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Agency, sentiment, and risk and uncertainty: fears of job loss in eight european countries

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Abstract: How people assess their prospects and act accordingly is anchored in time and space. But context is only half the story. Human beings share predispositions in favour of the here and now, discounting the future, and risk aversion. This paper provides a framework for integrating cognition with context in economic geography focusing upon agency, resources, and risk and uncertainty in European labour markets. In doing so, it seeks to avoid essentialising the individual while ensuring that the resulting framework does not leave individuals as cyphers of time and place. The framework is illustrated by reference to individual's assessments of the consequences of technological change for their employment prospects in a multi-country European setting. Implications are drawn for a behavioural economic geography that is policy relevant.

Introduction

The digital revolution has wrought profound changes in how we communicate with one another, how products and services are produced, and where exchange takes place—locally and globally. These developments are the subjects of research programs, publications, and commentaries (electronic and otherwise) in economic geography and cognate disciplines. If associated with Silicon Valley and its networks, the digital revolution has remade the map of global industries ranging from automobiles to pharmaceuticals and beyond. Its presence is felt around the world in many countries, regions, and cities.

The importance of the digital revolution has been put into sharp relief by the COVID-19 pandemic. In a series of interviews with corporate executives in the global insurance industry, the author and colleagues found that the digital revolution has enabled many firms to adapt to the challenges far-faster than expected, with far-reaching implications for the shape and size of the modern corporation (Oxford-Zurich Project 2021). It was also found that the spatial reach and significance of the digital revolution depends, in part, upon the sophistication or otherwise of national communication systems and networks. As revealed by COVID, the impact of the digital revolution has been highly uneven between and within countries.

With its genesis in Silicon Valley, the digital revolution has spread throughout OECD countries and beyond. For those countries not privileged to be at the cutting-edge of the digital revolution, the United Nations and the World Bank amongst other organisations have sought to disseminate the digital revolution through related development programs. Across the UK and the EU, the impact of the digital revolution is mediated and shaped by country-specific policies and institutions including competition policies, labour market regulations, and social welfare programmes. Locally, the incorporation of the digital revolution into trading and production systems also depends upon factors such as regional work cultures (Gertler 2003).

While academic studies tend to focus upon the positive aspects of the digital revolution, it has, and will increasingly, affect how and where products are produced, the skills needed to produce products, the rate of change in labour productivity and, in some cases, the displacement of labour through automation. As such, the digital revolution has prompted employers and employees alike to reconsider how production is organised in time and space, the skills needed to be successful, and the trajectory of change locally and globally (Yeung 2018). Whether cast in the positive or the negative, there is anxiety amongst workers about technological change absent information that is sufficient for short-term and long-term decision-making. This issue and workers' precautionary behaviour in the face of uncertainty are the foci of this paper.

For some workers more than others, job tenure is contingent upon economic conditions whether driven by macroeconomic factors and/or changes in consumer incomes and tastes and preferences. For other workers with in-demand skills and expertise, the short-term risks of job loss are relatively low. In any event, the risk of job loss also depends upon national regulations and local labour market codes of practice. For example, some European countries deliberately dampen short-term fluctuations in

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the demand for labour whereas other countries promote labour market ‘flexibility’ (Shafik 2021). In doing so, some countries promote job tenure and offer opportunities for *in situ* retraining whereas others expect companies and workers to adapt to changing conditions on their own account.

A distinction is drawn between short-term *risks* to employment and longer-term *uncertainties* about the impact of the digital revolution on employment.[1] In doing so, the paper is based upon three suppositions. First, it is meaningful to assess the labour market impact of a global phenomenon like the digital revolution through individuals’ expectations of the future *framed* by country of residence. Second, it is meaningful to study geographical similarities *and* differences in the impact of the digital revolution on workers’ behaviour and expectations – the importance attributed to ‘difference’ is one of the hallmarks of contemporary economic geography. Third, individuals’ responses to current and expected wellbeing are cognition- *and* context-dependent recognising that ‘context’ is multidimensional and multiscaler in nature and effect (Clark et al. 2018).[2]

The concept of agency underpins this paper where its conception and expression is related to the nature of one’s employment contract and the country-based institutional context in which expectations are formed and actions taken. It is argued that being worried about the future is an important intuitive or subjective response to changing employment prospects notwithstanding the more conventional focus on observed responses (often termed objective agency) to changing employment conditions and related expectations of the future. Using a representative sample survey of employed men and women across the EU and the UK, this paper focuses upon respondents’ anxiety about their employment prospects over the near term (risk), the longer term (uncertainty), and whether they would undertake training on their own account to mitigate the uncertainties associated with technological change in the workplace.

A distinction is also drawn between survey respondents according to their type of employment contract. Following Iversen and Soskice (2019), it is posited that those on ‘typical’ contracts have expectations of job tenure whereas those on ‘atypical’ employment contracts are at risk to immediate market conditions. Whereas individual expectations of the future may vary according to their employment contract and their country’s labour market regulations and practices, individuals can take steps to ameliorate or dampen if not resolve the uncertainties associated with technological change in the workplace. Taking precautions in response to an uncertain future is a widely recognised coping-strategy even if the instruments and means available vary by context (see Roy 1952).

This paper makes three contributions to the literature. First, it emphasizes the significance of digital revolution for research in economic geography by focusing upon its contextual dimensions and significance. Whereas there is research on technology, finance and centers of innovation (see Zook 2018), there has been less research on the geographical nature and scope of its labour market implications. Second, by focusing upon workers’ intuitive or subjective responses to labour market risk and uncertainty, the paper promotes a way of conceptualising behaviour that avoids misleading categorical distinctions such as rational and irrational. Third, by highlighting precautionary behaviour in the face of labour market uncertainty the paper provides a way of linking labour market expectations with coping strategies.

In the next section, the distinction between objective and subjective agency is developed followed by a discussion of agency in theory and practice. Thereafter, the source and composition of the survey data on workers’ expectations of the future are discussed along with summary findings about near-term and long-term anxieties. The penultimate section of the paper reports on respondents’ willingness to undertake training to mediate their anxieties about the future and the final section draws implications and conclusions from this research for economic geography and beyond. In these ways, the paper is a positive response to criticism made of economic geographers who “focus on the spatial laws governing human action but neglect the actors themselves” (Bathelt and Glückler (2011, 26).

Agency – subjective and objective

The textbook model of behaviour begins with an autonomous agent with a set of preferences whose origins are deemed irrelevant for analytical purposes. Set within an optimisation framework, it is assumed that people act in

1 Risk refers to the possibility of loss in a specific domain (Fox and Tversky 1995). Uncertainty obtains when risk-metrics are either not applicable or the available information is unreliable in unobserved ways (Vartanian and Mandel 2012; Schlottmann and Wilkening 2012).

2 Context-dependence is widely accepted in behavioural psychology and the cognitive sciences (see Fiedler and Juslin 2006). It is less accepted in economics and some branches of regional science where there is a premium on explanation that has universal applicability. Even so, this is changing (see Dold and Rizzo 2021 on idealism set against context-dependent preferences in law and economics).

a manner consistent with their preferences subject to the available resources (material and otherwise). To simplify, it is also assumed that individual preferences are idiosyncratic (endogenous) rather than societal (exogenous) and that 'agents' choose whether to engage with others for the realisation of their separate and overlapping goals and objectives.

Nobel Prize winners argue that individuals' preferences derive from social position and status (see Sharpe 2007). Normally, this is an observation about lived life as opposed to abstract models of rationality stripped bare of commitments and relationships. Economic geographers argue that individuals are *necessarily* embedded in 'place' anchored by family, community, region, and country—the observed heterogeneity in behaviour is produced at the intersection between cognition and context (Miller and Grubesic 2021). Even so, the nation-state is often-times deemed somewhat remote, being the guardian of societal rights using incentives and sanctions including coercion. Nonetheless, the modern state should not be taken for granted—its powers and programs often define individuals' obligations and options (see Latour 2021 *contra* Keating 2021).

Here, it is assumed that individuals have the capacity to make choices as to their current and expected well-being. This does not mean that choosing to act is necessarily effective or efficient in the sense that welfare is maximized. Furthermore, people can choose not to act and/or prevaricate in the face of risk and uncertainty—personally and collectively (Iyengar 2010). Whatever their intentions, their hopes can also be stymied or paralysed by adverse circumstances. In this respect, Haggard and Eitam (2015, xi) define agency as "the capacity to perform an action, or the event of performing that action" and they refer "to specific classes of actions – actions that are in line with a person's conscious goals and intentions, and that the person herself initiates and controls."

Going further, Haggard and Eitam (2015) suggest that agency is to be found in one's own actions and the actions of others (an objective form of agency) *and* can be felt and/or experienced by the person concerned and those affected (a subjective form of agency). In the first instance, agency involves the assessment of costs and benefits both in relation to a person's well-being and those affected by their actions. In the second instance, having a *sense* of agency is an intuitive or visceral response to circumstances and prospects. In this respect, a visceral sense of agency may be a prerequisite for the deliberate assessment of the costs and benefits of alternative courses of action (Kurth 2018). As such, any 'hard' distinction between subjective response and objective assessment dissolves in the face of how people process information about the world (see Kahneman 2011; Loewenstein et al. 2001).[3]

Societies regulate the nature and scope of agency in various ways. Cultural expectations as to 'proper' behaviour are commonplace and are evident in social approval and approbation. Equally, social norms and conventions are often important ways of 'regulating' agency especially as regards commonly-held expectations of fairness, reciprocity, and mutual regard (Brennan et al. 2014). As well, governments may allow, disallow, regulate and/or proscribe certain types of actions using legitimate instruments of coercion (Wertheimer 1987). There is evidence that these various types of mechanisms are widely shared across societies and may be important in explaining the persistence of human beings over the millennia (by context) (Henrich et al. 2005).

It is entirely likely that individuals internalise the permitted nature and scope of agency such that they behave in ways that mirror their status as members of a community and give expression to belonging by acting accordingly. Evidence in favour of this proposition has been found in behavioural research that demonstrates when people are assigned a role (such as being a lawyer) they not only act accordingly, but their role-playing also extends into other unrelated activities (where the roles and responsibilities of a lawyer are not relevant). To the extent these roles have positive and reinforcing effects, those who occupy these types of positions tend to reproduce related behavioural norms and conventions (Spamann 2020).

Role-related norms are ingrained in individuals' repertoires of behaviour and are contextual in three different ways. Most obviously social roles are, in effect, filters that include and exclude the options available to an individual in certain circumstances. Just as obviously, social roles carry with them behavioural cues that can frame individuals' intuitive or visceral responses to available options and provide individuals with shortcuts to actions in relevant circumstances. Third, social roles carry with them rewards for acceptable behaviour and impose sanctions on unacceptable behaviour. In abstract, people can choose whether to act accordingly. But, to violate these types of norms is to step outside of one (known) context in favour of another (possibly unknown) context.

3 The relationship between objectivity and subjectivity has been described as "light and dark, visibility and invisibility, surface and depth, and nearness and distance" (Sass 2021, 558). Cognitive scientists recognise the co-existence of different types of agency and suggest that these types of categorical distinctions do not do justice to their inseparability. See Kahneman (2011) on Type 1 and Type 2 reasoning and their interrelationships.

Recognising the framing of behaviour, the standard response is to suggest that individuals, dissatisfied with the available options, search for alternatives. For some theorists, the search option is a means of making good on one's transcendental aspirations. For other theorists, the search option is a means of overcoming bounded rationality on the assumption that individuals make imperfect decisions when they lack the information needed to optimise. However, the findings of behavioural and cognitive psychology have undercut plausibility of these analytical moves.[4] The available evidence suggests that people are myopic, prone to status quo bias, and are often unable to assimilate information based on different frames of reference (Baron 2008).

A distinction can be drawn between the volume of information and the organisation of information relevant to specific types of decisions in specific types of circumstances. Consider, for example searching for a job. In many EU countries, labour markets are geographically extensive. As such, the search process can be time-consuming, expensive, and inevitably partial in scope (geographically and temporally). With the tech revolution, new providers have come to the market with websites and apps that allow both sides of the market to seek options and matches beyond immediate circumstances thereby facilitating job switching by jurisdiction, type of job, wages, and availability. Characteristically, these apps are hierarchies of options and can be navigated simply and quickly through to viable options.

These apps are also resources that frame the decision-making process, structure the available information, exclude what is irrelevant in favour of that which is decision-relevant, and create hierarchies of value by salience. These apps also encourage repeated use by recalling past searches. In many cases, these tools are economical in terms of individual attention and more systematic than that which can be accomplished by someone initiating and managing the search process. Notice, however, these apps often reinforce preferences and circumscribe options because of the protocols imposed on the search process. In some cases, their effect is to reinforce bounded rationality rather than extend opportunities over time and space.

Agency – Theory and practice

In a widely cited paper, Kahneman and Tversky (1979) suggested that people look to the near future, discount the medium term, and heavily discount the distant future.[5] If people instinctively 'look forward' when encountering the world, they do so by reference to their immediate situation and near-term action space not a relatively abstract point in time or space (Sloman and Fernbach 2017). It is also possible that some individuals' discount functions are hyperbolic such that people discount the medium term but, at a certain point, increasingly value the distant future (Laibson 1997). This finding can be explained by age and gender–that is, older men and women look further forward than younger men for obvious reasons.

The biases and anomalies research program has relied upon human subjects—often undergraduate students—drawn from western universities. This type of platform is cost effective for recruiting test-subjects. Nonetheless, questions have been raised as to the representative nature of these findings for people who have an emotional stake in the consequences of their actions (Charness et al. 2013; Henrich et al. 2010). While younger men more than women heavily discount the future, these effects are mediated by increasing age and income just as cultural norms and social expectations can frame the acceptability of discounting the future (see Fan and Xiao 2006; Henrich et al. 2005).

Agency and salience

Once the focus shifts to the lived world of individuals, their families and societies, context raises questions about the integrity of universal statements of cognitive predisposition and behavioural traits. To illustrate, Servon (2017) provides an anthropological study of lower income workers' connections to the US banking industry, its services, and its borrowing protocols. By her account, many people have limited or no access to banking to deposit their salaries, pay bills, and save for the future. These commonplace activities are important where fee-for-service employment relationships frame the process of earning a living and supporting family life (see Vieder et al. 2015).

4 Searching for information runs the risk of confirmation bias even if this activity often extends the information available for assessing options (Hogarth 2001). Savvy decision-makers can dampen the effects of confirmation bias by learning-by-doing (Dhami et al. 2012) and/or self-conscious interrogation of intuition (Kahneman 2011).

5 Laboratory-based research shows that men more than women discount the future just as younger more than older people discount the future (see Lindquist and Säre-Söderbergh 2011). These patterns have been observed in a variety of settings including financial markets (see Barber and Odean 2001).

To the extent that lower paid individuals are excluded from conventional banking services, their agency is blunted in an objective sense notwithstanding the relevance or salience of the issues at hand. Furthermore, their capacity to save for the future can be quite limited in that cash checking companies do not provide cost-effective savings instruments consistent with this type of worker. Agency is also stymied in a subjective sense in that they are discouraged from saving for the future and lose confidence in their ability to realise related goals.

Given the geography of US labour markets, the incidence of banks, check cashing companies, and payday loan companies varies within and between cities such that inner cities are underserved by banks and other types of retail outlets while (figuratively speaking) every corner has a check-cashing facility (Shannon 2021). This mapping exercise could produce similar if not the same findings for other OECD countries like the UK (see Leyshon et al. 2004, 2006). More recently, based upon a representative sample survey of working men and women and their spending habits and savings intentions across 17 countries, it was found that whether lower paid individuals tend to spend their earned income, save for the future, and struggle to meet ongoing commitments is 'framed' by country of residence (Innocenti and Golan 2022).

Four implications are relevant to this paper. First, lower paid individuals compared to higher paid individuals tend to discount the future given their lack of savings and inability to make forward commitments. Second, lower paid individuals compared to higher paid individuals tend to rely upon a limited range of financial services that often accentuate rather than dampen the risks associated with making a living (Jachimowicz et al. 2020). Third, when asked about financial literacy through survey questions designed to elicit knowledge and understanding of certain financial concepts, many people score poorly on these tests compared to higher paid individuals (Lusardi and Mitchell 2014). Fourth, to the extent that these findings are universal in scope, their expression is context-specific (time and place).

Agency and context

Being 'in place' can be dominated by apprehension, fear, and despair (Dear and Wolch 1994). In these circumstances, agency is buffeted by adversity, visceral responses to events outside of one's control, and a sense of weariness and/or defeatism as opposed to confidence in the future.[6] Whereas it is possible to look outside of the immediate context or action space for positive cues for behaviour, to do so requires a leap of faith or optimism often not rewarded in immediate or foreseeable circumstances (see Hogarth 2001).

The link between anxiety and changing circumstances has been noted by many commentators. Sennett (1998) observed that most people, most of the time, associate risk with loss and, on average, loss aversion far outweighs any possible gains associated with risk-taking. Commentaries on twenty-first century labour market opportunities in the USA also point to the emotional, health and welfare costs of labour market vulnerability (see Case and Deaton 2020; Morduch and Schneider 2017). In these accounts, it is observed that those people who feel vulnerable to current circumstances react to the prospect of changing labour market conditions with a sense of dread while those who have benefited in the past from changing conditions may welcome its expected benefits (see Payne 2017).

Risk and labour market performance

Over the short term, certain types of employed men and women are vulnerable to the competitive conditions of the company that employs them, are vulnerable to the changing tastes and preferences of consumers and are vulnerable to near-term country-specific macroeconomic conditions. Some workers may be more vulnerable than others if they have no claim to job tenure and/or continuity of employment should short-term disruptions in company revenue and profit prompt the rationalisation of production and employment.

Labour market vulnerability is one of the key themes of contemporary economic geography and the social sciences and is reflected in, for example, recent studies of the City of London (McDowell et al. 2008, 2009), sex/gender divisions of labour (Meehan and Strauss 2015), the fracturing of employment contracts through the marginalisation of unions (Weil 2014), and the dominance of capital over labour in the distribution of earned income (Piketty 2014). Often missing in these accounts, however, is acknowledgement of the geographical diversity of

6 Knowing that desired goals are out of reach can fuel a sense of betrayal and even rage (Berlant 2011). Witness the support for BREXIT, notwithstanding the costs of the 'deal' for the UK and the EU (Thissen et al. 2021).

labour market practices and institutions by country and region (see Jones 2017)

To illustrate, we turn to the findings of a multi-year comparative study of European labour markets and the fears of employed men and women about their immediate and long-term employment prospects in the face of technological change. Whereas much of the debate about the future of employment has a global perspective combined with local impact, there is a danger of ignoring the fact that labour markets are typically embedded in national macroeconomic conditions and labour market regulations that attenuate the significance of global-local focus of contemporary research (Gertler 2010). See, for example, the OECD (2021) report showing marked differences between the UK and EU countries in the levels and duration of government income support when people lose their jobs.

McCormack (2015) amongst others has noted that people 'experience' macroeconomic events and forces including national inflation and related labour market volatility (in his example, German hyper-inflation during the 1930s). More recently, it has been shown that movements in US stock markets affect the spending behaviour of labour market participants where increases in perceived wealth tend to increase the propensity to spend mediated by the income-related propensity to hold property and financial assets like traded stock (Chodorow-Reich et al. 2019). In related research, Clark et al. (2010) show that movements in UK stock markets and property markets are statistically related and inform individual spending behaviour.[7]

More recently, Roth and Wohlfahrt (2020) demonstrate that many people follow short-term national economic forecasts and react to negative rather than positive signals. They also show that neophytes are quite variable and impatient in their responses to macro-signals whereas more experienced individuals tend to converge upon the *path* of expert opinion. For the former, their perceived labour market vulnerability (local) matters a great deal when framing responses to expert opinion (national) whereas more educated individuals appear to feel less vulnerable and have the patience to assess options that often transcend local opportunities. As a result, there are considerable variations in responses to the path of national economies anchored in the activity spaces and cognitive skills of different types of workers.[8]

The survey which informs the discussion here and in later sections of the paper was based upon representative samples of working men and women aged 20–70 years for 17 countries or jurisdictions (see Appendix). In this paper, the focus is upon the results for the UK and EU including Finland, Germany, Ireland, Italy, Romania, Spain, and Switzerland. Implemented in March and April 2019 before the acceleration of the pandemic (except for Finland), the survey was designed by reference to respondents' age and gender in proportion to country-specific demographic profiles. The survey research produced approximately 1100 completed surveys per country matching similar types of studies including Dohmen et al. (2010).

Information on risk preferences and expectations of the future were sought along with attitudes towards technological change in the workplace and individuals' intentions with respect to taking precautions via outside-of-work retraining. For the purposes of this paper, Q27 asked for respondents' employment expectations over the coming 12 months including voluntarily leaving one's job, becoming a freelancer, and the likelihood of losing their job. Answers to this question were related to the type of their employment contract, distinguishing between long-term or continuing employment (Typical) contracts and the type of short-term or non-contracts found in informal sectors and the gig economy (Atypical contracts).[9]

The survey was implemented at a time after a number of years of robust European economic growth subsequent to the economic dislocation occasioned by the 2009–2011 global financial crisis and the Euro-crisis of 2011–2014. Notice that Q27 was framed by reference to respondents' immediate employment prospects rather than long-term issues regarding employability and technology (see the next section). Presumably, respondents had a good feel for their immediate job prospects and related risks both in the positive (the option of switching jobs) and in the negative (looking for jobs). As such, assessment was likely informed by recent experience by context (country) rather

7 See also André (2016) who shows that there are marked differences between the UK and EU countries in the average levels of household debt comparing, for example Ireland (very high) with Italy (very low). Germany is also on the low side of the OECD average while the UK is above average but not significantly so compared to Australia. Household debt is made-up of many elements, principally housing mortgages. These differences are persistent and systematically affect consumer behaviour.

8 Government agencies are aware of these differences, study variations in sentiment, and frame polices accordingly: see https://www.federalreserve.gov/newsevents/pressreleases/monetary20210519a.htm

9 The term 'Atypical' is owed to research that distinguishes between standard labour contracts and those set by short-term expediency (Manow and Seils 2000). Notwithstanding claimed differences between UK and European social contracts (Dore 2000), German labour market reforms along with sectors not best-served by 'typical' contracts have promoted the diffusion of these contracts across the OECD (Iversen and Soskice 2019).

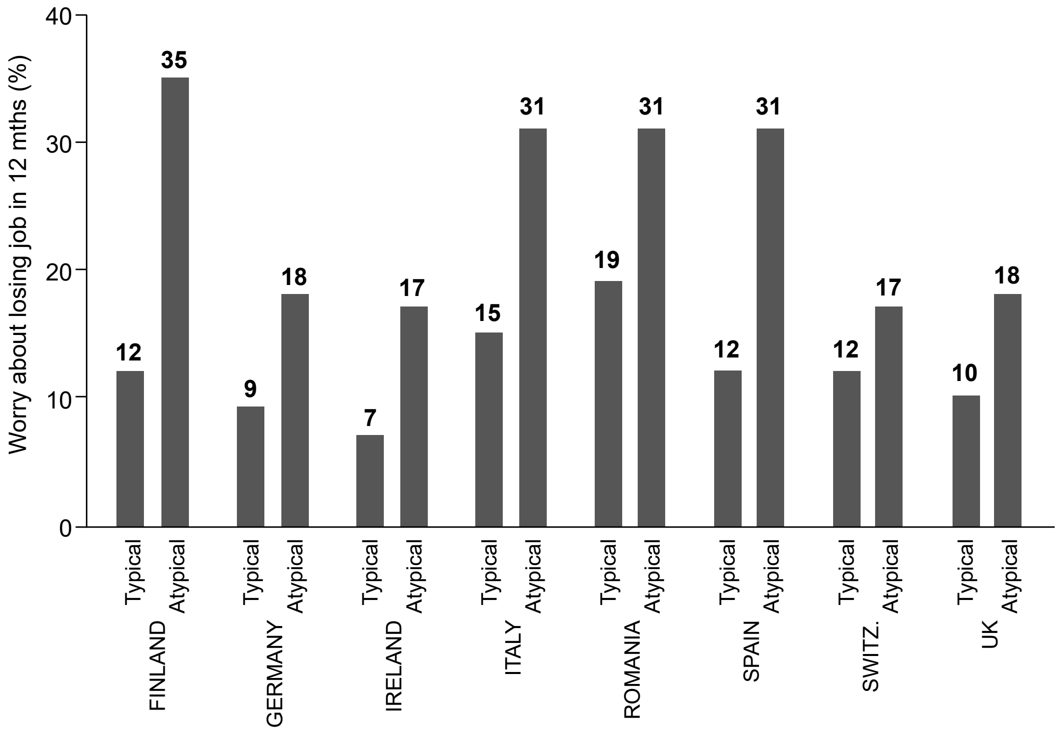

Figure 1: Worried about losing one's job in 12 months by employment contract and country (EU and UK)

than being so uncertain that their estimates were guesses about the future.[10]

Figure 1 displays the answers to Q27 by country and by type of employment contract, focusing on the likelihood of losing one's job over the coming 12 months. Overall, about 10 percent of those on Typical contracts indicated that they were fearful of losing their job whereas about twice as many of those on Atypical contracts were fearful of losing their jobs. Notice, Italians and Spaniards on Atypical contracts were nearly twice as likely to indicate that they were worried about losing their jobs. Atypical workers in Finland, Italy and Romania also felt quite vulnerable to losing their jobs whereas in Germany, Ireland, Switzerland, and the UK the fears of job loss amongst this group or type of worker were more modest (consistent with Manning and Mazeine 2020).[11]

Respondents' fears are likely 'conditioned' by the nature and scope of countries' social security and employment systems—the hypothesis being that confidence in the future is influenced by national institutions that underwrite or not the long-term welfare by different segments of the population (Shafik 2021). The available data on unemployment benefits by country suggest that the *level* of benefits may have had little to do with the fear of losing one's job. Unemployment benefits (6 months and 1 year) for Finland, Italy, Spain, and Switzerland are higher than the OECD average whereas unemployment benefits for Germany, Ireland, Romania, and the UK are lower than the average (OECD 2021). UK unemployment benefits are low against the OECD average even though UK survey respondents' fears of losing their jobs were low like Germany, Ireland, and Switzerland (with very different levels of benefits).[12]

10 Given the cross-sectional data, it was not possible to directly assess respondents' attitudes to changes in their circumstances. Nonetheless, the results of the survey by type of contract are consistent with those provided by Manning and Mazeine (2020) for the UK, the USA and Germany.

11 The three figures are based upon a series of reports published by the Smith School at Oxford University in conjunction with Zurich Insurance. Figure 1 is discussed in the 'global and local market insights' report, and versions of Figures 2 and 3 can be found in the 'European outlook' report (pages 6 & 8). See https://www.smithschool.ox.ac.uk/publications/reports/shaping-a-brighter-future-of-work-global-and-local-market-insights.pdf; https://www.smithschool.ox.ac.uk/publications/reports/perceptions-on-protection-global-highlights.pdf; https://smithschool.ox.ac.uk/publications/reports/shaping-shaping-a-brighter-world-of-work-the-European-outlook.

12 It was not possible to estimate the relationship between anxiety and the value of unemployment insurance by country. In any event, this variable is entangled in countries' social welfare systems including the value of disability insurance and the like. See Coile et al. (2020) and Iversen and Soskice (2019).

Fears about losing one's job were highest where economic growth was lower than the EU average over the period 2014–2019 along with higher levels of long-term unemployment and lower labour force participation rates.[13] In these countries, jobless recoveries had contributed to higher rates of unemployment amongst those with limited skills and expertise (Jaimovich and Siu 2020). By contrast, where fears of losing one's job over the short-term were lower, economic growth had been more robust over the same period contributing to higher rates of employment and labour force participation rates amongst those of working age. As such, country-specific macroeconomic conditions, shorter-term employment growth, and the option to switch jobs mediated by the type of employment contract frame workers' fears about their immediate future (see Bachmann et al. 2021 on churn in German labour markets).

Technology and uncertainty

Whether or not something deserves attention depends, in part, upon its significance or urgency against current and expected commitments. As in the previous section, it is acknowledged that threats can be registered in emotional and/or in deliberative ways. In the short-term, threats can be immediate and claim attention by virtue of the *vividness* of their possible consequences. Looking forward over the longer-term, threats can be recognised but responses confused and/or delayed because of uncertainty over their onset and likely effects in the future (see McCormack 2015 who focused on "immediate threats" over distant threats).

Looking beyond current circumstances involves risk *and* uncertainty—wherein the later, if approximated by estimates based upon the past and present are imperfect at best and, more likely, very challenging given that the 'future' can only be glimpsed but not predicted with any confidence. Knowing that they are vulnerable to an unknown but threatening future, workers can experience "immediate visceral reactions (e. g. fear, anxiety, dread)" (see Loewenstein et al. 2001, 267). Over the short-term, anxiety and fear can be mediated by being 'close-to-the-action' – that is, having sufficient knowledge and understanding of likely events to judge the options available. Equally, having a secure labour contract compared to an atypical contract can also discount the fear-factor.

Uncertainty is a mixed blessing offering the prospect of change as well as the possibility of gains through earned income and employment. For those not so advantaged by 'position' (labour market, social, geographical, and/or cultural), uncertainty is almost always a threat to future wellbeing with adverse implications for themselves and their families. If unknowable in terms of its long-term consequences, technological change and automation in the workplace typically involves obsolescence and displacement for those who have neither the skills nor the aptitude to respond appropriately. These issues inform research at the intersection between the revolution in technology, the gig economy, and workers' skills and aptitudes (see Nedelkoska and Quintini 2018).

Survey respondents were asked about their attitudes and likely behavioural responses to long-term employment prospects in the face of technological change and automation. Question Q58 was as follows: "To what degree are you worried about losing your job in the next 5 years because your tasks will be replaced by a machine or a computer programme?" The question was framed by the prospect of losing one's job to technology and was anchored by reference to being "worried" about being "replaced" – subjective and objective points of reference rather than pieces of data about specific factors. The timeframe "in the next 5 years" took respondents from prospects that could be glimpsed one year or two years into the future to an economic environment that was 'unknowable' notwithstanding their employment contract.[14]

It is possible that individuals' anxiety about the employment effects of the digital revolution were misplaced. For those with relevant skills and expertise, it has been argued that the tech revolution is an opportunity to switch jobs for higher wages and promotion (see Aghion et al. 2021). Being flexible and opportunistic through employment contracts that can be jettisoned 'at will' can also reap a premium in labour markets that face shortfalls in qualified workers. In countries with robust macroeco-

13 The source for the data on employment and unemployment trends was the European Commission through EuroStat at www.ec.europa.eu. Specifically, the data base on Employment and Unemployment Statistics, filtered by country and time (quarterly 2012–2019), including legal residents and citizens and those employed (fulltime and part-time). Missing from the data were illegal residents, recent immigrants without formal employment, and those working part-time jobs outside of reporting mechanisms.

14 Respondents' expectations could have been influenced by their age and gender (see Innocenti and Golan 2022; Tymula et al. 2013). Older-aged respondents' have more to lose from shorter-term rather than longer-term interruptions to earned income if they are eligible for early-retirement pensions and the like. Since men tend to work longer than women, older women may be less concerned about shorter-term interruptions to earned income than men of a similar age.

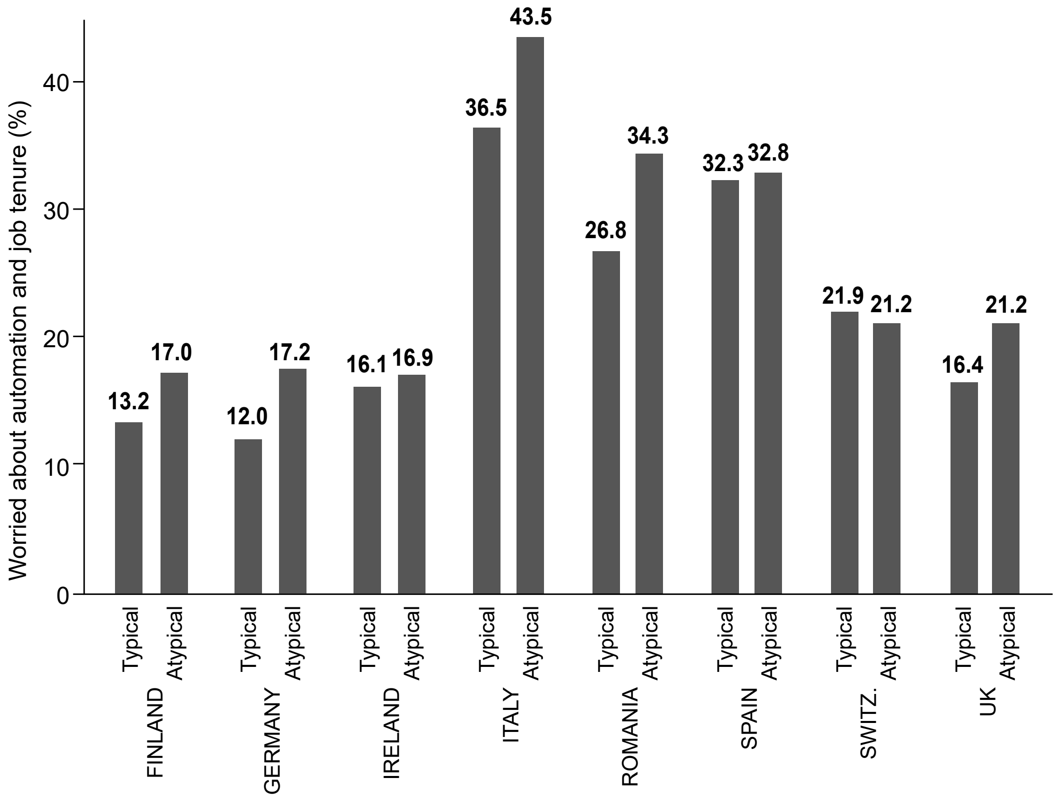

Figure 2: Worried about the impact of automation on job tenure (over 5 years) by employment contract and country (EU and UK)

nomic conditions, workers without tech-related skills can claim a premium on their work-efforts not just their skills. As such, confidence as well as anxiety about the future is likely mediated by country.

In Figure 2, the results of the survey are summarised for the UK and the EU countries included in the survey. There were similarities and differences in the survey responses according to the type of employment contract and country. Inspection of Figure 2 suggests that responses could be collected into two groups of countries – whatever the nature of their employment contract. German, Irish, UK and Finnish respondents were less worried about losing their jobs to technological innovation in the longer-term than Italian, Romanian, and Spanish respondents. Swiss respondents were somewhere in between. Country-specific differences in forward-looking expectations about employment prospects are important and could reflect both job-less recoveries AND a lack of confidence in their employability should they lose their current job.

One interpretation of this finding is that in some countries more than others recent high levels of employment and prosperity represent 'normal conditions' thereby discounting distant threats to employment. As noted above, employment rates were high in the first group of countries whereas in the second group of countries long-term unemployment and low rates of labour force participation rates have been persistent. For the second group of countries, the threats posed by unemployment were reflected in anxiety about the future whereas for the first group of countries the prospect of losing one's job in five years was dampened by recent positive experience and a *sense* of confidence in the future (being employed and/or being able to find a job if displaced by technology). For respondents in countries with high levels of unemployment or under-employment, 'normal' was being vulnerability now and in the future.

In every case except Spain and Switzerland, those on conventional employment contracts were less likely to indicate that they feared losing their job over the next five years than those on Atypical employment contracts. In some countries, the differences between those on different types of employment contracts were marked (Finland, Germany, Italy, Romania, and the UK) whereas in other countries those differences were not nearly as important (Ireland, Spain, and Switzerland). One interpretation is that in some countries being on a permanent contract may not help when economic growth stagnates and when unemployment is expected to remain high. In these conditions, holding one's job is more important than thinking about what technology might offer in a positive sense in the future.

Precautionary behaviour in context

Cognitive science supports the idea that individuals look forward when assessing the present. For example, Andrew Clark (2016, xiv) stated that "brains like ours have become masters of prediction – surfing the waves of noisy and ambiguous sensory stimulation by, in effect, trying to stay just ahead of them." For behavioural theorists, individuals use data about the present, anticipate what's coming, and translate these pieces of information into thought and action.

Forward-looking individuals can also take precautions against job risk and uncertainty. There are various ways of doing so, conditioned by age, income, family status and economic prospects. Take, for example, earning an income in a job that is believed to associated with a higher-than-average risk of being terminated. There are at least three ways of 'insuring' against such a possibility. Workers could rely upon government to underwrite their incomes in the face of technological change (Aghion et al. 2021). They could save for a 'rainy day' by putting aside a portion of earned income into a bank or equivalent to be drawn upon when things go wrong. They could also buy an insurance contract that could provide an income supplement over and above that available from the employer and/or government.

The available evidence suggests that those who can afford to do so put aside a portion of weekly and monthly earned income while those on higher incomes also tend to take out insurance contracts to the same effect (those on low and unstable incomes rarely save and cannot afford to buy insurance contracts given the loss of those contracts should premium payments be interrupted). There are other ways of insuring against interruptions in earned incomes. For example, lower income workers often take second jobs, large families pool their earned incomes and, in effect, protect one another when things go wrong. In yet other cases, friends and relatives act as backstops in difficult circumstances.

Another option is to take modest precautions by upgrading tech-related skills and expertise. Survey respondents were asked (Q53) "How likely are you to take on training to improve your professional skills if it would take you one evening a week (of your leisure time) for 6 months?" Answer options included "Very unlikely, Somewhat unlikely, Somewhat likely, and Very likely." Respondents were permitted to tick one option. As in the previous discussion of the survey findings, the results displayed are limited to the UK and the EU and those employed in standard (Typical) or non-standard (Atypical) contracts focusing upon those who would seek opportunities to retrain and those who would not.[15]

The results presented in Figure 3 were surprising. Nearly 66 percent of respondents would take the opportunity to improve their skills on a self-funded and part-time basis. As expected, those most likely to do so were found in Italy, Romania, and Spain. Irish respondents followed by Swiss respondents, German and Finnish respondents, and UK respondents. Comparing Italian, Romanian, and Swiss respondents to UK respondents there were marked differences. Those on Atypical employment contracts were marginally more likely to take the option. In Romania and the UK those on Typical contracts were more likely to take up the option.

It is unlikely that training one evening a week would be an especially effective strategy given the likely impact of the tech revolution on the nature and composition of employment (Frey and Osborne 2017). Many respondents would find it difficult to predict with any confidence the value of such training given uncertainty about the future demand for labour. To indicate an interest in this strategy could be interpretated as an instance of 'expressing' agency for its own sake whatever its effects on the probability of realising benefits from this activity in the future. That is, it is more about acting in the face of a threatening future. In doing so, current anxiety may be salved even if the value of such an action is yet to be revealed.

Whereas a safety-first strategy would underwrite well-being as currently understood, by investing in skills and expertise respondents may well seek to take advantage of future opportunities even if those opportunities are vague. By taking retraining on their own account they may also free themselves of any future dependence upon their current employer. In other fields of endeavour subject to risk and uncertainty, such as corporate management and strategy, optionality attracts a premium because lock-in can be costly and deciding to make a switch to a new opportunity depends upon the nature and value of

15 When addressing question 53, respondents had not encountered question 58 which, if encountered before this question could have primed answers. When answering question 58, respondents had already addressed question 53 which asks whether they would undertake, on their own volition, a part-time training program. Question 53 appears to be benign whereas question 58 asks about respondents' fears for the future.

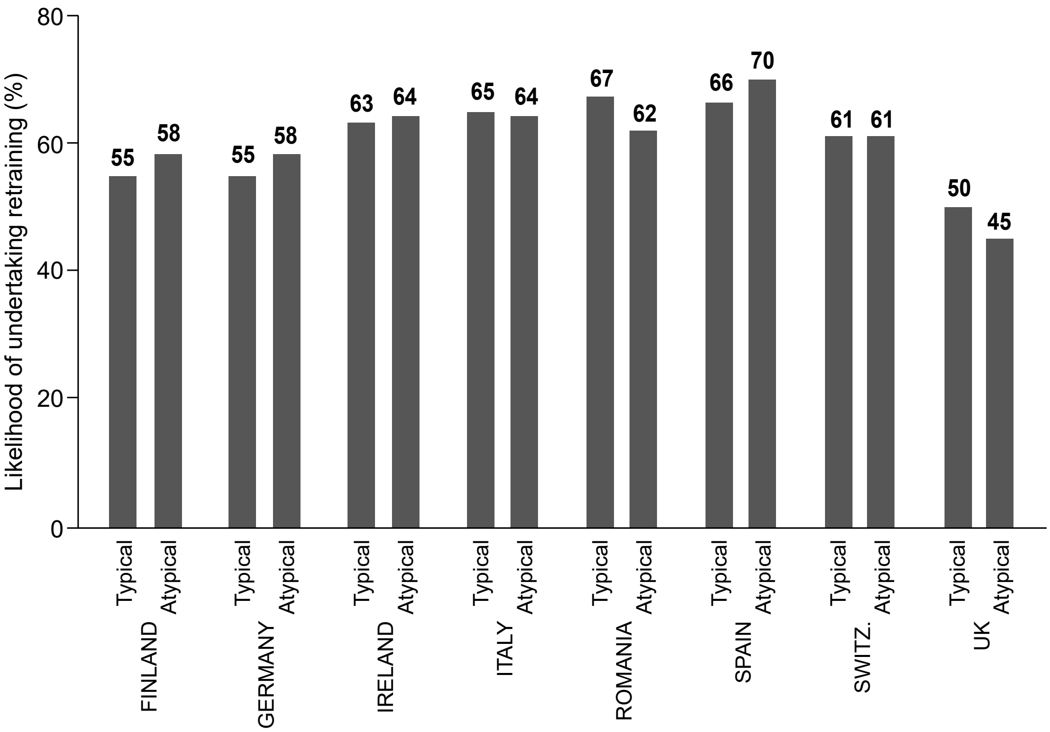

Figure 3: Likelihood of undertaking retraining for technological change on one's own account by employment contract and country (EU and UK)

expected opportunities against the costs of forgoing something now in favour of the future (Courtney et al. 1997).[16]

More specifically, it would make sense to select retraining programs that are different than those currently available in the workplace. It would also make sense to choose a skills' provider to ensure that flexibility is not compromised by an 'over-commitment' of personal resources. With knowledge and experience of technological change, respondents might also want to switch providers and seek other types of skills through the coming 5 years. Whether respondents are self-conscious about optionality is an important research topic. Respondents in decision-intensive jobs may have the ability and experience needed to understand the issues and make the needed commitments of time and effort to enhance long-term prospects (Deming 2021; Innocenti and Golan 2022).[17]

16 Some respondents could have an intuitive understanding of the value of optionality especially if they can cover downside risks while giving themselves the option to switch jobs in the future. Who would carry through on such a plan, and in what circumstances, is an important issue of public policy. See Thaler (1991) on the challenges involved in precommitment and self-control over the long-term.

17 As such, experience is likely to be the immediate reference point for making guesses about the future. See Innocenti et al. (2020) on the importance of experience in driving the demand for insurance.

Implications and conclusions

The building blocks for understanding decision-making in space and time were presented applicable to the risks to income and employment associated with the tech revolution. Individual decision-makers were contextualised, beginning with instances where people look forward from their current positions to immediate prospects (risk) and to the long-term which is difficult to grasp in terms of its likely consequences (uncertainty). In the first instance, experience matters whereas in the second instance experience is, at best, an imperfect guide to behaviour. Researchers often conceptualise these issues via an assessment of the costs and benefits of available options; in this paper, the focus is upon individuals' "self-perceived threats" to their livelihoods (see Manning and Mazeine 2020).

Agency was conceptualised in various ways including emotional or subjective responses to perceived threats to individual welfare. I followed behavioural scientists like Scheffler (1991,4) who suggested that "emotion without cognition is blind" and "cognition without emotion is vacuous". This is developed by an assessment of the significance of risk in everyday life and was informed by survey research on individuals' perceived labour market prospects in the UK and seven EU countries. Three issues were tackled: the immediate threat of losing one's job, the threat of technological change to employment in five years' time, and the likelihood that survey respondents would take precautions given the possibility of technological change in the workplace.

An expansive view of agency was presented that takes seriously so-called objective and subjective responses to material conditions. In the behavioural and cognitive sciences this distinction is invoked to acknowledge that there are various ways in which people react to the world and make plans for the future (Fiedler and Juslin 2006). As Simon (1982) and many others have shown, moreover, the rational man of economic theory is a partial and indeed misleading representation of how people go about their business. Here, I have focused on 'worries about the future' to illustrate the point that a broader conception of human behaviour in economic geography should take seriously issues of sentiment (noted by Blunt et al. (2021) and McCormick (2017) amongst others).

Having focused on the challenge of technological change for workers' employment prospects, it is reasonable to ask whether a sentiment-focused policy regime might be deployed suitably adapted to the institutional heritage and policy regimes of OECD countries. One way of proceeding would be to provide the public at large and those likely to be vulnerable to technological change in the workplace information as to their options, opportunities for training, and the costs and benefits of doing so over the short- to medium-term. This type of policy would leave to individuals the responsibility to make their own assessment, take steps to do so, and bear the consequences positive and negative.

An alternative is to target those groups who, by virtue of experience and/or their realisation of vulnerability, are predisposed to take actions to forestall the adverse effects of technological change. Given the patterns of immediate and long-term fears about the future identified in this paper, this type of intervention would be sensitive to countries' and regions' current employment conditions, labour market policies, and prospects for the future. As well, given evidence to the effect that many people across the countries included in our sample would be willing to undertake training on their own account, providing ways of doing so that are accessible and cost-effective would seem to be a way of translating fears about the future into precautionary behaviour.

Behavioural research also suggests that experience combined with vivid signalling are far more effective than providing information on likely trends, prospects, and long-term consequences. If people are fearful, then public policies need to capitalise on those fears in ways that allow individuals to salve their anxiety. In some respects, the recent experience of OECD countries through the Covid-19 pandemic has been a real-life laboratory for testing the signals that work, what do not work, and how to mobilise groups hesitant to take precautions whether in the form of vaccination or in the form of changing dietary and health-related habits. Recent evidence suggests that referring to peers' experience makes a difference when reaching out to those groups otherwise reluctant to take the initiative.

We should be cautious when linking individuals' behavioural responses to the pandemic and their responses to the possible employment consequences of technological change. The overwhelming effect of catching the virus is negative. By contrast, for certain types of workers technological change has, and is expected to have, positive effects for their employment and income. Whereas the former is negative and can be conceptualised as being a threat to wellbeing, the latter can entail positive and/or negative consequences depending upon the type of technology, the nature of current jobs, and much more. At issue is communicating the future in ways that use the negative and the positive in ways attuned to the visceral responses of different segments of the population. This deserves more research inside and outside of economic geography.

If the nation-state is the source of resources and the formal institutions that sponsor and manage work-based training programs, their effectiveness may also depend upon decentralising rather than centralising these interventions (as intimated by Rodríguez-Pose and Storper 2006 in a different context). To be effective, training and retraining programs may need to be targeted to cities and regions and their labour market conditions rather than remaining at the level of the nation-state. Some countries more than others have, or have had, this type of policy framework, buttressed by strategies designed to mobilise those groups most at risk to changes in local labour markets conditions. There may be a contested relationship between the design of retraining programs *and* their implementation at the local level considering of the geography of labour market conditions and practices.

Appendix

The data used in this paper comes from a bespoke survey (March 2019) comprised of 11 sections with 110 questions that took approximately 25–35 minutes to complete. The first four sections were devoted to eliciting information from respondents on their backgrounds, awareness and knowledge of financial instruments like insurance, and personal circumstances. Sections 5–8 focused upon career and employment prospects.

Some surveys with global scope have relied upon opinion polls augmented by a small set of questions to inform academic research (see Falk et al. 2018). Here, the survey was designed for understanding individuals' aspirations and behaviour within and between countries given national systems of labour market regulation and welfare. For ease of analysis and interpretation, country samples were of similar size and consistency in terms of age and gender. Small and/or inconsistent samples and problems of implementation related to language, culture and salience can hamper interpretation of the results (Tanaka et al. 2010; Vieider et al. 2015).

A commercial company was responsible for the implementation of the survey. It has experience in panel management and the collation of survey data across multiple jurisdictions with different languages, expectations, and performance criteria. Panel participants came to the survey without prior knowledge of its content and were modestly rewarded for participation and completion of the survey. The survey was translated from English into the language or languages of the target jurisdiction with checks as to the integrity of the translation (including translation back to the English version). The targets for the survey were employed men and women between the ages of 25 and 60 years of age.

The commercial provider engages panel participants (respondents) through a network of country-based providers in ways that allow for global reach and access to country-specific knowledge and expertise in panel management. These panels are actively maintained, proprietary to the providers, and were created at least a decade ago. The providers' panel management practices are compliant with market research industry standards as well as jurisdiction-specific data protection and privacy laws.[18]

Members of panels receive rewards for participation according to a structured incentive scheme. The size of a reward is determined by the length and complexity of the survey; in many cases it is also determined by the desired socio-demographic profile of respondents. For example, a highly qualified professional could receive a higher incentive for completing a survey related to their profession than if completing a survey about more general consumer purchasing decisions. Only respondents who complete the survey received rewards. These were tailored to local regulations and expectations and can include points-programmes, gift cards, vouchers, charitable contributions, and prize draws.

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[18] Information on the identity of panel participants was not shared with Epiphany, Zurich Insurance, or Oxford University. The author did not have access to the original data.

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