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„Behavioral Economic Aspects of Labor Supply and the Welfare State - The Exemplary Case of a Universal Basic Income"

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1. Introduction

National labor markets in the 21st century face a unique and unprecedented set of challenges. Be it via the increasing frequency and magnitude of global social, economic, and political crises or the rapid pace at which development and technology change the economic landscape. In recent years it has been challenging for firms, individuals, and policymakers to keep up with the rapid pace at which markets evolve, some of which has had disruptive consequences, while, in some instances, better foresight and flexibility could have helped to react more efficiently to unexpected developments.

This research aims to contribute to the discussion surrounding welfare regimes in developed economies in the 21st century as well as to the discussion on how findings obtained via empirical and experimental methods, instead of top-down assumptions, could contribute to a more informed debate around public economic policy. I intend to discuss the exemplary case of a universal basic income policy in suggesting that it may help to overcome some of the challenges contemporary labor market policy in developed economies faces.

Specifically, this research is intended to follow three steps. Initially, I intend to point out and discuss the challenges contemporary labor markets in developed economies are subject to. Herein, I intend to focus mainly on the shortcomings of contemporary welfare regimes with respect to unemployment benefits in developing, as I intend to point out, adverse effects with respect to the allocation of talent in the labor market as well as with respect to overall labor supply and discuss the characteristics a welfare regime would require to overcome these challenges. Secondly, I intend to introduce a basic income regime as one possible solution to some of the previously discussed challenges. Herein, the policy will be defined reflecting the contemporary literature on the topic and in addition its consequences on individual labor supply will be discussed. This discussion is intended to feature a formal analysis of the matter with respect to real world economic data on unemployment benefits, wages and taxes from three sample economies, that, as will be shown, differ to some extent in terms of type of welfare regime. In addition to the formal, thus solely theoretical, analysis the discussion is intended to include a summary of findings from different basic income pilot projects especially with respect to labor supply which show some discrepancies to the results obtained via the formal analysis. In the third part I intend to draw on findings from behavioral economics, a branch of economic theory which formally reflects knowledge gained via empirical and experimental observations, often highly interlinked with research in psychology, to suggest a formal interpretation of the individual labor supply response to a basic income welfare regime that aligns with the empirical

findings presented. The findings reflect that a basic income regime may not, as conventionally assumed, shorten individual labor supply and thus deprive the economy of a necessary component of development and prosperity, but may oppositely entail a positive effect on labor supply, while valuably contributing to the solution of some of the problems discussed in the first part.

While this discussion will be expanded in the concluding part of this work, I may, in the following, reflect on some of the findings presented in the ensuing chapters and deliver some early interpretation. Building on data from various sources the first part offers an argumentative basis for the assumption that labor markets in developed economies have moved from a time of labor supply rigidity to a time of labor supply mobility. Amongst other reasons, this is due to technological progress and especially the rapid growth of new economic sectors while other, formerly substantial, sectors shrink at an equally rapid pace. Furthermore it will be shown how conventional social security policies, especially with respect to unemployment benefits, contribute to the creation of adverse effects in markets of high labor mobility especially with respect to the allocation of talent and funds, with the result that it becomes more difficult for firms to find suitable talent, while at the same time it becomes more difficult for individuals to market their talent appropriately, resulting in declining wages and talent shortages in specific areas of the labor market. While a posteriori these are rather intuitive findings and the consequences thereof are to a substantial degree present in the public debate it can equally persuasively be argued that little has been done in order to create a social security framework that embraces and supports these realities of current labor markets in developed economies, which, given the most recent wave of disruptive technology, namely generative artificial intelligence, may substantially boost the impact of the aforementioned adverse effects instead of, what seems to be the more natural approach, curtailing it.

Ensuing the academic debate in philosophy and economics surrounding the question of how a social security regime could be improved and adjusted with respect to the findings presented in the first part, the second part of this work introduces and discusses a universal basic income policy as one of many potentially promising measures in enhancing social security regimes in developed economies. After the policy measure is motivated from a libertarian standpoint the part features a theoretical and an empirical discussion of the policy especially with respect to the expected effects on labor supply. Building on real world economic data from different developed economies it is found that on the basis of conventional economic assumptions about the competitive labor market, aggregated and individual labor supply can be assumed to decline following the introduction of a basic income policy, where the currently active unemployment

benefit regimes of the respective sample economies serve as the baseline. Contrarily the discussion surrounding empirical findings from basic income pilot experiment suggests a positive impact of the policy on individual and aggregate labor supply as well as procyclical effects on the general economy. This discrepancy can be interpreted in various ways, none more important than the fact that the empirical results have to be handled with caution as the discussed experiments have substantial limitations in terms of scope and duration. Nonetheless, if taken seriously, this discrepancy delivers a solid basis for a discussion surrounding the economic assumptions the previously presented formal analysis is built on, especially so, given the emergence of several branches of economic theory which provide formal models which go beyond what conventional assumptions suggest.

In focusing on behavioral economics, the third part of this work discusses such a branch of economic theory. Especially, it is discussed how the discrepancies between the theoretical and the empirical part of the second section can be reconciled or more specifically which theoretical framework could deliver an explanation for the empirical results. The results of the discussion in the third section show that well established models in behavioral economics may, under the circumstances discussed in the two preceding parts, predict results that are very similar to what the empirical trials have shown, which leads to the conclusion that these models may have proven to be more suitable to analyze individual and aggregate labor supply under a basic income social security regime. While with respect to the matter at hand it is shown that already an impact of 5% ascribed to behavioral factors could reverse the effects on labor supply presented in the conventional formal analysis, with respect to the big picture it seems that behavioral economic theory could be considered to deliver highly relevant and reliable results when it comes to individual labor supply effects resulting from adjustments to the social security regime.

2. Initial Situation – Motivation

The objective of this chapter is to establish the argumentative basis for the following work. This basis is twofold. In a first step, my aim is to take stock of the present situation with regard to the labor market situation in developed economies. These observations include results following from recent trends in the market such as the rapid growth and degrowth of individual economic sectors and the increasing flexibility of labor markets observed in high-income

economies (Flórez et. al. 2021). In addition, the rising frequency and impact of economic crisis[1] and their impact on the labor market require separate attention. I intend to show how, what we may understand as the natural development of economies, and especially the trends we currently observe in high income economies entail rising levels of labor market mobility. Furthermore, I aim to demonstrate how a high frequency of economic crisis could itself have a positive impact both on frequency and on amplitude of labor market shake-ups that tend to have the most severe negative impact on low-income households. Beyond that, I intend to show that labor demand, by virtue of its inherent nature, is able to react much more swiftly to adjusting market circumstances than labor supply, potentially creating efficiency losses in the market as well as additional burdens, on workers in general and on low-income households in particular.

This leads to the second point of discussion in this chapter – the problem. While the potential inefficiency of talent allocation in the labor market in combination with unnecessarily harsh effects on some social groups, especially low-income households, was less severe in times of more stable labor demand paired with lower frequency and impact of economic crisis, recent developments have made these tendencies more impactful. I intend to show that welfare systems currently applied in high-income economies perform inadequately given modern circumstances. Especially, means tested approaches place high transition costs and unnecessary risks on individuals changing or seeking to change their occupation. These effects multiply in case individuals seek re-training or further education between jobs, something which is increasingly the standard as the demand for talent swiftly evolves. I intend to argue, that a welfare state that is designed to cater to the growing flexibility of the labor market for example in contributing to the minimization of transition costs and transition risk could come a long way in maximizing the potential of modern high-income economies as well as cushion some of the negative effects we currently observe on individuals and companies alike.

2.1. The Labor Market in the 21st Century

Due to the increasing availability and quality of labor market data in the recent decades there is already a vast array of publications in the economic literature describing labor market developments and worker mobility in developed economies (see i.e. Davis, Faberman, and

[1] Such as the physical, structural and transitional risk with regard to the climate crisis (ECB/ESRB Project Team on climate risk monitoring 2021), the collapse of the housing bubble in the US and the ensuing global economic downturn (2007-2009) (International Institute for Labor Studies 2009), the economic crisis that resulted from the Covid-19 pandemic as well as the most recent economic downturn resulting from Russia's invasion of Ukraine. The latter appears to include critical developments concerning commodity markets – most severely with regards to gas and other fossil fuels – and a period of unusually high inflation in several western economies (International Labor Organization 2022).

Haltiwanger 2006, Davis, Faberman, and Haltiwanger 2012, Fujita and Nakajima 2016, Neffke, Otto, and Weyh 2017, Lazear and McCue 2017, Flórez et al. 2021). Additionally, the labor market effects of economic crisis such as covid-19 especially with regards to cross sector labor movements are well documented (see i.e. Ascari, Colciago, and Silvestrini 2021). It has, to some extent, been established that labor mobility in high-income economies tends to be ampler than labor movements in developing economies (Flórez et al. 2021). However, exact extrapolations of labor movements across economic sectors, differences between labor market fluctuation rates among economies as well as the questions if these fluctuation rates are driven by job starters or job leavers, hence the supply or demand side of labor remain ambiguous. Especially the role played by emerging and fast developing economic sectors on reallocations of the labor force is of special relevance for this work.

The aim of this chapter is to shed light to some of these questions using labor market data from countries in the European Union. The purposes of this work are especially well suited by EU data, as on one hand the EU can be understood as a developed as well as fairly homogenous economic environment while on the other hand some developmental and structural differences among member states persist, which allows for this analysis to draw some conclusions in terms of developed and less developed economies.

Figure 1: Yearly growth of workforce by economic sector in the EU (2008-2022)

Source: (Eurostat 2022b, LFSQ_EGAN2)

Figure 1 above shows the annual workforce development within the 21 economic sectors of the NACE format (European Commission 2008). The bars display the average annual growth or degrowth of the workforce in each economic sector between 2008 and 2022 within the

European Union (EU 27) in percent of the base value Q1-2008 according to the EU labor force survey. We observe that employment in the mining and quarrying and in the agriculture, sector declines annually by 2.7% and 2.0% while employment in the information and communication sector rises by 2.8% per annum. The total annual workforce change between 2008 and 2022 amounts to 22.47% which reflects 1.07% per economic sector. These numbers, while initially underwhelming, reflect that every year between 11.27% and 22.54%[2] of workers in EU27 economies are impacted in one way or another by the growth and degrowth of economic sectors.

Table 1: Labor market transition rates in the EU – annual averages (2011-2020)

From / To	Employed	Unemployed	Inactive	Total
Employed	53.38%	1.45%	2.58%	57.41%
Unemployed	1.77%	2.83%	1.31%	5.91%
Inactive	2.59%	1.49%	32.60%	36.68%
Total	57.74%	5.77%	36.49%	100%

Source: (Eurostat 2022b, LFSI_LONG_A)

Table 1 above displays the annual labor market transition rates in the European Union between 2011 and 2020 as percentages of the total population between the ages 15 and 74. The European workforce reflects 57.74% of the total population between 15 and 74 years of age. As we observe from the data 2.58% of the observed population annually leave the workforce – e.g. due to retirement – while 2.59% of the observed population join the workforce every year – for instance after leaving school or university. Recalling from the previous paragraph that 11.27-22.54% of European workers are affected by the growth and degrowth of economic sectors we have to subtract from it – at least to some extent – the annual flow rates of workers into and out of the total workforce. This step is necessary because the aim here is to describe the annual rate of workers that are affected by sectoral growth and degrowth. However, we have to rule out the rates by which sector sizes potentially change naturally, as the distortive effects[3] relevant to this

[2] The high variation reflects the fact that the numbers analyzed solely refer to the growth and degrowth of the workforce of the economic sectors displayed. Thus, it cannot be inferred how workers react on an individual level if their job disappears. Assuming that the individual quits her job in one sector and takes up occupation in another sector she contributes to the degrowth of the workforce of the first sector as well as to the growth of the workforce in the second sector (i.e. double counting). If this example applies to every individual in our observation than 11.27% of European workers are affected by workforce developments in the economic sectors annually. Secondly, if we assume every worker whose job disappears becomes unemployed and does not find a new occupation within the same year 22.54% of the European workforce are affected every year. The actual number may lay somewhere in between and likely much closer to 11.27%. Note furthermore that this statistic disregards the annual number of employees that goes to retirement as well as the annual number of new recruits to the labor force. Also, inner sectoral job-to-job changes are not reflected as the aim of this statistic is to show structural shortcomings of the labor markets rather than regular ones.

[3] Distortive effects in the present sense of interpretation reflect any effects that may hinder the individual in question to transition with absolute efficiency, for instance a period of unemployment or a necessary retraining. In

discussion do not apply here. For instance, if worker A in the agriculture sector leaves for retirement her employer could decide not to refill her position in the company causing a degrowth of the workforce in the agriculture sector of 1. At the same time a company in the information and communication sector could create a new position and fill it with an employee freshly joining the workforce, causing a growth of the workforce in the information and communication sector by 1. Note that neither of these two examples is accompanied by any distortive effects on the labor market or the two individual employees described. Consequently, this analysis does not benefit from including these cases in the observation. Given the total employment rate of the population between 15 and 74 with 57.41%, the 2.58% and 2.59% that respectively leave and join the workforce reflect percentages of 4.49% and 4.51% of the total workforce. Note that in the previous examples of individuals leaving and joining the workforce one individual had the capacity to grow or degrow one economic sector by the amount of 1.

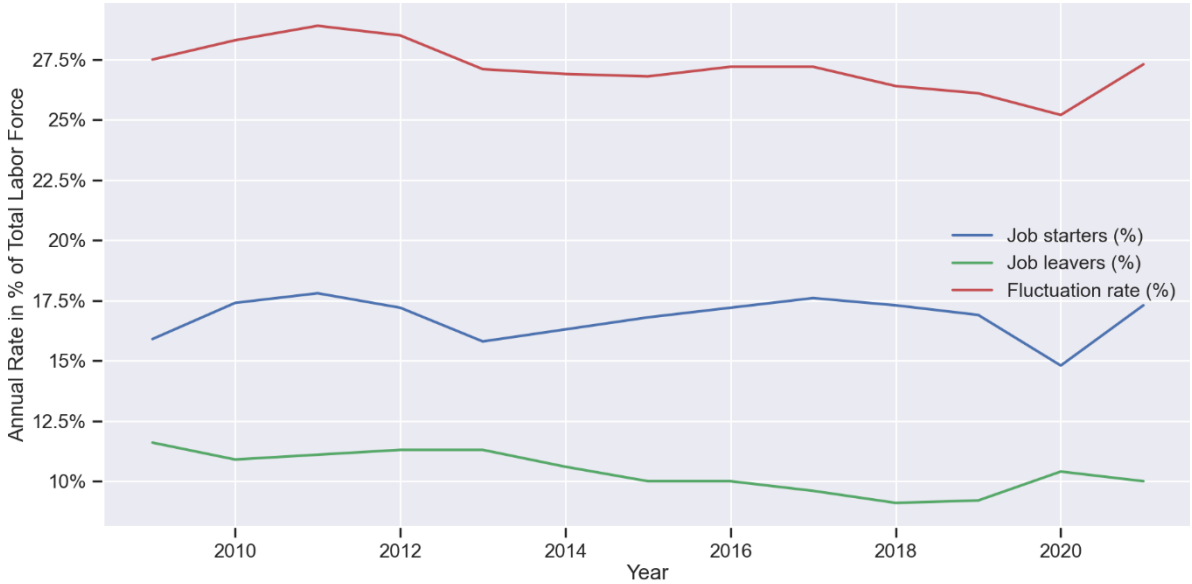
Contrarily focusing on the case where an employee leaves a job in the agriculture sector and commences a job in the information and communication sector this action would degrow the agriculture sector by 1 and grow the information and communication sector by 1, leaving the total growth impact of one individual employee at 2. As alluded to earlier the current data situation does only allow for very limited insight into the actual numbers, as this would require granular data explaining detailed moves of every individual on the labor market. Some information provides the possibility to circle in on the actual numbers – more on this later – but in the meantime, and to some extent throughout this paper, it cannot be avoided to calculate using margins. Since, while unlikely, it is not impossible that the flow rates of individuals into and out of the labor force do have zero impact on the growth and degrowth of workforces in individual economic sectors, the upper bound of the margin of individuals affected be the growth and degrowth of economic sectors does stay at 22.54%. From the lower number of the margin, the average of the workforce inflow and the workforce outflow rate given with 4.5% has to be subtracted, leaving a lower bound of 6.77%. This indicates that every year at least 6.77% of the European working population is affected by a cross sectoral occupation change.

After taking a look at workers changing their occupation across economic sectors – which due to the inherent structural nature of these kind of employment altercations is of paramount relevance for this work – the next step is to take a look at the total labor market fluctuation rate,

addition, any consequences following from the need to avoid long periods of unemployment or retraining, for instance accepting a job that earns far less than the one the individual previously possessed may be considered distortive effects. With respect to the overall labor market distortive effects reflect the macro consequences of what was mentioned before, hence inappropriate distribution of talent and the general tendency towards absence of qualified employees.

which includes inner sectoral and cross sectoral job changes, hence the total rate of annual job changes within an economy.

Figure 2: Annual labor market fluctuation rate in the EU (2009-2021)



Source: (Eurostat 2022b; 2022d, LFSI_LEA_Q, LFSI_STA_Q)

Figure 2 above shows a timeline of the annual labor market fluctuation rate (red line) between 2009 and 2021 in the European Union (EU 27). The labor market fluctuation rate is calculated by adding the annual rate of job starters (blue line) and the annual rate of job leavers (green line). All values are displayed in percentages of the total labor force in the EU between 15 and 74 years of age. Equivalently to what has been discussed before, this statistic does only allow us to abbreviate margins for the rates of individuals that are affected by the labor market fluctuation, as one individual could leave a job and start a new one right away indicating a positive impact of 1 on total job leavers and total job starters, while the same numerical effect can be reached by two people, for instance if one individual becomes unemployed while a formerly unemployed individual takes up a new occupation. Therefore, Figure 2 indicates that between approximately 10% and approximately 27.5% of individuals of the labor force in the EU are affected by labor market fluctuation. Or in other words, at the very least 10% of individuals in the European labor force change their occupation every year. Considering the findings from the previous paragraph we know that at least 6.77% of total job changes happen across economic sectors and therefore require special attention by the individual (i.e. additional training or education) and special attention by policy makers, as they reflect structural transformation of the labor market rather than its natural flow. As we have seen in the previous

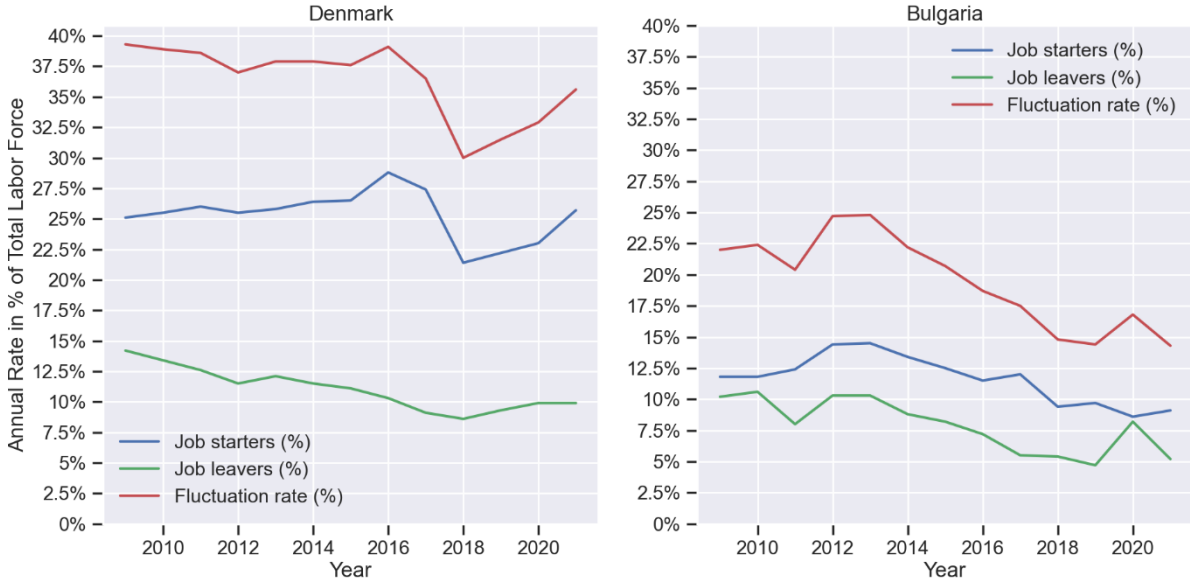
paragraph these at least 6.77% out of the total annual job changes cannot be absorbed by the natural flow of talent into and out of the labor market but reflect the margin by which labor demand develops faster than labor supply. A demand which can only be met by re-educating a certain amount of the population at least once during their professional career. With 6.77% of the population having to be re-educated every year, on average each individual faces this scenario approximately every 15 years. Of course, in reality many individuals will not face a point where they have to re-train over the course of their professional careers, while some will be in this unfortunate situation much more frequently than every 15 years.

Another observation that jumps out taking a close look at Figure 2 is that in times of crisis, such as the covid-19 crisis around 2020, the rate of job starters significantly drops while the rate of job leavers peaks. This shows us two things, none of which is necessarily surprising. First, in times of crisis there are less jobs available on the labor market. Second, assuming that in times of crisis the number of individuals that voluntarily changes occupation is smaller than in non-crisis times we can derive that the peak we observe for job leavers is mainly employer driven – i.e. job destructions, layoffs, while in times where the margin between the job starters and job leavers curve increases we can assume that these developments are mainly employee driven, as more employees are looking to improve their job situation in times of high labor demand. This shows that both in times of crisis and non-crisis labor market turnover tends to be high, as in the former employers are incentivized to cut jobs which boosts unemployment, and in the latter employees are incentivized to switch occupation either in order to improve their personal situation or to react to structural developments in labor demand.

After taking a look at the aggregate labor market fluctuation rate throughout Europe, the next step is to zoom in and compare labor market fluctuation rates across national economies within the European Union. The goal of this exercise is to inspect if there is a connection between the state of development of a national economy and its labor market fluctuation rate. National economies within the European Union allow for comparisons on these matters as we look at economies which are rather homogenous while states of development still differ to some extent (see e.g. Geppert and Stephan 2008).

Figure 3 below shows a comparison of the labor market fluctuation rates in Denmark – which ranks third among countries in the European Union in terms of GDP per capita, trailing only Luxembourg and Ireland – and Bulgaria which ranks last in GDP per capita among EU countries (Eurostat 2022f).

Figure 3: Annual labor market fluctuation rates in Denmark and Bulgaria (2009-2021)



Source: (Eurostat 2022b; 2022d, LFSI_LEA_Q, LFSI_STA_Q)

We observe that the labor market fluctuation rate in Denmark is substantially higher than in Bulgaria, actually given the mean values between 2009 and 2021 of 36.67% for Denmark and 19.52% for Bulgaria, the value is almost twice as high for Denmark. This aligns with the findings by Flórez et. al. (2021) who find that worker movements captured by hiring and separation rates are substantially higher in the US – a high income economy – than in Columbia – a developing economy (Flórez et.al. 2021).

In summary of this chapter, it has been established that fluctuation is a substantial feature of any labor market. Labor market fluctuation can be driven by labor demand, in case of hires, layoffs, destruction or creation of positions or by labor supply via separations and individuals who are incentivized to pursue a new position. It was established that the labor market fluctuation rate – the addition of the job leaver and job starter rates – in the EU over the last decade revolved around a number slightly below 30% of the total European labor force. Furthermore, by virtue of what we have seen in the data it can be assumed that in times of economic prosperity the labor market fluctuation rate is driven by the supply side, as many individuals are incentivized to seek new occupation. In this scenario the difference between job starters and job leavers is high indicating a high number of available positions. Contrarily, in times of economic downturn we can assume labor market fluctuation to be driven by the demand side, as many workers are involuntarily removed from their position driving the job leaver rate up, while the rate of job starters is low. During these times unemployment typically rises. Comparing labor market fluctuation rates of high income and low-income economies we

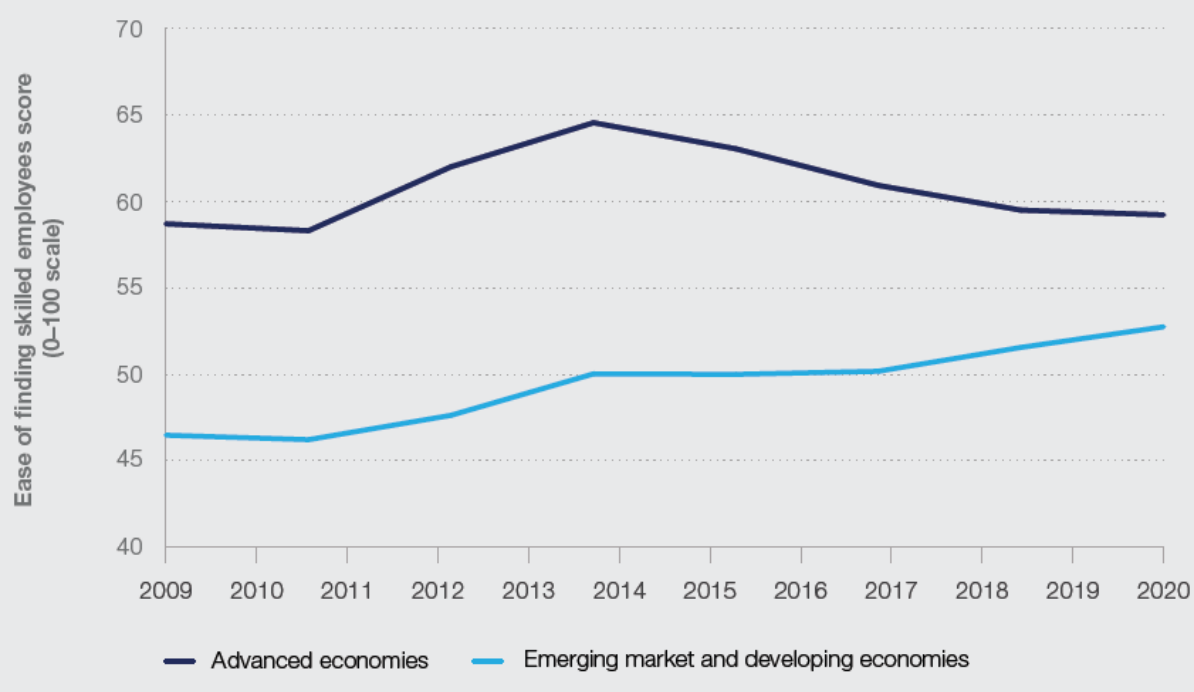
observe that fluctuation is substantially higher in high income economies. At the same time, it seems that fluctuation is overly driven by the supply side in high-income economies while being driven mainly by the demand side in low-income economies. This is coherent with the typically lower employment rates in low-income economies. Furthermore, it has been established that the rate with which economic sectors grow and shrink in terms of employment is substantially larger than the rate with which talent flows into and out of the labor force. This indicates, unsurprisingly, that labor demand develops faster than labor supply annually forcing at least 6.77% of workers in the EU to change their job from one economics sector to another. These job changes are of significant importance to this work as they are of structural nature and in many cases require time intensive and expensive re-trainings. As a result, these job changes entail the highest transition costs, and hence the highest barriers, for individual workers. Nonetheless, especially workers in the lower income quantiles are more often than not burdened with one of these structurally motivated occupation changes on multiple occasions throughout their careers.

2.2. The Economic Consequences of Labor Mobility

In the previous chapter it was established how labor mobility has become a crucial part of developed economies in the 21st century, how the swift growth and degrowth of economic sectors and the emergence and disappearance of new markets boost labor mobility across economic sectors, and how there is a positive interlinkage between economic growth and labor mobility. Acknowledging these facts poses some challenges to labor market related economic policy. One of these challenges, as I intend to argue, includes designing a welfare state that fits the unique requirements of increasing labor movement and helps incentivize labor mobility within and across economic sectors. This is essential as it enables labor supply to keep up with labor demand, thus boosting the efficiency of labor allocation in the market, and as a consequence creating a growth impulse for the economy as a whole. Furthermore, this helps offsetting harsh negative effects on households especially in the low-income spectrum. Households in the low-income spectrum are most severely affected by unforeseeable job destruction through sector degrowth or economic crisis. Designing a social security system which proves fit for the challenges of the 21st century labor market could ultimately decrease welfare related government expenditure and help creating a more inclusive and prosperous economic environment. In this chapter I intend to discuss the economic consequences posed by the 21st century labor market, especially with respect to labor market mobility and technological

change, focusing on labor demand, labor supply and especially consequences that may arise on household level.

Figure 4: Trends in ease of finding skilled employees (2009-2020)

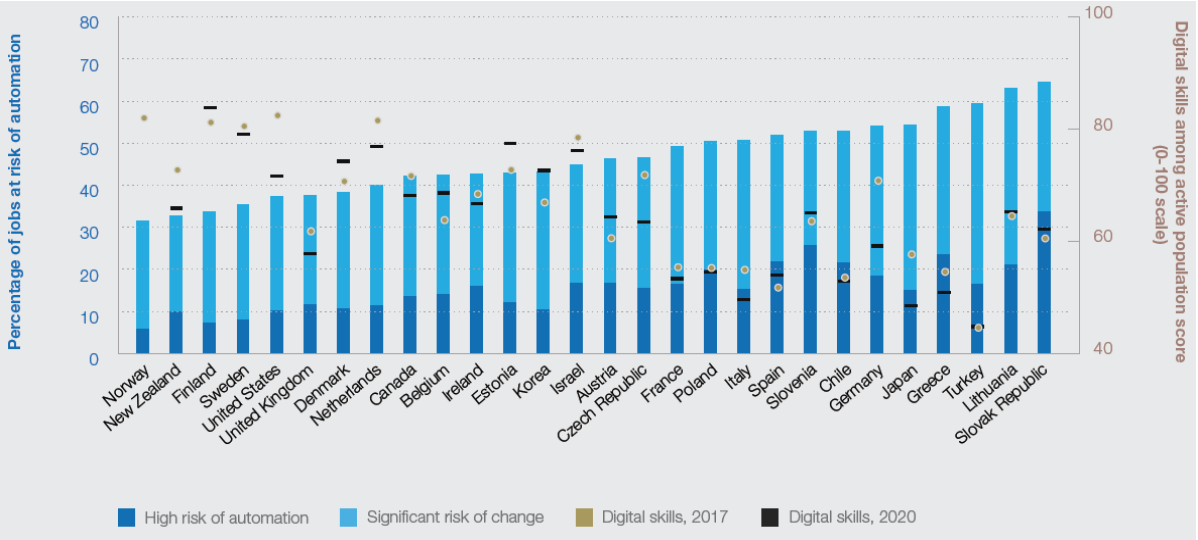


Source: Schwab 2020

Figure 4 above shows how employers assess the accessibility of suitable talent for vacant positions on a scale from 0 to 100 between 2009 and 2020. We observe that, while the availability of suitable talent continuously rises in developing economies over the observed timespan, advanced economies have seen a 7% relapse in availability of suitable talent since 2016. In addition, it has been shown that the adequacy of tertiary education to meet the qualities in demand on the labor market is declining in numerous advanced economies, among which the United States, Germany, and the UK. The shortfall seems to be particularly considerable when it comes to digital skills and other skills related to the new economy as the disruptive impact of technology on labor markets tightens its grip (Schwab 2020). The World Economic Forum's Global Competitiveness Report 2020 projects *"that technological change is set to displace a range of skills in the labour market while driving greater demand for a new set of core skills such as analytical thinking, creativity and critical thinking as well as skills in the use and design of technologies ("digital skills")"* (Schwab 2020).

Figure 5 below compares the digital skills among the active population (2017 vs 2020) in selected economies with the percentage of jobs at risk of automation.

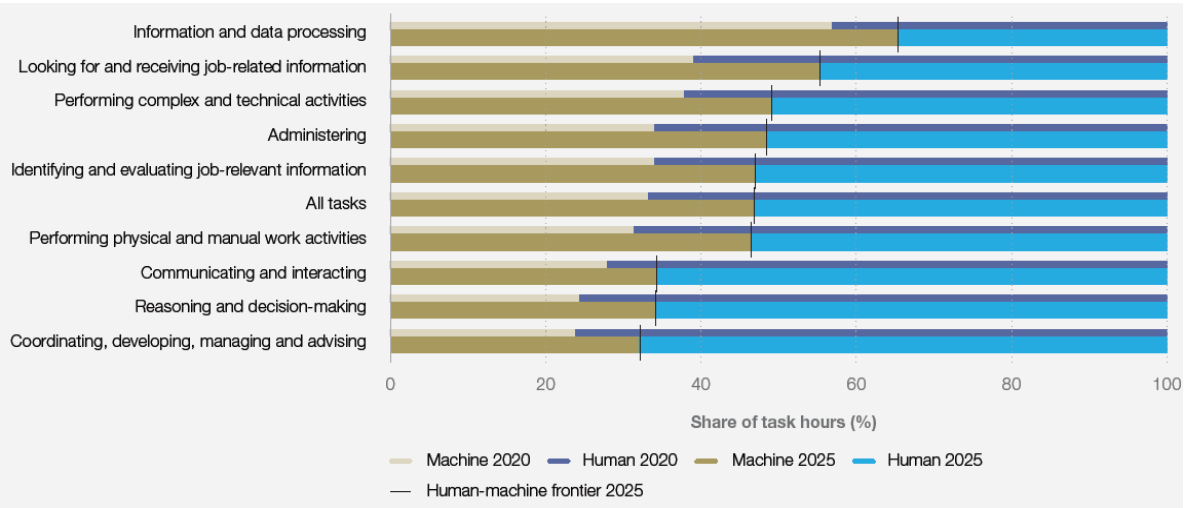
Figure 5: Digital skills among active population VS % of jobs at risk of automation



Source: Schwab 2020

Since 2017 the perception of businesses on digital skills have dropped by 3.4% on average in developed economies, while *"in OECD countries, at least 14% of all jobs are at "high risk" of automation and 32% of all jobs are at "significant risk" of automation. In 16 of 27 OCED countries digital skills scores have declined over the past four years, making it more difficult for workers to transition to new roles"* (Schwab 2020) leaving an increased risk of job loss due to automation.

Figure 6: Share of tasks performed by humans and machines (2020-2025 (Projected))

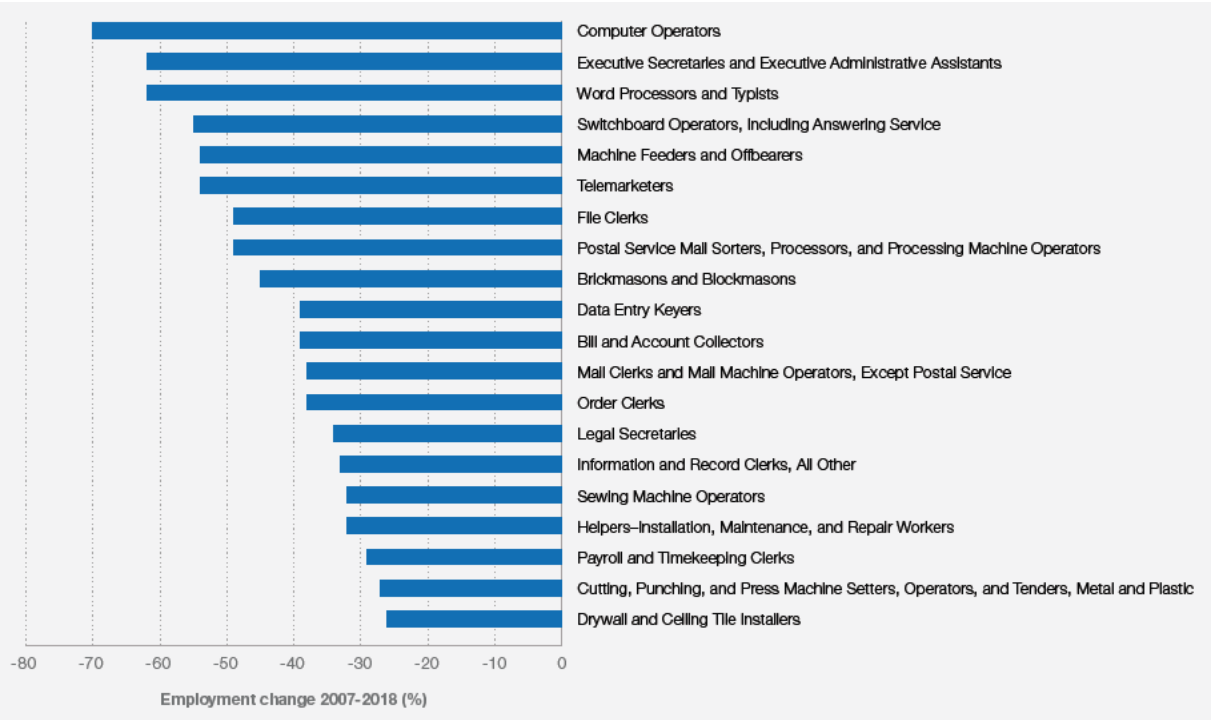


Source: Schwab and Zahidi 2020

Figure 6 above shows how automation is projected to develop with respect to specific tasks in the labor market. Even within the very short projection span of five years we observe a

significant impact of automation on a variety of highly demanded tasks in the labor market. The graphic indicates that overall, the share of machines participating in the completion of the depicted tasks is projected to rise by approximately 10%. Especially, tasks related to administering and looking for and receiving job-related information are highly affected by the automation.

Figure 7: Employment trends for jobs at high risk of automation in the US (2007-2018)

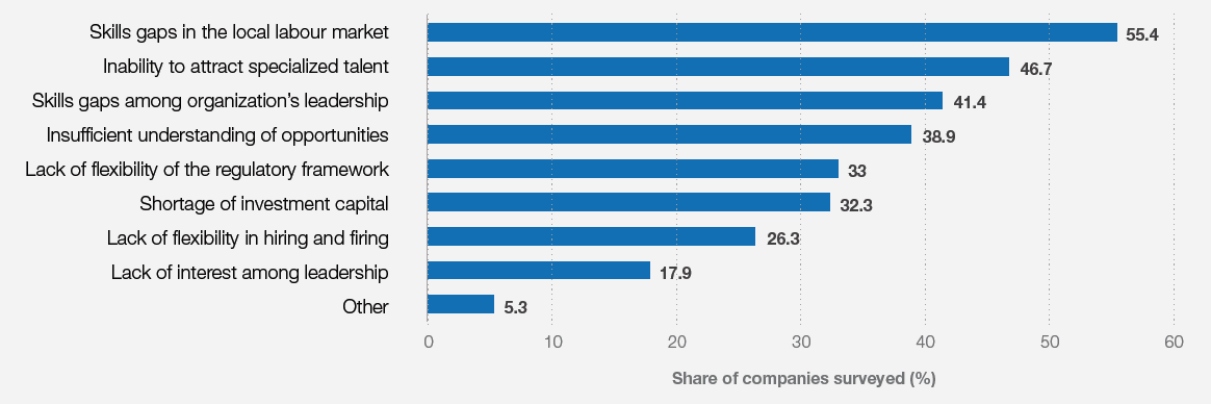


Source: Ding and Molina 2020

Figure 7 above paints and even more alarming picture showing employment developments for roles that are at high risk of automation in the US between 2007 and 2018. As the figure indicates there are several occupations in which over 50% of workers have been displaced within a span of only 11 years. Even occupations with lower displacement rates depicted in the graph show relapses of over 25% of the working population within the observed timeframe. Taken together these findings show that these swift developments in the labor market and especially the effects of digitalization and automation cannot be absorbed by education alone. Even an education system which adjusts at the same speed as labor demand, thus providing the perfect mix of talent every year – for obvious reasons a purely fictional scenario – cannot account for these fast developments, as still a substantial number of workers in certain occupations will be displaced at least once or even more frequently throughout their professional careers. Some of these displacements are connected to time and cost intensive re-

trainings the employee has to go through to stay a competitive candidate on a rapidly developing labor market.

Figure 8: Perceived barriers for implementing new technologies



Source: Schwab and Zahidi 2020

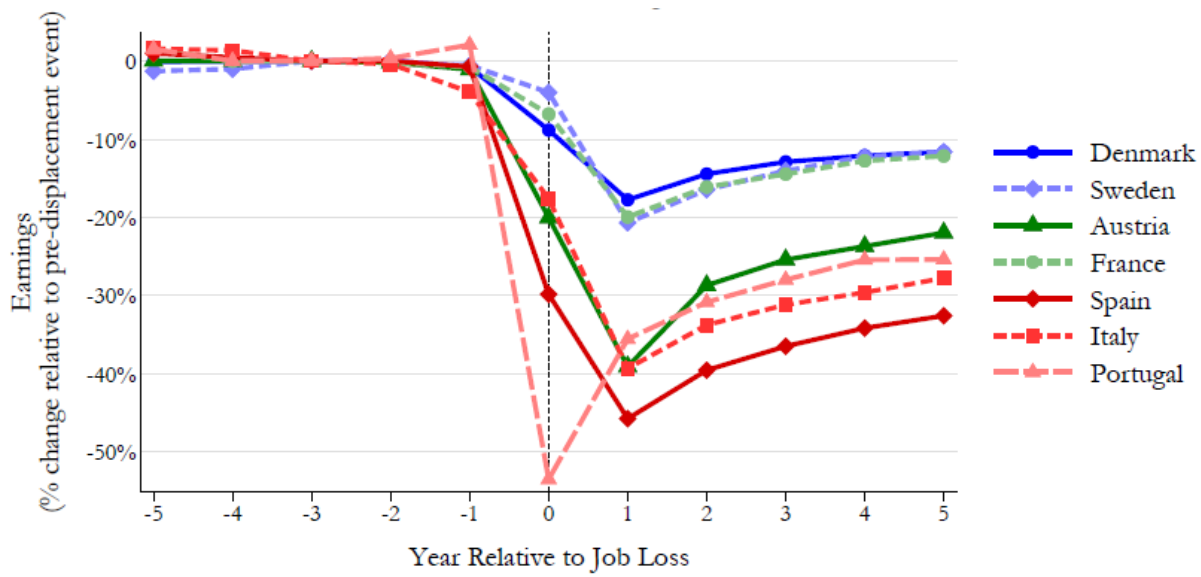
Figure 8 above shows the perceived barriers to the adoption of new technologies gathered via the 2020 Future of Jobs Survey. The data clearly indicate that skill gaps and the inability by enterprises to attract suitable talent are far and away the most impactful barriers delaying the implementation of new technologies. In addition, lack of flexibility in the regulatory framework and in hiring and firing policy are significant indicators as they are viewed as a barrier by approximately a third of the sample respectively.

In the following I will show how especially the barriers connected to skill gaps as well as talent shortages and the barriers related to the regulatory framework are tightly linked to government welfare policy. Applying a conventional welfare regime actively prevents labor supply to develop fast enough to keep up with swift structural changes on the demand side as their invention dates back to times where neither swift structural change in the labor market nor the omnipresent rapid uprising of new technologies, or the high rate of job displacements that comes with, it were the norm.

Labor market mobility is expansive. Jacobsen et. al. (1993) find that the income of a displaced employee starts regressing approximately one year in advance of the displacement compared to the income of her non-displaced peers. After a sharp drop following the displacement, it slowly recovers. However, the employees income five years after the displacement still falls 25% short of the income she could have expected if no displacement had occurred. The results display a particular amplitude in income losses for individuals included in mass-layoffs, indicating that job losses due to structural changes are more costly for the individual. Moreover, job losses during mass-layoffs are most likely to a large extent employer – i.e. labor demand – driven

while other job losses can include separations initiated by the employee. This finding is intensified as workers who are displaced by "distressed" firms seem to face higher losses compared to workers displaced by "normal" firms (Jacobson, LaLonde, and Sullivan 1993).

Figure 9: Effect of job loss on earnings across countries



Source: Bertheau et al. 2022

The study by Bertheau et. al. (2022) paints a similar picture, however, it does go a step further in examining the differences in earnings losses as a consequence of displacement across different national economies. As Figure 9 above indicates the earnings of displaced workers are approximately 10% to 30% lower five years after the displacement compared to one year before the displacement. The authors observe that average earnings drops of around 10% are common among northern European countries such as Denmark and Sweden while in southern European countries such as Portugal, Italy and Spain wage drops at averages of beyond 20% are the norm. This observation is partially but not entirely driven by the fact that displaced workers in Spain, Italy and Portugal are approximately four times more likely to be unemployed five years after the displacement than workers in Denmark or Sweden. Moreover, the authors observed that high labor market related government expenditure as well as high institutional expenditure on active labor market policy qualify as strong predictors for curtailing the negative earning effects of job displacement. Most notably, the relationship between spending on active labor market policy and the earnings effect of job displacement is driven particularly by government spending on further education and (re)training programs (Bertheau et al. 2022).

The conclusions we can draw form these findings are severalfold. First, in a world where displacements seem to increase, the fact that displacements are followed by noteworthy income

setbacks for individuals even years after the displacement happened becomes more and more relevant. The mentioned income setbacks indicate two things. First, displacements have significant negative effects on individual households income. Second, the fact that individuals who are reemployed after the displacement seem to earn substantially less then before their displacement indicates that on average these workers are less productive in their new roles. This again could have two reasons. First, the skillset these individuals supply is to a wide extent tailored to the skillset demanded in their previous position. The skillset demanded in their new position is less coherent with the skillset the employee possesses, making her less productive. Second, and to some extent following from the first point, the employee did not have the possibility to be properly retrained for the new position. This corresponds to the subsequent finding indicating that the negative income effects of displacement are smaller in economies that invest more in active labor market policy, a substantial part of which is effective retraining of employees. If governments fail to provide the unemployed with sufficient education possibilities it is unlikely that, in a conventional welfare environment, individuals especially in the lower income spectrum will take up the time- and cost-intensive endeavor to obtain a proper retraining for a new role as – we will see later – contemporary welfare policies in developed economies are featuring substantial incentives for individuals to reenter the labor force, in any available way, as quickly as possible. In summary, displaced workers face substantial income losses even after being reemployed. Effective retraining that makes the employees fit for their subsequent position seems to cushion these negative effects without making them disappear. What if instead employees had the chance to proactively react to demand shifts in the labor market by not having to wait for displacement and being granted time and financial means to take necessary retraining without having to go through lengthy bureaucratic processes and the potential stigmatization that may accompany unemployment (Norlander et al. 2020)?

2.3. The Problem of the Welfare State in the 21st Century

In the present chapter I intend to discuss contemporary interpretations of social security regimes and how they interact with recent developments in the labor market as discussed in the previous chapters.

Before moving to the discussion of specific features of social security regimes and how they interact with the contemporary labor market I will give a brief overview over the typology of social security regimes in developed economies. Hereinafter, the terms “social security regime” and “welfare state” will be used synonymously. Since its publication in 1990, *The Three Worlds of Welfare Capitalism* by Gøsta Esping-Andersen has provoked numerous reactions of praise

and criticism. While some like Lewis 1998 and Kasza 2002 outright reject the idea of a typology of welfare regimes others like Ferrera 1996, Kwon 1997 and Castles 2004 use it as a basis for their own work, extending the typological framework applied by Esping-Andersen (Põder and Kerem 2011). Its pertinent reception justifies the relevance of the work by Esping-Anderson as a parametric framework of reference for the discussion in this chapter.

Esping-Andersen's argumentation for the necessity of social security systems with the emergence of industrialization goes along somewhat similar lines as the argumentation of this work as he states "*that industrialization makes social policy both necessary and possible – necessary because pre-industrial modes of social reproduction such as the family, the church, noblesse oblige, and guild solidarity are destroyed by the forces attached to modernization, such as social mobility, urbanization, individualism, and market dependence. The crux is that the market has no adequate substitute because it caters only to those who are able to perform in it. Hence, the 'welfare function' is appropriated by the nation-state*" (Esping-Andersen 1990). In other words, the evolution of the labor market requires the welfare state to evolve with it.

Esping-Andersen uses two main variables for his typology of a welfare state, de-commodification and stratification. As commodification of people occurs when the institutional layers that "*guaranteed social reproduction outside the labor market*" (Esping-Andersen 1990) were removed, "*de-commodification occurs when a service is rendered as a matter of right, and when a person can maintain a livelihood without reliance on the market… a minimal definition [of the de-commodifying welfare state] must entail that citizens can freely, and without potential loss of job, income, or general welfare, opt out of work when they themselves consider it necessary*" (Esping-Andersen 1990). A stratifying welfare state, in contrast to a universalistic system, enhances or at least maintains social differences by employing a system that creates different classes of recipients, based on characteristics such as preceding income, social status or other demographic factors.

Based on their respective levels of de-commodification and stratification Esping-Andersen divides the world of welfare states into three clusters. First, the liberal welfare state which entails a low level of de-commodification through low levels of benefits and dual stratification through equality in poverty of state-welfare recipients and active and passive encouragement of the market for private welfares schemes via the state. Second, the conservative welfare state, entailing marginally higher levels of de-commodification, but in turn relying heavily on families – understood in the traditional sense – as social safety nets. As a consequence, preservation of status differentials is predominant in conservative welfare regimes, where

redistribution effects are marginal, non-working wives are traditionally excluded from social insurance, family benefits encourage motherhood and state assistance is understood merely as a last resort if the capacity of the family to serve its members is exhausted. The social democratic welfare regime completes the triumvirate of welfare regimes according to Esping-Andersen's typology. In social democratic regimes de-commodification is high as welfare states promote equality of the highest standards instead of equality of basic needs. In these, the level of stratification is low as mechanisms are not adjusted to social standing of recipients. The often generous benefits are typically funded by progressive income tax regimes (Esping-Andersen 1990).

In the following, I intend to discuss how certain social security regimes in combination with contemporary tendencies in developed labor markets can entail undesirable effects such as downward spirals, poverty traps and inefficient allocation of talent with the effect of poor economic performance and increased government spending. We will see that these undesirable effects are particularly impactful in welfare regimes of the liberal or the conservative type, especially such which rely heavily on means tested benefits. Social democratic systems fare better in curtailing most of the undesirable effects without however being able to outright eliminate them.

In the previous chapter we have seen that job displacement is often followed by substantial losses in income for individuals, both right after the displacement and years later. These losses in earnings can be attributed to different reasons, but most prominently they are the effect of a combination of lower income in the employment subsiding the displacement and lower hours worked, for instance if the individual takes a long time to find a new position (Farber 2017). Furthermore, the loss of particularly good job matches – meaning the coherence between a workers skill-set and the skill set required for her previous position – contributes heavily to earnings losses (Gulyas and Pytka 2020). This is where enhanced options for further education and retraining could make a difference in increasing the chance for the worker to find an equally good job match in her subsequent position. If we look at the question which demographic groups are mostly affected by displacements, we observe some outstanding characteristics. When it comes to age, we observe that workers in the lowest and in the highest age groups are disproportionally affected by displacements compared to their prime-aged peers. With regard to education, it seems that individuals with below secondary education are affected by displacements to a larger extent than individuals with higher education. Finally, and most importantly, individuals with shorter tenures are much more likely to be displaced than their peers serving longer tenures. More specifically, workers with tenures between one and four

years are 1.5 to 3 times more likely to be displaced than workers with a tenure between 10 and 19 years (OECD 2013). Importantly this observation entails the conclusion that being displaced once increases the risk of being displaced again.

So far, we know that especially younger and older workers with lower levels of education tend to be displaced and that being displaced increases the likelihood of being displaced again at some point in the future. Furthermore, we know that being displaced increases poverty. Further education or job specific retraining could enhance the labor market competitiveness of the candidate which in turn would enhance her chances of minimizing the risk of increased poverty. However, re-trainings are costly not only in terms of fees for the actual training but in addition also in terms of lost income for the time the individual is not working. An example analysis from the US labor market estimates the retraining cost of transforming a worker in the declining coal industry into a worker in the booming solar energy sector at between 5.756$ and 20.863$ per worker without taking into account the income lost during the time of retraining (Louie and Pearce 2016). Although, through reducing the risk of poverty, the training may pay off in the long run, individuals especially in the low-income spectrum may not have the luxury to calculate on a medium to long term basis. As a result, displacements entail earnings losses and, as individuals may underachieve in their new job as they accepted a bad job-skillset-match instead of going for a retraining, enhance the likelihood of being displaced again. Earnings losses lower the likelihood that an individual can afford further education or retraining to invest in herself and stay a competitive candidate on the labor market. This lowers the chances for the individual to find a job that matches her skillset, resulting in productivity losses and again enhancing the chance of displacement. Since the only available social safety net entails poverty and stigmatization the individual is incentivized to avoid longer periods of unemployment at all costs. However, this is exactly what proper further education or retraining would require. As a result, the individual is incentivized to avoid investments in her education and plan in the short run instead. This again resulting in less job matching, further displacements, and more poverty. The individual will circle between jobs, each one paying less than the one before, until she has lost the entirety of her competitive advantage on the job market, stretches of unemployment increase, let alone the psychological cost of unfulfillment and stigmatization until she becomes long-term unemployed. Even assuming active labor market policy and with-it government financed options of retraining apply at this point, the process that led to this situation is avoidable and does not have any beneficiaries as this situation has negative implications on individual, firm and government level. Neoclassical economic theory refers to an allocation which produces only losers as non-Pareto efficient (Lockwood 2008). In modern

economics the term coined by the Italian economist Vilfredo Pareto describes the desirable situation of a perfectly efficient allocation where no party can gain something with another one losing something in return. A situation which is not Pareto efficient in turn is understood to be not desirable.

Once dropped down the income ladder and after becoming recipients of means-tested welfare benefits individuals face what British labor economist Guy Standing calls “poverty traps” and “precarity traps”. In Britain individuals who take up a low-income occupation after being on welfare may face an income tax burden of 80%, a rate that is comparably low considering the situation in nations of continental Europe such as Denmark, Finland, or Germany. The intuition behind the so-called poverty trap is that the difference between the income an individual could generate via benefits and the income an individual could generate vie a low-income job is so marginal that the incentive to take up a low-income occupation is fatally low, incentivizing every reasonable human being to stay on benefits as long as possible. The precarity trap describes an equivalent phenomenon but with respect to part-time or temporary employment. The exhausting and complicated bureaucratic endeavor necessary to be eligible for benefits and the long waiting periods between filing for benefits and receiving the payments strongly disincentivize individuals to take up part-time or temporary work as the negative impact of having to go through all of it again when the temporary employment is over loom larger than the advantages of the short-term employment (Standing 2017).

Once presented with the situation to receive unemployment benefits, workers see their chances of re-entering the labor market shrink on a daily basis. Besides improper training possibilities and possible competitive disadvantages due to less demanded skillsets, recipients of social security benefits face substantial discrimination and stigmatization in the labor market. Conclusive evidence points to the fact that unemployed individuals receive substantially less callbacks when applying for a job than their equally qualified but employed competition (Kroft, Lange, and Notowidigdo 2013, Nunley et al. 2016). Further evidence suggests that this goes well beyond the point where individuals are reemployed. Even statistically controlled for job performance, formerly unemployed workers are on average judged as less competent in their new occupation when compared to their peers (Norlander et al. 2020).

Conventional social security systems tend to contribute to a substantial extent to the issues described above. This is perhaps not surprising as they originate in times where labor markets were much less flexible and switching jobs was all but the norm. More importantly, while it can be argued that modern economies tend to benefit from flexibility and mobility, it can equivalently be argued that 20th century economies were advantageously influenced by stability

and planning in the long run. In such an environment it seems to be advisable to apply social security regimes which disincentivize labor market mobility and the periods of unemployment that naturally come with it. Subsequent to the discussion above a few summarizing principles about what a suitable welfare state in the 21st century should entail can be derived. First of all, as it has been suggested by the examples above how highly targeted benefits with high entry barriers could entail efficiency losses, a welfare regime following a more universal approach seems advisable. As the issues indicated above tend to affect a substantial audience within a society instead of a small minority a corresponding welfare regime ought to be tailored to the needs of a wider range of recipients in terms of demographic groups and income segments, entailing for instance downsizing bureaucracy including a significant reduction of the burden for recipients. Secondly, as the discussion above has shown, planning insecurity is a prevalent limiting factor of contemporary social security regimes. Consequently, an improvement may lie in providing recipients with the freedom and security to plan in the long run, including investments in retraining and further education. Thirdly, an advantageous factor could result from the reduction of "social barriers" such as stigmatization, as labor market mobility tends to become the norm rather than the exception the architecture of a social security regime should reflect this socio-economic reality and may in fact bolster economic growth by incentivizing labor market mobility. Finally, while society, to a large extent, seems to evolve past a state where a population revolves around the family in the traditional sense, economic science with no exception to public economic policy making continuously places the "household" in the conventional sense at the core of its observations. As this entails limiting and potentially discriminatory tendencies a modern social security regime may enhance its focus on freedom and equality of individuals instead of relying – to varying degrees as we will see subsequently – on households and families as the initial provider of social security.

In the present chapter I have introduced the classification of welfare regimes introduced by Gøsta Esping-Andersen which will serve as a basis for the classification of welfare regimes for the remainder of this work. Moreover, I have shown how the labor market effects discussed in the two preceding chapters in combination with conventional social security regimes, as often applied in developed economies, can lead to downward spirals, resulting from a lack of funds and flexibility of individuals to attain the necessary further education and retraining to stay competitive candidates in the labor market, leading to increasingly bad job-skillset matches, eventually to more displacements and ultimately to long-term unemployment. Subsequently, I have alluded to the fact that recipients of unemployment benefits face poverty and precarity traps in addition to high financial and ideological barriers preventing them from reentering the

labor market. Finally, I have discussed the shortcomings of conventional social security regimes, in light of contemporary tendencies in developed economy labor markets, and what features could be desirable with respect to a more modern version thereof.

3. Basic Income

Universal basic income is, aside from numerous alternative examples, one of the most vividly discussed alternative social security regimes in the contemporary literature. The present chapter, and to some extent the remainder of this research, entails a discussion on if and how universal basic income has the potential to in many respects fit the requirements of the modern labor market to a wider extent than conventional welfare regimes. Please note that the basic income policy measure is to be understood as merely one option among many. Nonetheless, its well documented and well-established status among modern public economic policies makes it immensely suitable as an argumentative basis for this work.

While the discussion herein to a large extent revolves around concepts of welfare economics it is difficult to engage in a welfare policy, or for that matter public economics, debate entirely abstaining from a discussion about equality and socio-economic justice. Thus, in the present part I intend to allude to the conceptual background that undergirds universal basic income from a perspective of social justice in the libertarian sense. The most prominent account of the libertarian concept of justice is provided by John Rawls (1971) Difference Principle. The difference principle entails the maximinning of social and economic payoffs. In more detail the principle states that social and economic payoffs such as wealth, income and power, which build the socioeconomic foundation for pride and dignity, shall be allotted to the effect that the situation of the most advantaged group can only be reduced at the cost of additionally reducing the situation of the least advantaged (Rawls 2020). Given that Rawls in this description does explicitly not refer to income alone when mentioning socioeconomic advantages this principle can be interpreted favorable with respect for a basic income policy. Namely, reception of wealth differs from the reception of income by virtue of its unconditional nature. Furthermore, an unconditional transfer of wealth offers the best possible bargaining power to the less advantaged and thus the best obtainable powers and prerogatives that come with social positions. Finally, as a basic income policy entails a minimal amount of control over the individual and is not specifically targeted at individuals who display certain characteristics, it is least likely to undermine individuals self-respect, thus in turn providing the best possible outcome in terms of self-respect for the least advantaged. Thus, or so it seems, Rawls's Difference Principle

recommends the introduction of an unconditional basic income at the highest sustainable level, as therewith the maximin condition would be satisfied (Van Parijs 1991).

However, unfortunately according to the Difference Principle alone it seems impossible to determine a magnitude of the basic income grant that would not be vulnerable to at least one form of expansive tastes objection. Given two equally talented individuals with two very different approaches to labor an individual with a predisposition to monetarize her talents in the maximal possible way, who would consequently receive less than she could otherwise as a result from the basic income policy, would, resulting from the policy, be way less successful in obtaining happiness according to her conception of the good life than an individual who does not like to work that much. For the latter who, resulting from the basic income policy, would have much more than otherwise, the policy has a high positive impact on her attempt to live a good life according to her conception of it. Increasing the grant for the hard-working individual at the expense of the one who does not like to work would be subject to an expansive tastes objection, just as well as not doing so would be. In the first case the second person finances the expansive taste of the first person who wants more consumption while in the second case the first person finances the expansive taste of the second person who wants more leisure (Van Parijs 1991).

An alternative, and somewhat more promising, line of thought can be found via the envy-free allocation of external wealth by Ronald Dworkin. Herein, it is stated that society is endowed with a set of resources (such as land or air) that are external to the control of individuals while every individual has a claim to an equal share of these resources. With these shares being tradable however, while nonetheless the claim on the wealth being produced with these external resources stays with the original owner, it follows that a basic income should be distributed on the grounds of the values created via external resources by the individual who use these resources in a gainful way. If there is no envy between members of a society on the external resource, income, expanse packages obtained by other society members the distribution fulfils the criterion by Dworkin and justifies a universal basic income. Nonetheless, on this basis the basic income would perhaps be rather low. This situation however can be improved via widening the conception of what is considered external resources in modern societies. Doing so will soon lead to the conclusion that beyond natural resources such as land and air, the decisive majority of current wisdom and technology, aside from what is currently protected by patents, is to be understood as an external resource, as it is impossible to put a price on the wisdom of how to make fire, use the wheel or the content of most cooking recipes. This concept of inherited wisdom of course exceeds these basic wisdoms and includes anything up to the

most sophisticated technology or open-source computer software. Unfortunately however, as inherited wisdom is not exclusively available, and thus there is no market value attached to it, it is impossible to determine its value and thus the tax rate that should be brought upon the ones who use it, which again would determine the level of the basic income.

Finally though, in order to sufficiently justify a basic income policy from a libertarian standpoint, and in relation to the data presented in the previous chapter, the Walrasian interpretation of the labor market has to be considered, entailing that, like any other markets, the labor market, in the absence of external constraints, tends to clear at the equilibrium price. However, given the findings presented in the previous chapters, it seems there is a substantial discrepancy between individuals in employment and individuals affected by involuntary job changes, much to the disadvantage of the latter. As, again analogously to the reflections in the previous part, frequent job and even profession changes, involuntary or not, tend to become the norm in the 21st century this deserves further investigation. The phenomenon in question can be explained via the insider-outsider and the efficiency-wage theories which both reach the conclusion that there tends to be a bias in wages benefiting individuals already employed at a certain workplace over new joiners who would, in theory, be worth the same wage. Note that this discrepancy does not, under the assumptions of these two theories, come from a difference in experience of the two individuals at the workplace in question, but instead refers to two individuals offering the exact same utility to the firm, but are nonetheless paid differently with the one already employed at the workplace receiving a premium on the equilibrium wage. While the insider-outsider theory is based on the assumption that hiring, firing and training costs give employees the bargaining power they need to claim a wage above the market clearing level the efficiency wage theory rests on the assumption of a positive connection between wage and effort that incentivizes employers to pay wages above the market clearing level to their long-standing employees. This entails that in a non-Walrasian labor market individuals endowments to achieve their conception of the good life are not entirely reflected by their wealth and skillset but in addition by the possession of a job. Thus, in equivalence to the earlier reflections on general property such as land, individuals who arbitrarily possess the advantage in question, hence a job, ought to pay an unconditional dividend to the ones that involuntarily do not, compensating them for the disadvantage involuntary unemployment entails. A tax base reflecting these considerations would not only allow for a much higher basic income than would have been possible under consideration of the criterion by Dworkin alone, but would also facilitate the maximinning of real freedom within a society as demanded via the criterion by Rawls (Van Parijs 1991).

In the following I intend to define the term universal basic income as it is present in the contemporary literature and with respect to how I will use it for the remainder of this work. At its core universal basic income reflects the idea of every individuals right for a share of societies wealth (Müller 2014). The literature on the subject contains various definitions, some of which I will shortly present in this chapter. Guy Standing, one of the leading UBI researchers and co-founder of the BIEN (Basic Income Earth Network) uses the following definition in his book Basic Income:

"A modest amount of money paid unconditionally to individuals on a regular basis (for example, monthly). It is often called a universal basic income (UBI) because it is intended to be paid to all." (Standing 2017).

For Philippe Van Parijs and Yannick Vanderborght (2017), a universal basic income is:

"A regular income paid in cash to every individual member of a society, irrespective of income from other sources and with no strings attached." (Parijs and Vanderborght 2017).

The BIEN (Basic Income Earth Network) defines a UBI as:

"A periodic cash payment unconditionally delivered to all on an individual basis, without means-test or work requirement.

Here are the five characteristics of basic income

1. *Periodic – It is paid in regular intervals (for example every month), not as a one-off grant.*
2. *Cash payment – It is paid in an appropriate medium of exchange, allowing those who receive it to decide what they spend it on. It is not, therefore, paid either in kind (such as food or services) or in vouchers dedicated to a specific use.*
3. *Individual – It is paid on an individual basis – and not, for instance, to households.*
4. *Universal – It is paid to all, without means test.*
5. *Unconditional – It is paid without a requirement to work or to demonstrate willingness to work."* (Basic Income Earth Network 2022).

From this point forward the latter definition applies whenever universal basic income, basic income or UBI is mentioned in this work.

Moreover, it has to be mentioned that, while this work is not about how a UBI policy can be financed from a fiscal standpoint, I shall briefly comment on the assumptions I will use related to how the funds for such a policy will be raised. The UBI policy discussed hereinafter almost entirely finances itself via progressive income taxes. In this sense, much like in relation to social insurance policies, a portion of ones income will be deducted and redistributed via the basic income scheme. However, in contrast to social insurance, the funds raised will be redistributed

among society members, meaning that via the introduction of the policy some individuals especially on the high end of the income spectrum will be financially worse off than before the policy was introduced, while individuals on the lower income spectrum will be slightly better off. For the majority of society, namely middle-income individuals, almost nothing changes in terms of disposable income, however, the way of how this income is constructed differs.

While likewise the core objective of this work is not to conclusively determine a social security policy landscape I shall briefly comment on where a UBI policy would fit in such a landscape. The UBI policy discussed for the remainder of this work is intended to replace a vast amount of social security schemes upon its introduction. This not only adds efficiency to the government bureaucracy apparatus but also frees up funds that can flow into the pool from which the basic income is financed. However, it has to be noted that savings of that sort are minor and the main amount of money to finance the policy is raised via taxes. Furthermore, while the UBI policy is set to replace a vast amount of social security benefits it is considered advisable to leave some highly targeted benefit schemes, for instance disability benefits, or support for single parents, in place.

3.1. Formal Analysis

In order to understand the impact of a UBI on recipients, government expenditure and the labor market it is advisable to employ a general methodological framework in which we can compare the basic income with other existing social security policies. In the present chapter such a framework is introduced and discussed with respect to its implications as a basis for the formal part of this work.

In their paper *Universal Basic Income in the US and Advanced Countries* Hilary Hoynes and Jesse Rothstein (2019) introduce a formal framework which is considered promising as a basis on which various social security regimes can be compared. The authors approximate most transfer programs applied in developed economies like this:

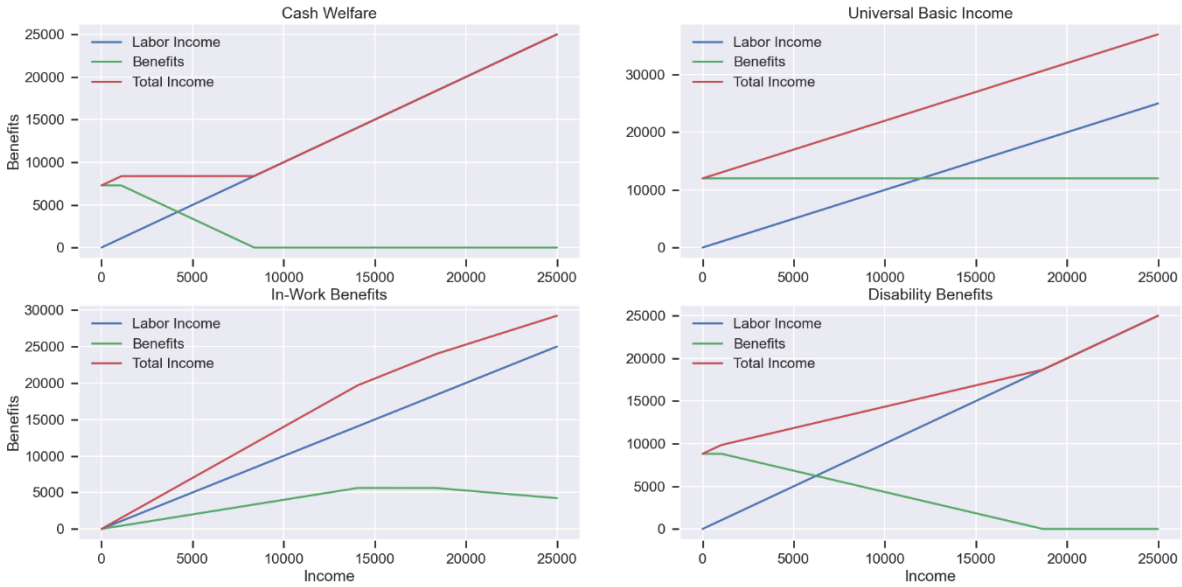
$$B(X,Y) = E(X) * \min(G + SY, M, \max(M - T(Y - P), 0))$$

Where B is the transfer (or benefit) for a family with characteristics X and earnings or income Y, and the parameters are:

- G (for “guarantee”): The transfer to a family with zero earnings.
- S (for “subsidy rate”): The rate at which the transfer grows as earnings rise above zero.
- M (for “maximum transfer”): The maximum transfer, reached at earnings of (M-G)/S.
- P (for beginning of “phase out” of transfer): The highest earnings a family could have and still receive M.

- T (for "tax rate"): The rate at which the transfer is reduced for earnings above P, until it reaches zero when earnings equal P + M/T.
- E (for "eligibility"): A definition of which individuals or families are eligible (based on factors other than earnings/income) for the program. This is often referred to as "categorical eligibility." We can think of it as a function E(X) mapping (non-earnings) characteristics X to an indicator for eligibility (Hoynes and Rothstein 2019).

Figure 10: Payouts of different social security schemes according to the model



Source: Hoynes and Rothstein 2019

Figure 10 above shows the payout patterns of different US social security schemes in comparison under the model described above. We observe that the depicted social security schemes aside from UBI all rely on a guaranteed minimum income level. The income of individuals who do not participate in the labor market or work very little hours is entirely or partially provided by the social security program. Meanwhile, as inherent to most conventional welfare schemes, benefits are phased out as individuals obtain a certain income. Typically benefits remain, or are even increased slightly, for individuals who obtain only a very small income. This mechanism is designed to incentivize individuals who do not participate in the labor market to take up a new occupation. If benefits would be reduced away at the same magnitude with which an individual's labor income grows (which nonetheless is the case in numerous benefit schemes) the incentive to join the labor force remains comparably small as the perks of doing so only become evident at an income level where benefits are reduced to zero and the total income still remains firmly above the maximum level of the benefits the

individual could have received. We observe that the margin where individuals are allowed to obtain an income without benefits being reduced is very small for the cash welfare and the disability benefits scheme. Namely, benefits are being reduced from 1.080$ and 1.020$ annual income respectively. However, the rate with which benefits are phased out differs for the two schemes. While in the cash welfare scheme benefits are phased out rapidly, essentially preventing the individual from obtaining a positive income before benefits are phased out entirely, the disabled benefits scheme proves slightly more generous in phasing out benefits slower, thus allowing recipients to obtain a positive income even from low income (e.g. part time) employment. Note that while the in-work benefits scheme does not provide a guaranteed minimum income it increases benefits slightly for recipients of lower income. Beyond that, from a certain point onwards benefits are neither increased nor reduced, providing a stable top-up of the income an individual receives from labor. Only at an annual income of slightly below 20.000$ the benefits are slightly reduced. However, the level with which the benefits are reduced is so low that recipients keep benefiting from the payments while climbing the income ladder. If we compare the three social security schemes discussed with the basic income scheme, we observe that under the basic income regime individuals are granted a minimum income threshold which does not depend on their income generated through labor. However, while programs which likewise guarantee such a minimum income threshold quickly phase out the benefits as individuals start to generate labor income, the basic income payments are granted regardless of the labor income an individual generates. Not only does a basic income treatment grant a basic safety net for every eligible recipient, but it also keeps incentives to join the labor market high as benefits are not reduced in correspondence to one's labor income.

3.2. The Three Types of Welfare States

In the previous chapter I introduced the model developed by Hoynes and Rothstein which provides a helpful toolkit to compare different welfare policies within a microeconomic framework. In addition, I discussed a few examples of welfare policies that can be compared under the introduced framework, namely the examples used by Hoynes and Rothstein themselves. While these examples provide a good overview over different benefit schemes that can be compared via the introduced model as well as a good comparison of how different schemes perform in the given framework these benefits schemes have two main shortcomings with respect to the scope of this work. First, the three schemes, aside from the UBI one, all originate from the same welfare state (the US). As it is more purposeful for this work to compare welfare policies, and namely unemployment benefit systems, of different welfare states,

preferably welfare states that are classified differently according to the typology by Esping-Andersen, the fact that all three schemes introduced above stem from the same legislation poses a limiting factor. Second, while the policies described above are not unrelated to unemployment benefits, they all, aside from the cash welfare to some extent, reflect special cases. For many reasons it may be more meaningful for this work to focus on plain unemployment benefits from different legislations, an approach which may produce more streamlined and as such more comparable results.

Therefore, in the following I intend to introduce three schemes of unemployment benefits from three different legislations, each representing a different category of welfare state with respect to Esping-Andersen's typology according to recent publications. The conservative welfare state will be represented by Germany, the liberal welfare state by the US and the social-democratic welfare state by Sweden (Bégin-Caouette, Askvik, and Cui 2016). Note that there are no definitive matches between existing welfare states and welfare state types according to the typology. Instead, an actual welfare state may combine social-democratic, conservative, and liberal elements while typically leaning towards one of the three options overall. In the cases of the given examples, the respective welfare states are most accurately characterized by the indicated types. Moreover, unemployment benefit schemes can take many different forms, therefore it is necessary to establish that there is enough common ground between the three selected legislations to facilitate a meaningful comparison. In this regard the relatively straightforward model introduced in the previous chapter is a beneficial asset as it allows for comparison between a wide range of welfare policies.

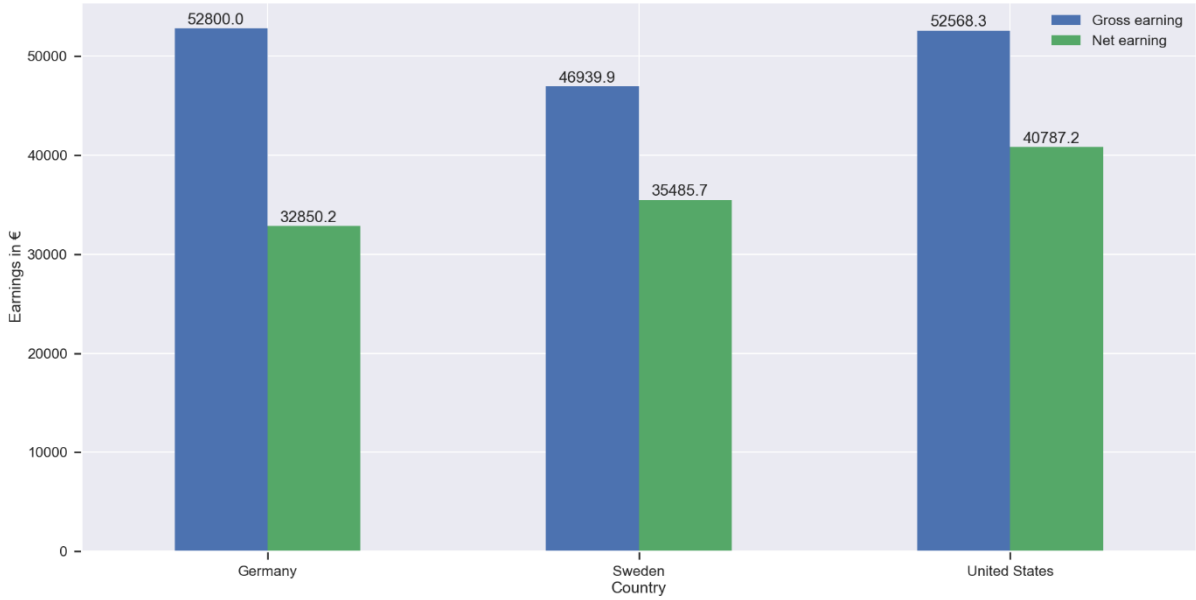
While the three welfare states introduced above vary vastly with respect to many characteristics including generosity of unemployment benefits, benefit schedules and general structure, there are some similarities. For instance, the three welfare states introduced schedule unemployment benefits in a manner that resembles a two-tier system. Therein, the first tier of benefits sets in immediately after the event of a job loss and the benefit payments depend on the previously earned wage. Therefore, this first tier of benefits functions to a large extent like an unemployment insurance, wherein employees pay a certain share of their wage into the unemployment insurance while employed and receive payments from the insurance once becoming unemployed. This unemployment insurance resembling tier of benefits usually comes with a time limit after which the payments stop. A step-by-step reduction of payments is another measure observed in some instances. If, after the first tier of unemployment benefits is exhausted, the individual in question is still unemployed, the second tier of benefits sets in. This second tier does not depend on the individuals previous wage but merely reflects the

minimal constitutionally determined means a person requires to cover their basic needs. Second tier benefits usually come with tremendous means tests, a complicated and lengthy application procedure, or the obligation to participate in active labor market policy programs. Therewith these benefit schemes reflect to a large extent what authors refer when talking about the social barriers of stigmatization and lack of dignity that come with unemployment in the majority of developed economies (e.g. Werner 2018). Furthermore, it has to be remarked, that in some economies, represented by the US in the list of examples herein, second tier benefits are almost impossible to obtain and are bound to specific demographic characteristics for instance single parenthood.

On top of the general remarks above, herein I will provide an overview of the specific characteristics of the three chosen example welfare states starting with the German, hence the conservative, model. After becoming unemployed a German individual enters the first tier of unemployment benefits, given that some specific conditions are met. Thes conditions include having worked at least 12 out of the 30 months preceding the application for benefits in a position subject to compulsory insurance (most full time and part time occupations, exceptions include under specific circumstances minimal work (<15h per week), internships and others, however the vast majority of occupations in Germany are subject to compulsory insurance). Other conditions include being fit for work and actively engaging in attempts to find work. If the necessary conditions are fulfilled a child-less, unmarried individual receives benefits of up to 60% of the net wage received on average per day in the 12 months before becoming unemployed (European Commission 2022).

Figure 11 below shows the net and gross average annual earnings of a single without children in each of the three sample welfare states discussed herein. Given the average annual net earnings of a German of 32.850,2€ reflecting 2.737,5€ per month the average German would receive 1.642,51€ in gross benefits during the first 12 months being unemployed, given that all the relevant criteria are met.

Figure 11: Average gross and net earnings for single person without children in 2021



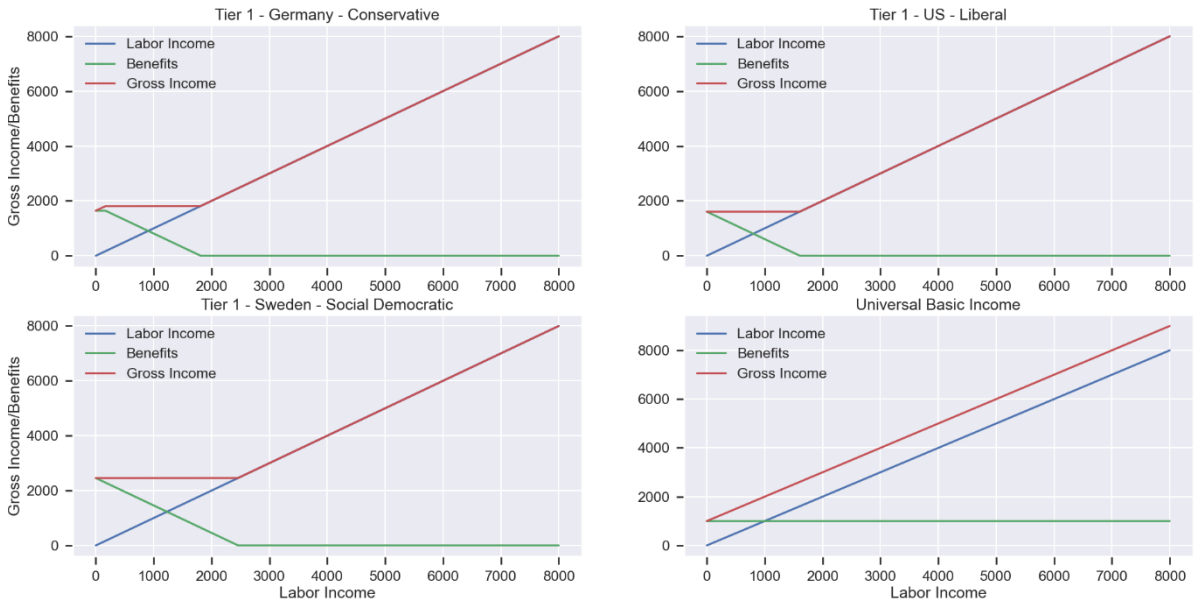
Source: (Eurostat 2022a)

In the United States, the example of a liberal welfare state, unemployment benefits are determined by state law and are thus incoherent with respect to the entire country. Nonetheless, for this particular exercise nationwide averages are sufficient as a level of granularity beyond that would unnecessarily impair comprehensibility without adding value. Given the mean gross annual wage received in 2021 by an American employee of 52.568,3€ per month this employee, once becoming unemployed, would for the first six months of being unemployed receive 2.188,33€ of gross monthly benefits in Massachusetts (Commonwealth of Massachusetts 2023) and 1.018,33€ of gross monthly benefits in Mississippi (Mississippi Department of Employment Security 2023b) given that the eligibility requirements are met. Eligibility requirements include that the individual shall not have become unemployed due to any fault of her own (Massachusetts Department of Unemployment Assistance 2018) and that she is both able to work and is actively looking for work (Mississippi Department of Employment Security 2023a). Per extrapolation from these two examples, namely the minimum and maximum of first tier unemployment benefits by state this leaves the average American individual with 1.603,33€ in gross monthly benefits for the first six months after becoming unemployed. It has to be noted that, other than in Germany, unemployment benefits are accounted for as taxable income in the US. The implications this has on the net value of the benefits will be discussed in the next chapter.

In Sweden, the example for a social democratic welfare state, obtaining first tier unemployment benefits requires membership of an unemployment insurance fund. While the general structure

of the funds is similar to a large extent, each occupational filed has its own unemployment insurance fund and there are some slight variations among the individual examples. Membership of an unemployment insurance fund is non-mandatory. A member of an unemployment insurance fund can, if the relevant conditions, such as the work condition (a minimum requirement of gainful work the applicant has to have performed in the 12 months preceding the claim), are met receive up to 80% of their daily income before the claim in unemployment benefits, or a maximum of 1.200SEK per working day, for the first 200 days of being unemployed. It has to be noted that these claims are calculated on a daily basis and that only working days (i.e. five days per week) are considered. Nevertheless, the example can be extrapolated to a monthly level in order to ensure coherence with the other examples. As a result, an unemployed individual in Sweden who is a member of an unemployment insurance fund, fulfills the necessary requirements and earns the 2021 mean wage can claim the maximum possible amount of unemployment benefits paid by an unemployment insurance fund of 1.200SEK per working day (European Commission 2023). Considering the average 2021 exchange rates of SEK/USD = 8,6 and USD/EUR = 0,8 (OECD 2023) we obtain the EUR/SEK exchange rate of 10,75 and as a result 1.200SEK per day reflects 111,63€ or, considering an average of 22 working days per month, 2.455,81€ of gross monthly benefits. Similar to the US unemployment benefits are considered taxable income in Sweden.

Figure 12: Country comparison of tier one unemployment benefits and UBI



Source: (European Commission 2022; 2023; Massachusetts Department of Unemployment Assistance 2018; Commonwealth of Massachusetts 2023; OECD 2023)

Figure 12 above depicts a comparison of the three tier one unemployment benefit schemes discussed beforehand. One immediately obvious takeaway is that, under consideration of zero working hours, the tier one benefits in all of the described economies outrank the benefits obtained via the basic income scheme. Nevertheless, the higher the benefit payments the longer a recipient has to work before obtaining a net positive from her employment as benefits are cut at the same rate at which income from employment grows. This phenomenon if referred to as the unemployment trap, welfare trap or poverty trap (see e.g. Standing 2017).

There are two considerable caveats with respect to the numbers discussed and displayed above. First, even though all the values are converted to the same currency, the meaningfulness of the comparison is limited due to the different purchasing power of the same amount of money in the different countries. Although, while this comparison is made for the purpose of a general indication and thus does not lose value as a result of this limiting factor, it should still be born in mind. Second, the numbers discussed and displayed above are calculated on the basis of the mean income of a childless single individual in the respective countries. Given that income inequality is considerably large in the three sample countries and income progression develops exponentially the median income for all three sample countries is considerably lower than the mean income. Once again this does not render the above meaningless, as it is intended as a mere indication, however it should not be forgotten that the number of individuals earning more than what is shown in the samples above is considerably lower than the number of individuals that earn less.

After expiration of tier one unemployment benefits, which occurs, depending on the country, after a time period of six to 12 months an individual which is still unemployed after that period enters the second tier of unemployment benefits. While first tier benefits are commonly designed as an insurance depending on the previously earned income with the objective to allow recipients a preservation of their standard of living in the short term after becoming unemployed, the purpose of second tier benefits is to ensure that the recipients basic needs of living are covered. Second tier benefits usually come with heavy means tests and multiple constraints of conduct for the recipient, including the obligation to take any job that is offered to them. This type of benefits is viewed as a last resort and the entrance barriers that come with them entail that, again depending on jurisdiction, a large portion of unemployed individuals does not have access to these benefits.

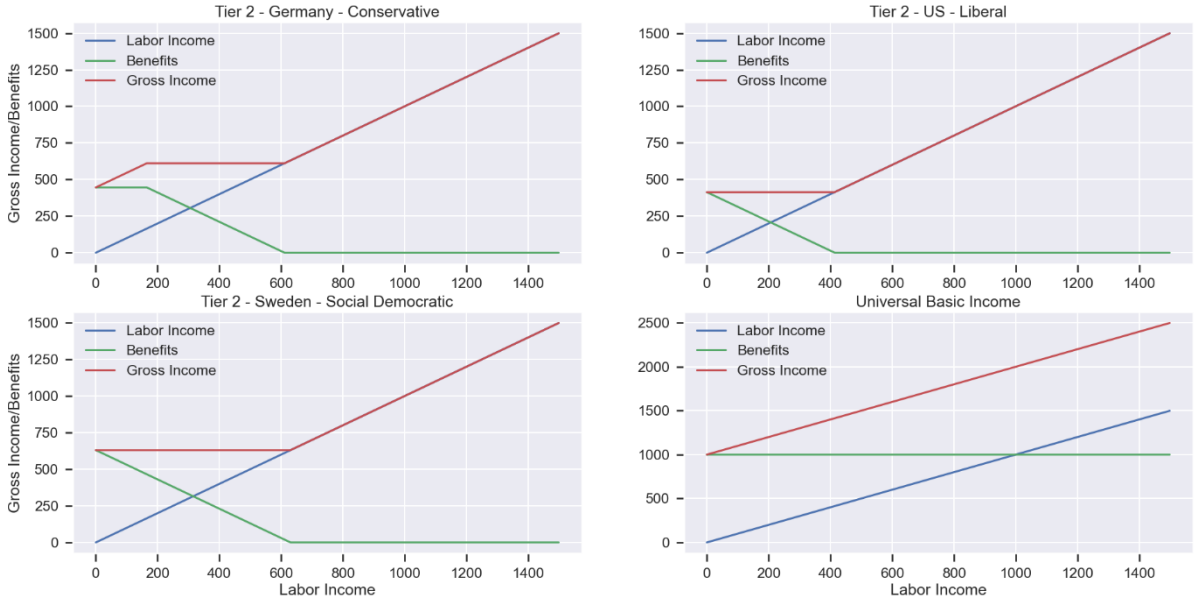
In 2021 Germany second tier unemployment benefits amounted to 446€ per month. Under specific circumstances – which account for the majority of cases – the costs for accommodation and heating can be claimed in addition to the basic amount (European Commission 2022).

In Sweden the reception of unemployment benefits beyond the first 300 working days after becoming unemployed is bound to the participation in a job and development guarantee program, an active labor market policy measure to reintegrate the long term unemployed into the labor force (Arbetsförmedlingen - Swedish Public Employment Service 2023b). A participant of a job and development guarantee program who is entitled to introduction benefits may receive 308SEK per working day after the assessment period of the program is completed (Arbetsförmedlingen - Swedish Public Employment Service 2023a). This amount corresponds to a monthly allowance of 630,33€. It should be noted that introduction benefits is one of three main types of benefits that can be claimed, while participating in a program, with the other two being activity support and development benefit. Which of the three benefit schemes can be claimed and which exact amount is applicable may depend on the selected program and the age of the participant and may thus, in some instances, vary from the amount quoted above.

In the US there is no general scheme of tier two unemployment benefits, as benefit schemes applicable to individuals who exhausted their eligibility to tier one benefits are fragmented and often targeted to groups with specific needs. The Temporary Assistance for Needy Families (TANF) program for instance is a welfare scheme applicable to families or individuals having one or several dependent children affected by poverty. In 2021 an average family of TANF recipients received 517$ per month corresponding to 413,60€ on the basis of the 2021 exchange rate (OECD 2023). Amounts vary among states and range from 11% of the poverty line (Arkansas) to 60% of the poverty line (New Hampshire). In addition, entry barriers are high, as in 2020 only 21% of eligible families received benefits with selection procedures often reflecting racist and sexist patterns (Center on Budget and Policy Priorities 2022).

Figure 13 below shows the comparison among the three tier two unemployment benefit schemes discussed above.

Figure 13: Country comparison of tier two unemployment benefits and UBI



Source: (European Commission 2022; Arbetsförmedlingen - Swedish Public Employment Service 2023a; 2023b; Center on Budget and Policy Priorities 2022; OECD 2023)

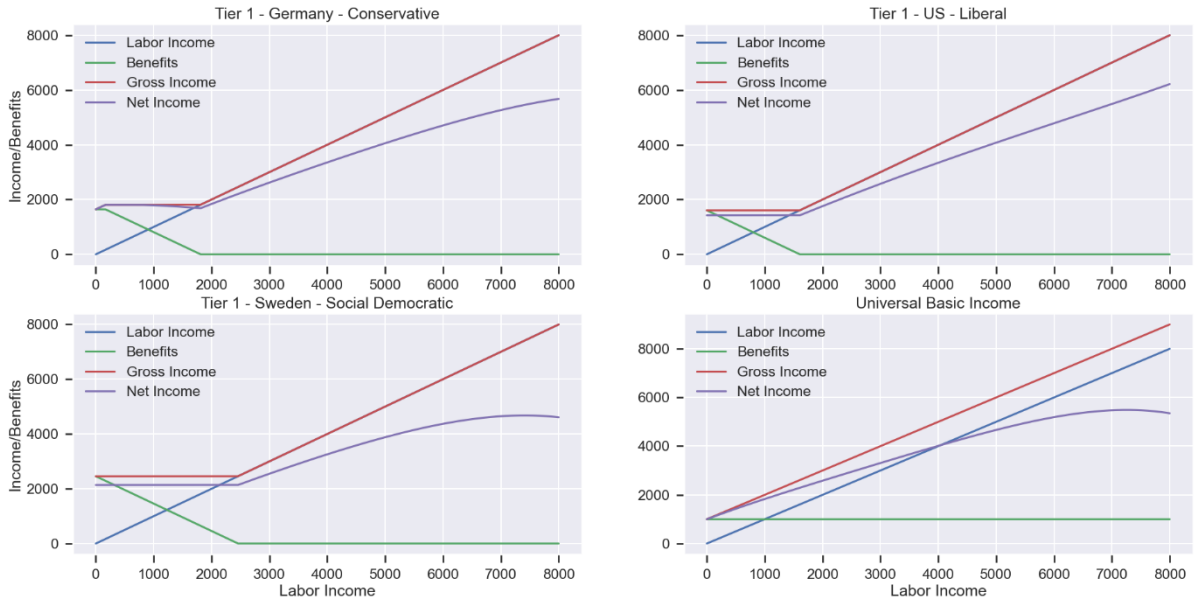
3.3. Including Taxes

In order to facilitate a meaningful comparison of labor market participation preferences under the regime of different unemployment benefit schemes it is necessary to add the component of taxes. Equivalently to unemployment benefit schemes tax regimes usually vary among countries and reflect to some extent a nations ideological outline.

Figure 14 below shows the comparison of the three tier one benefit schemes and the basic income scheme. While the plots for labor income, benefits and gross income did not change from what is depicted in Figure 12 the added component is the net income plot which depicts the income an individual is left with after income tax and social security deductions according to the tax and social security contribution rates in our three example legislations. The tax treatment for the basic income example is not particular to one of the three example legislations but reflects an average of the three individual deduction treatments with the exception that deductions in the basic income example only start beyond the level of 1000€ a month leaving the basic income essentially untaxed while the magnitude of the basic income remains influential on the deduction rates applied on gross income beyond 1000€ per month. The tax and social security contribution rates are based on 2021 numbers from the OECD database (OECD 2022b; 2022a). As the OECD database does not include a tax and social security contribution rate for every gross income and every example country but merely rates of

quantiles of the average domestic income, while otherwise being the best available source for these data, the exact tax rates used for the calculation depicted above are extrapolated via a nonlinear regression model. This means that, while the tendencies depicted for the net income values are robust, there can be slight variations to the actual numbers on an individual basis. Furthermore, the numbers used describe national averages, leaving a potential risk for variations on a sub-national level, especially with regards to highly federalized jurisdictions like the US, but also to a smaller extent Sweden and Germany.

Figure 14: Country comparison of tier one unemployment benefits and UBI including taxes

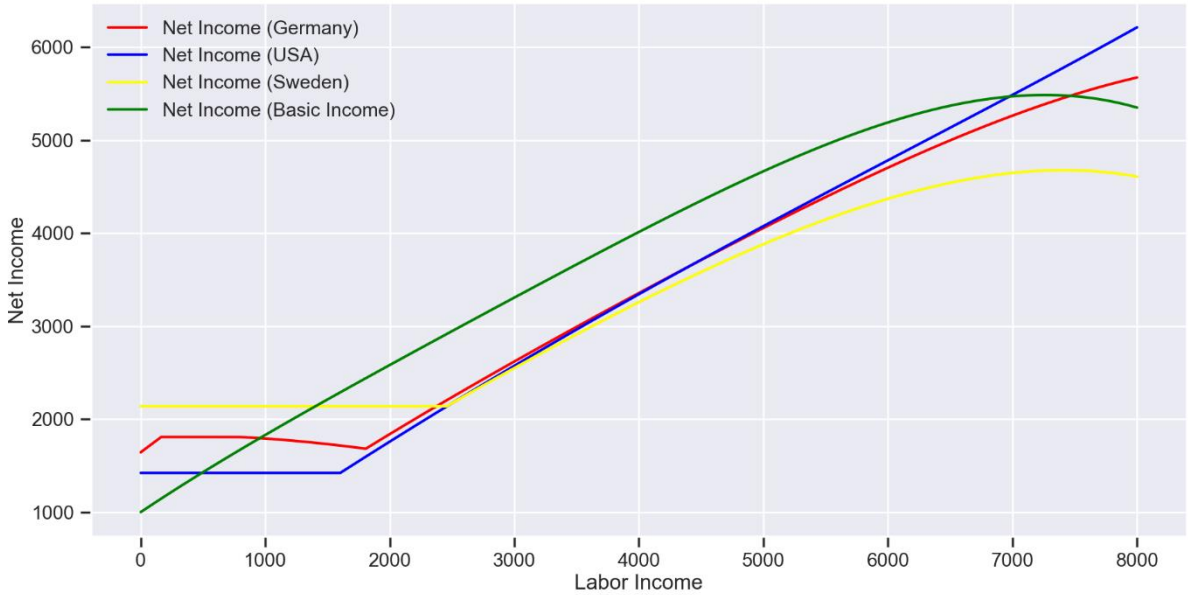


Source: (European Commission 2022; 2023; Massachusetts Department of Unemployment Assistance 2018; Commonwealth of Massachusetts 2023; OECD 2023; 2022a; 2022b)

There are a few immediate observations that become obvious when looking at Figure 14. First, as the observant reader might have suspected, the tax and social security contribution rates (hereinafter deduction rates) vary in degree of progressivity. While deduction rates in the US are almost linear, Swedish deduction rates are severely concave, with Germany's in the middle. Even though the deduction rate used for the basic income treatment is calculated based on averages of the three examples it appears to be more progressive than the German one, while still being substantially less progressive than the one from Sweden. Second, as mentioned in the previous chapter, unemployment benefits are considered taxable income in the US and in Sweden, which becomes apparent in the discrepancy between the gross and net income plots for the two countries even when there is no or very little labor income. In Germany unemployment benefits are not taxed, however labor income that is acquired while in addition receiving benefits is, depending on the magnitude of the labor income. This leads to the short

segment in the net income plot for Germany where net income develops negatively with growing labor income. While there are already severe poverty trap effects with net income staying flat as labor income grows – which is the case for the examples Sweden and the US – these effects multiply when net income behaves negatively while labor income grows. A similar phenomenon can be observed at the upper end of the net income curve for Sweden and for the basic income treatment. With the maximum deduction rate for Sweden being beyond 50% there are some instances where a plus in labor income results in a jump of the marginal tax rate and thus in a negative turn of net income. When the maximum possible tax rate is reached this phenomenon will stop and the net income will develop linearly proportional to the gross income. A third observation lies in the development of the net income for the basic income treatment compared to the three other examples.

Figure 15: Net income country comparison of tier one benefits with basic income



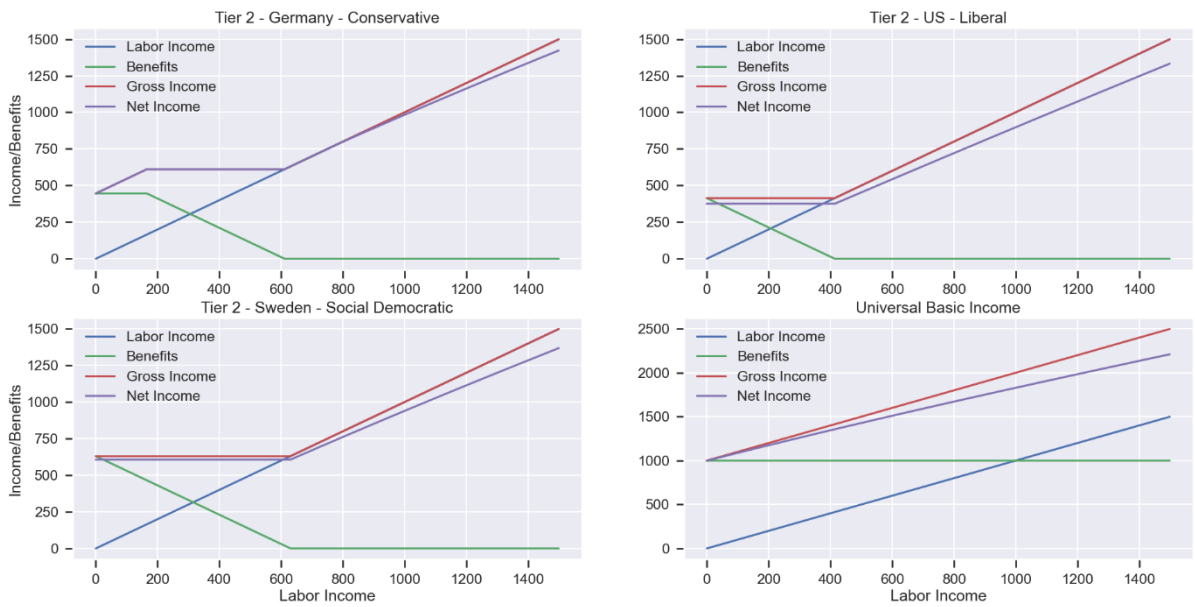
Source: (European Commission 2022; 2023; Massachusetts Department of Unemployment Assistance 2018; Commonwealth of Massachusetts 2023; OECD 2023; 2022a; 2022b)

Figure 15 above zooms in on the net income comparison of the four welfare treatments. We observe that, with labor income being the independent variable, net income in the basic income treatment is slightly above the net income for the other three treatments for a large segment of the plot. However, the lower and upper end of the plot show a different picture. On the lower end of the distribution the first-tier unemployment benefits in all three legislations outrank the benefits obtained via the basic income treatment. Once again it has to be noted that these benefits are calculated on the basis of average national income, meaning that the majority of individuals in these countries would receive less, given that the median wage is below the

average wage. Furthermore, the basic income treatment displays no flat lined, or even negative, net income curve in the bottom segment, indicating the absence of poverty traps or comparable factors which may disincentivize participation in the labor market. In addition, net income for the basic income treatment in the upper segment of the distribution falls below the net income in the two less progressive tax legislations Germany and the United States, indicating that the basic income welfare scheme, while providing a top up for a large portion of society, will leave high earners worse off in some instances, even in a deduction system that is calculated as an average of our three example deduction systems.

While the picture remains the same for the upper end of the net income spectrum for tier two unemployment benefits, there are substantial changes in the lower segment.

Figure 16: Country comparison of tier two unemployment benefits and UBI including taxes

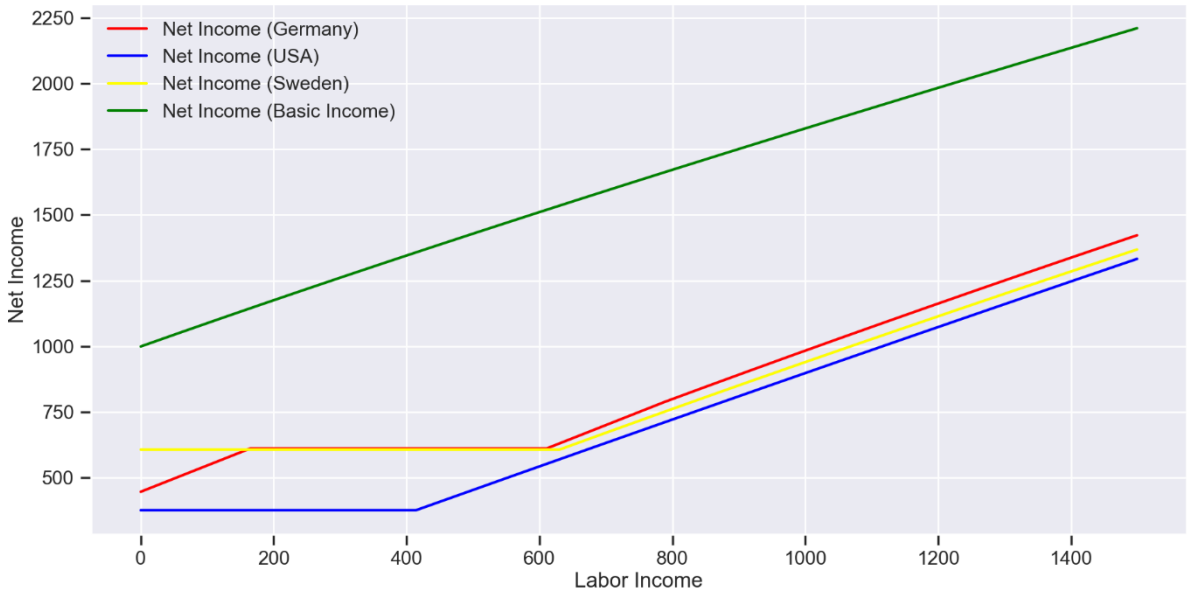


Source: (European Commission 2022; Arbetsförmedlingen - Swedish Public Employment Service 2023a; 2023b; Center on Budget and Policy Priorities 2022; OECD 2023; 2022a; 2022b)

Figure 16 above shows the comparison of the four welfare schemes with respect to tier two benefits. Note that there are no substantial changes in the upper segment of the plots compared to what was previously shown. Therefore, this figure provides a zoom in on the lower segment of the labor income distribution with tier two benefits. Just as in the first tier benefit plot we observe the occurrence of poverty traps in all treatments aside from the basic income one, as well as the effects of taxation of the unemployment benefits in Sweden and the US, while this time there is no downward sloping lower segment of the plot for Germany because the benefits

level and thus the level of income it takes to reduce them to zero is below the threshold from which onwards deductions are positive.

Figure 17: Net income country comparison of tier two benefits with basic income



Source: (European Commission 2022; Arbetsförmedlingen - Swedish Public Employment Service 2023a; 2023b; Center on Budget and Policy Priorities 2022; OECD 2023; 2022a; 2022b)

Figure 17 above depicts the net income distributions for the four welfare schemes depending on labor income. Once again, we observe severe poverty traps for the three conventional welfare systems and none for the basic income scheme. Furthermore, it has to be noted that the minimum amount of income in the basic income treatment is substantially higher than what we observe in the conventional systems. This observation, the absence of poverty traps and the fact that there are no "soft" barriers of degradation and stigmatization and no complicated application procedures for the basic income treatment may already provide a basis for the assumption that recipients of a basic income may experience a lower degree of "feeling left behind" compared to recipients of conventional second tier unemployment benefits and may thus display a higher motivation to rejoin the labor force.

3.4. Equilibrium Labor Supply

Now that the budget constraints under which individuals in the three described welfare regimes and with respect to either tier one or tier two benefits operate have been established the next item of the exercise is to establish the utility maximizing equilibrium labor supply depending on the gross hourly wage for each welfare regime and the basic income regime. The assertion

that a basic income like welfare regime may result in reduced labor supply is one of the two main objections towards the concept and well documented in the literature (see e.g. Burtless 1986). The goal of this chapter is to establish utility maximizing labor supply in accordance with conventional microeconomic modelling based on the four welfare regimes that were discussed so far in the formal part of this work. In addition to the budget constraints which were already established on the basis of real-world economic data from the three sample jurisdictions I use a Cobb-Douglas utility function of the following form:

$$U = C^{\alpha} * L^{\beta}$$

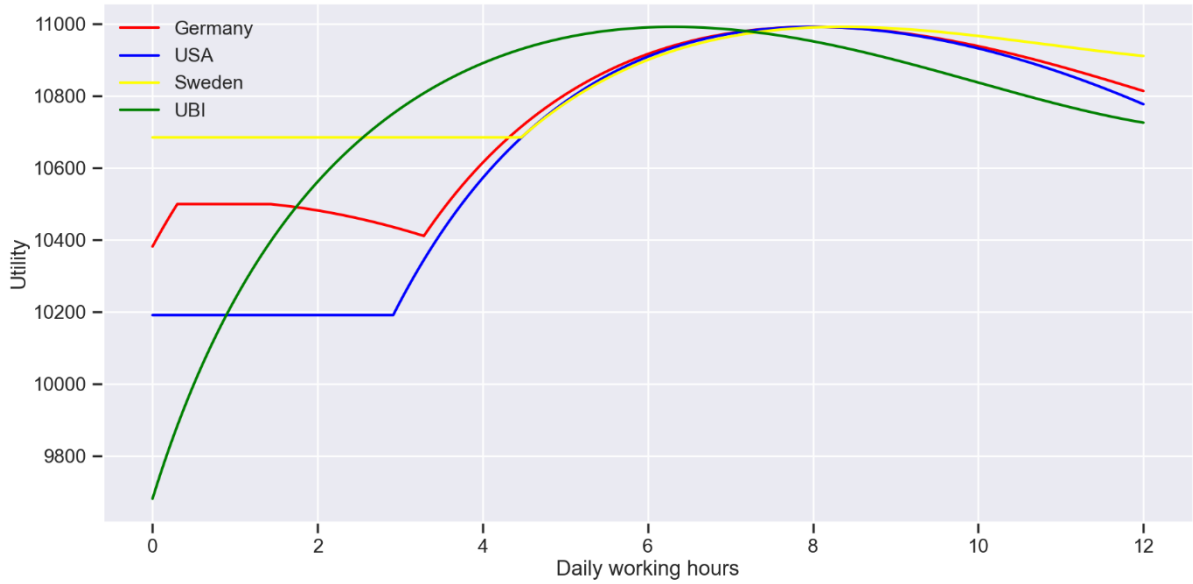
Where U denotes utility with C referring to consumption and L referring to leisure. Consumption is defined as the product of the hourly wage and the hours worked while leisure is defined as the positive opportunity cost of not working or the hourly wage multiplied with the maximal possible hours available to work minus C. In order to remain with a framework that is as close to real-world observations as possible the values for α and β are chosen in a way that a German individual who earns the average gross monthly wage would in a month with 22 working days supply 8 hours of work per working day given the German tier one benefit regime including taxes. This entails the following utility function:

$$U = C^{0,20248} * L^{0,79862}$$

This utility function paired with the budget constraints, hence the net income distribution in dependence or working hours of every regime, allows for a calculation of the utility maximizing individual labor supply in terms of hours per working day depending on the gross hourly wage. Figure 18 below presents the utility distribution of on individual earning a gross hourly wage of 25€ over hours worked, capped at 12 hours. 25€ per hour corresponds to the average gross hourly wage in Germany extrapolated from the gross annual wage on the basis of an individual who works 8 hours per working day in a month of 22 working days and a year of 12 months. The utility function applied is calibrated in a way that said individuals utility maximizes exactly at 8 working hours per day. The figure shows that the utility maximizing labor supply for individuals under the welfare regimes from Germany, the US and Sweden vary only gradually around 8 hours per day while the utility maximizing labor supply under the basic income regime is substantially lower at around 6 hours per day for a gross hourly wage of 25€. Furthermore, the chart clearly emphasizes the poverty traps of the conventional welfare regimes as there is no positive, and in the case of Germany even negative, utility attached to working between 2,5 hours in the US and a bit above 4 hours in Sweden or less. For the basic income curve (in green) we can observe that, while utility on the left side of the tipping point grows with every extra minute worked - something that is not necessarily the case for the conventional welfare regimes

as shown in the graph - the minimum utility in the basic income regime is lower than the minimum utility for the other welfare regimes. This results from the fact that under tier one benefit regimes zero hours worked leads to a lower net income under the basic income regime than under the other three regimes.

Figure 18: Utility distribution over daily working hours under tier one benefit regimes compared to basic income (gross hourly wage = 25€)

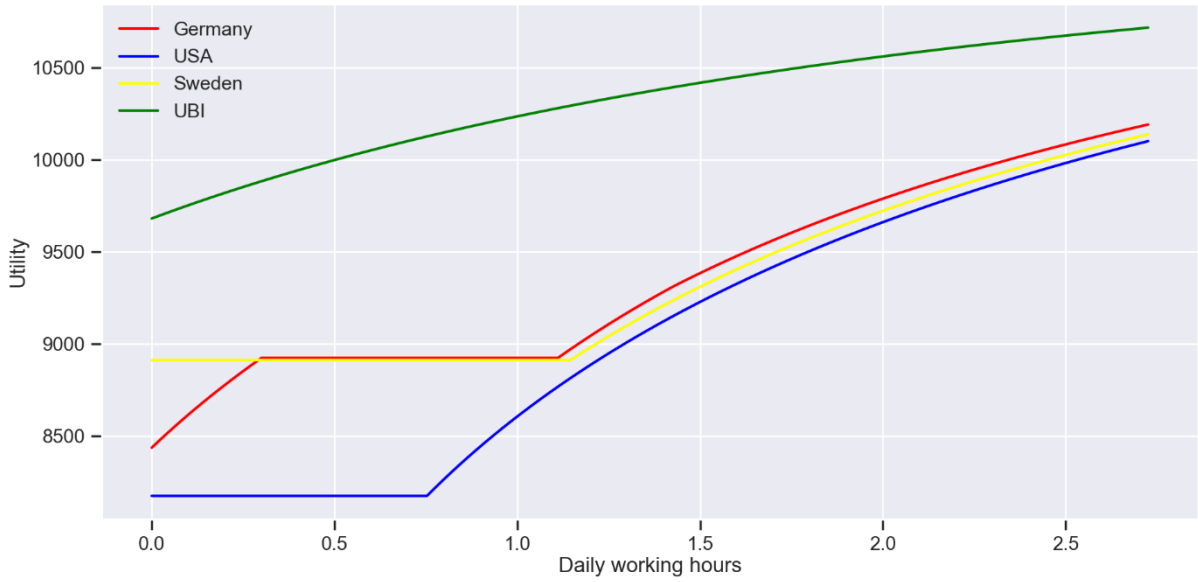


Source: (European Commission 2022; 2023; Massachusetts Department of Unemployment Assistance 2018; Commonwealth of Massachusetts 2023; OECD 2023; 2022a; 2022b; Eurostat 2022a)

If we, as shown in Figure 19 below, compare this to the left part of the utility distribution (the part where no benefits are received does not change among the two tiers of welfare regimes as it only depends on the tax regime) we observe that the impact of the poverty traps remains. Although the scale at which the poverty traps play a role is reduced as now only around the first hour of work per day (a little above that for Sweden and Germany and a little below that for the US) comes with no added utility for the individual. Furthermore, we observe that compared to all three tier two benefit schemes the utility of zero hours worked is higher for the basic income scheme. This is because the amount received for not working under the basic income regime is higher than the amounts under either of the tier two welfare regimes. It has to be noted that the impact of the poverty trap changes with the hourly wage. The lower the hourly wage the more impactful the poverty trap. Thus, while for a gross hourly wage of 25€ only around the first working hour per day does not generate positive utility, for a wage of 12€ per hour the first two daily working hours do not generate positive utility. As a result, the impact of poverty traps is

most severely felt on the lower end of the income distribution and, since in this example individuals face the tradeoff between working and not working, especially low paying part time jobs are very unlikely to be accepted even by an individual on tier two benefits.

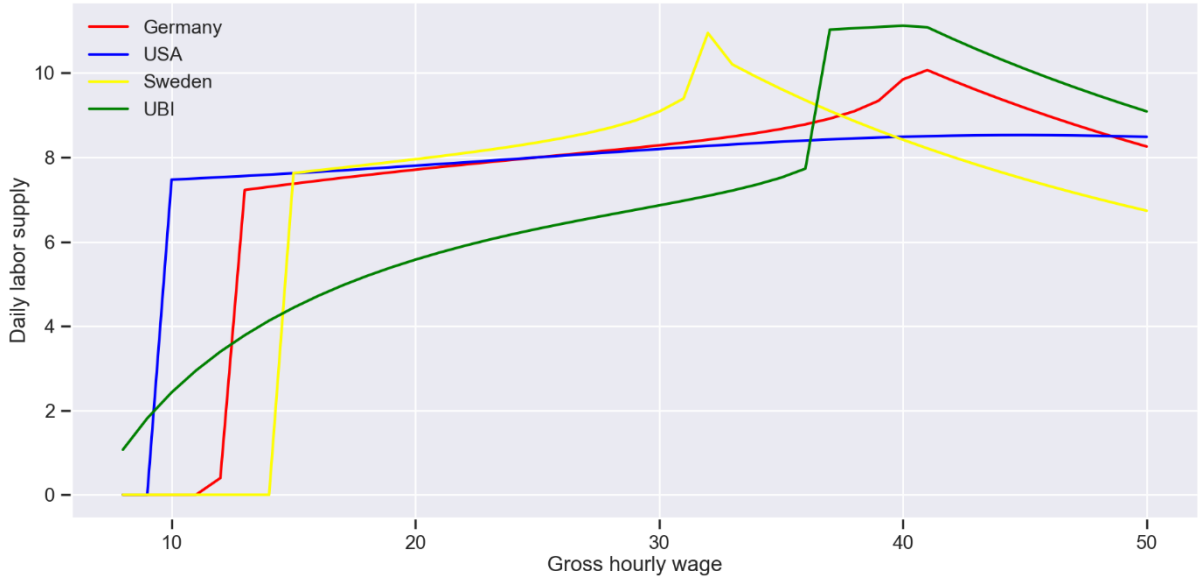
Figure 19: Utility distribution over daily working hours under tier two benefit regimes compared to basic income (gross hourly wage = 25€)



Source: (European Commission 2022; Arbetsförmedlingen - Swedish Public Employment Service 2023a; 2023b; Center on Budget and Policy Priorities 2022; OECD 2023; 2022a; 2022b; Eurostat 2022a)

Finally, Figure 20 below depicts the utility maximizing labor supply under the introduced utility framework depending on the gross hourly wage in each of the three tier one welfare regimes in comparison to the basic income regime. Once again there are several conclusions we can draw from these observations. First of all, we observe the poverty traps discussed with respect to the previous graphics are visible if we look at the low-income spectrum, hence hourly wages between 8-15€. On the lowest end of our spectrum of observations, namely a gross hourly wage of 8€, labor supply would be positive only under the basic income regime. In the three remaining tier one welfare regimes labor supply becomes positive only when gross hourly wages surpass a certain threshold which is around 9€ for the US, around 11€ for Germany and around 14€ for Sweden.

Figure 20: Optimal labor supply over gross hourly wage in tier one regimes vs basic income



Source: (European Commission 2022; 2023; Massachusetts Department of Unemployment Assistance 2018; Commonwealth of Massachusetts 2023; OECD 2023; 2022a; 2022b; Eurostat 2022a)

While under the basic income regime, utility maximizing labor supply grows relatively continuously with a growing hourly wage, ideal labor supply jumps somewhat for the other three treatments. This is due to the fact that under the more conventional treatments benefits are substituted away at the same or almost the same ratio at which income is earned, meaning that, unless the utility of leisure is zero, labor only pays off at a level at which benefits are reduced to zero and the net amount earned from labor is fairly above the maximum amount of benefits the individual would be eligible for if not working at all. As under the basic income treatment no benefits are substituted away as a consequence of working the ideal labor supply develops more continuously. It has to be noted here again that tier one benefits are dependent on the income an individual obtained before becoming unemployed. For the present example the calculations are made on the basis of an individual who earned the average gross wage in the respective economy. If we assume a non-arbitrary correlation between the wage an individual received before becoming unemployed und the wage and individual is offered at a new potential job this puts a caveat to the observations just discussed. In actual terms this means a Swedish individual who lost her job where she earned the average gross wage in Sweden would prefer tier one unemployment benefits to taking a job where she would earn a gross hourly wage of 14€ or less. This threshold wage would be lower for an individual who earned less than the average gross hourly wage in her previous job as this would reduce her unemployment benefits proportionally. Equivalently, the threshold wage would be higher for

an individual who earned more than the average wage in her previous job and thus would receive a higher amount of unemployment benefits.

All in all, this entails that the poverty trap under conventional tier one benefit regimes works to the effect that individuals would prefer to stay on benefits to accepting a job that pays substantially less than the job they had before becoming unemployed. The second observation is that, while ideal labor supply under the basic income regime is above the ideal labor supply under the conventional regimes for very low-income levels, the previously discussed jumps in ideal labor supply under the conventional regimes propel ideal labor supply for conventional tax and welfare regimes ahead of ideal labor supply under the basic income regime for the main part of the observed wage spectrum. For gross hourly wages between around 14€ to around 36€ the ideal labor supply under the basic income regime develops continuously from just above 4 hours per day to just below 8 hours. For the same income levels the ideal individual labor supply revolves around 8 hours for the conventional benefit regimes, including a small jump for Sweden at around 33€, which is due to the progressive nature of the Swedish tax system. It is interesting how the design of the tax system in all three conventional regimes keeps ideal labor supply fairly constant with only a slight positive relationship to the gross hourly wage. At the same time ideal labor supply under the basic income regime develops continuously and slightly concave. This entails that under the conventional regimes increasing wages provide a very small incentive to increase individual labor supply. This incentive is much more severe under the basic income regime. A third observation that we can draw is that for income levels beyond approximately 36€ per hour, hence the high-income spectrum, ideal individual labor supply under the basic income regime jumps the ideal individual labor supply for the three conventional regimes and outranks it for the remainder of the observed wage spectrum.

As a result, this exercise has shown that under the assumptions of conventional economic modelling the conclusion that a welfare regime resembling a basic income would, all else equal, reduce the ideal individual labor supply compared to more conventional unemployment benefit regimes for the main part of the wage spectrum aside from the very low and the very high end of the hourly wage distribution.

4. Empirical Observations on Labor Supply in UBI Experiments

The previous chapter has shown how a basic income welfare regime is assumed to reduce individual welfare supply under the conventional economic assumptions of utility maximization. In the following I intend to present a few basic income field experiments and

especially the observations on individual labor supply development in reaction to the basic income regime therein.

First of all, it has to be noted that there has not yet been a fully comparable field experiment on the subject to this date. Empirical literature has so far been drawing either on concepts where circumstances comparable to a basic income regime apply (Akee et al. 2010; Jones and Marinescu 2018) or on field experiments with a very narrow scope (Haarmann et al. 2009; Davala et al. 2015; Kangas et al. 2019). Especially field experiments have so far been very limited in terms of time horizon. Basic income payments to participants are often limited to a duration of two years or less. This makes it almost impossible to observe or predict anything beyond effects in the very short term and more importantly this experimental setting fails to meet the nature of a basic income related welfare state as the concept entails payments either for life or for a substantial portion of it. It is difficult to assume that individuals who receive regular payments for two years or less would adjust their behavior in the same way as they would in reaction to regular payments for a substantial portion of their life.

One of the most widely anticipated basic income field experiments is the one conducted in Finland. In the study that went on over a duration of two years a total of 2000 initially unemployed individuals received an unconditional monthly payment of 560€. This amount corresponds to the basic unemployment insurance an unemployed Finish person would receive. The remaining unemployed individuals in Finland who continued receiving the regular unemployment benefits served as a control group. Besides significantly boosting individuals well-being in the basic income group the treatment, against the conventional opinion that a basic income would reduce work incentives, resulted in a small increase in employment. People in the basic income group ended up being slightly more likely to take up new employment than individuals in the control group (Kangas et al. 2019; Allas et al. 2020). While there are some obvious shortcomings in this experiment, most prominently the short time horizon as well as the focus on initially unemployed participants alone, the findings, as they partially contradict the assumption that a basic income welfare regime would substantially reduce labor supply, are intriguing. Not only was labor supply not substantially reduced in comparison to the control group, a reaction that, as we have seen from the calculations in the preceding chapter would have been assumed by conventional economics, but labor supply was slightly boosted via the basic income treatment.

The audience receiving basic income payments in a pilot series in India between 2009 and 2013 was far larger than the one in the Finnish pilot and represents to this date on of the largest audiences in a basic income field experiment. In a series of experiments in the region Madhya

Pradesh and in Delhi a total of 5850 women, men and children received basic income payments. The experiment series was conducted in several villages, wherein the researchers tried to always match two fairly similar villages with one being the trial group and the other being the control group. Besides findings on well-being, emancipation, nutrition and more during the trial period the scientist conducted some findings on work incentivization and labor market participation. Local earning activity in the villages where individuals received basic income payments increased significantly compared to the control villages. Especially, the number of households which increased their earned income (that is income besides the one stemming from the basic income payments) was much higher in the trial villages compared to the control villages. At the same time fewer households experienced a fall in earned income, resulting in a total rise of prosperity in the basic income villages, fueled by a significant increase in labor supply. In the survey conducted during and after the trails nearly three quarters of households that experienced an increase in earning activity attributed it to the effects of the basic income. Furthermore, results shown in the basic income villages included an increase in labor force participation by women, in some instances a shift from wage labor conducted by children towards own-account work around the household, a development that had a positive overall effect on the children's access to education and an increase of investments into devices and materials, increasing the long-term economic stability of the regions. Once again, it is hard to draw definitive conclusions from short term experiments on the impact of a long-term basic income policy. In addition, it has to be noted that the nature of the general economic circumstances in the regions where these experiments were conducted differs vastly from the economic circumstances in the target economies discussed herein (namely developed economies). Nevertheless, these experiments provide another example contradicting the calculations presented in the previous chapter, as not only adverse effects of the basic income on labor supply remained absent, but it seems there were even some advantageous effects.

The third project I intend to discuss was carried out in Namibia. In a country struggling with poverty, a tough economic situation and extreme levels of unemployment, the government intended to explore the opportunity of introducing a basic income in an effort to increase the citizens economic situation. In a pilot project carried out between 2007 and 2009 930 residents under the age of 60 years received basic income payments over a duration of 24 months. Besides positive effects on entrepreneurial activities and reduction of poverty the basic income payments had an immediate positive effect on employment with the unemployment rate in the trial regions declining by 15% between November 2007 and November 2008 (payments were handed out between January 2007 and December 2008). Besides the substantial improvement

on the number of employed individuals, the average monthly per capita income equivalently rose by slightly over 25% over the same time period. This number includes exclusively income from economic activity and not the income obtained via the basic income payments (Haarmann et al. 2009). Once again there are limitations to the comparability of the economy of Namibia with its rich world counterparts and the short time horizon of the experiment provides reason to cautiously interpret these results. Nevertheless, the findings, in so explicitly contradicting the prediction of the calculations presented above, may provide a sufficient incentive to look for an alternative explanation in the field of economic theory.

5. Behavioral Economic Aspects

In the previous chapter it has been established that in contrast to expectations by standard economic analysis of the labor market it seems that labor supply reacts differently to a basic income welfare regime. This finding suggests that individuals may face incentivizing factors beyond the budget constraint. In the present chapter I intend to discuss a selection of findings and models from the field of behavioral economics that could help interpreting the findings presented above and suggest a set of factors that may influence individual labor supply that go beyond characteristics of the budget constraint.

Behavioral economics is a branch of economic theory which emerged in the 1970s, with some aspects of the philosophical foundation dating back to the early 20s century and even beyond that in some abstract instances. Behavioral economics draws on psychology and observed human behavior as a basis informing economic theory. Especially theories emerging from that field enrich economic thinking beyond the paradigm of rationally made choices by individuals with unlimited time and resources. Behavioral economic theories state, among others, that humans make decisions based on heuristics and “rules of thumb” much rather than based on the maximally attainable utility in every given situation. Furthermore, theorists suggest that individuals might be motivated by factors beyond their individual payout and tend to cooperate with and care about others. Over the years behavioral economics enriched economic theory with a substantial number of insightful theories, some of which may be applicable to the example at hand.

5.1. Benefits Losses Loom Larger than Taxes

Observations that suggest that individual labor supply is incentivized by factors beyond the budget constraint alone are present in the literature for a solid period of time already. Some of

the more prominent examples include the finding that the labor supply of New York cabdrivers responds negatively to transitory wage increases (Camerer et al. 1997) which diametrically contradicts the artefact of positive wage elasticity promoted by conventional economic theory (Lucas, and Rapping 1969). A field experiment by Fehr and Goette 2007 finds that an increase in wages positively affects the number of shifts a worker takes but entails a negative effect on her effort. By virtue of a second experiment to elicit the participants loss aversion the authors conclude that the previously mentioned effect is to a large extent driven by loss aversion (Fehr and Goette 2007). In general a wide set of literature in the field of behavioral economics suggests that individuals have reference dependent utility functions and place a larger emphasis on losses than on gains (Goette, Huffman, and Fehr 2004; Abeler et al. 2011). Moreover, individuals seem to focus on particular characteristics of their budget, which entails for instance over-perception of their gross income and misperception of explicit or implicit tax rates (Blaufus et al. 2009; Gamage, Hayashi, and Nakamura 2010; Fochmann et al. 2013). These findings manifest the assumption that taxes as well as benefits are subject to a framing effect (Avram 2015).

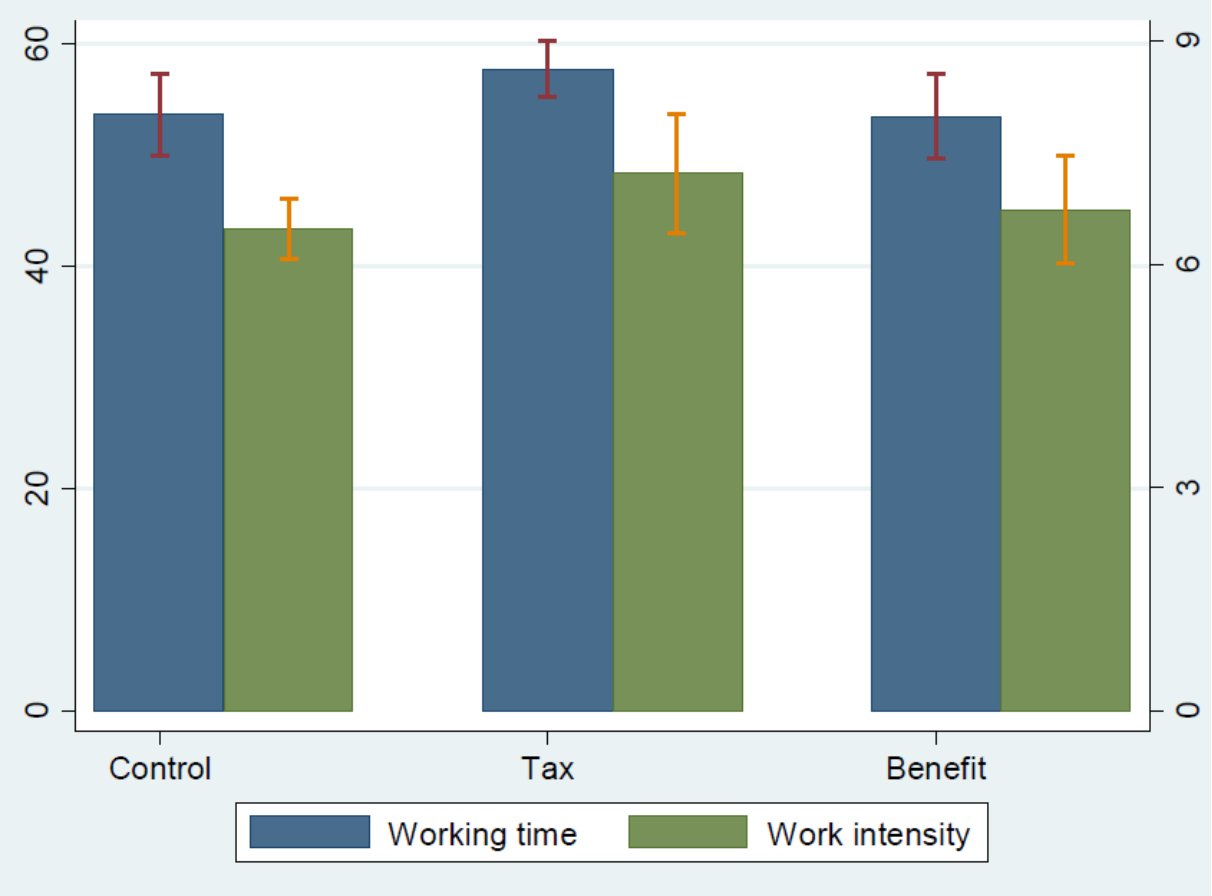
On the basis of this assumption, a laboratory experiment by Silvia Avram (2015) comparing participant work effort behavior when presented with an identical budget constraint which was framed differently, shows that taxes framed as benefit losses lead to lower work efforts than taxes framed as income deductions. In the experiment two groups of participants (and a control group) had to carry out a repetitive labor task to generate payments – i.e. income. In the benefits treatment tax payments were framed as deductions from the show-up fee received by all participants prior to the experiment, while in the tax treatment tax payments were framed as income taxes deducted from the payments generated from the labor task. Apart from these differences in framing the budget constraint in the two treatments was exactly identical.

Figure 21 below shows the mean working time and mean work intensity by the group that received the income tax framing compared to the group that received the benefits deduction framing[4]. The working time is displayed as the probably that participants stop the working task in the experiment before the maximum possible time of 1 hour – an event in which participants will keep the money they earned up to this point but leave money on the table by not working for the full hour, hence choosing leisure over work. Work intensity is measured in successfully completed tasks per minute. The experiment finds that individuals presented with the loss of benefits framing tend to stop work significantly earlier and supply significantly less effort than

[4] The control group was presented with an identical budget constraint and a neutral framing.

individuals presented with the income tax framing. Moreover, the study shows that individuals who display a high loss-aversion[5] are 2.2 times more likely to stop working early then less loss-averse participants under the benefits treatment. Meanwhile, in the income tax treatment margins were much smaller and not statistically significant (Avram 2015).

Figure 21: Mean working time and work intensity by treatment group



Source: Avram 2015

Prospect theory (Kahneman and Tversky 1979; Tversky and Kahneman 1986; 1992) – one of the earliest and most elaborate theories in the field of behavioral economics – has it that individuals view risk asymmetrically. An item that is already in an individual's possession is viewed as more valuable than an item that can be gained. This well documented stylized fact is also known as the "endowment effect" (Kahneman, Knetsch, and Thaler 1990; Kahneman, Thaler, and Knetsch 1991). Therefore, risks related to losses are viewed as more eminent than risks related to gains, even if monetary budget constraints are similar in both scenarios. As a result, losses affect the utility function more severely than gains. A phenomenon known as risk

[5] Loss-aversion is measured via a series of lottery experiments which are not related to the previously conducted labor task.

aversion. *"The 'endowment effect' potentially has implications for the tax-benefit policy. In particular, if the existing stream of benefits is more likely to be integrated into the current endowment compared to future earnings (because of a perceived entitlement to the benefit stream but not to the future earnings), individuals will be more likely to reduce their labor supply in the face of benefit withdrawal (such as to avoid loss of benefits) compared to direct taxation (which a loss of future rather than already realized income)"* (Avram 2015).

This finding has relevant implications for the present work. The fact that the disutility of a loss of something is larger than the utility of an identical amount gained shows that the reduction of means-tested benefits with rising income may be perceived as more severe than its pure monetary value suggests by the individual. As a result, net labor market participation incentives may in fact be negative when benefits are reduced at rates close or even equal to earnings, something that – as shown above - is the case for the majority of means-tested benefits. At the same time individuals may show a higher desire to participate in the labor market when facing income tax deductions. This is particularly relevant for individuals in the low-income spectrum as they often face tradeoffs between income generated through wages or through benefits. As some examples in chapter 2.3, namely considerations on poverty and precarity traps, have shown, means-tested benefit regimes may display tendencies to diminish individual incentivization to participate in the labor market. These effects were discussed under standard assumptions and, as shown above, may be intensified by behavioral considerations. On the other hand, these findings can give an intuition for the observation that universal basic income regimes could enhance labor effort and participation in the labor market. As individuals facing no benefits reductions but instead income tax deductions display higher rates in working time and work intensity, the findings above indicate that a UBI based social security regime could, if framed adequately, have a positive effect on individual labor supply. Moreover, as a social security system based on unconditional benefits, but apart from that with the identical inherent budget constraint as means-tested benefits, may increase labor supply and thus productivity and taxes within an economy, the surplus in taxes can be used to finance a more generous safety net providing a basis of existence plus the possibility for cultural and social participation for recipients. This is not only a substantial feature of the UBI policy most of its advocates promote, but also something current welfare regimes in developed economies often fail to provide (Werner 2018).

5.2. A Matter of Motivation

In the previous chapter I have demonstrated the potential for non-linear characteristics in monetary incentives. In the present chapter I intend to discuss the potential of non-monetary, hence intrinsic, incentives and how they may interact with extrinsic incentives in particular scenarios.

It was 1970 when the economic literature was first presented with the idea that monetary incentives could negatively affect a person's willingness to do something. Richard Titmuss (1970) had argued that financial compensation for blood donations may crowd out the intrinsic motivation to give blood in a process of undermining values of social responsibility. The effect may be that the number of blood donations regresses substantially or even falls to zero (Richard Morris Titmuss 1970). Since then, a broad pool of research emerged around questions concerning intrinsic and extrinsic motivation and the interplay thereof. One strand of literature on the subject stems from social psychology, where a number of researchers found that extrinsic rewards can diminish intrinsic incentives (Deci 1971; Deci and Ryan 1980; Pittman and Heller 1987).

In the literature of economics and economic philosophy, a strand of literature which is suggested to be unrelated to the one in social psychology, as cross references are missing (Frey and Jegen 2001), a first attempt to formalize the findings by Titmuss in the language of utility theory was made 1971 by Kenneth Arrow. Arrow suggests three motives which could incentivize someone to act in the way described by Titmuss:

"1. The welfare of each individual will depend both on his own satisfaction and on the satisfaction obtained by others. We here have in mind a positive relation, one of altruism rather than envy.

2. The welfare of each individual depends not only on the utilities of himself and others but also on his contributions to the utilities of others.

3. Each individual is, in some ultimate sense, motivated by purely egoistic satisfaction derived from the goods accruing to him, but there is an implicit social contract such that each performs duties for the other in a way calculated to enhance satisfaction of all" (Arrow 1972). The idea of cooperation between individuals which goes beyond individual profit maximization and in fact suggests that individual utility may be enhanced by an increase in the welfare of others was not new in the field of economic philosophy in the 1970s. In the beginning of the 20th century the Russian philosopher Pyotr Kropotkin (1902) famously derived from his observations of animal behavior under the demanding circumstances of the Siberian winter the conclusion that *"sociability is as much a law of nature as mutual struggle"* (Kropotkin 1902). Kropotkin

observed that, besides mutual struggle, animals, even and especially under the toughest conditions, display social behaviors such as mutual support, mutual defense and mutual aid, which led the author to the conclusion that mutual aid is as much an evolutionary principle as mutual struggle and that animals may have an inherent sense suggesting that individual welfare may be positively affected by positive impacts on the common good (Kropotkin 1902).

While these observations may explain blood donations in the absence of monetary reward, they do not include any evidence why a market for blood would decrease people's willingness to donate blood. After all, a monetary reward, added on top of the non-monetary reward of giving, would by all means of interpretation of conventional economic theory enhance incentives to donate and thus boost the supply for blood. Titmuss however argues to the contrary. Neither Arrow (1972) nor his contemporary and fellow Nobel Price winnings economist Robert Solow (1971) could find an economic explanation for the described downturn in quantity of blood donations when a monetary incentive is introduced (Richard M Titmuss and Solow 1971; Arrow 1972). In a first attempt to formalize the findings by Titmuss (1970) with respect to labor supply, Jordan (1986) finds that subjects rewarded with benefits contingent on performance by a government work incentive program displayed a drop in intrinsic motivation while subjects rewarded with non-contingent benefits showed rising intrinsic motivation. In 2001 Frey and Jegen argue that the *"'crowding-out-effect'..., is one of the most important anomalies in economics, as it suggests the opposite of the most fundamental economic 'law', the raising monetary incentives increases supply. If the crowding-out effect holds, raising monetary incentives reduces, rather than increases, supply. Under relevant circumstances, it is therefore not advisable to use the price mechanism to elicit a higher supply, and one should moreover rely on a quite different type of incentive, namely intrinsic motivation"* (Frey and Jegen 2001). The two authors not only thereby inaugurate the relevance of the crowding-out effect within economic theory but proceed to formalize the effect in terms of conventional economic methods.

While conventional economic theory has its difficulties with non-extrinsic aspects of motivation, which are typically either treated as an exogenous constant or disregarded entirely, intrinsic motivation – i.e. motivation that lies solely in the performance of an act instead of a suspected reward – is a well-established concept in social psychology (See i.e. DeCharmes 1968). As a basis of their formal analysis Frey and Jegen (2001) describe the space between entirely intrinsically motivated subjects and entirely externally motivated subjects as a spectrum on which most subjects can be placed somewhere in between the two extremes. Movements along this spectrum and thus altercations of how intrinsic and extrinsic motivations are

weighted per subject and per individual decision are allowed and can be prompted either by a change in preference of the subject or in changes of the decision setting with regard to the perceived task, the environment, or the subjects self-perception. Both positive and negative incentives that originate outside of the subject in question can alter intrinsic motivation. These incentives may both be able to positively, negatively or neutrally affect intrinsic motivation (Frey 1997). As a consequence, in traditional principal agent settings (Alchian and Demsetz 1972) two forces are at play when an agent faces an external influence by the principal. The traditional price effect assumes an external price incentive will boost the agents motivation, while the crowding-out effect is understood to usually work in the opposite direction. However, crowding effects can also work in the positive direction – i.e. as crowding-in effects, especially if the external measure is perceived to be supportive. The behavior of the agent will be determined by the net effect resulting from the interplay between the price and the crowding effects (Chang and Lai 1999). Psychologically speaking the crowding-out of motivation as a result of an external price incentive could have two reasons, impaired self-determination, and impaired self-esteem. If subjects perceive the external act as a rejection towards their self-determination, as it effectively shifts the point of control to the external, hence the principal actor, or if subjects perceive the external act as a rejection to their self-motivation, intrinsic motivation can be crowded out. Derived from this psychological basis Frey and Jegen (2001) describe the two potential directions of crowding effects as follows:

"1) External interventions crowd out intrinsic motivation if the individuals affected perceive them to be controlling. In that case, both self-determination and self-esteem suffer, and the individuals react by reducing their intrinsic motivation in the activity controlled.

2) External interventions crowd in intrinsic motivation if the individuals concerned perceive it as supportive. In that case self-esteem is fostered, and individuals feel that they are given more freedom to act, thus enlarging self-determination" (Frey and Jegen 2001).

Analogously, the authors Gneezy and Rustichini (2000) find that work performance does not develop monotonically with respect to price incentives. Most notably the introduction of a monetary incentive in a scenario that did not include one to begin with, a low monetary incentive could result in a net loss in total productivity compared to the scenario with no monetary incentive at all. In addition, productivity in reaction to price changes after a price incentive was already introduced were observed to be closer to traditional economic predictions regarding price incentives (Gneezy and Rustichini 2000). Frey and Oberholzer-Gee (1997) reach similar conclusions in their study concluding that *"where public spirit prevails, using price incentives to muster support for the construction of a socially desirable , but locally*

unwanted, facility comes at a higher price than suggested by standard economic theory because these incentives tend to crowd out civic duty" (Frey and Oberholzer-Gee 1997). The authors proceed to state that *"the use of price incentives needs to be reconsidered in all areas where intrinsic motivation can empirically be shown to be important. We speculate that this may be the case in work relationships characterized by incomplete contracts…"* (Frey and Oberholzer-Gee 1997).

The implications motivation crowding theory has for the welfare state and a UBI policy are severalfold. First of all, I intend to focus on the psychological characteristics that enhance the crowding effects. Frey and Jegen (2001) mention two effects in this regard, namely impaired self-determination and impaired self-esteem (Frey and Jegen 2001). Comparing different social security policies with regard to these characteristics, the following is found. It can be assumed that social security policies can be ranked on a spectrum when it comes to self-determination. Hereby, means-tested policies, especially from the liberal and conservative spheres of welfare states, are the ones with the highest negative potential towards self-determination. Benefits recipients in these types of welfare states face excessive measures of external control including negative and positive price incentives and privacy infringement as benefits are often tied to demanding conditions, for instance to actively search for new employment (as discussed in chapter 3.2 above), and stigmatization. When it comes to social security policies from the social democratic sphere of welfare states the level of external control is usually lower, additionally price incentives are less severe. Finally, a UBI based welfare state potentially displays the lowest level of potentially negative effects on self-determination. The welfare state itself does not provide any price incentives in positive or negative directions. Furthermore, other coercing mechanisms are absent and self-determination is actively enhanced in providing individuals with a surplus in freedom, something that does not occur by coincidence but is among the main items of justification for UBI advocates (See i.e. Yang 2018). Looking at self-esteem on the other hand, a similar picture emerges. While a deliberate feature of conventional benefit systems is to undermine recipients' self-esteem for instance by means of impoverishment or stigmatization, more social democratic and especially UBI welfare states are designed to undermine recipients' self-esteem as little as possible for instance by actively contributing to the eradication of classes within a society. Once again, since UBI is a benefit received regardless of an individuals employment status it can be assumed to have no more than a negligible impact on recipients self-esteem. Recalling that motivation crowding theory assumes external incentives to crowd-out internal ones when the external incentive is perceived to be controlling while an external incentive may crowd-in internal motivation if it is perceived to be supportive,

it can be concluded that, due to their high tendency to display controlling characteristics, conventional benefit regimes may more often be perceived to be controlling than UBI based welfare regimes. Moreover, UBI regimes display numerous features that can be perceived as supportive and may have enhancing effects on self-determination and self-esteem.

However, there remains the question of how the reliance on internal motivation combined with supportive price incentives has a non-negative effect on total labor turnout within a society. In the theories discussed above it was argued that payments for a specific task where under some circumstances counterproductive or enhancing to an individual's total incentive to perform the task. However, social security benefits under some circumstances, and especially benefits received via a UBI regime are explicitly not bound to the performance of a specific task. The answer to the question of how considerations on internal and external motivation and the interplay thereof justify the introduction of a UBI based welfare state thus rely on the assumption that individuals have an internal incentive, hence an internal motivation to participate in the labor market apart from monetary incentivization. Evidence that work incentives follow the laws of monetary incentivization only to a limited extent and conversely rely heavily on internal considerations such as reciprocity and social norms is widely established in the economic literature (Sen 1977; Marglin 1974). Accordingly, we can assume that conventional welfare regimes which not only display large amounts of controlling features but also include widespread monetary work incentives crowd out the naturally internal motivation to work. A UBI policy instead abstains from providing monetary incentives that are directly bound to work and thus does not undermine recipients self-determination and self-esteem which eradicates the crowding out effect. As a consequence, and especially considering how the empowering characteristic of the UBI may help to crowd in internal motivation, recipients total motivation is positive, resulting in a non-negative development of the labor market participation turnout.

As a result, a UBI policy could, according to motivation crowding theory, potentially prove more effective in eliciting individual motivation to participate in the labor market compared to traditional measures of the welfare-state, especially means-tested benefits.

5.3. The Quality of Equality

In the previous chapter it was established what effects the welfare state can have on individual motivation when it comes to participating in the labor market as well as when it comes to providing a certain effort in the workplace. In the present chapter I intend to discuss the effects of certain social security policy on individual welfare and especially how individual utility may react to equality variations that come with the application of a certain social security policy.

Finally, I intend to offer which – if any – conclusions we can draw from these observations on possibly socially preferred welfare regimes.

Pure self-interest is one of the longest standing doctrines in economic science and economic philosophy. This is the conviction that every individual in every situation has the sole objective to get as much as possible out of any given situation (See i.e. Edgeworth 1881). In the second half of the 20th century that conviction started to encounter some opposing views, when thinkers started to argue that individual incentive structure may be much more complex than precedingly argued, some claiming that it must have dawned on even the inventors of this conviction that *"this so-called first principle of Economics was not a particularly realistic one"* (Sen 1977) as Edgeworth (1881) himself admitted that *"the concrete nineteenth century man is for the most part an impure egoist, a mixed utilitarian"* (Edgeworth 1881). Highlighting the general awareness of tendencies of social reciprocity in the later 19th century Edgeworth's contemporary Herbert Spencer (1879) argued *"that within each society it becomes greater as social evolution, implying increase of mutual dependence, progresses, needs to be shown; and it is a corollary that as fast as dependence of societies on one another is increased by commercial intercourse, the internal welfare of each becomes a matter of concern to others"* (Spencer 1879). Spencer (1879) goes on to conclude that individual happiness and general happiness – that is the happiness of the aggregate – are interconnected since general happiness is enhanced by the happiness of the individual but individual happiness is enhanced by general happiness as *"self-happiness is a measure, to be obtained by furthering the happiness of others"* (Spencer 1879). However, as Sen (1977) poses as an explanation for the somewhat deliberately limited view put forward by Edgeworth *"the primary concern here is not with the relation of postulated models to the real economic world, but with the accuracy of answers to well-defined questions posed with preselected assumptions which severely constrain the nature of models that can be admitted into the analysis. A specific concept of man is ingrained in the question itself, and there is no freedom to depart from this conception as long as one is engaged in answering this question"* (Sen 1977).

Sen (1977) proceeds to manifest however, that economic theory is technically equipped with a framework that can capture pure egoism as well as absolute altruism and everything in between, namely rational choice theory. All human behavior, as long as it is consistent, can be exemplified by rational choice theory, as a utility function can capture and formalize any kind of behavior as long as preferences are displayed consistently. However, limited by the factor that via rational choice theory preferences are described by behavior and behavior is described by preferences, the presence of the consistency requirement makes the theory meaningful (Sen

1977). Sen emphasizes two separate origins of other regarding preferences. The first one, sympathy, can merely be reduced to an individual performing an act out of compassion for someone else. Thus, this strand of incentivization can be understood to align with rational choice theory as while helping someone else the individual act within the lines of her own preferences. As a consequence, while performing an act of sympathy the individual is still concerned with maximizing her own welfare, even while perhaps but not necessarily improving the welfare of someone else in the process, and thus does at its core perform an act of egoism. The second origin of other regarding preferences Sen (1977) calls commitment. Someone executes other regarding preferences rooted in commitment if she deviated from an act that would maximize her personal welfare because she believes that, simply speaking, it is *"the right thing to do"*. The characteristic of commitment that makes it the more tricky of the two cases and the one that makes it not necessarily align with rational choice theory is that *"it drives a wedge between personal choice and personal welfare"* which entails the conclusion that *"the purely economic man"* – namely the one that shows no inconsistencies in his choices – *"is indeed close to being a social moron"* (Sen 1977).

I will return to the distinction between commitment and sympathy as root causes for other regarding preferences at a later stage in this chapter and for the moment stay with the evolution of the theory of inequity aversion in behavioral economics. We have seen that other regarding preferences were philosophically established within the economic literature in the 19th century already. The discussion was revitalized by the observations of Amartya Sen (1977) who did not, as so many others, dismiss the phenomenon as an exogenous constant or an externality but suggested that other regarding preference may reveal some shortcomings at the core of rational choice theory. Spurred by the growing popularity of the topic soon economists took to the lab and created various experimental settings in which individual behavior with regard to the welfare of others was tested. It was found that subjects display tendencies to defer from pure individual welfare maximizing behavior frequently and decisively even when no "rational" reason for this behavior could be established. For instance, in one shot public goods games, a game in which participants can spend any part of their endowment on a public good from which all players benefit, participants where observed to contribute between 40% and 60% of their endowment to the public good, even though the Nash equilibrium is placed firmly at 0%, and effects due to repercussion or reciprocity can be neglected due to the one shot characteristic of the game (Dawes and Thaler 1988). In an attempt to further formalize the findings elicited by experimental studies Rabin (1993) suggests three principles with which he seeks to describe the behavior of the experiment participants.

"A. People are willing to sacrifice their own material well-being to help those who are being kind

B. People are willing to sacrifice their own material well-being to punish those who are being unkind.

C. Both motivations (A) and (B) have a greater effect on behavior as the material cost of sacrificing becomes smaller" (Rabin 1993).

Note that these principles justify behavior of fairness and reciprocity, and technically partly align with Sen's (1977) observations on sympathy and commitment, they do presume that subjects are already in possession of information in their counterpart, namely if they are dealing with a kind or unkind person. Thus, these principles explain fairness and reciprocity, but do not account for pro social behavior in one shot scenarios where participants are not aware if they are facing a kind or an unkind person at the other end of the table.

An environment where this information gap plays a significant role is labor market economics, a field in which fairness considerations soon became part of a number of well received models and publications. Akerlof and Yellen (1990) find that workers seem to withdraw effort if they perceive their wage to fall short of their fair wage, a phenomenon they call the fair wage-effort hypothesis. The authors argue that this behavior causes unemployment and is consistent with cross-section wage differentials (Akerlof and Yellen 1990). Equivalently, it appears that reasons of fair wage perceptions lead to limited reactions by employers to labor market developments. Namely, wages are seldomly adjusted to the equilibrium wage. This is most notably the case when the equilibrium wage falls short of the wage the employer presently pays. The rationale behind this behavior is that, even though a wage cut may align with market developments, employers have an incentive to avoid the effect the wage cut would have on their workers productivity. Yet more importantly, employers fear to lose their most productive workers to separation if wages are cut, at the same time firing workers in times of recession instead of cutting wages will give them the opportunity to get rid of the least productive workers instead (Campbell and Kamlani 1997). Fehr, Goette and Zehnder (2008) argue that some characteristics that are inherent to interactions between employer and employee in the labor market cannot be accounted for by the standard model. On the contrary the authors claim that two stylized facts would add clarity to our current perception of the labor market and models thereof. Thus, they promote a definition of the labor market *"that acknowledges (i) the inherent completeness and relational nature of most employment contracts and (ii) the existence of reference dependent fairness concerns that are shaped by nominal loss aversion*" (Fehr, Goette, and Zehnder 2008). Especially the characteristic of the inherent incompleteness and relational

nature of most employment contracts aligns with Sen (1977) who argues that the question of commitment is *"central to the problem of work motivation"* (Sen 1977). Sen (1977) goes on in claiming that *"it is certainly costly and may be impossible to devise a system of supervision with rewards and punishment such that everyone has the incentive to exert himself. Every economic system has, therefore, tended to rely on the existence of attitudes toward work which supersedes the calculation of net gain from each unit of exertion. Social conditioning plays an extremely important part here"* (Sen 1977 and i.e. Marglin 1974).

Economic scientists have tried to mathematically formalize the observations described above in universal models of other regarding preferences (see i.e. Charness and Rabin 2002; Engelmann and Strobel 2004; Alesino and Angeletos 2005; Dimick, Rueda, and Stegmueller 2017). However, one of the most widely recognized models, and the one that I intend to apply in the present argument, is the model of inequity aversion by Fehr and Schmidt (1999). The authors design a simple mathematical framework, which is in line with rational choice theory, in which subjects display preferences for individual welfare as well as for equality. Or rather the model assigns gains in disutility to increasing inequality. The framework created by Fehr and Schmidt does to some extent go along the lines of traditional economic modelling under the assumption of pure egoism as discussed earlier, as it allows for individual preferences of pure self-interest. And indeed, as the authors concede, while the number of non-purely self-interested individuals may have been underestimated in the past there do exist individuals whose preferences align with pure egoism. Nonetheless, beyond that the model includes a variable for inequity aversion. Inequity aversion simply states that individuals experience disutility from situations of inequality. Here again, we have to distinguish between two cases, namely inequality to the advantage of the individual in question and disutility to her disadvantage. The authors claim that the disutility individuals experience from disutility to their own disadvantage is larger than the disutility they experience in a situation which is unfair to their advantage (Fehr and Schmidt 1999). As mentioned above this framework does not contradict rational choice. However, in addition it does not necessarily contradict the two motives Sen presents in favor of other regarding preferences. Accordingly, an individual can be inequity averse due to sympathy and commitment. Although the case for commitment is more complicated. While an individual could certainly be inequity averse because inequity is morally "wrong" according to her believes it is not said that she believes inequality is wrong to the same extent in every situation. Therefore, inequity aversion due to commitment can still lead to inconsistent behavior as commitment more often than not relies on moral convictions,

social norms or other concepts of the kind that are applicable to individual situations instead of general outlooks on, for instance, equality.

Considerations of equality and inequality are of significant importance to rate the effectiveness efficiency and overall preferability of welfare systems. There are few policy topics spurring so widespread discussions among populations as equality considerations of the welfare state. This can be argued either from the perspective of the recipients of welfare benefits or from the perspective of the ones who finance the welfare state via income taxes. Recalling the categorization of welfare states put forward by Esping-Andersen (1990), stratification is one of the two variables that drive his analysis. If a welfare state reaches high scores in stratification it is perceived to conserve or even enhance inequality, while welfare states displaying low stratification values are understood to have a regressive effect on inequality. As UBI can be understood as an extreme case of a social democratic welfare regime (as described in chapter 3 above) its stratification score is as very low, hence it has a regressive effect on inequality. It may be added that this is not a side effect but one of the central ideological concerns behind the concept (Standing 2017). Therefore, it can be said that in general a UBI policy would, according to inequity aversion, entail positive welfare effects for every inequity averse individual in a society as it reduces inequality. However, the welfare effects of diminishing inequity have to be added on to the welfare effects created via income altercations. Hereinafter, I will call the welfare generated via monetary payoff effects, i.e. the welfare according to conventional economics, individual welfare, and the welfare generated through inequity changes communal welfare, both combined entailing total welfare. The aggregate welfare in a society will be called social welfare. The utility function of the inequity averse individual according to Fehr and Schmidt (1999) is given as:

$$U_i(x) = x_i - \alpha_i \frac{1}{n-1} \sum_{j \neq i} max\{x_j - x_i, 0\} - \beta_i \frac{1}{n-1} \sum_{j \neq i} max\{x_j - x_i, 0\}$$

Where the second term indicates the welfare loss from disadvantageous inequality while the third term measures the welfare loss from advantageous inequality, with the former always assumed to be larger than the latter (Fehr and Schmidt 1999). To delineate the welfare effects resulting from the change from a conventional welfare policy to a basic income policy in an inequity averse society, where individuals have the above utility function with varying levels of α and β I will analyze the effects of three distinct segments of society.

The first segment consists of individuals in the lower-income spectrum as well as recipients of welfare benefits. These individuals experience positive monetary payoffs as welfare benefits rise with the introduction of the basic income policy and so do wages, be it via the effect of the

actual addition of the basic income on top of the wage or equilibrium altercations in the labor market, for instance resulting from the effects on “good” and “bad” jobs as described in chapter 5.2 above. Additionally, individuals in this income segment experience positive communal welfare as they see inequality to their disadvantage decline. Note that, as described above, communal welfare gains via reduction of self-disadvantageous inequity are perceived to be larger than communal welfare gains via reduction of self-advantageous inequity. As a consequence, purely self-serving individuals in this income segment experience welfare gains and so do individuals with inequity averse preferences, although to an even larger degree. Looking at the medium income segment of society, namely individuals who experience individual welfare gains through the reception of the basic income and individual welfare losses through growing taxation, entailing a net individual welfare that stays approximately equal compared to their situation under the conventional welfare regime. Conversely, individuals in this income segment experience reduction of self-advantageous inequality as individuals in the segment below are better off than before. Additionally, they experience reduction of self-disadvantageous inequality as payoffs of individuals in the high-income segment drops due to rising taxes. As a result, purely self-serving individuals in this income segment experience no welfare altercations, while inequity averse individuals experience a net positive welfare change. Finally, we will look at individuals in the high-income segment. From a monetary standpoint these individuals experience individual welfare losses, as their monetary gains from reception of the grant are smaller than the additional tax burden, they have to bear to finance the policy. In terms of communal welfare individuals in the high-income segment receive welfare gains in terms of reduction of self-advantageous inequality. In this segment purely self-serving individuals will experience negative effects on total welfare. The total welfare effects for inequity averse individuals depends on the proportion between the individual welfare losses and the communal welfare gains. If the individual welfare effects are larger the person experiences negative total welfare. If the communal welfare effects are larger the individual experiences positive total welfare. The latter may however be questionable, recalling that communal welfare gains via the reduction of self-advantageous inequality are the smallest possible welfare gains from inequity reduction.

Now that it is established what the switch towards a UBI based welfare state means for the population in every income segment the question remains how the welfare developments described above reflect labor market participation. To stay with the formal reflection for a moment, the welfare state can be described as a public good. We have seen above that subjects, especially inequity averse ones, have the tendency to willingly contribute to a public good when

faced with the choice to do so in a public goods game (Dawes and Thaler 1988). We have seen above that in a society in general and certainly in society consisting of purely inequity averse individuals a UBI based welfare state would generate welfare gains for most people in that society. As a consequence, if presented with an equivalent scenario of a public goods game, individuals would likely opt to contribute the necessary share of their endowment to the public good. While in the laboratory endowments are usually cash handouts, in the open market endowments are realized via individual income. Nonetheless, the interplay of income, taxes and the welfare state is usually vastly more complex in a national economy than in a laboratory experiment. Therefore, individuals may misperceive certain factors of the equation and may be unable to draw the explicit connections between the welfare gains they receive and the relevance of their own contributions to make these welfare gains possible. The effects of a UBI policy on labor turnout thus are in theory non-negative as fully informed individuals have an incentive to contribute to a public good that makes them better off. However, actual turnout may depend on the limitation of information asymmetry and free riding, thus on communication, framing, social perception of the policy, social cohesion and commitment to labor market participation as according to Sen (1977).

5.4. Implications for Optimal Labor Supply

The discussion in the previous chapters has presented an extract of behavioral economic theories which provide the theoretical foundation for a view on the labor market and especially labor supply that allows for the assumption that aligns with the empirically established findings, and to some extent contradicts the conclusion of conventional economic theory, that labor supply may remain stable or even develop positively in reaction to the introduction of a basic income welfare regime. While the exact formalization of these findings goes beyond the scope of this work, I may provide an extract of what such a formalization would look like and what it could entail in the present chapter. Given the assumption that the theories described above may change individual preferences, be it via inequity aversion, intrinsic motivation, loss aversion or a combination thereof, in the positive direction with regards to labor in reaction to a basic income welfare regime a simple way to formalize this would be to shift the preference distribution among work, via consumption, and leisure in the utility function. This may entail the following utility function for an individual in a society with a basic income welfare regime:

$$U = C^{\alpha+x} * L^{\beta-x}$$

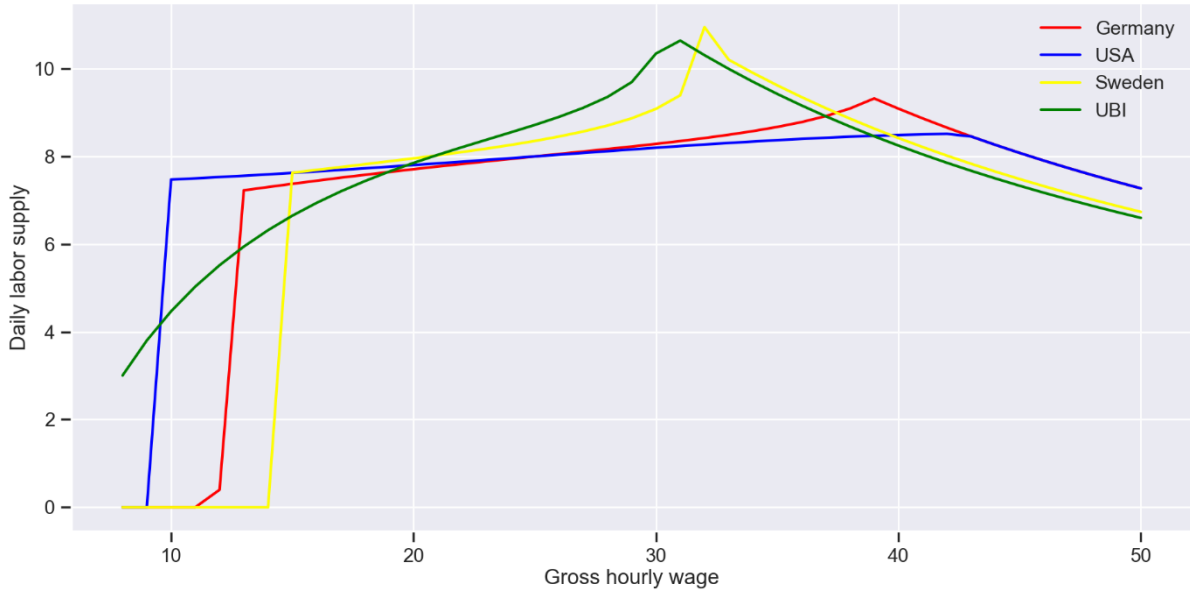
Where x implies the factor by which preferences shift in reaction to the theories described above. Assuming the factor by which preferences shift at 5% this entails the following for the utility function introduced in 3.4 above:

$$U = C^{0,20248+0,05} * L^{0,79862-0,05}$$

Thus:

$$U = C^{0,25248} * L^{0,74862}$$

Figure 22: Optimal labor supply over gross hourly wage in tier one regimes vs basic income



Source: (European Commission 2022; 2023; Massachusetts Department of Unemployment Assistance 2018; Commonwealth of Massachusetts 2023; OECD 2023; 2022a; 2022b; Eurostat 2022a)

Figure 22 above shows how already a 5% shift of preferences from leisure towards work under the basic income regime would bring individual labor supply close, and in some parts beyond, the levels of the three conventional welfare state regimes. Raising the preference shift beyond 5% would boost individual labor supply even further, allowing policymakers to raise taxes without having to accept labor supply dropping below the original level. This increased, and for some parts ideally more progressive, tax level could contribute to financing the basic income policy. Nonetheless, it has to be noted that the above is merely a primitive approximation of a model that would in detail account for the behavioral economic factors discussed above. A more sophisticated approach would incorporate individually measurable terms for loss aversion, intrinsic motivation and inequity aversion and thus present a solution under which labor supply could be compared with respect to shifts in each of the three factors individually. Furthermore, the effectiveness of the behavioral principles discussed in the previous parts does to a large

extent depend on how transparent the effects of a basic income welfare regime are to the individual. Factors of loss aversion, intrinsic motivation and inequity aversion can be effective only if perceived correctly by the individual. Thus, a basic income policy entails a heavy communicative burden on policymakers who have to make specific factors of the policy as transparent as possible to achieve the best possible outcome under the behavioral economic paradigm.

6. Conclusion

Developed economies in the 21st century face a unique and unprecedented set of constraints and requirements. Global challenges such as the climate crisis, technological change and even global pandemics are increasingly forcing humans to rethink central aspects of social, political, and economic interaction. Recent developments have made it evident that labor markets and the welfare state are not exempt from this necessity. This work has alluded to the specific challenges labor markets in developed economies face in the 21st century and has pointed out how especially currently conventional welfare states and especially schemes of unemployment benefits may be a questionable fit to the current economic challenges. Furthermore, the establishment of a universal basic income policy was introduced and discussed as one possible contraceptive to the current shortcomings of welfare regimes and an improvement thereof. Particularly a basic income regime would increase the flexibility and adaptability of individuals in a rapidly changing labor market and allow them to act independently and proactively. This measure could critically boost the efficiency of talent allocation in the labor market while enhancing individual independence, well-being and social equality in the process. Furthermore, inefficiencies of current welfare regimes such as poverty traps could be overcome. Nonetheless, the question remains how individuals would react to such a policy in terms of labor supply. Conventional economics, on the basis of rational choice under the conditions of infinite individual information and time, suggests that individual labor supply could be affected negatively under specific circumstances in reaction to a basic income policy. Calculations made herein on the basis of real world economic data, with respect to benefit payments, wages and taxes, have shown the formal assumption of a reduction of individual labor supply under the paradigm of conventional economic theory may not be unreasonable, although some publications reach different conclusions under the equivalent economic paradigm (see e.g. Gamel, Balsan, and Vero 2006; Gilroy, Heimann, and Schopf 2013). The application of the behavioral economic paradigm, a branch of economics which draws on psychology and

empirical findings to develop theories, which to some extent overcome the assumption of individual rational choice in the traditional sense, has shown an alternative interpretation of the findings discussed before and the assumptions made on the reaction of individuals thereto. Especially, this theoretical framework has allowed for a reconciliation between empirical observations made via basic income pilot experiments, which show that individual labor supply may remain constant or even react positively to a basic income policy, and economic theory. The individual reaction to potentially work more instead of less following the introduction to a basic income policy can be explained via loss aversion, inequity aversion and intrinsic motivation as developed above. These findings not only reconcile economic theory with empirical experimental findings but provide, as the paradigm of rational choice is to some extent left behind, a more realistic interpretation of economic circumstances.

Nonetheless, some substantial limitations of this work have to be born in mind. As partly alluded to in the respective chapters, the findings herein are to a large extent extrinsically dependent on the quality of the data used. Especially, real world extrapolations on labor supply mobility based on the growth and degrowth of economic sectors and labor market flow rates can to a large extent account for observations of trends and general directions of effects, while observing exact effects remains nearly impossible. Furthermore, the application of solely nominal data for the country comparison of income and unemployment benefits allows for criticism as among the economies compared small differences in real purchasing power remain. Finally, and most importantly, the basic income pilot projects cited to motivate the further focus on aspects of economic theory that could explain a growth of individual work incentives rather than a decline, have to be digested with caution. The findings presented by the experiments are based on trials with very limited numbers of participants and more importantly carried out over a very limited time period. It is very unlikely that reactions to basic income payments over a very limited trial period are remotely similar to reactions to a nationwide policy where the payments are distributed for an entire lifetime or a substantial part thereof. The citation of these experiments serves merely as a motivational basis for this work, placing the parts that follow from it, as no remotely complete basic income pilot has yet been performed, a priori firmly in the realm of theoretical extrapolations. The equivalent can be said with respect to the behavioral economic arguments discussed in the third part of this work. While, as argued above, the interpretations presented can be considered reasonable, it is, understandably, nearly impossible, to deliver a fully-fledged assessment of the labor supply reactions to a basic income policy on theoretical grounds alone.

Aside from the large potential of contemporary economic challenges, due to the opportunities in terms of availability of data and empirical observations economic theory is increasingly able to overcome the rigidity of traditional modelling approaches and enhance the relevance of real-world observations in model building and policy making. As for the topic at hand, the findings presented herein can give an indication of how to explain empirical findings about individual labor supply in reaction to a basic income policy via economic modelling. Nonetheless, neither the current state of empirical research nor the current state of economic modelling allows for a definitive conclusion. More research must be done and the impact of different policy reactions to the contemporary challenges in developed economy labor markets has to be weighed carefully. This research aims to contribute to this discussion.

The recent breakthroughs in the field of artificial intelligence and especially generative artificial intelligence may add further pertinence to the discussion surrounding modern interpretations of the labor market and social welfare regimes. The first part of this work concludes that while the pace with which jobs seem to disappear is increasing the pace at which new jobs emerge accelerates with it. However, given the increasing potential of technological breakthrough, job destruction may soon outpace job creation. While researchers in the field vastly disagree on timing, and indeed scenarios like this may very well not become relevant before the end of the century or even beyond, it seems there is widespread agreement that artificial intelligence may at some point have a considerable impact on the labor market (see e.g. Bostrom 2014; Tegmark 2017). In creating an environment of systemic high unemployment, a scenario like this would for obvious reasons make an intensified discussion around the modernization of the welfare state unavoidable and it seems sensible to assume that such a modernization would, in one form or another, include the redistribution of societies wealth which is not bound to individual labor supply.

References

Abeler, Johannes, Armin Falk, Lorenz Goette, and David Huffman. 2011. "Loss Aversion and Labor Supply." *The American Economic Review* 101 (2): 470–92.

Akee, Randall K. Q., William E. Copeland, Gordon Keeler, Adrian Angold, and E. Jane Costello. 2010. "Parents' Incomes and Children's Outcomes: A Quasi-Experiment Using Transfer Payments from Casino Profits." *American Economic Journal: Applied Economics* 2 (1): 86–115. https://doi.org/10.1257/app.2.1.86.

Akerlof, George A., and Janet L. Yellen. 1990. "The Fair Wage-Effort Hypothesis and Unemployment." *The Quarterly Journal of Economics* 105 (2): 255–83.

Alchian, Armen A, and Harold Demsetz. 1972. "Production, Information Costs, and Economic Organization." *The American Economic Review* 62 (5): 777–95.

Alesino, Alberto, and George-Marios Angeletos. 2005. "Fairness and Redistribution: US vs. Europe." *American Economic Review* 95: 913–35.

Allas, Tara, Jukka Maksimainen, James Manyika, and Navjot Singh. 2020. "An Experiment to Inform Universal Basic Income." McKinsey & Company. https://www.mckinsey.com/industries/public-and-social-sector/our-insights/an-experiment-to-inform-universal-basic-income#/.

Arbetsförmedlingen - Swedish Public Employment Service. 2023a. "Introduction Benefit." https://arbetsformedlingen.se/other-languages/english-engelska/extra-stod/ersattning-och-franvaro/etableringsersattning.

———. 2023b. "Job and Development Guarantee Programme." https://arbetsformedlingen.se/other-languages/english-engelska/extra-stod/stod-a-o/jobb--och-utvecklingsgarantin.

Arrow, Kenneth. 1972. "Gifts and Exchanges." *Philosophy & Public Affairs* 1 (4): 343–62.

Ascari, Guido, Andrea Colciago, and Riccardo Silvestrini. 2021. "Business Dynamism, Sectoral Reallocation and Productivity in a Pandemic." *DNB Working Paper* 725. https://www.dnb.nl/media/pxamblqs/working_paper_no-_725.pdf.

Avram, Silvia. 2015. "Benefit Losses Loom Larger than Taxes: The Effects of Framing and Loss Aversion on Behavioural Responses to Taxes and Benefits." ISER Working Paper Series.

Basic Income Earth Network. 2022. "About Basic Income." https://basicincome.org/about-basic-income/.

Bégin-Caouette, Olivier, Tanja Askvik, and Bian Cui. 2016. "Interplays Between Welfare Regimes Typology and Academic Research Systems in OECD Countries." *Higher Education Policy* 29: 287–313. https://doi.org/10.1057/hep.2015.25.

Bertheau, Antoine, Edoardo Maria Accabi, Cristina Barcelo, Andreas Gulyas, Stefano Lombardi, and Raffaele Saggio. 2022. "The Unequal Cost of Job Loss Across Countries." *NBER WORKING PAPER SERIES*, NBER WORKING PAPER SERIES, 29727 (February). https://www-nber-org.uaccess.univie.ac.at/system/files/working_papers/w29727/w29727.pdf.

Blaufus, Kay, Jonathan Bob, Jochen Hundsdoerfer, Dirk Kiesewetter, and Joachim Weimann. 2009. "It's All About Tax Rates: An Empirical Study of Tax Perception." *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1707445.

Bostrom, Nick. 2014. *Superintelligence: Paths, Dangers, Strategies*. Unabridged. Grand Haven, MI: Audible Studios on Brilliance audio.

Burtless, Gary. 1986. "The Work Response to Guaranteed Income: A Survey of Experimental Evidence." *Conference Series; [Proceedings]* 30: 22–59.

Camerer, Colin, Linda Babcock, George Loew Enstein, and Richard Thaler. 1997. "LABOR SUPPLY OF NEW YORK CITY CABDRIVERS: ONE DAY AT A TIME." *The Quarterly Journal of Economics* 112 (2): 407–41.

Campbell, Carl, and Kunal Kamlani. 1997. "The Reasons for Wage Rigidity: Evidence from a Survey of Firms." *The Quarterly Journal of Economics* 112 (3): 759–89.

Castles, Francis G. 2004. *The Future of the Welfare States: Crisis Myths and Crisis Realities*. Oxford: Oxford University Press.

Center on Budget and Policy Priorities. 2022. "Policy Basics: Temporary Assistance for Needy Families." https://www.cbpp.org/research/family-income-support/temporary-assistance-for-needy-families.

Chang, Juin-jen, and Ching-chong Lai. 1999. "Carrots or Sticks? A Social Custom Viewpoint on Worker Effort." *European Journal of Political Economy* 15 (2): 297–310. https://doi.org/10.1016/S0176-2680(99)00007-5.

Charness, G., and M. Rabin. 2002. "Understanding Social Preferences with Simple Tests." *The Quarterly Journal of Economics* 117 (3): 817–69. https://doi.org/10.1162/003355302760193904.

Commonwealth of Massachusetts. 2023. "How Your Unemployment Benefits Are Determined." https://www.mass.gov/info-details/how-your-unemployment-benefits-are-determined#unemployment-benefits-determination-calculator-.

Davala, Sarath, Renana Jhabvala, Soumya Kapoor Mehta, and Guy Standing. 2015. *Basic Income: A Transformative Policy for India*. 1st ed. Bloomsbury Publishing Plc. https://doi.org/10.5040/9781472593061.

Davis, Steven J., R. Jason Faberman, and John Haltiwanger. 2006. "The Flow Approach to Labor Markets: New Data Sources and Micro–Macro Links." *Journal of Economic Perspectives* 20 (3): 3–26.

———. 2012. "Labor Market Flows in the Cross Section and over Time." *Journal of Monetary Economics* 59 (1): 1–18. https://doi.org/10.1016/j.jmoneco.2011.10.001.

Dawes, Robyn M, and Richard H Thaler. 1988. "Anomalies: Cooperation." *Journal of Economic Perspectives* 2 (3): 187–97. https://doi.org/10.1257/jep.2.3.187.

DeCharmes, Richard. 1968. *Personal Causation: The Internal Affective Determinants of Behaviour*. New York: Academic Press.

Deci, Edward L. 1971. "Effects of Externally Mediated Rewards on Intrinsic Motivation." *Journal of Personality and Social Psychology* 18 (1): 105–15. https://doi.org/10.1037/h0030644.

Deci, Edward L., and Richard M. Ryan. 1980. "The Empirical Exploration of Intrinsic Motivational Processes." In *Advances in Experimental Social Psychology*, 13:39–80. Elsevier. https://doi.org/10.1016/S0065-2601(08)60130-6.

Department of the Treasury. 2022. "Tax Withholding and Estimated Tax." https://www.irs.gov/pub/irs-pdf/p505.pdf#en_US_2023_publink1000194739.

Dimick, Matthew, David Rueda, and Daniel Stegmueller. 2017. "The Altruistic Rich? Inequality and Other-Regarding Preferences for Redistribution." *Quarterly Journal of Political Science* 11 (4): 385–439. https://doi.org/10.1561/100.00015099.

Ding, Lei, and Julieth Saenz Molina. 2020. "'Forced Automation' by COVID-19? Early Trends from Current Population Survey Data." Discussion Paper. Community Development and Regional Outreach. Philadelphia: Federal Reserve Bank of Philadelphia. https://www.philadelphiafed.org/-/media/frbp/assets/community-development/discussion-papers/discussion-paper_automation.pdf.

ECB/ESRB Project Team on climate risk monitoring. 2021. "Climate-Related Risk and Financial Stability." ECB/ESRB. https://www.ecb.europa.eu/pub/pdf/other/ecb.climateriskfinancialstability202107~87822fae81.en.pdf.

Edgeworth, Francis Ysidro. 1881. *Mathematical Psychics: An Essay on the Application of Mathematics to the Moral Sciences*. London: The London school of economics and political science.
Engelmann, Dirk, and Martin Strobel. 2004. "Inequality Aversion, Efficiency, and Maximin Preferences in Simple Distribution Experiments." *The American Economic Review* 94 (4): 857–69.
Esping-Andersen, Gøsta. 1990. *The Three Worlds of Welfare Capitalism*. Cambridge, UK: Polity Press.
European Commission. 2008. "Statistical Classification of Economic Activities in the European Community." Eurostat - Methodologies and Working Papers. https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF.pdf/dd5443f5-b886-40e4-920d-9df03590ff91?t=1414781457000.
———. 2022. "Employment, Social Affairs & Inclusion - Germany - Unemployment Benefits." https://ec.europa.eu/social/main.jsp?catId=1111&langId=en&intPageId=4557.
———. 2023. "Employment, Social Affairs & Inclusion - Sweden - Unemployment Benefits." https://ec.europa.eu/social/main.jsp?catId=1130&langId=en&intPageId=4817.
Eurostat. 2022a. "EARN_NT_NET." https://ec.europa.eu/eurostat/databrowser/view/EARN_NT_NET__custom_6063341/default/table?lang=en.
———. 2022b. "LFSI_LEA_Q." https://ec.europa.eu/eurostat/databrowser/view/lfsi_lea_q/default/table?lang=en.
———. 2022c. "LFSI_LONG_A." https://ec.europa.eu/eurostat/databrowser/view/lfsi_long_a/default/table?lang=en.
———. 2022d. "LFSI_STA_Q." https://ec.europa.eu/eurostat/databrowser/view/lfsi_sta_q/default/table?lang=en.
———. 2022e. "LFSQ_EGAN2." https://ec.europa.eu/eurostat/databrowser/view/lfsq_egan2/default/table?lang=en.
———. 2022f. "NAMA_10_PC." https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_PC/default/table?lang=en.
Farber, Henry S. 2017. "Employment, Hours, and Earnings Consequences of Job Loss: US Evidence from the Displaced Workers Survey." *Journal of Labor Economics* 35 (S1): S235–72. https://doi.org/10.1086/692353.
Fehr, Ernst, and Lorenz Goette. 2007. "Do Workers Work More If Wages Are High? Evidence from a Randomized Field Experiment." *The American Economic Review* 97 (1): 298–317.
Fehr, Ernst, Lorenz Goette, and Christian Zehnder. 2008. "A Behavioral Account of the Labor Market: The Role of Fairness Concerns." *Institute for Empirical Research in Economics University of Zurich, Research Paper Series* Working Paper No. 394: 1–47.
Fehr, Ernst, and Klaus M. Schmidt. 1999. "A Theory of Fairness, Competition, and Cooperation." *The Quarterly Journal of Economics*, no. Vol. 114, No. 3: 817–68.
Ferrera, Maurizio. 1996. "The 'Southern Model' of Welfare in Social Europe." *Journal of European Social Policy* 6 (1): 17–37. https://doi.org/10.1177/095892879600600102.
Flórez, Luz A., Leonardo Fabio Morales, Daniel Medina, and José Lobo. 2021. "Labor Flows across Firm Size, Age, and Economic Sector in Colombia vs. the United States." *Small Business Economics* 57 (3): 1569–1600. https://doi.org/10.1007/s11187-020-00362-8.
Fochmann, Martin, Joachim Weimann, Kay Blaufus, Jochen Hundsdoerfer, and Dirk Kiesewetter. 2013. "Net Wage Illusion in a Real-Effort Experiment*: *Net Wage*

Illusion in a Real-Effort Experiment." *The Scandinavian Journal of Economics* 115 (2): 476–84. https://doi.org/10.1111/sjoe.12007.
Frey, Bruno S. 1997. *Not Just for the Money: An Economic Theory of Personal Motivation*. Cheltenham, UK ; Brookfield, Vt: Edward Elgar Pub.
Frey, Bruno S., and Reto Jegen. 2001. "Motivation Crowding Theory." *Journal of Economic Surveys* 15 (5): 589–611. https://doi.org/10.1111/1467-6419.00150.
Frey, Bruno S, and Felix Oberholzer-Gee. 1997. "The Cost of Price Incentives: An Empirical Analysis of Motivation Crowding-Out." *The American Economic Review* 87 (4): 746.
Fujita, Shigeru, and Makoto Nakajima. 2016. "Worker Flows and Job Flows: A Quantitative Investigation." *Review of Economic Dynamics* 22 (October): 1–20. https://doi.org/10.1016/j.red.2016.06.001.
Gamage, David, Andrew Hayashi, and Brent K. Nakamura. 2010. "Experimental Evidence of Tax Framing Effects on the Work/Leisure Decision." *Berkeley Program in Law and Economics, Working Paper Series. University of California Berkeley*. https://doi.org/10.2139/ssrn.1629919.
Gamel, Claude, Didier Balsan, and Josiane Vero. 2006. "The Impact of Basic Income on the Propensity to Work." *The Journal of Socio-Economics* 35 (3): 476–97. https://doi.org/10.1016/j.socec.2005.11.025.
Geppert, Kurt, and Andreas Stephan. 2008. "Regional Disparities in the European Union: Convergence and Agglomeration." *Papers in Regional Science* 87 (2): 193–217. https://doi.org/10.1111/j.1435-5957.2007.00161.x.
Gilroy, Bernard Michael, Anastasia Heimann, and Mark Schopf. 2013. "Basic Income and Labour Supply: The German Case." *Basic Income Studies* 8 (1). https://doi.org/10.1515/bis-2012-0009.
Gneezy, Uri, and Aldo Rustichini. 2000. "Pay Enough or Don't Pay at All*." *Quarterly Journal of Economics* 115 (3): 791–810. https://doi.org/10.1162/003355300554917.
Goette, Lorenz, David Huffman, and Ernst Fehr. 2004. "Loss Aversion and Labor Supply." *Journal of the European Economic Association* 2 (2–3): 216–28. https://doi.org/10.1162/154247604323067934.
Gulyas, Andreas, and Krzysztof Pytka. 2020. "Understanding the Sources of Earnings Losses After Job Displacement: A Machine-Learning Approach," 63.
Haarmann, Claudia, BIG Coalition (Namibia), Evangelical Lutheran Church in the Republic of Namibia, Labour Resource and Research Institute (Namibia), and Namibia Non-Governmental Organisation Forum, eds. 2009. *Making the Difference! The BIG in Namibia: Basic Income Grant Pilot Project Assessment Report, April 2009*. Windhoek, Namibia: NANGOF.
Hoynes, Hilary, and Jesse Rothstein. 2019. "Universal Basic Income in the US and Advanced Countries." w25538. Cambridge, MA: National Bureau of Economic Research. https://doi.org/10.3386/w25538.
Internationales Institut für Arbeitsfragen, ed. 2009. *The Global Jobs Crisis and Beyond*. World of Work Report 2009. Geneva: Internat. Inst. for Labour Studies.
Jacobson, Louis S., Robert John LaLonde, and Daniel Gerard Sullivan. 1993. "Earnings Losses of Displaced Workers." *THE AMERICAN ECONOMIC REVIEW* 83 (4): 685–709. https://doi.org/10.17848/wp92-11.
Jones, Damon, and Ioana Marinescu. 2018. *The Labor Market Impacts of Universal and Permanent Cash Transfers: Evidence from the Alaska Permanent Fund*. NBER Working Paper Series, no. w24312. Cambridge, Mass: National Bureau of Economic Research.
Jordan, P. C. 1986. "RESEARCH NOTES. EFFECTS OF EXTRINSIC REWARD ON INTRINSIC MOTIVATION: A FIELD EXPERIMENT." *Academy of Management Journal* 29 (2): 405–12. https://doi.org/10.2307/256195.

Kahneman, Daniel, Jack L Knetsch, and Richard H Thaler. 1990. “Experimental Tests of the Endowment Effect and the Coase Theorem.” *Journal of Political Economy* 98 (6): 1325–48.

Kahneman, Daniel, Richard Thaler, and Jack Knetsch. 1991. “Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias.” *Journal of Economic Perspectives* 5 (1): 193–206.

Kahneman, Daniel, and Amos Tversky. 1979. “Prospect Theory: An Analysis of Decision under Risk.” *Econometrica* 47 (2): 263–92.

Kangas, Olli, Signe Jauhiainen, Miska Simanainen, and Minna Ylikännö. 2019. “The Basic Income Experiment 2017–2018 in Finland Preliminary Results.” *REPORTS AND MEMORANDUMS OF THE MINISTRY OF SOCIAL AFFAIRS AND HEALTH* 2019:9. https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/161361/Report_The%20Basic%20Income%20Experiment%2020172018%20in%20Finland.pdf.

Kasza, Gregory J. 2002. “The Illusion of Welfare ‘Regimes.’” *Journal of Social Policy* 31 (02). https://doi.org/10.1017/S0047279401006584.

Kroft, Kory, Fabian Lange, and Matthew J. Notowidigdo. 2013. “Duration Dependence and Labor Market Conditions: Evidence from a Field Experiment*.” *The Quarterly Journal of Economics* 128 (3): 1123–67. https://doi.org/10.1093/qje/qjt015.

Kropotkin, Pyotr. 1902. *Mutual Aid: A Factor of Evolution*. London. https://www.gutenberg.org/cache/epub/4341/pg4341.html.

Kwon, Huck-Ju. 1997. “Beyond European Welfare Regimes: Comparative Perspectives on East Asian Welfare Systems.” *Journal of Social Policy* 26 (4): 467–84. https://doi.org/10.1017/S004727949700514X.

Lazear, Edward, and Kristin McCue. 2017. “Hires and Separations in Equilibrium.” *NATIONAL BUREAU OF ECONOMIC RESEARCH*, NBER working paper series, Working Paper (January): 54.

Lewis, Jane. 1998. “Gender and the Development of Welfare Regimes.” In *Power Resource Theory and the Welfare State: A Critical Approach, , Edited by O’Connor, Julia S. and Olsen, Gregg M*, 229–49. Toronto: University of Toronto Press. https://doi-org.uaccess.univie.ac.at/10.3138/9781442678675-012.

Lockwood, B. 2008. “Pareto Efficiency.” In *The New Palgrave Dictionary of Economics*, edited by Palgrave Macmillan, 1–5. London: Palgrave Macmillan UK. https://doi.org/10.1057/978-1-349-95121-5_1823-2.

Louie, Edward P., and Joshua M. Pearce. 2016. “Retraining Investment for U.S. Transition from Coal to Solar Photovoltaic Employment.” *Energy Economics* 57 (June): 295–302. https://doi.org/10.1016/j.eneco.2016.05.016.

Lucas, Robert E., and Leonard A. Rapping. 1969. “Real Wages, Employment, and Inflation.” *Journal of Political Economy* 77 (5): 721–54. https://doi.org/10.1086/259559.

Marglin, Stephen A. 1974. “What Do Bosses Do?: The Origins and Functions of Hierarchy in Capitalist Production.” *Review of Radical Political Economics* 6 (2): 60–112. https://doi.org/10.1177/048661347400600206.

Massachusetts Department of Unemployment Assistance. 2018. “A Guide to Benefits and Employment Services for Claimants.” https://www.mass.gov/doc/a-guide-to-benefits-and-employment-services/download.

Mississippi Department of Employment Security. 2023a. “Benefit Eligibility Requirements.” https://mdes.ms.gov/unemployment-claims/benefit-information/benefit-eligibility-requirements/.

———. 2023b. “TABLE OF WEEKLY BENEFIT AMOUNTS AND MAXIMUM AMOUNTS.” https://mdes.ms.gov/media/7140/Benefit_Chart1.pdf.

Müller, Wolfgang. 2014. *Does an Unconditional Basic Income Provide Higher Effectiveness and Efficiency?* Hamburg: Anchor Academic Publishing.
Neffke, Frank M.H., Anne Otto, and Antje Weyh. 2017. "Inter-Industry Labor Flows." *Journal of Economic Behavior & Organization* 142 (October): 275–92. https://doi.org/10.1016/j.jebo.2017.07.003.
Norlander, Peter, Geoffrey C. Ho, Margaret Shih, Daniel J. Walters, and Todd L. Pittinsky. 2020. "The Role of Psychological Stigmatization in Unemployment Discrimination." *Basic and Applied Social Psychology* 42 (1): 29–49. https://doi.org/10.1080/01973533.2019.1689363.
Nunley, John M., Adam Pugh, Nicholas Romero, and R. Alan Seals. 2016. "College Major, Internship Experience, and Employment Opportunities: Estimates from a Résumé Audit." *Labour Economics* 38 (January): 37–46. https://doi.org/10.1016/j.labeco.2015.11.002.
OECD. 2013. "Back to Work: Re-Employment, Earnings and Skill Use after Job Displacement." In *OECD Employment Outlook 2013*, by OECD, 191–233. OECD Employment Outlook. OECD. https://doi.org/10.1787/empl_outlook-2013-8-en.
———. 2022a. "Table I.1. Central Government Personal Income Tax Rates and Thresholds." https://stats.oecd.org/Index.aspx?DataSetCode=TABLE_I1#.
———. 2022b. "Table I.5. Average Personal Income Tax and Social Security Contribution Rates on Gross Labour Income." https://stats.oecd.org/Index.aspx?DataSetCode=TABLE_I5.
———. 2023. "Exchange Rates (Indicator)." doi: 10.1787/037ed317-en.
Parijs, Philippe van, and Yannick Vanderborght. 2017. *Basic Income: A Radical Proposal for a Free Society and a Sane Economy*. Cambridge, Massachusetts: Harvard University Press.
Pittman, T S, and J F Heller. 1987. "Social Motivation." *Annual Review of Psychology* 38: 461–89.
Põder, Kaire, and Kaie Kerem. 2011. "'Social Models' in a European Comparison: Convergence or Divergence?" *Eastern European Economics* 49 (5): 55–74. https://doi.org/10.2753/EEE0012-8775490503.
Rabin, Matthew. 1993. "Incorporating Fairness into Game Theory and Economics." *The American Economic Review* 83 (5): 1281–1302.
Rawls, John. 2020. *A Theory of Justice: Revised Edition*. Harvard University Press. https://doi.org/10.2307/j.ctvkjb25m.
Schwab, Klaus. 2020. "How Countries Are Performing on the Road to Recovery." *The Global Competitiveness Report*, 95.
Schwab, Klaus, and Saadia Zahidi. 2020. "The Future of Jobs Report 2020." The Future of Jobs Report. World Economic Forum. https://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf.
Sen, Amartya K. 1977. "Rational Fools: A Critique of the Behavioral Foundations of Economic Theory." *Philosophy & Public Affairs* 6 (4): 317–44.
Spencer, Herbert. 1879. *The Data of Ethics*. London.
Standing, Guy. 2017. *Basic Income: A Guide for the Open-Minded*. New Haven ; London: Yale University Press.
Statsskuld. 2023. "Calculated Net Pay in Nykvarn." https://statsskuld.se/en/jobs/net-salary.
Tegmark, Max. 2017. *Life 3.0: Being Human in the Age of Artificial Intelligence*. First edition. New York: Alfred A. Knopf.
Titmuss, Richard M, and Robert M Solow. 1971. "Blood and Thunder." *The Yale Law Journal* 80 (8): 1696–1711.
Titmuss, Richard Morris. 1970. *The Gift Relationship: From Human Blood to Social Policy*. London: Allen & Unwin.

Tversky, Amos, and Daniel Kahneman. 1986. “Rational Choice and the Framing of Decisions.” *Journal of Business*, no. Vol. 59, No. 4, Part 2: The Behavioral Foundations of Economic Theory: S251–78.
———. 1992. “Advances in Prospect Theory: Cumulative Representation of Uncertainty.” *Journal of Risk and Uncertainty* 5 (4): 297–323.
Van Parijs, Philippe, ed. 1991. “Why Surfers Should Be Fed: The Liberal Case for an Unconditional Basic Income.” *Philosophy and Public Affairs* 20 (2): 101–31. https://doi.org/10.4324/9781315257563.
Werner, Götz W. 2018. *Einkommen Für Alle: Bedingungsloses Grundeinkommen, Die Zeit Ist Reif*. 1. Auflage der überarbeiteten aktualisierten und erweiterten Neuausgabe. Köln: Kiepenheuer & Witsch.
“World Employment and Social Outlook | Trends 2022.” n.d., 128.
Yang, Andrew. 2018. *The War on Normal People: The Truth about America’s Disappearing Jobs and Why Universal Basic Income Is Our Future*. First edition. New York: Hachette Books.

Appendix A: Abstract

Labor markets in 21st century developed economies have been subject to an unprecedented set of circumstances and challenges. Amongst other effects, modern developed economy labor markets have, via the rapid emergence of new economic sectors due to technological change, proven to require increasing flexibility and mobility on the demand, but more importantly, on the supply side, while, as will be shown, the policy architecture surrounding labor markets is not suited to efficiently cater to these requirements, contributing to the emergence of adverse effects on individuals, firms and governments. The work at hand proposes the introduction of a universal basic income social welfare regime in arguing that this, while being merely one option among many, could help overcoming some of the adverse effects mentioned. Traditionally one of the key objections to a basic income policy has been that it may itself create adverse effects on individual labor supply in general. The work at hand features a formal theoretical economic analysis with respect to individual labor supply effects in reaction to a basic income policy as well as the examination of data from field experiments surrounding this question, resulting, to some extent, in a lack of alignment between the two. Finally, and as its core part, this work draws on findings from behavioral economics in an attempt to reconcile theoretical formal analysis with the results observed in the field. Given limitations, especially with respect to the quality of data obtained by the field experiments, this work remains to a large extent theoretical, while offering new insights to the discussion and promoting the relevance of, ultimately necessary, further research surrounding more modern interpretations

of the welfare state and behavioral economics as a formal framework that may ultimately prove more robust than conventional economic theory in analyzing individual reactions thereto.

Appendix B: Zusammenfassung

Die aktuellen Umstände und Herausforderungen, mit denen sich Arbeitsmärkte in entwickelten Volkswirtschaften des 21. Jahrhunderts konfrontiert sehen sind ebenso anspruchsvoll wie beispiellos. Neben anderen Effekten hat sich gezeigt, dass moderne Arbeitsmärkte durch hochfrequentes Entstehen und schnelles Wachstum neuer Wirtschaftssektoren, einer Entwicklung die vorrangig raschem technologischem Wandel zugeschrieben werden kann, zunehmende Flexibilität und Mobilität auf der Nachfrage-, aber vor allem auch auf der Angebotsseite erfordern. Arbeitsmarktpolitische Rahmenbedingungen sind oft nicht geeignet, diesen Anforderungen effizient gerecht zu werden, was zu negativen Konsequenzen für Einzelpersonen, Unternehmen und Staaten beitragen kann. In der vorliegenden Arbeit wird die Einführung eines bedingungslosen Grundeinkommens als, einer von vielen, sozialpolitischen Lösungsvorschlägen für die genannten arbeitsmarkttechnischen Entwicklungen diskutiert. Traditionell ist einer der Haupteinwände gegen ein Grundeinkommen, dass es selbst negative Auswirkungen auf das individuelle und aggregierte Arbeitsangebot im Allgemeinen produzieren könnte. Die vorliegende Arbeit beinhaltet eine formale ökonomische Analyse in Bezug auf individuelle Arbeitsangebotseffekte als Reaktion auf ein Grundeinkommen sowie einen Vergleich der Ergebnisse hieraus mit empirischen Daten. Es wird gezeigt, dass formale und empirische Analyse, unter Berücksichtigung von Einschränkungen im Bereich Datenqualität, unterschiedliche Interpretationen bezüglich der Richtung des Arbeitsangebotseffekts anbieten. Schließlich wird, als Kernstück der vorliegenden Arbeit, in einem Versuch die empirischen Ergebnisse theoretisch zu unterlegen auf Erkenntnisse im Bereich Verhaltensökonomie Bezug genommen. Da es nicht vertretbar ist von den bisher durchgeführten Feldexperimenten im Bereich bedingungsloses Grundeinkommen einschlägige Effekte auf den Arbeitsmarkt ableiten zu wollen muss diese Arbeit weitgehend theoretisch bleiben. Sie leistet allerdings relevante Beiträge zur theoretischen ökonomischen Diskussion und zeigt erneut die Notwendigkeit weiterer Forschung zur Modernisierung der Interpretationen des Sozialstaates. Weiterhin wird das Potenzial Verhaltensökonomischer Grundsätze als formaler Rahmen zur robusten Interpretation individueller Reaktionen auf Veränderungen der Arbeitsmarkt-, und Sozialpolitischen Gegebenheiten gezeigt.