. (2015), *Rise of the Robots. Technology and the Threat of a Jobless Future*, New York: Basic Books.

Forma, P., Kallio, J., Pirttilä, J. and Uusitalo, R. (2007), 'Kuinka hyvinvointivaltio pelastetaan? Tutkimus kansalaisten sosiaaliturvaa koskevista mielipiteistä', *Sosiaali- ja terveysturvan tutkimuksia* 89, Helsinki: Kela.

Freeman, R. (1980), 'Unionism and the Dispersion of Wages', *ILR Review*, 34(1), 3–23.

Freeman, R. (2015), 'Who owns the robots rules the world', *IZA World of Labor*, 5, 1–10.

Frey, C.B. and Osborne, M. (2013), 'The future of employment: how susceptible are jobs to computerisation?' *OMS Working Paper*, University of Oxford.

Frey, C.B. and Osborne, M. (2017), 'The future of employment: how susceptible are jobs to computerisation?', *Technological Forecasting and Social Change*, 114, 254–280.

Frey, C.B., Berger, T. and Chen, C. (2018), 'Political machinery: did robots swing the 2016 US presidential election?', *Oxford Review of Economic Policy*, 34(3), 418–442.

Garnham, A. (2018), 'Universal Credit discriminates against women by design. Here's how.', *New Statesman*, <https://www.newstatesman.com/politics/feminism/2018/08/universal->

[credit-discriminates-against-women-design-here-s-how](#), [accessed 21.9.2020].

Gentilini, U., Grosh, M., Rigolini, J., and Yemtsov, R. (eds.), (2019), *Exploring universal basic income: A guide to navigating concepts, evidence, and practices*, Washington, DC: The World Bank.

Goos, M, Manning A and Salomons A (2014), 'Explaining job polarization: routine-biased technological change and offshoring', *American Economic Review*, 104(8), 2509–2526.

Gordon, R. (2012), 'Is U.S. economic growth over? Faltering innovation confronts the six headwinds', *NBER Working Paper*, 18315.

Gough, I., Meadowcroft, J., Dryzek, J., Gerhards, J., Lengfeld, H., Markandya, A., and Ortiz, R. (2008), 'JESP symposium: Climate change and social policy', *Journal of European Social Policy*, 18(4), 325–344.

Graetz, G., and Michaels, G. (2018), 'Robots at work', *Review of Economics and Statistics*, 100(5), 753–768.

Graham, M., Hjorth, I., and Lehdonvirta, V. (2017), 'Digital labour and development: impacts of global digital labour platforms and the gig economy on worker livelihoods', *Transfer: European Review of Labour and Research*, 23(2), 135–162.

Gregory, T., Salomons, A., and Zierahn, U. (2016), 'Racing with or against the machine? Evidence from Europe. Evidence from Europe', *ZEW-Centre for European Economic Research Discussion Paper*, 16-053.

Greve, B. (2017), *Technology and the Future of Work. The Impact on Labour Markets and Welfare States*. Cheltenham/Northampton: Edward Elgar.

Haavisto, I. and Heikkinen, J. (2017), 'Työ ensin. EVA Arvio.', Helsinki: Elinkeinoelämän valtuuskunta.

Haavisto, I. (2019), 'Jäähvyäiset perustulolle. EVA Analyysi', Helsinki: Elinkeinoelämän valtuuskunta.

Hall, P.A. (1993), 'Policy paradigms, social learning and the state: the case of economic policymaking in Britain', *Comparative Politics*, 25(3): 275–96.

Hansen, R. and King, D. (2001), 'Eugenic ideas, political interests, and policy variance: immigration and sterilization policy in Britain and the US', *World Politics*, 53(2), 237–263.

Head, B.W. (2016), 'Toward More "Evidence-Informed" Policy Making?', *Public Administration Review*, 76, 472–484.

Helsingin Sanomat (2016), 'Suomalaiset uskovat töidensä säilyvän tulevaisuudessa. – Tutkija: "2010-luvulla työpaikkojen tuhoutuminen on ollut

vähäisempää kuin 1990- ja 2000-luvuilla”], <https://www.hs.fi/talous/art-2000002919320.html>, [accessed 21.9.2020].

Hicks, A., and Swank, D. (1984), ‘On the Political Economy of Welfare Expansion: A Comparative Analysis of 18 Advanced Capitalist Democracies, 1960-1971’, *Comparative Political Studies*, 17(1), 81–119.

Hirsch-Kreinsen, H. (2016), ‘Digitization of industrial work: development paths and prospects’, *Journal for Labour Market Research*, 49, 1–14.

Hofheinz, P., Moise, C. and Osimo, D. (2019), ‘The 2019 Future of Work Index. How the World of Work Is Changing – and How Policy Needs to Change with It’, Policy Brief, Brussels: The Lisbon Council.

Hunt, W., Warhurst, C. and Sarkar, S. (2019), ‘People and machines: from hype to reality’, Report, CIPD.

Im Z.J., Mayer, N., Palier, B. and Rovny, J. (2019), ‘The “losers of automation”: A reservoir of votes for the radical right?’, *Research & Politics* January-March 2019, 1–7.

International Labour Organisation (ILO) (2019), ‘A human-centred agenda needed for a decent future of work’, https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_663006/lang--en/index.htm, [accessed 21.9.2020].

Jara, H.X., Tumino, A. and Sutherland, H. (2015), ‘The redistributive and stabilising effects of an EMU unemployment benefit scheme under different hypothetical unemployment scenarios’, *EUROMOD Working Paper Series*, EM18/15.

Jordan, B. (2012), ‘The low road to basic income? Tax–benefit integration in the UK’, *Journal of Social Policy*, 41(1): 1–17.

Kallio, J. and Niemelä, M. (2017), ‘Kuka ansaitsee tulla autetuksi? Kansalaisten asennoituminen toimeentulotuen saajiin vuonna 2015’, *Janus*, 25(2), 144–159.

Kallio, J., Lintunen, L. Niemelä, M., Blomberg, H. and Kroll, Christian (2020), ‘Lurjuksista kunnan kansalaisia? Kansalaisten asennoituminen toimeentulotuen saajiin 2012–2018’, *Yhteiskuntapolitiikka*, 85(3), 247–258.

Kangas, O. and Pulkka, V-V. (eds.) (2016), ‘Ideasta kokeiluun? Esiselvitys perustulokokeilun toteuttamisvaihtoehtoista’. *Valtioneuvoston selvitysja tutkimustoiminnan julkaisusarja*, 13/2016, Helsinki: Valtioneuvoston kanslia.

Kangas, O., Niemelä, M. and Varjonen, S. (2014), ‘When and why do ideas matter? The influence of framing on opinion formation and policy change’, *European Political Science Review*, 6(1), 73–92.

Kangas, O., Jauhiainen, S., Simanainen, M. and Ylikännö, M. (2020), 'Suomen perustulokokeilun arviointi', *Sosiaali- ja terveystieteiden tutkimuskeskuksen raportteja ja muistioita*, 2020:15, Helsinki: Sosiaali- ja terveystieteiden tutkimuskeskus.

Kaplan, A. and Haenlain, M. (2018), 'Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence', *Business Horizons*, 62(1), 15–25.

Kela (2016), 'From Idea to Experiment: Report on universal basic income experiment in Finland', *Kela Working Paper*, 106/2016, Helsinki: Kela.

Kenney, M., and Zysman, J. (2016), 'The rise of the platform economy', *Issues in science and technology*, 32(3), 61–69.

Kenworthy, L. (2010), 'Labour market activation', in F.G. Castles, S. Leibfried, J. Lewis, H. Obinger, C. Pierson (eds.) *The Oxford handbook of the welfare state*, 1–13.

Keynes J.M. (1930[2010]), 'Economic Possibilities for Our Grandchildren', in *Essays in Persuasion*, London: Palgrave Macmillan, 321–332.

Kingdon, J. W. (1995[2013]), 'Agendas, alternatives, and public policies', New York, NY: HarperCollins.

Koning, E. (2015), 'The three institutionalisms and institutional dynamics: Understanding endogenous and exogenous change', *Journal of Public Policy*, 36(4), 639–664.

Korpi, W. (1989), 'Power, politics, and state autonomy in the development of social citizenship—Social rights during sickness in 18 OECD countries since 1930', *American Sociological Review*, 54(3), 309–328.

Korpi, W. (2006), 'Power resources and employer-centered approaches in explanations of welfare states and varieties of capitalism: Protagonists, consenters, and antagonists', *World Politics*, 58(1), 167–206.

Kuivalainen S. and Niemelä, M. (2010), 'From universalism to selectivism: the ideational turn of the anti-poverty policies in Finland', *Journal of European Social Policy*, 20(3), 263–276.

Lee, S., McCann, D. and Messenger, J.C. (2007), *Working time around the world: Trends in working hours, laws, and policies in a global comparative perspective*, London and New York: Routledge.

Lerner, A. (1943), 'Functional finance and the federal debt', *Social Research* 10(1), 38–51.

Linnanvirta, S., Kroll, C. and Blomberg, H. (2019) 'The perceived legitimacy of a basic income among Finnish food aid recipients', *International Journal of Social Welfare*, 28(3), 271–281.

ManPowerGroup (2019), 'Humans wanted: robots need you', Report, 18 January, <https://www.manpowergroup.com/workforce-insights/world-of-work/skills-revolution-series>, [accessed 21.9.2020].

Manyika J, Chui M, Miremadi M, Bughin J, George K, Willmott P and Dewhurst M (2017), *Harnessing automation for a future that works*, New York: McKinsey Global Institute.

David, M. and Sharman, J.C. (2009), 'Policy diffusion and policy transfer', *Policy Studies*, 30(3), 269–288.

Martinelli, L. (2017), 'Exploring the distributional and work incentive effects of plausible illustrative basic income schemes'. *IPR Working Paper*, March 2017, Bath: Institute for Policy Research.

Martinelli, L. (2019), 'Basic income, automation, and labour market change', Report, September, Bath: Institute for Policy Research.

Martinelli, L. (2020), 'A Basic Income Trilemma: affordability, adequacy, and the advantages of radically simplified welfare', *Journal of Social Policy*, 49(3), 461–482.

Martinelli, L., and O'Neill, K. (2019), 'A comparison of the fiscal and distributional effects of alternative basic income implementation modes across the EU28', *EUROMOD Working Paper Series*, EM 14/19.

Marx, P. (2014), 'Labour market risks and political preferences', *European Journal of Political Research*, 53, 136–159.

Mazzucato, M. (2013), *The entrepreneurial state. Debunking public vs. private sector myths*, London/New York: Anthem Press.

Meier Jæger, M. (2006), 'What makes people support public responsibility for welfare provision: Self interest or political ideology? A longitudinal approach', *Acta Sociologica* 49(3), 321–338.

Meyer, H. (2014), 'Inequality and work in the second machine age', *SE Journal* 4, Bonn: Friedrich-Ebert-Stiftung,

Michaels, G., Ashwini, N. and Van Reenen, J. (2014), 'Has ICT polarized skill demand? Evidence from eleven countries over twenty-five years', *Review of Economics and Statistics*, 96(1), 60–77.

Millar, J., and Bennett, F. (2017), 'Universal Credit: Assumptions, Contradictions and Virtual Reality', *Social Policy and Society*, 16(2), 169–182.

Miller, B. and Atkinson, R.D. (2013), 'Are robots taking our jobs, or making them?' Report, September, Washington DC: The Information Technology & Innovation Foundation ITIF.

Mintrom, M. (1997), 'Policy entrepreneurs and the diffusion of innovation', *American Journal of Political Science*, 41(3), 738–770.

Mitchell, T. and Brynjolfsson, A. (2017), 'Track how technology is transforming work', *Nature* 7650(544), 290–292.

Mokyr, J., Vickers, C. and Ziebarth, N.L. (2015), 'The history of technological anxiety and the future of economic growth: is this time different?', *Journal of Economic Perspectives*, 29(3), 31–50.

Morgan, G., Reed, H. and Torry, M. (2019), 'Analysis of the Financial Effects of Basic Income', in M. Torry (ed.) *The Palgrave International Handbook of Basic Income. Exploring the Basic Income Guarantee*, Cham, Palgrave Macmillan, 191–211.

Nedelkoska, L. and Quintini, G. (2018), 'Automation, skills use and training', *OECD Social, Employment and Migration Working Papers*, 202, Paris: OECD.

OECD.Stat (2020), 'Trade Union', <https://stats.oecd.org/Index.aspx?DataSetCode=TUD>, [accessed 21.9.2020].

OECD (2016), 'Automation and independent work in a digital economy', *Policy brief on the future of work*, Paris: OECD.

OECD (2017), 'Basic income as a policy option: Can it add up?', *Policy Brief on the Future of Work*, Paris: OECD.

OECD (2018a), 'Putting faces on the jobs at risk of automation', *Policy Brief on the Future of Work*, Paris: OECD.

OECD (2018b), 'Job creation and local economic development 2018. Preparing for the future of work', Paris: OECD.

OECD (2018c), 'Good jobs for all in a changing world of work', *The OECD jobs strategy*, Paris: OECD.

OECD (2020), 'Digital economy', <https://www.oecd.org/sti/ieconomy/>, [accessed 21.9.2020].

Official Statistics of Finland (OSF) (2018), 'Quality of work life', Helsinki: Statistics Finland, http://www.stat.fi/til/tyoolot/2018/tyoolot_2018_2019-12-11_tie_001_en.html, [accessed 21.9.2020].

Pajarinen, M. and Rouvinen, P. (2014), 'Computerization threatens one third of Finnish employment', *ETLA Brief*, 22, Helsinki: ETLA.

Pareliussen, J.K., Hwang, H. and Viitamäki, H. (2018), 'Basic income or a single tapering rule? Incentives, inclusiveness and affordability compared for the case of Finland', *Economic Department Working Papers*, 1464, Paris: OECD.

Perez, C. (2010), 'Technological revolutions and techno-economic paradigms', *Cambridge Journal of Economics*, 34(1), 185–202.

- Perkiö, J. (2020), 'From rights to activation: The evolution of the idea of basic income in the Finnish political debate, 1980–2016', *Journal of Social Policy* 49(2), 103–124.
- Pesole, A., Urzì Brancati, M. C., Fernández-Macías, E., Biagi, F., and González Vázquez, I. (2018), *Platform Workers in Europe: evidence from the COLLEEM Survey*, Luxembourg: Publications Office of the European Union.
- Pew Research Center (2016), *Public predictions for the future of workforce automation*, Report, 10 March, Washington: Pew Research Center.
- Pierson, P. (1996), 'The New Politics of the Welfare State', *World Politics*, 48(2), 143–179.
- Pierson, P. (2000), 'Increasing Returns, Path Dependence, and the Study of Politics', *The American Political Science Review*, 94(2), 251–267.
- Pulkka, V-V. and Hiilamo, H., 'Finnish Views on the Future of Work in Digital Economy 2017 [dataset]', Version 1.0 (2020-06-08), Finnish Social Science Data Archive [distributor], <http://urn.fi/urn:nbn:fi:fsd:T-FSD3348>, [accessed 21.9.2020].
- PwC (2018), 'Will robots really steal our jobs? An international analysis of the potential long term impact of automation', PricewaterhouseCoopers.
- Pyöriä, P. and Ojala, S. (2016), 'Precarious work and intrinsic job quality: Evidence from Finland, 1984–2013', *The Economic and Labour Relations Review*, 27(3), 349–367.
- Reed, H and Lansley, S. (2016), *Universal Basic Income: An Idea Whose Time Has Come?*, London: Compass.
- Rincón, L., and Hiilamo, H. (2019), 'Understanding Multidimensional Preferences towards Basic Income Policy: A Conjoint Experiment', Proceedings of ECPR General Conference 2019, Wroclaw, Poland.
- Roosma, F., van Oorschot, W. and Gelissen, J. (2014), 'The preferred role and perceived performance of the welfare state: European welfare attitudes from a multidimensional perspective', *Social Science Research*, 44, 200–210.
- Roosma, F. and van Oorschot, W. (2019), 'Public opinion on basic income: Mapping European support for a radical alternative for welfare provision', *Journal of European Social Policy*, 30(2), 190–205.
- Rueda, D., and Pontusson, J. (2000), 'Wage Inequality and Varieties of Capitalism', *World Politics*, 52(3), 350–383.
- Sanderson, I. (2002), 'Evaluation, policy learning and evidence-based policy making', *Public administration*, 80(1), 1–22.
- Santens, S. (2017), 'Technological unemployment is here. Unconditional basic income is the answer', in K. LaGrandeur, K. Hughes and J. James

(eds.) *Surviving the Machine Age. Intelligent Technology and the Transformation of Human Work*, Cham: Palgrave Macmillan, 107–116.

Schwab, K. (2015), 'The fourth industrial revolution: what it means, how to respond', *Foreign Affairs*, December 12, <https://www.foreignaffairs.com/articles/2015-12-12/fourth-industrial-revolution>, [accessed 21.9.2020].

Servoz, M. (2019), *The future of work? Work of the future! On how artificial intelligence, robotics and automation are transforming jobs and the economy in Europe*, AI report, Brussels: European Commission.

Sharkey, A. and Sharkey, N. (2012), 'Granny and the robots: ethical issues in robot care for the elderly', *Ethics and information technology*, 14(1), 27–40.

Shipan, C.R. and Volden, C. (2008), 'The Mechanisms of Policy Diffusion', *American Journal of Political Science*, 52, 840–857.

Sihvo, T. and Uusitalo, H. (1995), 'Economic crises and support for the welfare state in Finland 1975–1993', *Acta Sociologica*, 38, 251–262.

Solita (2017), 'Solita tutki: Suomalaiset eivät pidä robotteja uhkana työpaikoilleen', <https://www.solita.fi/solita-tutki-suomalaiset-eivat-pida-robotteja-uhkana-tyopaikoilleen/>, [accessed 21.9.2020].

Somers, M. and Block, F. (2005), 'From poverty to perversity: ideas, markets, and institutions over 200 years of welfare debate', *American Sociological Review*, 70(2), 260–287.

Stadelmann-Steffen, I. and Dermont, C. (2020), 'Citizens' opinions about basic income proposals compared – A conjoint analysis of Finland and Switzerland', *Journal of Social Policy* 49(2), 1–21.

Standing, G. (2011), *The Precariat: The New Dangerous Class*, London: Bloomsbury.

Stephens, J. D. (1979), *The transition from capitalism to socialism*, London: Macmillan.

Stephens, M. (2004), 'Job loss expectations, realizations, and household consumption behaviour', *Review of Economics and Statistics*, 86(1), 253–269.

Stewart, I., Debapratim, D. and Cole, A. (2015), 'Technology and People: The Great Job-Creating Machine', Report, London: Deloitte LPP.

Stewart, A., and Stanford, J. (2017), 'Regulating work in the gig economy: What are the options?', *The Economic and Labour Relations Review*, 28(3), 420–437.

Sutela, H., and Pärnänen, A. (2018), *Yrittäjät Suomessa 2017*, Helsinki: Tilastokeskus.

Sutherland, H. and Figari F (2013), 'EUROMOD: the European Union tax-benefit microsimulation model', *International Journal of Microsimulation*, 6(1), 4–26.

Susskind, R. and Susskind, D. (2015), *The Future of Professions: How Technology Will Transform the Work of Human Experts*, Oxford University Press.

Susskind, D. (2017). 'A model of technological unemployment', *Economics Series Working Papers*, 819.

Stern, A. (2016), *Raising the Floor. How a Universal Basic Income Can Renew Our Economy and Rebuild the American Dream*, New York, NY: Public Affairs.

Thelen, K. (1999), 'Historical institutionalism in comparative politics', *Annual Review of Political Science*, 2, 369–404.

Thewissen, S., and Rueda, D. (2019), 'Automation and the Welfare State: Technological Change as a Determinant of Redistribution Preferences', *Comparative Political Studies*, 52(2), 171–208.

University of Oxford Future of Humanity Institute (FHI) (2013), 'Machines and employment: which tasks can be automated?', <https://www.fhi.ox.ac.uk/machines-and-employment-which-tasks-can-be-automated/>, [accessed 21.9.2020].

Urzì Brancati, C, Pesole, A. and Fernández-Macías, E. (2019), *Digital labour platforms in Europe: numbers, profiles, and employment status of platform workers*, Technical Report, Luxembourg: Publications Office of the European Union.

Urry, J. (2016), *What is the future?*, Cambridge: Polity.

Valenduc, G. and Vendramin, P. (2016), Work in the digital economy: sorting the old from the new. *ETUI working paper*, 2016.03, Brussels: ETUI.

van Oorschot, W. (2006), 'Making the difference in social Europe: Deservingness perceptions among citizens of European welfare states', *Journal of European Social Policy*, 16(1), 23–42.

Viitamäki, H. (2019), 'Perustulo Suomessa', *Valtiovarainministeriön julkaisu*, 2019:46, Helsinki: Valtiovarainministeriö.

Warhurst C., Mathieu C. and Wright S. (2017), 'Workplace Innovation and the Quality of Working Life in an Age of Uberisation', in P. Oeij, D. Rus and F. Pot (eds.) *Workplace Innovation. Aligning Perspectives on Health, Safety and Well-Being*, Cham: Springer, 245–259.

Warhurst, C., Barnes, S-A., Wright, S., Dhondt, S., Erhel, C., Greenan, N., Guergoat-Larivière, M, Hamon-Cholet, S., Kalugina, E., Kangas, O.E., Kirov, V., Kohlgrüber, M., Mathieu, C., Murray Leach, T, Oeij, P., Perez, C., Pomarez,

- E., Ryan-Collins, J., Schröder, A. and van der Zee, F. (2019), 'D2.1 Guidance paper on key concepts, issues and developments. Conceptual framework guide and working paper', Report, 7 November.
- White, S. (1997), 'Liberal equality, exploitation, and the case for an unconditional basic income', *Political Studies*, 45(2), 312–326.
- Widerquist, K. (2018), *A critical analysis of Basic Income experiments for researchers, policymakers, and citizens*, New York: Palgrave Macmillan.
- Widerquist, K. (2019), 'Three waves of basic income support', in M. Torry (ed.) *The Palgrave International Handbook of Basic Income. Exploring the Basic Income Guarantee*, Cham: Palgrave Macmillan, 31–34.
- Widerquist, K., Noguera, J.A., Vanderborght, Y. and De Wispelaere, J. (2013), *Basic income: An anthology of contemporary research*, Wiley-Blackwell Publishing.
- Wood, A. J., Graham, M., Lehdonvirta, V., and Hjorth, I. (2019), 'Good Gig, Bad Gig: Autonomy and Algorithmic Control in the Global Gig Economy', *Work, Employment and Society*, 33(1), 56–75.
- World Bank (2013), 'Capital for the Future: Saving and Investment in an Interdependent World', *Global Development Horizons*, Washington, DC: World Bank.
- World Bank (2016), 'World development report 2016: digital dividends', *World Bank Publications*, Washington, DC: World Bank.
- World Bank (2019), 'World Development Report 2019: The Changing Nature of Work', Washington, DC: World Bank.
- World Economic Forum (WEF) (2016), 'The future of jobs: Employment, skills and workforce strategy for the fourth industrial revolution', *Global challenge insight report*, Geneva: World Economic Forum.
- World Economic Forum (WEF) (2018), 'The future of jobs report 2018', Geneva: World Economic Forum.
- World Economic Forum (WEF) (2020), 'The future of jobs report 2020', Geneva: World Economic Forum.
- Wright, E. (2006), 'Basic Income as a Socialist Project', *Basic Income Studies*, 1(1), 1–11.
- Zhang, B. (2019), 'No Rage Against the Machines: Threat of Automation Does Not Change Policy Preferences', *MIT Political Science Department Research Paper*, 2019-25.

APPENDICES

Appendix 1 Finnish Views on the Future of Work in Digital Economy 2017 questionnaire

Helsingin yliopiston väitöskirjatutkijan Ville-Veikko Pulkan ja sosiaalipolitiikan professori Heikki Hiilamon toteuttaman *Tulevaisuuden työn tahtotila* -kyselytutkimuksen avulla kartoitetaan kansalaisten näkemyksiä työmarkkinoiden kehittymisestä lähitulevaisuudessa sekä siitä, millaisten yhteiskuntapoliittisten toimenpiteiden katsotaan olevan tärkeässä roolissa.

Kysely on osa valtioneuvoston kanslian selvitys- ja tutkimustoiminnan (VNTEAS) tilaamaa *Suomalainen työ murroksen jälkeen* -tutkimushanketta.

Tutkimuksen tulokset esitetään sellaisessa muodossa, ettei niitä voida yhdistää vastaajiin.

Ensimmäinen osa: Digitaalisen talouden vaikutukset työmarkkinoihin

Tekoälyssä, robotiikassa, digitalisaatiossa, fyysisen maailman verkottumisessa (Internet of Things), 3D-tulostuksessa ja itseään ohjaavissa liikennevälineissä saavutetuilla läpimurroilla uskotaan yleisesti olevan perustavanlaatuisia vaikutuksia työmarkkinoiden toimintaan. Lisäksi digitaaliset alustat ja joukkorahoitus muuttavat työn tekemisen mahdollisuuksia ja malleja. Tässä kyselyssä näihin ennen muuta 2010-luvulla saavutettuihin teknologisiin edistysaskeliin ja uusiin liiketoimintamalleihin viitataan käsitteellä digitaalinen talous.

- 1. Asiantuntijoilla on erilaisia näkemyksiä teknologiamurroksen vaikutuksista työllisyyteen. Mikä seuraavista työllisyysennusteista on teidän mielestänne uskottavin tulevien kymmenen vuoden kuluessa?**
 - a. Työttömyys lisääntyy väliaikaisesti, mutta tasoittuu uusien työpaikkojen syntyminen myötä.
 - b. Työttömyys vakiintuu pysyvästi 1–10 prosenttiyksikköä nykyistä korkeammalle tasolle.

- c. Työttömyys vakiintuu pysyvästi 10–20 prosenttiyksikköä nykyistä korkeammalle tasolle.
- d. Työtehtävien automatisointi ei lisää työttömyyttä.
- e. Työtehtävien automatisointi vähentää työttömyyttä.
- f. En osaa sanoa

Mitä mieltä olette seuraavista digitaalisen talouden keskusteluissa esitetystä väittämästä?

Likert-asteikko: 4 Täysin samaa mieltä 3 Jokseenkin samaa mieltä 2 Jokseenkin eri mieltä 1 Täysin eri mieltä 0 En osaa sanoa

- 2. Itsensä työllistäjien määrä lisääntyy merkittävästi.
- 3. Työsuhteet muuttuvat nykyistä epävarmemmiksi.
- 4. Työntekijöiden palkat laskevat kilpailun lisääntyessä työpaikoista.
- 5. Työmarkkinoilla tapahtuvat muutokset johtavat eriarvoisuuden lisääntymiseen.
- 6. Poliittikkatoimenpiteillä voidaan vaikuttaa työllisyyskehitykseen.

Alustatalous tarkoittaa työn teettämistä keikkaluonteisesti digitaalisia sovelluksia (esim. kotiapulaisia välittävä mobiilipalvelu-Tremer, ruoanvälityspalvelu Foodora ja taksisovellus-Uber) hyödyntäen.

Mitä mieltä olette seuraavista alustatalouteen liittyvistä väitteistä?

- 7. Digitaalisten alustojen käyttöä on edistettävä politiikkatoimenpitein, esimerkiksi verotuksen kautta.
- 8. Työntekijöiden asemaa heikentävät digitaaliset alustat on kiellettävä.

Toinen osa: Yhteiskuntapolitiikka digitaalisessa taloudessa

Seuraavaksi kysytään mielipidettänne erilaisista toimenpiteistä, joita on esitetty digitaalisen talouden yhteiskuntapolitiikaksi.

Mitä mieltä olette seuraavista toimenpiteistä keinoina lisätä työntekijöiden mahdollisuuksia digitaalisessa taloudessa?

Likert-asteikko: 5 Erittäin hyvä idea 4 Hyvä idea 3 Ei hyvä eikä huono idea 2 Huono idea 1 Erittäin huono idea 0 En osaa sanoa

- 9. Aikuiskoulutuksen lisääminen
- 10. Yrittäjyyskasvatuksen lisääminen

11. Luovuuden ja sosiaalisten taitojen korostaminen opetuksessa
12. Työttömien uudelleen kouluttaminen ainoastaan aloille, joissa suurella todennäköisyydellä tarvitaan työvoimaa myös tulevaisuudessa (esim. hoiva-alat)
13. Työttömyysturvan käyttäminen nykyistä vapaammin opiskeluun
14. Työttömyysturvan käyttäminen starttirahana
15. Nykyisten työttömien aktivointitoimenpiteiden (esim. työkokeilut, harjoittelut, TE-palveluiden järjestämät kurssit, palkkatuettu työ, omaehtoinen opiskelu, kuntouttava työtoiminta) lisääminen
16. Työttömyysturvan sanktioiden lisääminen (esim. etuuden maksun keskeytys tai etuuden tason leikkaus aktivointitoimenpiteistä ja työtarjouksista kieltäydyttäessä)
17. Työn vastaanottovelvoitteen tiukentaminen
18. Työttömyysturvan tason korottaminen
19. Työttömyysturvan tason heikentäminen
20. Työttömyysturvan keston pidentäminen
21. Työttömyysturvan keston lyhentäminen
22. Aktiivinen finanssipolitiikka (valtion investoinnit työllisyyttä lisääviin kohteisiin)
23. Työtakuujärjestelmä (julkisen sektori takaa työpaikan, joka lähtee työntekijän omista lähtökohdista ja kehittää työntekijän osaamista)
24. Pakolliset työntekijärahasotot suurille yrityksille (osalla yrityksen voittoa ostetaan yritystä työntekijöiden omistukseen, jolloin työntekijät voivat saada osan tuloistaan pääomatuloina)
25. Vapaaehtoiset työntekijärahasotot
26. Byrokratialoukkujen (etuuksien tarve- ja tuloharkinnasta johtuvat viiveet etuuksien maksussa, raportointi- ja tapaamisvelvollisuudet, etuuksien takaisinperintä) purkaminen
27. Palkkatuen lisääminen (julkinen sektori maksaa osan työllistyvän henkilön palkasta joko työnantajalle tai työntekijälle)
28. Paikallisen sopimisen lisääminen ilman heikennyksiä työehtosopimuksiin
29. Paikallisen sopimisen lisääminen vähentämällä työehtosopimusten merkitystä
30. Työnteon taloudellisten kannustinten lisääminen
31. Palkkatyön jakaminen työaika lyhentämällä
32. Maahanmuuton rajoittaminen
33. Osallistumistulo, jossa toimeentulotuen tai perusturvan vastineeksi osallistutaan aktivointitoimenpiteisiin, joihin työttömät voivat vaikuttaa nykyistä enemmän (esim. vapaaehtoistyö, opiskelu, omaishoiva tai harrastustoiminta)

Perustulo on etuus, joka maksettaisiin kaikille täysi-ikäisille (pl. eläkeläiset) ilman työvelvoitetta ja tarveharkintaa. Perustuloa maksettaisiin siis riippumatta siitä, onko henkilöllä muita tuloja.

Perustulon suorat vaikutukset tulonjakoon vaihtelevat merkittävästi riippuen sovellettavasta verojärjestelmästä, korvautuvista etuuksista ja perustulon tasosta. Perustulosta ei voida siis puhua pelkästään yleisellä tasolla.

Mitä mieltä olette seuraavista perustulomalleista?

34. Perustulo, joka heikentäisi nykyisen perusturvan nettotasoa (pienempi kuin 560 €/kk) ja säilyttäisi oikeuden asumistukeen sekä ansiosidonnaisiin etuuksiin.
35. Perustulo, joka säilyttäisi nykyisen perusturvan nettotason (noin 560 €/kk) ja säilyttäisi oikeuden asumistukeen sekä ansiosidonnaisiin etuuksiin.
36. Perustulo, joka nostaisi perusturvan nykyistä tasoa (suurempi kuin 560 €/kk) ja säilyttäisi oikeuden asumistukeen sekä ansiosidonnaisiin etuuksiin.
37. 1000 euron perustulo, joka säilyttäisi oikeuden asumistukeen ja ansiosidonnaisiin etuuksiin.
38. 1000 euron perustulo, joka poistaisi oikeuden asumistukeen ja ansiosidonnaisiin etuuksiin.
39. 1500 euron perustulo, joka poistaisi oikeuden asumistukeen ja ansiosidonnaisiin etuuksiin.

40. Mikä seuraavista on mielestänne tärkein tavoite, jota politiikkatoimenpiteillä tulisi edistää digitaalisessa taloudessa?
 - a. talouskasvu
 - b. työajan lyhentäminen
 - c. työllisyyden edistäminen
 - d. eriarvoisuuden vähentäminen
 - e. kansainvälisen kilpailukyvyn turvaaminen
 - f. ilmastonmuutoksen torjuminen
 - g. valtion velkaantumisen estäminen
 - h. suomalaisten korkean koulutustason turvaaminen jatkossakin
 - i. ansiotyön merkityksen vähentäminen

An English version of the codebook is available at:
<https://services.fsd.uta.fi/catalogue/FSD3348/PIP/cbF3348e.pdf> [accessed 21.9.2020]