



The influence of automation in support for Universal Basic Income

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ABSTRACT

Technology is advancing at unprecedented rates and Automation and AI have the potential to expand the economy beyond human production, as such, Universal Basic Income (UBI) arises as a political measure to mitigate the effects of that scenario. Nonetheless, opinions towards UBI are divergent and may be influenced by different socioeconomic and psychological factors. This dissertation explores the influence that the introduction of a future automated society has on individual's support for UBI. Additionally, this study investigates the role of specific beliefs (Meaningfulness of Work and Meritocracy) as well as of Job Automation Risk as moderators in that relationship. Results show that the introduction of a future automated scenario positively influences participant's opinions towards UBI. Results also reveal that the more individuals believe in Meaningfulness of Work, the less they are prone to support UBI. Finally, the study found no evidence of moderation by Meritocracy and Job Automation risk in the relationship between the introduction of a future automated society and support for UBI.

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Keywords: Universal Basic Income, Automation risk, AI, Meaningfulness of work, Meritocracy

RESUMO

A tecnologia está a evoluir a um ritmo sem precedentes e a automatização e a inteligência artificial têm o potencial de expandir a economia para além da produção humana. Neste contexto, surge o Rendimento Básico Universal (RBU) como uma medida política para mitigar os efeitos deste cenário. No entanto, as opiniões sobre o RBU são divergentes e podem ser influenciadas por diferentes fatores socioeconómicos e psicológicos. Esta dissertação explora a influência que a introdução de uma futuro totalmente automatizado tem no apoio ao RBU. Além disso, este estudo investiga o papel de crenças específicas (como o Significado do Trabalho e a Meritocracia), bem como do Risco de Automatização do Emprego, como moderadores nessa relação. Os resultados mostram que a introdução de um cenário de um futuro automatizado influencia positivamente as opiniões dos participantes em relação ao RBU. Os resultados revelam também que quanto mais os indivíduos acreditam no Significado do Trabalho, menos propensos estão a apoiar o RBU. Por fim, o estudo não encontrou evidência de moderação da Meritocracia e Risco de Automatização de Emprego na relação entre a introdução de uma sociedade futuramente automatizada e o apoio ao RBU.

Title: A influência da automatização no apoio ao Rendimento Básico Universal

Autora: Mariana Amaro de Sousa Coelho Monteiro

Palavras-chave: Rendimento Básico Universal, Risco de Automatização, Inteligência Artificial, Significado do Trabalho, Meritocrácia

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1. INTRODUCTION

Technology is changing at unprecedented rates, impacting every aspect of our lives, from our daily routines, to our jobs, to the way we function in society, and to how global economies progress (Butler, 2016). A few centuries ago, the limit of the economy and creation of wealth was people's production capacity. With technology and automation, that limit saw a gradual, but exponential expansion over the decades, and today this expansion has been growing at unprecedented rates (Bruce-Lockhart, 2022).

Artificial Intelligence (AI) will allow for the growth of the economy to lie beyond the limits of human production and to tend more to the boundary of available planet resources. This tendency is thought to result in a world capable of generating wealth unlike any other time in history (Lu, 2021).

Nonetheless, as history corroborates, the consequences of automation and wealth creation may contribute to an unequal society (Szczepanski, 2019). In the context of mitigating and balancing equality, governments tend to intervene. Social welfare schemes have been created in the attempt to distribute the wealth of those who own too much to those who have too little (OECD, 2019). Although the structure of these schemes is already embedded in the way economies function, it is unclear if they are enough to sustain equal societies today, let alone in a future with complete technological disruption (Buchs, 2022).

Deriving from that uncertainty, the political idea of UBI arises, as a form of universal, unconditional, individual, and regular cash transfer to each member of the society (Bidadanure, 2019). Although there are strong arguments in favor of UBI, namely the decreasing in inequality and the increase in freedom and productiveness (Grace et al., 2018; Gupta, 2022; Jones & Llewellyn, 2019), there is also the prominent idea that it would generate disincentives to work and that it would be an extremely costly solution (Dermont & Weisstanner, 2020; Ruckert et al., 2018).

Despite the arguments against UBI, the literature suggests that UBI could be a viable solution in an AI disrupted global economy (Cholbi & M. Weber, 2019). Nonetheless, the public's acceptance of the idea is a crucial factor for its implementation, and there is still a prevalent resistance due to UBI's radical nature.

1.1 Current Research

With this research, I intend to understand the attitudes and perceptions of people towards UBI in the context of a future where AI will be able to outperform humans in most workplace tasks and thus many jobs will be fully automated.

Departing from the idea that the implementation of any public policy requires public acceptance, this study aims to understand to which extent individuals would be compliant with a UBI policy in the context of an automated future.

With that intent, I have developed a study based on two scenarios, the first one aiming to understand the attitudes towards UBI in a *ceteris paribus* context, where the economic situation is the equivalent to the present one, and the second one in which workforce has been almost completely automated. Therefore, this study aims to answer the following research question: Does awareness about the prevalence of workplace automation change people's acceptance towards UBI? And what factors may influence this relationship?

This dissertation contributes to the existing literature on public opinion towards UBI, focusing on understanding whether in a context of a future automated society this policy would be accepted. Furthermore, it also contributes to research on what personal beliefs and characteristics would influence people to be acceptive of redistribution policies, more specifically in this case, to UBI.

The present dissertation is divided in four chapters. The following section is dedicated to the literature review, in which the main concepts and research on this subject were included. Afterwards, the methodology section is presented, including the research design, the sample description, the detail on the materials used for the assessment of the hypothesis and an overall description of the procedures. The results section follows, where the study data is analyzed. Then, the main findings of the study are discussed, as well as their implications for current research. Lastly, the limitations of the current research are presented, as well as the future possible directions for research on the topic.

2. LITERATURE REVIEW

The aim of this section is to provide a theoretical background and a basis of discussion for the main topics of interest in this study.

2.1 The theory behind Universal Basic Income

UBI is a policy proposal consisting of a monthly income grant transferred to the entire population, independent of labor and free from any work requirements (Chohan, 2017). Although unostentatious, the idea behind UBI is to provide a solid enough income basis to enable freedom from economic insecurity.

According to Bidadanure (2019), UBI may be also characterized according to four dimensions, being a **universal, unconditional, individual, and regular cash** transfer.

The **universality** of UBI lies on the fact that it is not aimed at a specific class of society. Unlike most western countries' welfare schemes, this grant is not targeted at the poorest, nor does it require the assessment of each individual's wealth, as it is accessible to everyone.

It is also **unconditional** in the sense that it is independent of each individual's labor conditions. Most western economies unemployment benefits' schemes require individuals the constant proof of unemployment or unfitness to work. Taking the example of Portugal, unemployed individuals are required to prove that they are actively looking for a job and are offered only a limited period to earning the monetary benefit (Silva & Pereira, 2012). Such conditionality does not apply in the case of UBI.

Furthermore, UBI is also attributed to everyone **individually**, regardless of household income and property.

Lastly, UBI defenders are usually in favor of periodic payments, as this method better leverages the benefits associated to it (Birnbaum, 2016). Therefore, UBI takes the form of **regular** cash payments to each individual.

2.2 Universal Basic Income – From utopia to radical policy proposal

The appearance of the idea of UBI may be traced back to the 16th century, with Thomas More's 1516 *Utopia*, and has been revised and built up by various political thinkers throughout the centuries, evolving from the paradigm of raising equality.

The English-born American activist Thomas Paine advocates the concept of a universal and individual compensation, in the context of the "loss of his and her natural inheritance, by the introduction of the system of landed property" (Paine, 1795, p.10), which is, to make up for the

private appropriation of the commons. Centuries to follow, another political activist, Martin Luther King, suggests during the 1960's Civil Rights Movement, that the most efficient and applicable way to abolish poverty in the United States would be to implement a minimum guaranteed income to all individuals (McDonough & Morales, 2019).

Despite its long dating precedents, UBI has remained in theory throughout the centuries. Recently, there has been, however, a renewed interest in UBI policies, in which the historical and exponential increase of wealth inequality, the instability and precariousness of labor conditions, and the prevalence of poverty have been among the contributing factors. Nonetheless, the fear that workplace automation and the implementation of AI may replace workers in the labor market, is undoubtedly the main driver for UBI discussions today (Bidadanure, 2019).

2.3 Automation and the Future of the Labor Market

Researchers predict that technology associated with AI and robotics will radically and structurally disrupt the global employment market and our current definition of work itself (Grace et al., 2018; Harari, 2018; Martin Ford, 2015). Although projections of a job takeover by technology are not a novelty, Ford (2015) argues that we are in a phase of unprecedented technology acceleration, in which the economic impact will extend much further than simply threatening routine jobs. In fact, current predictions corroborate this view by showing that AI will be able to outperform humans in a wide variety of tasks, from writing articles and driving machinery, to working in retail and medical fields by 2053 (Grace et al., 2018).

The social and economic impact of such technological disruption in the labor market, as well as the part that governments will take in regulating it, are yet to be determined. As such, expert views tend to vary in this topic. Some take a pessimistic view on arguing that long-term unemployment is unavoidable (Harari, 2018), while others prefer to explore the idea that there will indeed be a restructuring in the job market, where some jobs will become obsolete but where there is also room for the creation of new roles, leveraging deeper human-only capabilities (ben Miller & Atkinson, 2013; Bessen & James Bessen, 2016).

2.4 Universal Basic Income as a Response to Workplace Automation

Given the motors of technological change and their impact in the labor market, UBI appears as a possible solution to mitigate the social impact of changes induced by workplace automation (Cholbi & Weber, 2019).

As it is the case of any political policy development, there are several arguments in favor and against UBI. The most prominent opinion across scholars (Gupta, 2022; Jones & Llewellyn, 2019), is that UBI could potentially have the power of reducing inequality, increasing job opportunities for those currently excluded from the labor market, ultimately also eradicating extreme poverty. Furthermore, and in a context of workplace automation and outperformance of humans by AI (Grace et al., 2018), it makes sense to consider the argument of increased freedom, innovation, and pursuit of knowledge. According to this argument UBI would allow a stable source of income, encouraging people to pursue their passion, quit jobs they do not appreciate in order to start ones they can contribute more to, and innovating in fields they would not have the opportunity to otherwise (Gupta, 2022).

In the other side of the spectrum, and despite the several theoretical arguments in favor, most endeavors to implement a UBI scheme have been rejected, whether given the high costs and strategy associated to its implementation, or due to the resistance to change the infrastructure of current welfare schemes, in order to implement an unfamiliar system (Dermont & Weisstanner, 2020). Another relevant argument against UBI today, is that it would generate **disincentives to work**, which could lead to some individuals not contributing at all to society (Ruckert et al., 2018). This situation would be mainly prominent in lower prestige professions, where individuals would not be motivated to take certain jobs.

2.5 Public Acceptance of Universal Basic Income as a basis to implementation

UBI is, in fact, a radical alternative to the current systems implemented in most Western economies, as it would disrupt the existing benefits scheme in detriment of applying an unconditional income available to all citizens. Therefore, considering its implementation requires assessing to what extent society would agree to such a radical policy change.

Although empirical literature is rather constrained on this question, mainly due to the lack of quality data on public preferences on UBI (Martinelli, 2019), some authors have studied preferences for redistribution policies based on indicators of labor market risk. As such, research has shown that unemployment, low income, and precarious labor conditions all predict

preferences towards redistributive welfare policies (Alesina & Giuliano, 2011; Marx, 2014; Naumann et al., 2016).

More recently, following up on the current events of evolution towards AI and workplace automation, several scholars (Chrisp & Martinelli, 2018; Dermont & Weisstanner, 2020; Nam, 2020; Thewissen & Rueda, 2019; Zimmermann et al., 2020) have explored the impact that automation risk - the individual's occupation's vulnerability to technological change – and labor-market conditions have in the public acceptance of not only redistribution policies, but also UBI in particular.

Thewissen and Rueda (2019) recur to a scale of routine task intensity (RTI) to measure the relationship between automated risk and the acceptance of income redistribution policies, assuming the higher the RTI, the higher the risk of automation. The authors find that the routine-intensity of tasks within an occupation significantly increase support for wealth redistribution.

Furthermore, Chrisp and Martinelli (2018) carried out a study in order to poll respondents' attitudes towards UBI, where labor market status and automation risk were the main independent variables of interest. Results show that higher instability of labor market conditions strongly predicts a more secure support of UBI, while there is, on the other hand, insufficient evidence that automation risk has a significant effect on preferences for UBI in their study.

In addition, Dermont and Weisstanner, (2020) also explore the impact of automation risk in the acceptance of UBI, using a similar RTI scale to Thewissen and Rueda (2019). Data was collected within the European Social Survey. Results show that most citizens tend to more neutral answers, even in countries where the public debate on UBI has been strong, such as Finland and Switzerland. The results also suggest that opinions on replacing established welfare systems for a basic income scheme are more unpopular in countries where these systems are much more developed, such as the Nordics. Even though the study did not suggest there is a positive association between automation risk and acceptance of UBI, it did show that individuals in lower economic situations, such as unemployment, hold more favorable opinions towards the implementation of UBI, as did Chrisp and Martinelli (2018).

Another interesting research approach compares debates on UBI in two different European countries, Germany, and Slovenia. The results show that UBI acceptance tends to be less popular in Germany, a country where poverty and unemployment are low. In this context, the dominant line of arguments state the role of earnings by achievements and investments, stressing the valuation of meritocracy, and shows less fondness of the concepts of unconditionality and universalism. On the other hand, debates of the same nature in a country

with higher poverty rate and lower working conditions, Slovenia, led to an overall more positive view towards UBI policies (Zimmermann et al., 2020).

Finally, Nam (2020) discusses the relationship between attitudes towards automation and towards proposed welfare policies, and concludes that awareness of predictions that work will become fully automated, increases support of several public policies, elaborating that a guaranteed basic income is mainly supported by technological future enthusiasts.

Thus, according to the analyzed research, the following hypothesis was developed:

H1: Perception of a future automated workplace leads to higher acceptance of UBI policies.

But this hypothesized relationship might be qualified by a variety of variables. Following, I elaborate on some variables that I consider of interest to such a relationship.

2.6 Meaningfulness of Work

The concept of experiencing meaningfulness at work is described as the “degree to which the employee experiences the job as one which is generally meaningful, valuable and worthwhile” (Hackman & Oldham, 1975, p. 162). It is known that more and more employees seek jobs that can provide them a sense of meaningfulness, drifting away from the old concepts of detachment between personal life and the workplace, and seek to build environments that is aligned with each individual’s life and contributes to their overall happiness. In fact, Americans, for example, have identified meaningful work as the most important aspect of a job, ahead of income, security, and number of working hours (Bromley et al., 2021).

In the context of a future automated workplace, the search for meaningful work may influence individuals’ political and social opinions towards the legislation of labor market conditions, such as the implementation of UBI. Indeed, the results of a study by (Hüffmeier & Zacher, 2021) suggests that UBI might lead to an increased focus on meaningfulness of work, as individuals become less reliant on salary. On the other hand, a study conducted with Hungarian University students, placing them in a context of an automated future society discuss opposite results. It suggest that individuals might not be in favor of UBI policies, as they believe having a meaningful work also brings meaningfulness to life, and since UBI would allow people not to work, this meaning would not be provided to them (Herke & Vicsek, 2022). As such, I hypothese:

H2: The belief in meaningfulness of work moderates the impact that the perception of a future automated workplace has on the acceptance of UBI policies, such that the more individuals

believe in the meaningfulness of work, the less likely they are to accept UBI policies, irrespectively of the scenario they consider.

2.7 Meritocracy

Meritocracy has been defined as a social system in which “merit or talent is the basis for sorting people into positions and distributing rewards” (Scully, 2002, p. 22). Advocates of meritocracy defend that everyone should have equal chances of success based on their individual merits and efforts, regardless of any inherent social conditions in which they were born (Castilla & Benard, 2010).

Meritocracy gained traction in global politics since the British sociologist Michael Young first developed the concept in 1958, and it has increasingly been recognized in Western economies, as a system of egalitarian societies, much corroborating with the idea of the “American Dream” (Kim & Choi, 2017). As such, the most successful politicians in the last century all have in common their belief in the neologism developed by Michael Young, from Margaret Thatcher and Ronald Reagen who declared themselves as vivid meritocrats, to more recent political leaders such as Boris Johnson who defended meritocracy by “allowing the right cornflakes to get to the top of the packet” (Wooldrige, 2021).

According to Zimmermann et al.’s (2020) research results, the belief in meritocracy may lead individuals to hold negative opinions towards UBI, as by definition, UBI is a form of income independent from efforts or achievements. This being, I hypothesize that:

H3: The belief in meritocracy moderates the impact that the perception of a future automated workplace has on the acceptance of UBI policies, such that the more individuals believe in meritocracy, the less likely they are to accept UBI policies, irrespectively of the scenario they consider.

2.8 Exposure to Market Risks

Proponents of this UBI argue that it would provide a safety net for workers who may be displaced by automation, while also promoting economic stability and reducing poverty. However, there is ongoing debate surrounding the effectiveness of UBI and the factors that may influence support for this policy. In this context, empirical research has investigated the relationship between job automation and support for UBI, as well as the factors that may drive

support for this policy among individuals with limited socio-economic resources and those who are more exposed to labor market risks.

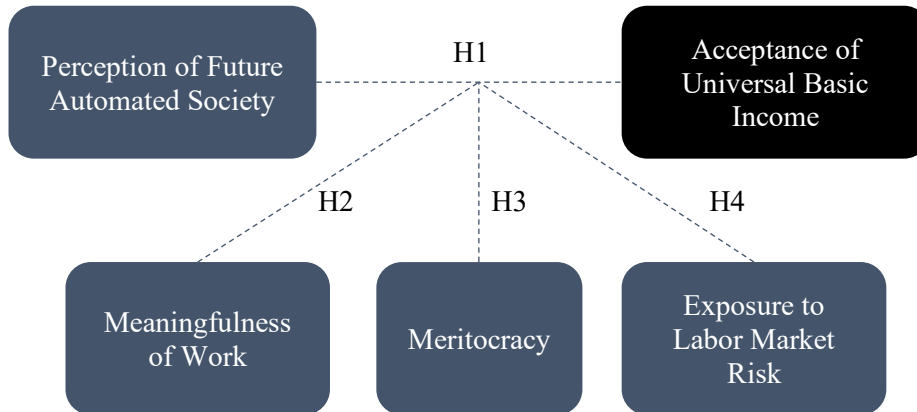
Empirical evidence suggests that individuals who have limited socio-economic resources and are more exposed to labor market risks tend to show greater support for both welfare policies and UBI (Vlandas, 2019).

In contrast, according to a study by (Dermont & Weisstanner, 2020), analyzing data from the European Social Survey across 21 countries in 2016-2017, there is no apparent link between job automation and the need for basic income support. The study suggests that working in a job with high routine task intensity may prompt calls for redistribution (Thewissen & Rueda, 2019), but not necessarily for basic income support. Basic income is often proposed as a potential social policy response to the challenges posed by automation in the workforce. However, the findings suggest that routine task intensity is not a significant factor in driving support for this policy. This being, I hypothesize that:

H4: Exposure to higher labor market risks moderates the impact that the perception of a future automated workplace has on the acceptance of UBI policies, such that individuals who are exposed to a higher risk of automation show greater support for UBI policies under a scenario of an automated future.

In light of the current literature, this study aims to analyze the extent to which the existence of an automated future labor market would influence people's opinions towards UBI, and the impact that meaningfulness of work, exposure to market risks, and meritocracy have on this relationship. Although the reviewed literature suggests that UBI is more likely to be accepted in the face of real economic risks and challenges, with some literature specifically looking at the impact of automation on the support of redistribution policies, there is no evidence of this last relationship from an experimental standpoint. Moreover, the revised studies explored attitudes towards UBI, having mainly focused on the current economic context of the questioned individuals, not considering their acceptance of UBI in the context of a future automated workforce. The experimental design for testing the mentioned moderators distinguishes this study from the existent literature (Herke & Vicsek, 2022; Nam, 2020), since it introduces an analysis of relative influence of these moderators, making the model stronger and allowing a more complete vision of the phenomena. Figure 1 depicts the conceptual model for the current research.

Figure 1 - Conceptual Model



3. METHODOLOGY

3.1 Research Design and Procedure

The main goal of this research is to study the influence that the perception of a future automated society will exist (independent variable) has on people's acceptance of UBI (dependent variable). Furthermore, the role that the moderators exposure to labor market risks, belief in meaningfulness of work, and meritocracy may have on this relationship is also assessed. As such, a survey-based experimental study was carried out through *Qualtrics*, using a within research design, in which each participant experiences all conditions (please, refer to **Appendix A** for full display of the survey).

The survey was divided in five parts. The first part was composed of questions that measure the participant's exposure to labor market risks, based on their labor status, profession, and annual income, with the aim of assessing the moderating relationship between this variable and the acceptance of UBI (please, refer to Section 3.3.3.1, for further details). In the following section, an assessment of what other moderators could influence this relationship takes place. According to what has been revised in the literature section, the belief in meaningfulness of work and meritocracy may influence individuals' opinion on redistribution welfare policies, such as UBI. Therefore, questions in this section are directed at measuring these indicators with the goal of finding out what part they take in the relationship between the main two variables (please, see Sections 3.3.3.1 to 3.3.3.2 for details).

Next, and in light of the main goal of this study and in order to assess if the perception that a future automated society will exist influences people's opinion towards UBI, participants

were presented with a description of UBI based on round 8 (2016/2017) of the European Social Survey:

The government pays everyone a monthly income to cover essential living costs. It replaces many other social benefits. The purpose is to guarantee everyone a minimum standard of living. Everyone receives the same amount regardless of whether or not they are working. People also keep the money they earn from work or other sources. This scheme is paid for by taxes.

Following the description, participants were asked to rate their agreement with UBI policies, in an implicit ceteris paribus scenario.

After that, they were presented with a future automated scenario:

Scholars from the University of Berkley (CA, USA) and the University of Oxford (UK) predict that AI will be able to outperform humans in all tasks by 2053.

Please picture yourself in an even more distant future, the year of 2060. Automation technologies are taking over most of the jobs we know. Artificial Intelligence is now capable of cognitive human capabilities and unemployment is thus high.

Following the scenario, participants were requested to answer again to what extent they would be in favor of UBI policies (refer to Section 3.3.1, for details).

The fourth section is composed of two questions, the first one being if participants believe the exposed automation scenario to be realistic, that is, if they believe it to be something that will truly happen, and secondly, if they believe they would be affected by it. The intent of these questions is to measure the extent that the perception that a future automated society scenario is realistic, and whether influences the acceptance of UBI in an automation context (please, refer to Section 3.3.7, for details).

Lastly, the survey builds up to a few demographic questions, relevant as covariates on the effect of the perception of an automated future in people's acceptance of UBI (please, refer to Section 3.3.7, for details). And the study ends with a debriefing and a thank you note.

The survey was available in both English and Portuguese languages, allowing participants the freedom to choose which language they were most comfortable with.

3.2 Sample

For this study, participants were recruited via social networks and messaging platforms (Linkedin, Facebook, Whatsapp) and the survey was posted on student and research groups on the mentioned platforms. Answers were also collected through the Survey Circle and the Poll

Pool websites. Moreover, participants were encouraged to share the questionnaire with others in order to increase the number of respondents (i.e., snowball technique). The data collection method used resulted in 394 answers from which resulted a relevant sample size of 261 respondents (see Section 4.1, for details).

From the relevant sample, most of the respondents were Portuguese (85.8%), as expected given the chosen data collection method. From the remaining non-portuguese participants, 11.4% have chosen Portugal as their country of residence. Furthermore, the average age of participants was 46 years, with a standard deviation of 23 years. Refer to Table 6 in Appendix C for more details.

3.3 Materials

3.3.1 Acceptance of Universal Basic Income – Dependent Variable

The main dependent variable in this study is the acceptance or support of UBI policies.

Following the descriptions on the topic, participants were asked on their level of agreement with UBI and answers were provided on a scale from 1 (*strongly against*) to 7 (*strongly in favor*). Since participants were asked this question before and after the introduction of a future automated scenario, both using the same scale, the dependent variable was formed based on the answers to both scenarios, attached to the binary variable explained in Section 3.3.2.

3.3.2 Perception of Future Automated Society – Independent Variable

In the light of predictions derived from the revised literature, that automation has the potential to overcome human capabilities in the labor market in the medium-term (Grace et al., 2018), the main goal of this study is to assess if in the presence of a perception that there will be a future automated society (main independent variable), in which AI and other technologies will take over jobs, impacts individual's level of support over UBI policies. In order to analyze the mentioned relationship, the main independent variable was defined as the binary variable for the period before the introduction of the scenario and for the period after the introduction of the scenario described in Section 3.1. This variable takes on the value of 0 for the period before the introduction of the automated workplace scenario and 1 for the period after. This variable will be used as a predictor variable to examine the effect of the automated scenario on the dependent variable of interest, while controlling for the effect of other variables.

3.3.3 Moderators

3.3.3.1 Meaningfulness of Work

As a moderating effect, the study intends to assess whether the meaningfulness of work may have an impact on people's support towards UBI policies. In that sense, the Work as a Meaning Inventory (WAMI) scale developed by Steger et al. (2012) was used to measure participant's degree of belief in meaningful work. The WAMI scale is divided into three main components - **positive meaning, meaning making through work and greater good motivations**. The scale was used as a whole rather than separated by dimensions, in order to maintain consistency with the underlying theory, as the three measures of the same construct may be relevant together for the analysis. Moreover, it may also facilitate comparisons across studies, allowing to improve the generalization of research findings and help to establish a more robust and consistent body of research. The scale measured each component through questions such as "I have found a meaningful career." or "I understand how my work contributed to my life's meaning." (please, refer to Table 3 in Appendix B). All items within the WAMI scale were rated in a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

3.3.3.2 Belief in Meritocracy

With this study, I intend to analyze if the belief in meritocracy as moderator, has an impact on individual's perceptions towards UBI. With that purpose, the Preference for the Merit Principle Scale, created by Davey et al. (1999) was used to assess participant's belief that in work and academic settings, outcomes should be distributed on the basis of merit (vs. need or equality).

The scale is composed of 15 questions that measure the belief in meritocracy in mundane matters such as "In work organizations, each employee ought to be named employee of the month once, even if he or she is not deserving" or "In organizations, people who do their job ought to rise to the top" (please, refer to Table 5 in Appendix B). Participants are requested to rate each question from 1 (*strongly disagree*) to 7 (*strongly agree*).

3.3.3.3 Exposure to Labor Market Risks

The moderator exposure to labor market risks is analyzed with the intent of finding out if a higher or lower exposure influences individual's support on UBI. For the purpose of this study, the category is composed by three independent variables, following Chrisp and Martinelli (2018): **labor status, income and automation risk**. Based on the results obtained

by Chrisp and Martinelli (2018), **labor status** significantly predicts UBI support and similarly to their study, participants were requested to provide detail on their work situation. In the context of this study, the first question aimed to ask if the individual was a student or not. Secondly, it was asked if the participant was employed or unemployed. If the answer was employed, two follow up questions were presented, the first one being about whether one is self-employed or working for another party and the second being about whether it is a temporary or a permanent contract.

Regarding the measurement of **income**, participants were simply requested to state their average yearly salary on a monetary scale ranging between X and Y.

When it comes to **automation risk**, as analyzed in the literature section of this report, it is argued by several scholars, including Thewissen and Rueda (2019), that individuals who hold routine occupations have a higher exposure to risks of wage and unemployment loss due to automation. In order to measure the routine task intensity (RTI) of several occupations, Goos et al. (2014) developed a scale, which builds on the routine, manual and abstract tasks in Autor et al. (2003). More recently, the scale was used by other scholars with the purpose of assessing the automated risk of each profession (Dermont & Weisstanner, 2020; Thewissen & Rueda, 2019). In the context of this study, participants were given a list of potential jobs from which they would have to pick their own and the respective level of experience (years worked). The jobs were then matched to the list developed by Goos et al. (2014) (please, refer to Table 3 in Appendix B) and respective RTI scores that were assigned to them. The RTI index ranges from -1.52 to 2.24, in which higher values correspond to jobs with more routine-based tasks and thus higher risk of automation.

3.3.6 Attention check

In order to account only for the relevant responses to the survey, just before the demographics section, a question was directed to participants in order to filter if they were paying attention. The question consisted in asking participants what was their favourite hobby, with an indication for them to answer “Other”. A few options were presented, but only the option “Other” could be considered as correct.

3.3.7 Covariates

In this study, demographic variables, namely age, education, nationality, and country of residence were included in order to control for their effect on participant’s opinions towards

UBI, in a scenario of technological automation, as well as enabling the measurement of their effect in people's preferences towards the studied policy.

According to Salverda and Checchi (2015), human capital development is generally associated with reduced labor market risk, since it increases the opportunity to find employment. Because higher education tends to be strongly related to also higher income, the authors conclude that highly skilled individuals are less likely to demand redistributive welfare policies and thus may also not be willing to be in favor of UBI, as concludes Vlandas (2019).

Furthermore, Vlandas (2019) also finds disparities in the support of UBI based on the country of residence within Europe (using the European Social Survey), which makes it relevant to analyze the impact of this variable in this study.

Lastly, Chrisp and Martinelli (2018) find that age is significantly associated with opposition to basic income and that gender does not have a significant effect on participant's opinions towards UBI.

The fourth section is composed of two questions, the first one being if they believe the exposed automation scenario to be realistic, that is, if they believe it to be something that will truly happen, and secondly, if they believe they would be affected by it, both to be answered in a likert scale ranging between 1 (*extremely unlikely*) and 7 (*extremely likely*). This variable was used in the Secondary Analysis of this study (refer to Section 4.3.6 for details).

4. RESULTS

4.1 Data Preparation and Cleaning

From a total of 394 answers gathered from the survey (please, refer to **Appendix B**), 7 were excluded from the sample for not having finished it (evidencing a drop-out rate of 1.78%). The survey had a question that served as an attention test, to which 119 participants did not answer correctly, and thus their answers were also excluded. Furthermore, 5 more entries were excluded due to inconsistency in answering to the Work as a Meaning Inventory and the Preference for the Merit Principle scales, as these participants did not answer all the questions within each scale. As such, the final total sample of this study is of 261.

Since the main purpose of this study is to evaluate if the introduction to a scenario of AI disruption would influence people's perception towards UBI, the data set was reshaped into a long format, by dividing the answers before the introduction of the scenario and after (a dummy variable 0 was attributed to the scenario before and 1 to the scenario after). As such,

instead of having two variables: one the acceptance of UBI before and the other the acceptance of UBI after, there is now only one variable but correspondent to the dummy time variables of 0 and 1, respectively. For variables that did not depend on the scenario, the values were repeated for dummies 0 and 1.

4.2 Scale Reliability

In this study, two scales were utilized: the Work as a Meaning Inventory (WAMI), which measures the belief in meaningfulness of work and the Merit Principle Scale, which measures the belief of individuals in meritocracy. In order to perform a reliability test on both scales, which is, to assess whether the different statements measure the same dimension, the *Cronbach's Alpha* was used.

For the Work as a Meaning Inventory (WAMI), the *Cronbach's Alpha* was of 0.9, which indicates an excellent consistency within the scale. In the case of the the Merit Principle Scale, the *Cronbach's Alpha* was 0.53. Since this result was extremely low, the reversed measuring questions were eliminated since they could be distorting the reliability of the scale. The final *Cronbach's Alpha* was then of 0.60.

4.3 Descriptive Statistics

The overall results of the study show that within the respondents, the average agreement with UBI is of 4.1 (on a scale of 1 to 7), with a standard deviation of 0.12. This result is in a *ceteris paribus* scenario. After the introduction of the future automated society scenario, the average agreement with UBI policies is of 5.18 (on a scale of 1 to 7), with a standard deviation of 0.11 (refer to Table 7 in Appendix D). Furthermore and in line with the above result, statistics also show that the average belief that this future automated scenario is likely to happen is of 5.16 (in a scale of 1 to 7), with a standard deviation of 0.1, which together may be interpreted as a common belief within respondents that it may be likely that AI and automation disrupt the entire job market (refer to Table 8 in Appendix D).

When analyzing the additional beliefs, it can be observed that meaningfulness of work had an average of 5.44 (in a scale of 1 to 7), with a standard deviation of 1.11, while belief in meritocracy had an average of 4.93, with a standard deviation of 0.51. The figures show that the general tendency of participants on this study, on average, is to attribute meaning to their job and to believe in achieving success in a merit-based system, however, there is also a

moderate deviation from the mean within participants in both scales (refer to Tables 9 and 10 in Appendix D).

Regarding job RTI, which is the index used in this study to measure a job's automation risk, the average index observed in participants of the study was of -0.26, with a standard deviation of 1.02. Since the average RTI index of the analyzed categories was 0 (see Table 3 in Appendix B), it can be concluded that the automation risk of jobs within participants of this study was below average. Moreover, since the RTI index varied from -2 to 2.24, a standard deviation of 1.02 also means a relatively high deviation from the mean (refer to Table 11 in Appendix D).

4.4 Hypothesis Testing

4.4.1 The effect that the perception of a future automated workplace has on the acceptance of UBI policies

Hypothesis 1 predicted that the perception of a future automated society leads to higher acceptance of UBI policies. In order to test this hypothesis, I have computed a multiple regression analysis. Additionally, several models were built in parallel to test each of the remaining hypothesis of this study (please, see Table 1 for more detail). Therefore I will first describe how it was constructed and then refer back to this section when discussing the results of the remaining hypothesis, as the main dependent and independent variables will not change.

The continuous variable "acceptance of UBI" (see Section 3.3.1) was defined as the dependent variable (y) and the temporal categorical variable that defines the period before and the period after the introduction of the scenario "period dummies" was defined as main independent variable (x_1), being (0=period before the introduction of the automated future society scenario and 1=period after the introduction of the automated future society scenario) (see Section 4.1 for details on the data preparation).

As such, results suggest that people are more likely to agree with UBI after being introduced to the scenario than before ($b=1.081,; p=0.00$). Taken into account that the variable takes the value 0 in the period before the introduction of the scenario and the value 1 in the period after, the higher the value of the coefficient, the higher (more positive) the difference between the agreement before the introduction of the scenario and after. As this result has shown to be statistically significance, there is strong evidence that the perception of an automated future society positively impacts the acceptance of UBI.

4.4.2 Moderating effect of belief in meaningfulness of work in the relationship between the perception of a future automated workplace and the acceptance of UBI policies

Hypothesis 2 predicted that the belief in meaningfulness of work moderates the relationship between the perception of a future automated society and the acceptance of UBI policies, such that people with strong beliefs in the meaning of work itself would be less prone to agree with UBI, even in a scenario of automation.

To test for this moderation, the same multiple regression analysis described in section 4.4.1 was used and the result of interest for this hypothesis is the interaction term between the categorical variable of period before and after the introduction of the automated scenario and the scale variable that measures meaningfulness of work. There seems to be no indication of moderation in the model, as the interaction term was not significant ($b=0.064$, $p=0.668$). Consequently, Hypothesis 2 is not supported, since there is no statistical evidence that the belief in meaningfulness of work moderates the acceptance of UBI policies, when faced with an automated scenario.

Moreover, it is also worthy to mention that the coefficient of meaningfulness of work was indeed statistically significant ($b=-0.245$, $p=0.024$), which suggests that the less an individual believes in meaningfulness of work, the more prone they are to agree with UBI policies.

4.4.3 Moderating effect of belief in meritocracy in the relationship between the perception of a future automated workplace and the acceptance of UBI policies

Hypothesis 3 states that the belief in meritocracy moderates the relationship between the perception of a future automated society and the agreement with UBI, in the sense that people with strong beliefs in meritocracy would be less inclined to agree with UBI, even in a future scenario of automation.

To test for the moderation of meritocracy in the main relationship of this study, the same multiple regression analysis described in Section 4.4.1. was used. In this case, we are interested in analyzing the interaction term between the categorical variable of period before and after the introduction of the automated scenario and the scale variable that measures belief in meritocracy. It can be concluded, by analyzing the results, that the interaction term was not statistically significant ($b=0.193$, $p=0.398$) and thus Hypothesis 3 could not be supported.

Additionally, the coefficient of belief in meritocracy was also not statistically significant ($b=-0.035$, $p=0.912$), which does not provide evidence on the direct impact of this variable in people's opinions towards UBI.

4.4.4 Moderating effect of higher labour market risks in the relationship between the perception of a future automated workplace and the acceptance of UBI policies

Hypothesis 4 predicted that higher labour market risks, which is, in the case of this study, a higher risk of automation associated with one’s job, could moderate the relationship between the perception of a future automated workplace and the acceptance of UBI policies. In practice, this hypothesis intends to test if having jobs that present a higher risk of automation and consequently of extinction would moderate the main relationship of this study.

To test for this moderation, the multiple regression described in Section 4.4.1 was once again used. The main variable of interest in this case is the interaction term between the categorical variable of period before and after the introduction of the automated scenario and the scale variable that measures job RTI - variable that was used to measure the risk of automation of each job (see Section 3.3.3.3 for details). We may conclude from the results, that there is no statistical significance in the coefficient ($b=-0.89$, $p=0.639$), which means that there is no statistical evidence of a moderating effect of job RTI on the way the perception of automation influences acceptance of UBI policies and thus Hypothesis 4 cannot be supported.

Nonetheless, it is worthwhile mentioning that in the same model, the coefficient of job RTI is marginally statistically significant ($b=0.247$, $p=0.072$), which indicates that individuals with a higher job RTI (risk of automation) are more likely to agree with UBI policies.

4.4.5 Results on covariates

Variables age and education were also analyzed within the multiple regression detailed in Section 4.4.1. Results have shown that age doesn’t have a statistically significant effect on people’s agreement with UBI ($b=-0.008$, $p=0.174$). Similarly, education has also not shown to have an impact on how much an individual agrees with UBI policies ($b=-0.080$, $p=0.293$).

Table 1: Multiple Regression for estimation of agreement with UBI predictors

	Dependent variable			
	H1	H2	H3	H4
likely_automation_c	0.231*** p=0.00002	0.232*** p=0.00002	0.232*** p=0.00002	0.239*** p=0.0001
age_c	-0.008 p=0.174	-0.002 p=0.682	-0.009 p=0.123	-0.006 p=0.455

education	-0.08 p=0.293	-0.053 p=0.485	-0.084 p=0.269	0.048 p=0.612
period_dummies1	1.081*** p=0.000	0.735 P=0.372	1.256 p=0.429	1.032*** p=0.00000
Meaningfulness_work		-0.245** p=0.024		
period_dummies1:Meaningfulness_work		0.064 p=0.668		
Belief_meritocracy			0.193 p=0.398	
period_dummies:Belief_meritocracy			-0.035 p=0.912	
job_RTI				0.247* p=0.072
period_dummies:job RTI				-0.089 p=0.639
Constant	3.385*** P=0.000	4.448*** P=0.000	2.481** p=0.037	2.979*** p=0.00000
Observations	516	516	516	392
R2	0.113	0.126	0.116	0.117
Adjusted R2	0.106	0.116	0.105	0.104
F Statistics	16.311*** (df=4; 511)	12.268*** (df=6; 509)	11.051*** (df=6; 509)	8.528*** (df=6; 385)

Note:

*p>0.1;
**p<0.05;
***p<0.01

4.4.6 Secondary Analysis

In addition to the main analysis, a secondary analysis was conducted, by building an additional multiple regression in which the main dependent variable is still the agreement with UBI policies, but places the variable “perception of likeliness of automation” as main independent variable of the analysis (Refer to Table 2 for more details).

Results have shown that the more individuals find a future automated society scenario likely, the more they tend to agree with UBI ($B=0.231$; $p<0.001$).

Furthermore, an additional analysis was conducted on the interaction term between the variable that measures the perception of likeliness of automation and the scale variable that measures belief in meaningfulness of work. There seems to be indication of moderation in the model, as the interaction term did show to be marginally significant ($B=-0.083$, $p=0.082$). This result suggests that the more one believes in meaningfulness of work, the higher (more

negative) the impact that the likeliness of automation has on them agreeing with UBI or not. In the same way, it also means that the more one perceives the future to be likely automated, the higher (more negative) the belief in meaningfulness of work have on her/him agreeing with UBI.

Looking at the interaction term between the variable that measures the perception of likeliness of automation and the scale variable that measures belief in meritocracy, results have shown that the interaction term is indeed positive and marginally significant ($B=0.177$, $p=0.062$). This result suggests that the more one believes in meritocracy, the higher (more positive) the impact that their opinion on the likeliness of automation has on them agreeing with UBI or not. In the same way, it also means that the more one perceives the future to be likely automated, the higher (more positive) the impact of their beliefs in meritocracy have on them agreeing with UBI or not.

Furtnermore, by analysing the interaction term between the variable that measures the perception of likeliness of automation and the variable that measures job RTI, it may be concluded that there is no statistical significance ($B=-0.065$, $p=0.240$). Thus, there seems to be no relation between these variables.

Table 2: Secondary Analysis - Additional Interaction Analysis of Multiple Regression for estimation of agreement with UBI predictors

	Dependent variable			
	agree_UBI_C			
	H1	H2	H3	H4
likely_automation_c	0.231*** p=0.00002	0.694** p=0.00002	-0.655 p=0.171	0.217*** p=0.001
Meaningfulness_work		0.192 p=0.433		
Belief_meritocracy			-0.734 p=0.153	
job_RTI				0.533* p=0.074
age_c	-0.008 p=0.174	-0.002 p=0.774	-0.008 p=0.152	-0.006 p=0.413
education	-0.080 p=0.293	-0.052 p=0.491	-0.091 p=0.228	0.048 p=0.609
period_dummies	1.081*** p=0.00002	1.081*** p=0.000	1.081*** p=0.000	1.056*** p=0.000

likely_automation_c: Meaningfulness_work		-0.083*			
		p=0.082			
likely_automation_c: Belief_meritocracy				0.177*	
				p=0.062	
likely_automation_c:job_RTI				-0.065	
				p=0.240	
Constant	3.385***	1.994	7.119***	3.097***	
	p=0.000	p=0.160	p=0.007	p=0.00000	
Observations	516	516	516	392	
R2	0.113	0.131	0.121	0.120	
Adjusted R2	0.106	0.121	0.111	0.106	
F Statistics	16.311*** (df=4; 511)	12.814*** (df=6; 509)	11.078*** (df=6; 509)	8.749*** (df=6; 385)	
Note:				*p>0.1; **p<0.05; ***p<0.01	

5. DISCUSSION

We are living in an era in which there is more and more evidence that AI and automation technologies will disrupt the job market as we know it today. Consequently, we will face a total reshape of the economy and the way the state intervenes by designing and implementing welfare policies will have to be reshaped accordingly. In today's context, UBI arises as a possible solution, even though it still divides the public opinion. At the same time, there may be doubts that society is not yet prepared or does not want to accept the foreseeable future of an automated world. As such, those divisions and way of thinking were what inspired this research, which main goal is to investigate if the introduction of a future automated scenario would have an impact on people's opinions towards UBI.

After analyzing the main results of this study, this section aims to discuss the findings and conclusions in more depth, along with the study's limitations and suggestions for future research.

5.1 Main Findings and Conclusions

This research investigated four hypothesis, which focused on studying people's opinions towards UBI policies depending on the belief that work automation will take place, as well as the impact of moderating variables. While the main hypothesis of this study was supported, evidence for the role of the hypothesized moderators was mixed.

Results from this study support Hypothesis 1, which predicted that individuals are more likely to agree with UBI policies when they are faced with a scenario of future automation and hence have the perception of this scenario. These results are in line with what was previously discussed in the literature, specially according to (Nam, 2020), who concludes that awareness of predictions that work will become fully automated increases support of guaranteed basic income.

In what concerns Hypothesis 2, the study did not find evidence of moderation of meaningfulness of work in the relationship between the perception of a future automated society and the acceptance of UBI policies. As such, this result does not allow for corroborating the hypothesized scenario based on the discussion by (Herke & Vicsek, 2022), that individuals might not be in favor of UBI policies, as they believe that the fact that UBI allows people not to work implies that this meaningfulness would not be provided to them. Even though meaningfulness of work may be an important predictor of opinions towards UBI, it may not have a significant impact on how people perceive the potential impact of automation on their work. In this case, the absence of a moderation effect would not necessarily invalidate the importance of meaningfulness of work as a predictor of opinions towards UBI. As such, even though the moderation on Hypothesis 2 was not found to be relevant, the study found relevance on the direct impact of meaningfulness of work in people's opinions towards UBI, implying that the more one believes in meaningfulness of work, the less will be prone to agree with UBI, also supporting what was discussed in the literature. In contrast, results found in the secondary analysis were different, suggesting that the more one believes in meaningfulness of work, the higher (more negative) the impact that their opinion on the likeliness of automation has on them agreeing with UBI or not. In the same way, it also means that the more one perceives the future to be likely automated, the higher (more negative) the impact of his beliefs in meaningfulness of work have on them agreeing with UBI. It is relevant to discuss the secondary analysis since it is compatible with what was found in the study by (Herke & Vicsek, 2022). One possible reason that could explain why the impact of meaningfulness of work is stronger in the secondary analysis is due to the fact that the variable used measures the degree to which an individual

believes that the future will be automated, whereas in the first analysis, it is only taken into account the period before and after the introduction of the scenario, which may include people who even though introduced with the scenario, not quite believe it is likely to happen.

With regards to what was defined in Hypothesis 3, the study did not find relevance in the moderating effect of meritocracy in the relationship between the perception of a future automated society and the agreement with UBI, thus not supporting the results of Zimmermann et al.'s (2020), which concluded that the belief in meritocracy may lead to negative opinions towards UBI. Two possible reasons for this are the following: First, it is possible that the low *Cronbach's alpha* is masking the moderating effect that actually exists, because the scale items are not measuring belief in meritocracy accurately or consistently enough, which may be caused by the fact that respondents may not have answered the questions consistently or accurately. Secondly, it is possible that belief in meritocracy is not a relevant or important factor in shaping people's perceptions of the impact of automation on their work and their opinions towards UBI. This could be because other factors, such as economic concerns, technological advancements, or political ideologies, may have a stronger influence on these opinions and perceptions.

Concerning Hypothesis 4, this research did not find significant statistical evidence of job automation risk as a moderator in the relationship between relationship between the perception of a future automated society and the agreement with UBI. This result was indeed in line with what Dermont and Weisstanner (2020) discussed, being that there is no apparent link between job automation and the need for basic income support. Although past research has concluded that an individual with high routine intensity task job may be more prone to agree with redistribution policies (Thewissen & Rueda, 2019), the case for UBI is unclear. This may have to do with perception variations, which is, various people might view the hazards posed by job automation differently. While some could perceive it as a threat to their way of life, others might see it as a chance for creativity and advancement. These various viewpoints might have an impact on how automation risk and UBI support are related. Furthermore, it may also be the case that there are other options that individuals feel to be more effective or desirable, even if UBI is frequently considered as a potential solution to the problems caused by automation. For instance, as a strategy to lessen the impact of automation on employment, some people would advocate policies like job training or investment in new industries. Lastly, some individuals might not fully be aware of the risk of their own job and consequently not comprehend how automation would effect their employment opportunities or the mechanics of how a UBI scheme will be handled, thus it might be more challenging to establish a precise connection between automation danger and UBI support due to this incomplete understanding.

Finally, regarding the results on the analysis of covariates, neither age nor education had a significant impact on agreement with UBI within participants. Although Salverda and Checchi (2015) and Vlandas (2019) agree that higher skilled individuals are less likely to demand redistributive welfare policies, education within this study may have not been significantly related with support for UBI possibly because the relationship between education and UBI support may be influenced by the broader social and economic context. For example, in countries where there is a high degree of income inequality and limited social safety nets, education may be associated with greater support for UBI as a means of addressing poverty and inequality. In contrast, in countries where there is a better income distribution and higher education is more common, such as Portugal, education may not be strongly related to support for UBI. In regards to age, Chrisp and Martinelli (2018) find that age is significantly associated with opposition to basic income, however, in this study, that relationship was not found. One explanation could be that younger people may be more likely to support UBI due to their greater exposure to economic precarity, but they may also be more skeptical of government intervention in the economy or have alternative policy proposals in mind.

5.2 Academic and Managerial Implications

The present dissertation may provide relevant insights in the academic and managerial prespective.

From an academic standpoint, this study can shed light on the consequences of technological progress for income distribution and the welfare state by examining how people's attitudes regarding UBI are affected in the context of a future automated world. The discovery that people's perceptions of UBI shift when a future automated employment scenario is presented has important scholarly ramifications. It emphasizes the need for policymakers and UBI supporters to take into account how external variables, such technological improvements, may affect how the public views UBI. The findings of the study may guide the creation of UBI and other policies that help workers in a world that is more mechanized. The research stresses the significance of context in influencing people's opinions toward social welfare measures from a theoretical perspective. It may contribute to the existing literature on the psychological and social factors that influence public support for UBI and social welfare policies in general.

This study can also have important managerial implications for organizations seeking to better understand the impact of automation on workers' attitudes towards work and income. Organizations can more effectively anticipate and adapt to the evolving demands and

expectations of their employees by developing a deeper understanding of how automation influences people's perceptions of their job security and fulfillment. This study can also help organizations with their salary and benefits strategies. For instance, firms may need to modify their wage and benefit packages to remain competitive and draw in and keep top talent given that the study indicated that people are more likely to embrace UBI in an automated environment. Lastly, the findings highlight the potential role of UBI as a means of supporting workers in an automated world. Organizations could consider the potential benefits of supporting UBI policies as a means of promoting the welfare and well-being of their employees, while also contributing to broader societal goals.

Overall, the finding that the introduction of a scenario of a future automated workplace changes people's opinions towards UBI has important managerial implications, particularly in terms of workforce management and anticipating and responding to the potential impact of automation on the labor market.

5.3. Limitations and Future Research

Despite the relevant contribution of this study to existing literature on people's opinions towards UBI and what socioeconomic and psychological factors may influence those opinions, there are limitations that should be taken into account when interpreting the findings obtained in this study.

Firstly, the outcomes of this study should be interpreted cautiously considering the type of sample used for this research. Because there was little participant heterogeneity due to the convenience sample and snowball method, there were a lot of participants who were Portuguese (85.8%) and had a bachelor's degree (40.2%). As such, results obtained may have been affected by these demographics, as they can reflect different experiences with automation and different views on UBI than people in other countries. For example, the Portuguese economy may be more or less automated than other countries, and the social safety net may be more or less robust, which could affect people's opinions on UBI. Furthermore, the fact that the majority of people in the study have a university degree may reflect specific socioeconomic and political contexts. People with a university degree may have different experiences and exposure to automation than those who have not, for example, they may be more likely to work in industries that are more automated, or have a higher level of digital literacy and technological knowledge. Therefore, their opinions regarding automation and its impact on employment may differ from individuals without a university degree. Moreover, those with a university degree may have

distinct economic and social origins than those without one. For instance, they may come from more affluent families or have better access to education and job opportunities, which can change how individuals feel about UBI since they might feel less of a need for the safety net that UBI offers. People who have attended college may hold different political and ideological views from those who have not. Their opinions on social and economic issues may be more liberal or progressive, which may have an impact on how they feel about UBI and automation.

The second limitation concerns the possible ambiguity of the description of UBI. As stated by Dermont and Weisstanner (2020), the lack of detail on the amount that each person would receive, or other policy-specific terms in the description presented may leave room for interpretation, or may not be specific enough for participants to form an adequate opinion. Therefore, one suggestion for future studies on people's opinions towards UBI would be to provide a more concrete scenario based on an approximation to what UBI would be in reality, so that participants have a more clear understanding of the policy, consequently improving validity and relevance of findings.

Furthermore, the fact that the variable used as main independent variable only measures opinions towards UBI in the period before and after the introduction of the scenario may represent a limitation, in the sense that it may be including people who even though introduced with the scenario, not quite believe it is likely to happen. As such, measuring the impact of the introduction of an automated scenario using this variable may result in some people, for example, not changing opinions about UBI from the moment before the introduction of the scenario to the moment after, due to the fact that they do not believe in it. In the case of this research, measuring the perception of automation before and after the scenario would invalidate the study, as it would make participants think about the subject from the beginning. Hence, a suggestion for a future study could be a between design, in which the belief on the future automated scenario could be measured in a group that was exposed to the idea and in a group that was not, thus allowing to understand if this variable explains the obtained results, as a mediator.

Finally, the automation risk of participant's jobs was measured through the Routine Task Intensity (RTI) scale also used by Dermont and Weisstanner (2020) and Thewissen and Rueda (2019), which applied an RTI score to each individual's job category. As such, the fact that people may not be aware that their profession may be more likely to be automated than others, may not purely reflect on their opinion towards UBI. For future research purposes, measuring each individual's personal belief on their job's risk of automation could be an

alternative that would possibly be more likely to directly reflect on an individual's opinions towards UBI.

5.4. Conclusions

In the context of a scenario where automation may replace workers in the labor market, UBI is one of the main policies discussed to mitigate the effects that could arise from that scenario (Bidadanure, 2019). As such, the study of what factors could influence people's opinions towards such policy is of high relevance. This dissertation has contributed to this important research field mainly by evaluating opinion's towards UBI and understanding how the perception of an automated future workplace may influence those opinions. Hence, the author hopes that these findings are a contribution to enrich the research on this topic, as well as to encourage and guide future research.

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APPENDIX

Appendix A – Online Survey (original English Version)



English

Welcome and thank you for participating in this experiment. This study is being conducted as part of my Master Thesis at Católica Lisbon School of Business and Economics, under the supervision of Prof. Filipa de Almeida.

The purpose of this study is to gain insight into individual's perceptions about Universal Basic Income.

The survey will take about 10 minutes to complete.

Please answer as honestly as possible. All answers will be kept strictly confidential and anonymous. This means that there will be no way to link your responses to your identity. The data collected will be used for research purposes only.

Your participation will contribute to research on people's perception of Universal Basic Income. There are no expected side effects of participating in this study. You may drop out at any point. If you have any questions about this study, please feel free to contact: s-mascmonteiro@ucp.pt.

By continuing you agree to participate. Thank you!

Mariana Monteiro



English

I would like to assess a few details of your **current labor status**, therefore please answer the following questions before starting the survey.

Are you a student?

Yes

No

Are you currently employed?

Yes

No



How many **people** are there in your household?

1 person (only myself)

1-2 people

3-4 people

5-6 people

7+

Who do you live with?

Flatmates

Family

By myself

Other



English

What is your **household's** average **net** (that is, after taxes) monthly income in euros (€)?

Below 800

800-1000

1000-1500

1500-2000

2000-3000

3000-5000

Above 5000



English

For the purpose of this study, I would like to **know more about you and your beliefs**. Here is a set of questions that may or may not apply to you. For each statement please indicate the extent to which you agree or disagree with that statement. Please remember that there are no right or wrong answers.

I have found a meaningful career.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

I understand how my work contributes to my life's meaning.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

I have a good sense of what makes my job meaningful.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

I have discovered work that has satisfying purpose.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

I view my work as contributing to my personal growth.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

My work helps me better understand myself.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

My work helps me make sense of the world around me.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
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My work really makes no difference to the world.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

I know my work makes a positive difference in the world.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

The work I do serves a greater purpose.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------



English ▾

In work organisations, each employee ought to be named employee of the month once, even if he or she is not deserving.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

In organizations, people who do their job well ought to rise to the top.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

It is wrong for an employee to give a job to someone they know without advertising the job to other candidates.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------



English

In work organisations, each employee ought to be named employee of the month once, even if he or she is not deserving.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

In organizations, people who do their job well ought to rise to the top.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

It is wrong for an employee to give a job to someone they know without advertising the job to other candidates.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

In life, people ought to get what they deserve.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

The effort a worker puts into a job ought to be reflected in the size of a raise he or she receives.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

When students are working on a group project, each member of the group ought to receive the same grade regardless of the amount of effort each team member puts in.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

Promotion decisions ought to take into account the effort workers put into their job.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

Members of a work team ought to receive different pay depending on the amount each person contributed.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

Sometimes it is appropriate to give a raise to the worker who most needs it, even if he or she is not the most hard-working.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

Qualifications ought to be given more weight than seniority when making promotion decisions.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

Between two equally smart students applying for the same job, the one who is the harder worker ought to always get the job.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

When a bonus is given to a work team for good performance, the money ought to always be divided equally among the group members.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

It is never appropriate to choose which student to hire by how much the student needs the job.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

People ought to be able to get away with poor quality work under some circumstances.

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------



English

The following statement describes **Universal Basic Income**. Please read it attentively.

The government pays everyone a monthly income to cover essential living costs. It replaces many other social benefits. The purpose is to guarantee everyone a minimum standard of living. Everyone receives the same amount regardless of whether or not they are working. People also keep the money they earn from work or other sources. This scheme is paid for by taxes.

European Social Survey, 2016/2017

To which extent do you **agree with the implementation** of Universal Basic Income?

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

How likely would you be to **vote on a party** that defended the introduction of Universal Basic Income?

Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
--------------------	---------------------	-------------------	-----------------------------	-----------------	-------------------	------------------

How would your **arguments** be regarding Universal Basic Income in an **informal political discussion**?

Extremely negative	Moderately negative	Slightly negative	Neither positive nor negative	Slightly positive	Moderately positive	Extremely positive
--------------------	---------------------	-------------------	-------------------------------	-------------------	---------------------	--------------------



English

Scholars from the University of Berkley (CA, USA) and the University of Oxford (UK) predict that **AI will be able to outperform humans in all tasks by 2053**. Please **picture yourself in an even more distant future**, the year of 2060. **Automation technologies** are taking over most of the jobs we know and **artificial Intelligence** is now capable of cognitive human capabilities, threatening even the jobs that require the human mind the most.

Please state **3 words** that demonstrate your feelings towards this description.

Word 1

Word 2

Word 3

Please answer the following question imagining **you are living in the year 2060**, under the described circumstances.

To which extent do you **agree with the implementation** of Universal Basic Income?

Strongly disagree	Moderately disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Moderately agree	Strongly agree
-------------------	---------------------	-------------------	----------------------------	----------------	------------------	----------------

How likely would you be to **vote on a party** that defended the introduction of Universal Basic Income?

Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
--------------------	---------------------	-------------------	-----------------------------	-----------------	-------------------	------------------

How would your **arguments** be regarding Universal Basic Income in an **informal political discussion**?

Extremely negative	Moderately negative	Slightly negative	Neither positive nor negative	Slightly positive	Moderately positive	Extremely positive
--------------------	---------------------	-------------------	-------------------------------	-------------------	---------------------	--------------------



English

How **likely** do you think this **future automated scenario** is to happen?

Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
--------------------	---------------------	-------------------	-----------------------------	-----------------	-------------------	------------------

How **likely** would it be for you to be **negatively affected**, if it becomes reality?

Extremely unlikely	Moderately unlikely	Slightly unlikely	Neither likely nor unlikely	Slightly likely	Moderately likely	Extremely likely
--------------------	---------------------	-------------------	-----------------------------	-----------------	-------------------	------------------





English

This last question is a simple one to make sure you were paying attention. You do not need to be an AI or UBI expert to answer. When asked about your favorite hobby, you need to answer "other" and write the word "attentive" in the text box in front.

What is your favourite hobby?

Singing Swimming Fishing Surfing Sailing Reading Other



English

Please indicate your age.

Please indicate your country of residence.

Please indicate your nationality.

Please indicate your highest level of education

High school or lower Bachelor's degree Post graduate degree Master's degree PhD or higher



English

Thank you for your participation in this study.

The intent of this study is to assess if the introduction to a future automated world context, impacts people's perceptions towards Universal Basic Income. With that purpose, participants were asked the same questions regarding their opinions towards UBI in a *ceteris paribus* scenario and in a hypothetical future automated scenario. Furthermore, it also aims to analyse the impact that exposure to labor market risks, the beliefs in meritocracy and meaningfulness of work have on people's opinions towards UBI and thus questions directed to assessing this variables in each participant were included.

Appendix B – Measurement scales

Table 3 - RTI of selected occupations

Occupation	<i>RTI Index</i>
High paying occupations	-0.72
Corporate managers	-0.75
Physical, mathematical, and engineering professionals	-0.82
Life science and health professionals	-1.00
Other professionals	-0.73
Managers of small enterprises	-1.52
Physical, mathematical, and engineering associate professionals	-0.40
Other associate professionals	-0.44
Life science and health associate professionals	-0.33
Middling occupations	0.69
Stationary plant and related operators	0.32
Metal, machinery and related trade work	0.46
Drivers and mobile plant operators	-1.50
Office clerks	2.24
Precision, handicraft, craft, printing and related trade workers	1.59
Extraction and building trades workers	-0.19
Customer service clerks	1.41
Machine operators and assemblers	0.49
Other craft and related trade workers	1.24
Low-paying occupations	-0.08
Laborers in mining, construction, manufacturing and transport	0.45
Personal and protective service workers	-0.60
Models, salespersons and demonstrators	0.05
Sales and service elementary occupations	0.03

Table 4 – Work as a Meaning Inventory (WAMI)

Positive Meaning
1. I have found a meaningful career.
2. I understand how my work contributed to my life’s meaning.
3. I have a good sense of what makes my job meaningful.
4. I have discovered work that has satisfying purpose.
Meaning Making Through Work
5. I view my work as contributing to my personal growth.
6. My work helps me better understand myself.
7. My work helps me make sense of the world around me.
Greater Good Motivations
8. My work really makes no difference to the world.
9. I know my work makes a positive difference in the world

10. The work I do serves a greater purpose.

Table 5 - Preference for the Merit Principle Scale

-
1. In work organizations, each employee ought to be named employee of the month once, even if he or she is not deserving. (R)
 2. In organizations, people who do their job well ought to rise to the top.
 3. It is wrong for an employee to give a job to someone they know without advertising the job to other candidates.
 4. In life, people ought to get what they deserve.
 5. The effort a worker puts into a job ought to be reflected in the size of a raise he or she receives.
 6. When students are working on a group project, each member of the group ought to receive the same grade regardless of the amount of effort each team member puts in. (R)
 7. Promotion decisions ought to take into account the effort workers put into their job.
 8. Members of a work team ought to receive different pay depending on the amount each person contributed.
 9. Sometimes it is appropriate to give a raise to the worker who most needs it, even if he or she is not the most hard-working. (R)
 10. Qualifications ought to be given more weight than seniority when making promotion decisions.
 11. Between two equally smart students applying for the same job, the one who is the harder worker ought to always get the job.
 12. When a bonus is given to a work team for good performance, the money ought to always be divided equally among the group members. (R)
 13. It is never appropriate to choose which student to hire by how much the student needs the job.
 14. People ought to be able to get away with poor quality work under some circumstances. (R)
 15. If every person in an office has the same abilities, the promotion ought to always be given to the person who puts in the most effort.
-

Note: Items indicated with an (R) are reverse coded.

Appendix C – Study Demographics

Table 6 – Sample Demographic Characteristics

Characteristic	Main Analysis n=261	
	N	%
Age		
<18	2	0,8%
18-24	60	23,0%
25-34	88	33,7%
35-44	6	2,3%
45-54	46	17,6%
55-64	47	18,0%
>65	12	4,6%
Country		
Portugal	224	85,8%
Other	37	14,2%
Education		
High school or lower	57	21,8%
Bachelor's degree	105	40,2%
Post graduate degree	23	8,8%
Master's degree	73	28,0%
PhD or higher	3	1,1%

Appendix D – Study Overview

Table 7 – Opinions towards UBI

	Agree UBI before scenario		Agree UBI after scenario	
	Average	Std Devation	Average	Std Devation
Answers	4,10	0,12	5,18	0,11

Table 8 – Belief in likeliness of automation

	Belief likeliness automation	
	Average	Std Devation
Answers	5,16	0,10

Table 9 – Belief in meaningfulness of work

	Meaningfulness work	
	Average	Std Deviation
Answers	5,44	1,11

Table 10 – Belief in meritocracy

	Belief in Meritocracy	
	Average	Std Deviation
Answers	4,93	0,51

Table 11 – Job RTI

	Job RTI	
	Average	Std Deviation
Answers	-0,26	1,02