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Full Employment:

A Survey of Theory, Empirics and Policies

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Abstract

The concept of full employment is associated with diverse economic, political and social aspects. We provide a survey of theory, empirics and policy issues related to full employment. We make a novel contribution by tying together multi-dimensional aspects of full employment regarding definitions, theoretical perspectives, empirical measurements, policy debates and real-world policy programs. We distinguish: concepts of full employment that provide systematic links to price stability; minimum unemployment and maximum employment approaches; and the unfilled vacancies perspective. Furthermore, we provide and discuss different empirical measures of full employment for selected economies, and we propose a new full employment typology. Based on our survey findings, we argue that conceptualising and measuring full employment is not merely a technical task, but inevitably involves normative judgments. Finally, we discuss avenues for future research.

Keywords: full employment, NAIRU, Beveridge curve, employment, welfare states, job guarantee

JEL classification: B22, E24, E61

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1. Introduction

While full employment is a concept with a long history in economics and policy-making, interest in full employment topics has recently grown in academic and policy discussions (e.g. Gökten et al. 2024a; Council of Economic Advisers 2024).¹ Full employment is tricky to conceptualise. Whether an economy operates at full employment is unobservable. Hence, full employment needs to be defined, theorised and estimated to produce policy-relevant inputs. There are different views on how best to do this.

This paper contributes to the literature by providing a survey of different perspectives on theory, empirics and policies of full employment. Macroeconomic policy-making currently takes special account of estimates of the unemployment rate at which inflation remains stable, which links the issue of full employment to price stability (e.g. Ball and Mankiw 2002; Blanchard 2018). While estimates of the non-accelerating inflation rate of unemployment (NAIRU) are an important information input in monetary policy decisions (e.g. Staiger & Watson 1997a), they are also part of assessments of the fiscal stance of individual governments (e.g. Heimberger & Kapeller 2017; Fatas 2019). Yet, other approaches to full employment start from different theoretical priors that do not consider links between inflation and unemployment as central, positing that stable prices and full employment can coincide, or suggesting that the price stability aspect plays a subordinate role in analysing full employment (e.g. Tcherneva & Wray 2005; Michaillat & Saez 2021).

We provide value-added by connecting different strands of literature on labour economics, socioeconomics, macroeconomics and political economy. Our focus is on full employment topics related to (un)employment in persons, but we partly also cover full employment-related aspects such as working time and part-time arrangements (e.g. Behringer et al. 2024; Autor 2022, Leitner and Stehrer 2019). Furthermore, our approach is useful from a policy-making perspective because it provides information about the time-varying level of full employment in selected economies according to different empirical approaches. Engaging with labour market dynamics based on technical change, demographic change or structural change would be beyond the scope of this paper, although we acknowledge relevant literature (e.g., Acemoglu & Restrepo 2019). Finally, we provide a novel summary and discussion of full employment policies and public employment programs in different parts of the world. In light of a shortage of market-based employment opportunities, several countries at different stages of economic development have implemented public employment policies (e.g. Kaboub 2007; ILO 2020; Haim 2022).

The rest of the paper is structured as follows. The second chapter contextualises full employment by introducing definitions of full employment and by discussing the historical emergence and relevance of full employment as a concept. The third chapter surveys different theoretical perspectives on full employment. The fourth chapter presents the most prominent empirical perspectives on full employment. The fifth chapter discusses full employment policies and real-world programs. Chapter six puts forward a new approach for a full employment typology and discusses avenues for future research. Section seven concludes.

¹ The emergence and relevance of historical full employment episodes is covered in Appendix A. Appendix B contextualises full employment in economic policy debates.

2. Definitions and conceptual understandings of full employment

A key argument as to why full employment became a relevant policy goal is because of its economic significance and societal contributions to quality of life (e.g. Jahoda et al. 2017), at least within the historically contingent capitalist organisation of the economy as a 'work economy' (Weeks, 2011; Gorz, 1999). Apart from foregone income, being unemployed may come with many undesired side effects such as health problems and reduced self-esteem (e.g. Dooley et al. 1996, Herbig et al. 2013, Avendano and Berkman 2014). People who do not find employment have to find other activities to fill their time, which may lead to the development of alternative non-working cultures around potential issues of drugs, prostitution, and crime (Sawyer 1995). Prolonged withdrawal from the labour market intensifies these negative effects, leads to a loss of skills and potential, which reflects a waste of human capital but also discrimination of the long-term unemployed (e.g. Roed 1997; Ortego-Marti 2017). More negative mental health effects are also reported for long-term unemployed in a meta-analysis study (Picchio & Ubaldi 2023). The longer a person is unemployed, the lower the probability of landing a job interview; e.g. being unemployed for 10 months or more already decreases the probability of being invited to a job interview by 30% (Nuess 2018).

There is, however, no unifying or commonly accepted definition of full employment. Full employment may be defined as 'an economy in which workers able and willing to work can obtain the jobs and [working] hours they want' (Council of Economic Advisors 2024, p. 24). A very common definition is to describe a state of full employment as a 'tight match between the number of people seeking jobs and the number of employers seeking workers' (Bernstein 2014). When there is a 'tight match' there is a supposed scarcity of jobs, which implies that at the end of the job-seeking process there will be a number of people who remain involuntarily unemployed. When a labour market is operating at full employment, 'labour in an economy is being fully and efficiently used' (ECB 2021b). The labour economics literature also shows different views on full employment by describing 'a situation in which the entire labour force is employed in some form or other of salaried work' (Paesani & Palumbo 2023, 186), or 'a situation in which everyone who wants a job can get one, and has most often been articulated in relation to the unemployed – those looking for and available for work' (Gregg & Laurdiner 2016, 21). In this perspective, reaching full employment implies that all involuntary forms of unemployment have been eliminated (see the upper-left quadrant in Figure 1).

Labour economics typically distinguishes three types of unemployment: 'Structural' unemployment reflects a mismatch between potential workers' skills or location and job requirements; frictional unemployment occurs when workers are temporarily unemployed while switching jobs; and cyclical unemployment is caused by downswings in the economy. Full employment is often seen as the equivalent of getting rid of all 'cyclical' unemployment so that involuntary or unwanted unemployment would be absent (Keynes 1936). For William Beveridge, full employment also includes frictional unemployment with 'reduced to short intervals of standing by, with the certainty that very soon one will be wanted in one's old job again or will be wanted in a new job that is within one's powers [... which means] always having more vacant jobs than unemployed men, not slightly fewer jobs' (Beveridge 1960

[1945], 18). Yet, while there is agreement among economists regarding an inevitable amount of frictional unemployment along the path of economic development, it remains a point of debate how much frictional unemployment is consistent with the full employment goal. There are different views on the level of unemployment consistent with full employment. For example, Tinbergen cited an unemployment rate of 5% or below for the US, Lord Beveridge named 3% for the UK, and Sweden managed an unemployment level of 1.5% until the 1980s (Timar 1983).

Another way of looking at full employment is by discarding the 'percentage game' and instead defining it as a human right to a job (Schantz & Schmidt 2015). As a further requirement for 'full employment', a socioeconomic view on human conditions articulates that full employment means more than showcasing a certain number of jobs (see the upper-right quadrant in Figure 1). Provided forms of employment need to be such that 'where all who are ready, willing, and able to work are gainfully employed at a given base wage' (Skidelsky & Gasperin 2021, 16). As Beveridge put it in *Full Employment in a Free Society* '[i]t means that the jobs are at fair wages, of such a kind, and so located that the unemployed men can reasonably be expected to take them' (Beveridge 1967, p. 18). Another similar way to define the requirements of full employment is to see it as a situation in which 'all those wishing an employment income to realize their long-run consumption expectations could find a job.' (Parguez & Blieg 2007, 29) This case allows for a definition of full employment that also includes forms of waste or underemployment of the labour force. An implication of such a definition is that unemployment typically appears as involuntary. More generally, full employment considerations also address the degree to which the available work opportunities advance well-being (Minsky 1986).

Full employment typically focuses on the unemployed. However, the unemployment rate may understate the available labour supply (e.g. Hornstein et al. 2014). Even if those outside the labour force say that they do not want to take a job, they may transition to becoming employed as labour market conditions improve. Broader definitions than the unemployment rate include job searchers beyond the unemployed. For example, U-6 is a measure of unemployment that consists of workers that are part-time- due to economic reasons as well as marginally attached individuals, where the latter would be willing to accept a job if an employer offered one and have looked for work over the last twelve months but not over the last four weeks. And the prime-age employment-to-population ratio even considers all non-participants in labour markets as potential job searchers (Council of Economic Advisers 2024).

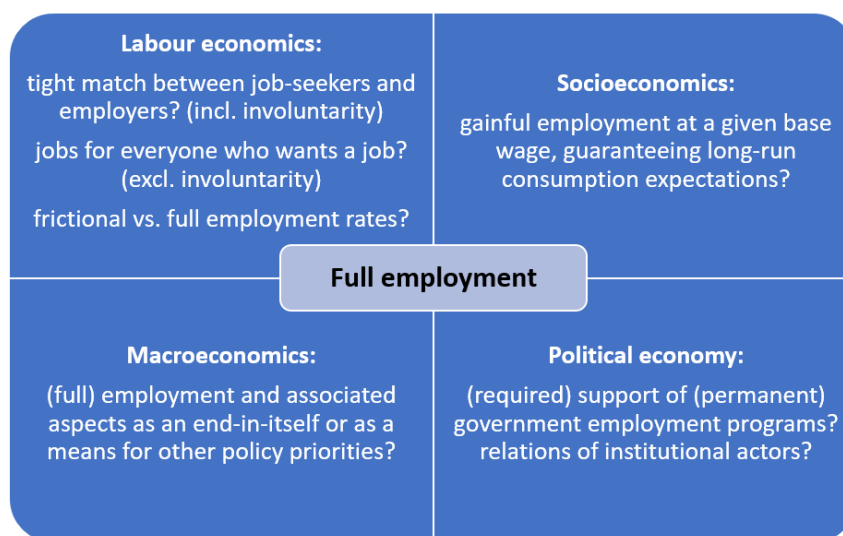
The issue of working time plays a prominent role in relation to involuntary unemployment. Reducing working hours per week and similar arrangements have been named as measures to ameliorate involuntary unemployment, by redistributing the number of hours worked over a larger number of people (Delsen 1997). Attractive side effects mentioned include the provision of flexibility and contribution to power sharing in the workplace (Papadimitriou 1999). However, the last significant changes in working hours took place in the 1970s in the aftermath of the oil crisis, and since the early 1980s working hours have not declined more sharply or have even risen at times (Behringer et al. 2024). However, it also has to be considered that a sizeable group of employees may want to work more hours than currently available (e.g. Sigl-Glöckner et al. 2021).

Critically, full employment, its social desirability and associated aspects are not always seen as an end. They are rather part of a broader set of a policy agenda that includes other priorities as well. In the field of macroeconomics, full employment is regularly understood through its link to price stability concerns (see lower-left quadrant in Figure 1): if policy makers tried to reduce the unemployment rate beyond a

certain threshold (the NAIRU), inflation would accelerate (e.g. Staiger et al. 1997; Ball & Mankiw 2002). In such a context, full employment is understood as the ‘highest level of employment the economy can sustain without generating unwelcome inflation’ (Barcena & Wessel 2022). In that way steering unemployment to a certain level can be beneficial in attaining other policy goals and is common practice in monetary policy. Thereby the NAIRU approach follows an understanding of full employment that accepts and even legitimises a certain (‘natural’) amount of unemployment as macroeconomically desirable. Other parts of the literature do not follow a NAIRU approach, but still highlight that wage and price developments need to be accounted for. Sigl-Glöckner et al. (2021) argue that full employment needs to be distinguished from full capacity utilisation, where the latter is a ‘state in which everyone has the opportunity to be sufficiently productive to support themselves.’ (Sigl-Glöckner et al. 2021, p. 15). In this perspective, the labour market may have to be very tight over a sustained period to reduce involuntary part-time work and low-wage jobs, and to increase wage growth so that (almost) all workers can sustain themselves out of their income without being dependent on additional welfare transfers. Fontanari et al. (2020) use an updated Okun method to estimate potential output, based on an unemployment target which they consider compatible with full resource utilisation. Fontanari et al. (2022) show that different measures of labour underutilisation – based on official and broad unemployment indicators – can be used to estimate potential output consistent with full employment. In this way, full employment is connected to the scale of productivity capacity in the economy, and whether existing resources are sufficiently utilised to enable full employment of labour.

Lastly, the conceptual understanding of full employment also depends on the political economic framing. Episodes of full employment could be brought about by pure market dynamics or in combination with government actions; they could either be very short or long-lasting. In this view (see the lower-right quadrant in Figure 1), full employment typically can only be achieved through the involvement of the government (e.g. Minsky 1986).

Figure 1 / Multiple aspects of definitions of full employment



Source: own depiction

3. Theoretical approaches to full employment

Table 1 summarises different theoretical approaches to full employment.

Classical Political Economy: William Petty was an early observer and debater of labour and the challenges of unemployment during the onset of capitalism. Since labour ranked as the greatest source of value, he argued to not waste the working power of the unemployed but utilise their capacity to work for required tasks such as building infrastructure. The unemployed ‘ought neither to be starved, nor hanged, nor given away’ (Petty 1899 [1662], ch. 2/38). David Ricardo on the other hand interpreted the process of industrialisation and the substitution of human labour by machinery in a more ambivalent way. While labour substitution was disadvantageous to workers, it also increased societal productivity and thereby enriched the nation. Similar to Adam Smith, Ricardo argued that markets self-regulate and that full employment would be achieved in the long run naturally as labour markets adjusted (Smith 1776; Ricardo 1821). This perspective saw full employment as a state where the labour market clears itself without the need for government intervention.

Marxian Economics: According to Karl Marx, unemployment is not just a reflection of market frictions, but it emerges as an essential feature of capitalist economies and technological change (Marx 1999 [1887]; Marx 2009 [1898]). It is in the interest of capitalists to increase the industrial reserve army of the unemployed to maintain a better position in negotiating wages. This induces capitalists to promote capital accumulation, substitute workers and extend the reserve army of workers. In a Marxian view, ills like unemployment, increases in income inequality and environmental destruction are inherent to capitalism and paint a crony outline for capitalist economies (Saito 2023; Bensaid 2009; Foster & Burkett 2016). Hence, the policy considerations of Marx rather engaged in forms of revolutionary alternatives to capitalism rather than reformatory ideas of moving towards full employment (Marsh et al. 2018).

New Consensus Macroeconomics: This stream of thought essentially incorporates aspects of the New Classical and Real Business cycle school with additional Keynesian features of sticky prices (e.g. Nachane 2013). Milton Friedman was critical about the policy goals of full employment because of an inherent ‘natural’ rate of unemployment that would prevail if all cyclical and seasonal fluctuations were cancelled out. Should governments keep pushing to reduce unemployment below the natural unemployment rate, it would inevitably lead to rising inflation (Friedman 1968). The relationship between unemployment and wage (inflation) became known under the empirical regularity of the Phillips curve (e.g. Karanassou et al. 2010). Modigliani & Papademos (1975) and Tobin (1980) introduced the term non-accelerating inflation rate of unemployment (NAIRU) — the idea is that if actual unemployment were to fall below the NAIRU — which is unobservable, but can be estimated by using various statistical models (e.g. Laubach 2001; Heimberger et al. 2017) —, inflation would accelerate. Other key elements include a primacy of inflation targeting and monetary policy over active fiscal policy interventions since the latter would be ineffective in stabilising the economy at a given level of output (Nachane 2013). Macroeconomic policy recommendations therefore commonly involve maintaining inflation at a desirable level.

A prominent theoretical approach that explains involuntary unemployment in equilibrium was put forward by Shapiro and Stiglitz (1984): it is not possible for companies to monitor employees permanently as the costs would be too high. Hence, they can only carry out random checks on employee performance. At full employment, a worker immediately finds a new job if he or she is dismissed. But shirking reduces productivity, so that companies raise wages to reduce shirking. Many companies doing this at the same time leads to (involuntary) unemployment: in equilibrium, all firms will pay a wage that is higher than the market-clearing wage, which provides a theoretical explanation of why wages are unlikely to fall while involuntary unemployment may prove persistent.

Keynesian Economics / Post-Keynesian Economics: John Maynard Keynes did not see full employment as a condition to be achieved by private sector employment only. Firms keep workers employed when current operations are in line with their expected sales and profits. They expand their operations and tend to hire more workers when they run close to maximum capacity utilisation, and they fire workers in circumstances when their operations remain far below expected sales. However, while Marx did not emphasise the role of the government to intervene via active fiscal policies, Keynes saw a central role in an aggregate demand management approach by the government. He also argued that the common view of classical political economists that the labour market reverts to full employment in the long run ignores the present state of people's working conditions. Yet, involuntary unemployment will result from aggregate demand shortfalls, and unemployment will prove sticky if the government does not intervene with expansionary policies to establish full employment (Keynes 1936). Active fiscal policy interventions can be used counter-cyclically, to counteract the negative effects of business cycle downturns via fiscal expansion to stimulate employment. When the economy is slack, i.e. when economic resources remain underutilised, it has been argued that an additional aggregate demand stimulus has stronger effects when it comes to increasing economic growth and employment without generating inflationary pressures (e.g. Marsh et al. 2017; Gechert & Rannenberg 2018). Kalecki (1944) made the case for the technical possibilities of achieving full employment through budget deficits. The implications of aggregate demand stimulus through higher government spending were observed during and after WWII in the US when growth was robustly high, while unemployment and poverty rates were low (Wray 2007). In this context, Post-Keynesian economists have also argued in favour of more labour market coordination efforts and ambitious (fiscal) policies to achieve full employment, as unemployment cannot be cured by liberalising the labour market or getting rid of wage rigidity (Sardoni 1998; Amendola et al. 2004; Watt 2017). Recent Post-Keynesian literature also combines full employment with issues of sustainability, income distribution, and social justice (e.g. Dafermos & Nikolaidi 2019; Arestis 2019; Lavoie 2014).

Modern monetary theory (MMT): In contrast to a more general attribution of unemployment through insufficient aggregate demand as for Post-Keynesians, MMT proponents are more specific about the role of a lack of government spending and the necessity of a job guarantee program (e.g. Ehnts & Höfgen 2019; Mitchell & Wray 2005). The job guarantee should act as an endogenous automatic stabiliser whereby its basic wage anchors all other prices and thereby provides an integrated full employment- policy framework (Mitchell & Muysken 2008). In that sense MMT claims are compatible with arguments on the right to work.

Social and Welfare Economics: Scholars in the field of social and welfare economics whose work focuses on issues of human welfare, well-being, and social justice, associate full employment with a desirable, normative status and key policy priority. In a stronger relation to humanist traditions than to certain economic assumptions, such approaches are also broadly in line with the UN sustainability goals

(UN 2015). Encountering employment opportunities is key to enhancing human capabilities. Hence, they are essential to well-being (Sen 1999) and can be helpful in bringing down economic inequality (Pierson 2006; Delsen 1997). In conceptualising the economy as being embedded in a social system, the state's economic planning ought to address diverse categories of the social system, e.g. conditions of production, levels of living standards, and attitudes (Hirvilammi 2020). Full employment was also considered a key element in the expansion of the welfare state (Myrdal 1957), described as a 'condition sine qua non for sustained welfare states' (Delsen 1997) and seen as a central issue of social policy in the welfare state agenda of European countries in the 1990s – integrating diverse population groups into labour markets (Esping-Andersen 2002).

Feminist Economics: The school of feminist economic thought emanated in the 1980s and 1990s with a general focus on care and provisioning work (e.g. Agenjo-Calderón & Gálvez-Muñoz 2019; Austen & Jefferson 2010; Folbre & Nelson 2000). As unpaid care work is mostly unequally distributed between men and women (e.g. Hirway 2015), feminist economic contributions strongly engage with questions regarding the nature of labour, inequalities, female discrimination in national income accounting, and political (economic) matters (e.g. Waring 1988; Ferber & Nelson 2003). Contributions in the sense of feminist economics would commonly look at issues of full employment based on these themes, but there is a wide diversity of approaches in terms of research agendas, such as: the relevance of monetary and fiscal policy matters in labour market discrimination and issues of participation (Balakrishnan et al. 2011); the dominance of patriarchal values regarding labour and macroeconomics and implications for full employment (Hirway 2015); notions of gender responsive budgeting (Hirway 2014); rethinking full-employment concepts to reduce gender inequalities by accounting for gender and care work gaps (Mason et al. 2021); or developing a synthesis of a social provisioning approach with an ELR-based full employment program (Alessandrini 2013). However, more radical perspectives have also been developed by feminist economists who critically engaged with full employment: Bruegel et al. (1998) argue that the full employment notion is outdated as it rests on contemporary profitability strategies and underlying hegemonic ideals of the nuclear family and a male breadwinner wage. Combining gender and environmental justice perspectives, Dengler and Lang (2022) argue that a feminist degrowth imaginary is needed to overcome the boundary between the monetised economy and the invisibilised economy of socio-ecological provisioning.

Green growth economics: Economic research in the fields of climate change and environmental studies link the need for sustainable environmental policies that consider employment with economic well-being. It emphasises the importance of balancing economic and environmental objectives. As such, some contributions that align with a 'green growth' paradigm assess how climate policies can create jobs in environmentally sustainable sectors such as renewable energy, clean technology, and conservation and thereby also contribute to full employment (Stern 2006; Pollin et al. 2008; Pollin et al. 2014; Dell'Anna 2021). As a commonly echoed policy instrument in this field, a large-scale green investment program such as the Green New Deal is seen as a crucial climate policy for full employment (Pettifor 2019), as an 'insurance policy' against ecological collapse and described as a unified program to jointly address human equality and ecological sanity (Chomsky & Pollin 2020).

Degrowth / post-growth economics: Contributors that can be aligned with the 'degrowth' or 'post-growth' paradigm argue that such green growth programs are the result of preoccupations with the logic of Keynesian virtuous circles between public spending, employment and income, and are ultimately inconsistent with ecological sustainability (e.g. Hickel & Kallis 2020; Green 2022). As such, green goals

and full employment in market economies are incompatible with each other; what is required is a more systematic change to non-growing economies to make both ends meet (Antal 2014). Post-growth and degrowth proponents do not focus on how far unemployment rates are away from full employment but argue for a more qualitative change in social and environmental relations, stressing planetary boundaries, limits of growth and the need to reduce consumption and production to diminish the volume of carbon and resource-intensive economic flows for developing towards steady state economies (Kallis 2011; Hickel & Kallis 2020; Raworth 2016; Galvin & Healy 2020; Mastini et al. 2021; Spash 2021). 'Degrowth' scholars argue in favour of reimagining the general idea of work, weakening the link between employment and income by loosening the constraints of market discipline and freeing up time for democratic revitalisation, voluntary work and community engagement (Green 2022), also invoking ideas such as universal basic income and automation (Graeber 2018; Van Parijs 2013).

Table 1 / Theoretical approaches around full employment

School of thought	Prominent examples of associated authors	Position regarding full employment
Classical political economy	Smith, Ricardo	Full employment as natural long-run equilibrium
Marxian economics	Marx	Unemployment as essential feature of capitalist economies (industrial reserve army)
New consensus macroeconomics	Goodfriend & King, Gali & Gertler, Woodford	Natural unemployment rate and priority of price stability as cornerstones
Keynesian and Post-Keynesian economics	Keynes; Lavoie, Setterfield, Heim, Rochon	Labour market coordination and government intervention key for economic stabilisation and full employment
Modern monetary theory	Minsky, Wray, Tcherneva	Using money generating power of state to fund full employment policies
Feminist Economics	Folbre, Nelson, Dengler	Conceptual, inequalities, and political economic matters regarding (unpaid) care and provisioning work
Green growth economics	Pollin, Stern	Triple dividend of 'green growth' full employment programs
Degrowth economics	Kallis, Hickl, Spash	Reimagining work in 'post-growth' scenarios

Sources: own depiction

4. Empirical measurements of full employment

We explore the three most prominent measurement approaches. The price approach, focusing on the equilibrium unemployment rate consistent with stable inflation (NAIRU - Non-Accelerating Inflation Rate of Unemployment); the minimum unemployment and maximum employment approaches, where the former explores historical lows in the unemployment rate and the latter focuses on the highest employment level attained by removing inefficiencies that hinder certain demographics from participating in the labour market; and the unfulfilled vacancy approach—, which highlights structural mismatches in the labour market by analysing the relationship between job vacancies and unemployment.

Empirical approaches to full employment use different definitions to measure employment and unemployment. The price approach, unfulfilled vacancy, and minimum unemployment approach take the unemployment rate. In contrast, the maximum employment approach focuses on the employment rate, calculated as the number of employed individuals divided by the total population, rather than the traditional definition of the employment rate, or employment level divided by labour force. Each of these concepts might miss certain demographics. Labour supply statistics categorise individuals as employed, unemployed or not in the labour force.

In the subsequent subsections, we mainly rely on Eurostat data to estimate full employment, which applies International Labour Organization (ILO) definitions in its Labour Force Survey. Employed persons, according to Eurostat, include those (1) who worked for pay or profit at least one hour during the reference week, (2) those temporarily not working but with a job attachment (e.g., on leave or training), and (3) certain agricultural producers (Eurostat 2024a). Unemployed persons are defined as individuals aged 15 to 74 who are without work, but available for work within the next two weeks, and have been actively seeking employment within the past four weeks (Eurostat 2024b). This definition of unemployment does not include (1) underemployed/part-time workers, who are seeking additional hours, (2) individuals searching for work but not available immediately, and (3) individuals not seeking work but available immediately. The last two categories are also considered as potential labour force. And finally, Eurostat defines persons outside the labour force as those who are neither employed nor unemployed (Eurostat 2024c).

4.1. PRICE APPROACH

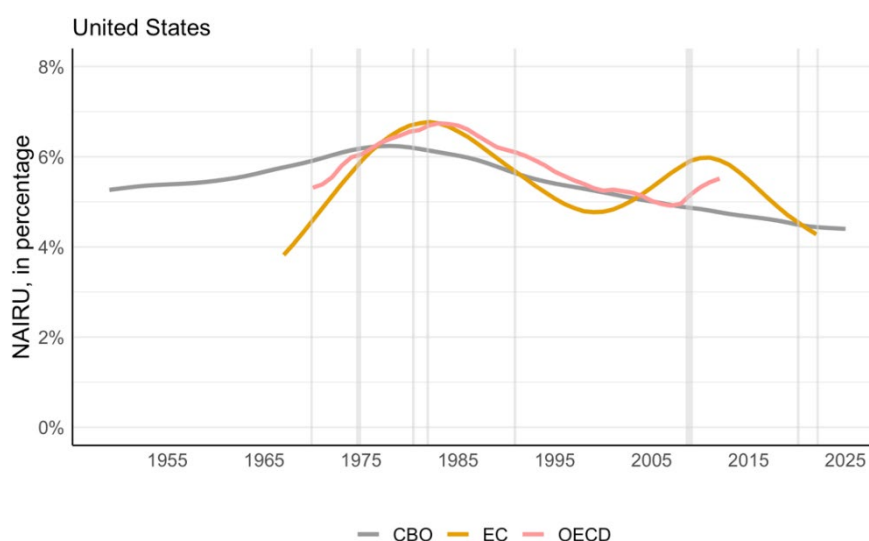
The most important empirical measurement of full employment builds on the link to price stability. Pushing unemployment below the NAIRU, which may be required by other approaches for achieving full employment, will be at the cost of rising inflation. Governments and central banks use NAIRU estimates to assess how much slack there is in labour markets, and whether inflationary pressures are to be expected in further reducing unemployment (e.g. Ball & Mankiw 2002). Additionally, the NAIRU serves as a proxy for structural unemployment when estimating potential output and cyclically-adjusted budget balances (e.g. Heimberger et al. 2020). Hence, the NAIRU is a key benchmark when it comes to monitoring whether the labour market is so tight that it will put upward pressure on inflation.

However, the NAIRU cannot be directly observed; rather, it has to be estimated by applying statistical methods. Prominent official estimates of the NAIRU include the European Commission's NAWRU (Non-Accelerating Wage Rate of Unemployment), the US Congressional Budget Office's (CBO) NAIRU estimates, and the OECD's NAIRU estimates.

From a technical point of view, the NAIRU is an unobservable variable that is difficult to estimate and subject to revision, as the correlation of unemployment and inflation changes over time (Rudd 2021, Bernstein 2014; Mitchell & Muysken 2008; Galbraith 1997). Staiger et al. (1997b) find for US quarterly data between 1955 and 1994 that the possible range for the NAIRU is too wide to conduct monetary policy without explicitly taking measurement error into account. Their study reports that, with a typical 95% confidence interval, the NAIRU is between 5% and 8%. Alain Krueger (1997) commented that the proper title for Staiger et al. (1997b) would have been: 'We don't know what the natural rate is, and neither do you', so that macroeconomists should explore different approaches. In any case the paper of Staiger et al. (1997b) already showed with data up to the 1990s that empirical evidence for solid policymaking based on the NAIRU is very thin. Results of a meta-analysis also report non-stationarity of the unemployment rate as well as bias and misspecification among studies that are more supportive of the natural rate hypothesis (Stanley 2004). Nevertheless, the existence of the NAIRU is still a central element in macroeconomic policy considerations (e.g. Mankiw 2020; Heimberger et al. 2017; Council of Economic Advisers 2024).

Estimating the NAIRU depends on various factors, including the duration and quality of the historical data considered, assumptions regarding the nature of the Phillips Curve, and the choice of the filter used for estimation. The process of filtering and the introduction of new data points can lead to biased estimations. The final data points in the time series often have a disproportionate impact on the filtered estimates (e.g. Gechert et al. 2016; Heimberger et al. 2017). This phenomenon is known as the 'end-point bias' (Kaiser & Maravall, 2001; Ekinici et al., 2013), and implies that significant revisions in the estimates can occur when incorporating new data into the model, particularly when these new data points originate from periods of macroeconomic distress (e.g. Havik et al. 2014).

Figure 2 / NAIRU estimates for the US (in % of active population)

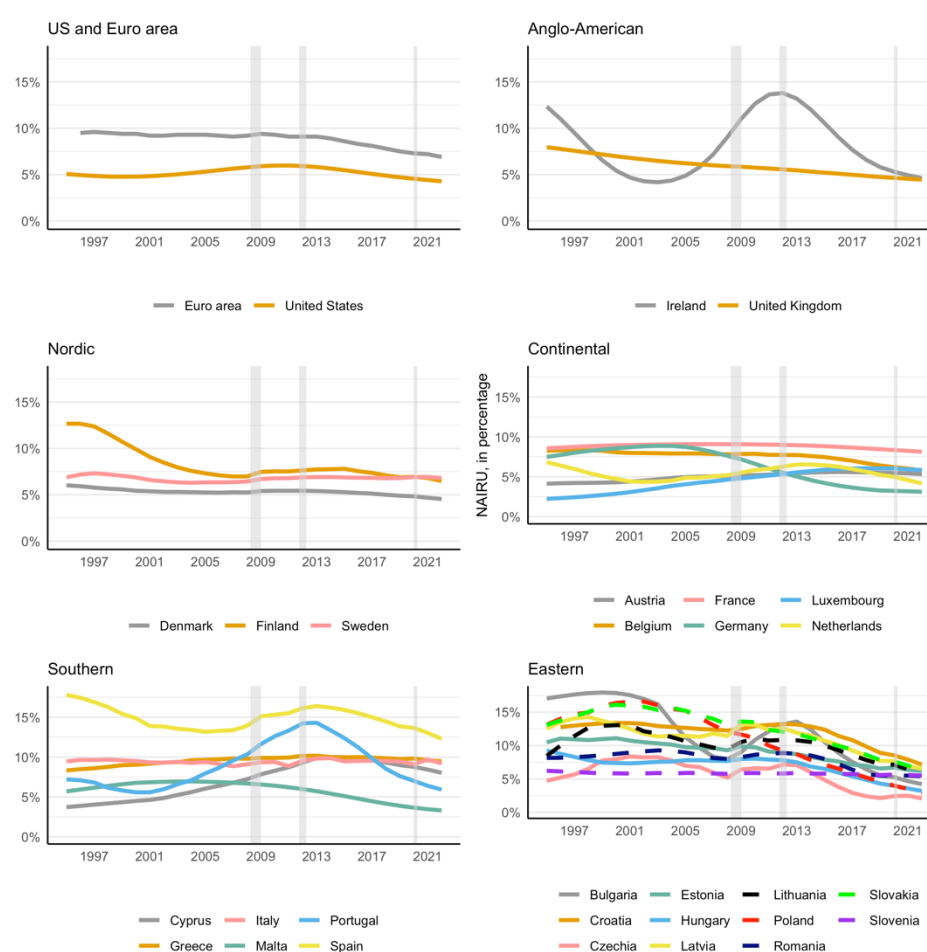


Source: AMECO, OECD, and FRED; own calculations

Figure 2 shows NAIRU estimates for the US from different sources (CBO, European Commission and OECD). Notably, the CBO's NAIRU estimates exhibit considerably less volatility and smaller swings when contrasted with OECD and European Commission estimates.

Figure 3 shows the European Commission's NAIRU estimates for different EU Member States, the UK and the US. It is visible that for countries in continental Europe, the NAIRU tends to be lower than for countries in Southern or Eastern Europe. Some of the Member States show larger fluctuations in the NAIRU over time, such as Ireland, Portugal, Spain, Lithuania and Bulgaria.

Figure 3 / NAIRU estimates for the EU27, the UK and the US (in % of active population)



Notes: The grey areas in the figure indicate periods of recession in the aggregated OECD Europe sample. A recession is defined as two consecutive quarters of negative real GDP growth.

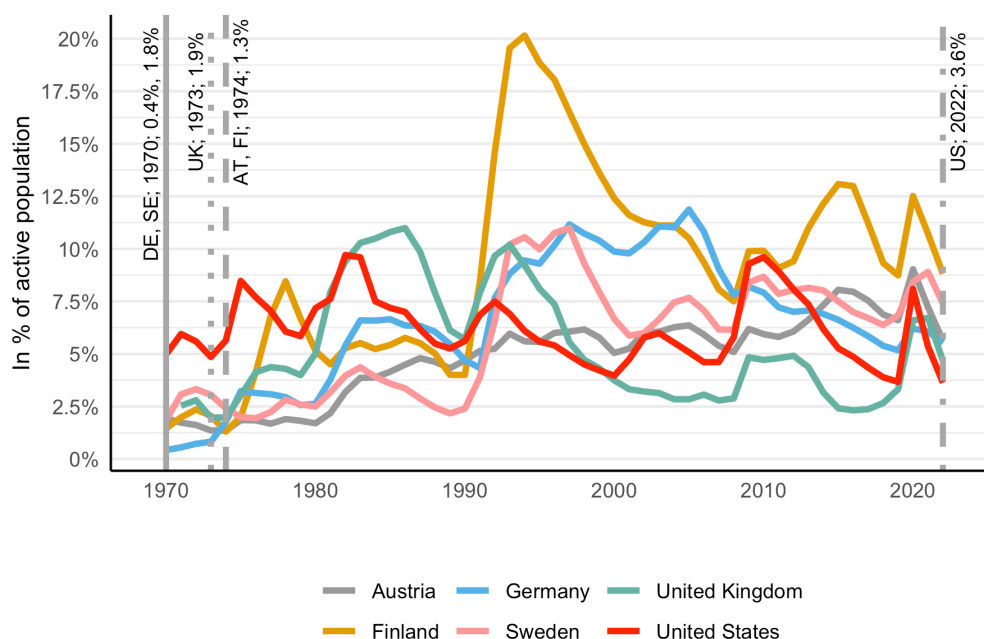
Source: AMECO, OECD; own calculations

4.2. MINIMUM UNEMPLOYMENT AND MAXIMUM EMPLOYMENT APPROACHES

Conceptualising full employment from the perspective of minimum unemployment means taking a historical perspective regarding when and what the lowest documented unemployment values were. Correspondingly, the maximum employment approach would be to look at historical maximums of employment rates. Currently, the Fed focuses on the standard measure of unemployment - known as 'U-3' -, which does not count people who dropped out of the labour market by having stopped actively looking for jobs, or those who are inadequately employed in a temporary, seasonal, or other precarious manner (Paul et al. 2018). A minimum unemployment approach could be to look at the historical minimum of 'U3' as a full employment benchmark.

Looking at historically documented minimum values of unemployment and maximum employment rates can show very low reference values of minimum unemployment rates and very high values for maximum employment rates. Figure 4 highlights minimum unemployment rates for a set of selected advanced economies over 1970-2022. The European countries all recorded their minimum unemployment rates over this period somewhere in the 1970s. The US is an exception, as the lowest unemployment rate was only reached in 2022. While advantages of these measures are seen in their simplicity and freedom from ambiguity, a context-free reference to these values might also disguise conditions regarding potentially high-inflation environments or labour shortages (Rees 1957). There are difficult questions such as: How far back should we go in time to determine historical benchmarks? When are historical labour market conditions no longer meaningful for assessing current conditions? Over which period should the measurement be taken (should it be one month, several months, or a year?). What exact (un)employment measure should be used (e.g. total unemployment, partial unemployment, long duration-unemployment)? By definition, employment plus unemployment equals the civilian labour force. However, if taken at different moments in time, the minimum unemployment rate and the maximum employment rate might not coincide due to differences in timing.

Uxo et al. (2024) provide an example for using the minimum unemployment approach. They calculate potential output consistent with full resource utilisation for the Spanish economy based on a full employment target, which they set as the historical minimum of Spain's unemployment rate for men (6%, recorded in 2006). The maximum employment approach that is formulated by Mason et al. (2021) develops a full employment concept based on a revision of the labour force. Being 'in the labour force' refers to people who are available for work and expected to work, while people 'out of the labour force' are in a group not available for work and not looking for a job. Moving between these groups reflects a change in institutional factors or social norms. Better retirement policies may lead to more people moving out of the labour force but also a change in expectations. E.g., women were for a long time in history thought to permanently leave labour markets once they gave birth to children, but this has changed greatly in modern societies that aim at increasing the share of mothers in formal employment. Since changing norms takes time and mobilising these people also requires a shift in social expectations, labour markets may have to be (close to or) at full employment for a prolonged period of time to trigger sustained changes.

Figure 4 / (Minimum) unemployment rates by country, 1970-2022

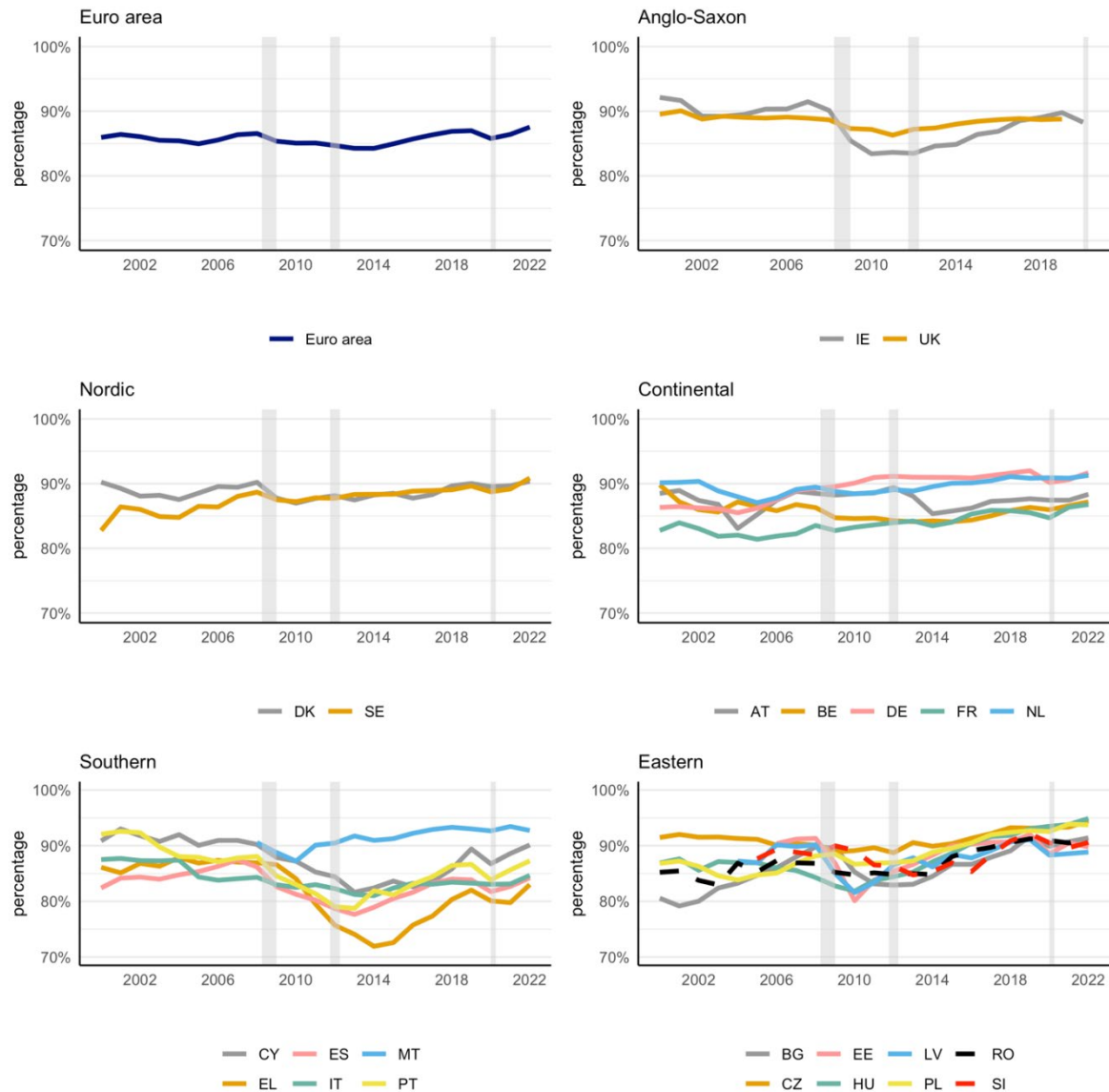
Notes: The grey lines indicate the lowest unemployment rates observed between 1970-2022.

Source: OECD, Michaillat and Saez (2022); own calculations.

Based on demographic data for the US, Mason et al. (2021) assign maximum historical employment rates over the last thirty years for ten age groups from 16-24, 25-34 and so on. They present estimates that demonstrate how much employment could rise if sustained labour market tightness closed existing employment gaps. In a second step, they close the employment gaps by race and gender, on the assumption that women and Black Americans are no less able or willing to work than white men of a similar age. For closing the race gap, they use the rates of white Americans with the highest employment rate and assign it to all other racial groups. For closing the gender gap, they assign the maximum employment rates of men of all races in each age group (including some adjustment for the fair share of care work) to female groups. A combination of these two assignments is used to jointly close the race and gender gap, which they also combine with an estimate for reducing the employment gap between more- and less-educated workers. In total they find that adjustments yield a potential employment-population ratio 10 points higher than the CBO estimates (a rise from 58% to 68%).

Figure 5 displays maximum employment rates under the scenario of closing gender and education gaps in employment for selected EU Member States and the UK. The elimination of education and gender gaps in employment is achieved by assuming that women and individuals with less than a Bachelor's degree have employment rates equal to those of men with a university education of similar age (Gökten et al. 2024b). Maximum employment rates consistent with closed gender and education gaps differ across countries and can vary over time. They lie in a range between roughly 70% and 95% of the total population. Reaching the employment rate consistent with closed gender and education gaps would translate into an average 15.6 percentage points' increase in the employment rate for the EU27 over the period from 2002 to 2022. The group of Nordic EU countries would experience the smallest increase, with the closing of the employment gap for gender and education contributing 9.6 percentage points, while the Eastern group would see the largest increase, with a contribution of 17.8 percentage points.

Figure 5 / Employment rate consistent with closed gender and education gaps for selected countries, in % of total population (maximum employment approach)



Notes: The grey areas in the figure indicate periods of recession in the aggregated OECD Europe sample. A recession is defined as two consecutive quarters of negative real GDP growth.

Source: Eurostat, OECD; own calculations.

A slightly different approach that also locates the full employment concept in a spatial-temporal context of geographical units is proposed by Gregg & Gardiner (2016). Their definition of full employment is met when the area where one lives does not determine one's labour market outcomes relative to others with similar characteristics. They follow a socio-demographically oriented maximum employment approach and derive full employment rates based on bottom-up geographical convergence by rebasing unemployment chances of different socio-demographic groups with regard to the tightest labour market regions in the UK, instead of using a national historical maximum reference point. Employment rates during 2014-2015 in the UK were highest in the east and southeast of the country, which are used as reference points for unemployment chances of different subgroups for all geographic regions. Gregg and

Gardiner (2016) quantify a national full employment scenario by predicting employment rates and employment levels through a five-step process. Thereby they turn to geographical and time-based reductions in unemployment (steps 1 & 2), then they apply the same to labour market participation (steps 3 & 4), and finally account for expected population growth through to 2020-2021 (step 5). Based on an employment-population ratio of 73.1% in 2014-2015, their estimate of a full employment scenario for 2014-2015 would be 3.0 percentage points higher at 76.1%, and for 2020-2021 4.9 percentage points higher at 78.0% (equivalent to a 2.7 million employment increase). A central message of their policy report is also a very detailed breakdown regarding which socio-demographic groups would especially benefit from moving to a tighter labour market. For their final scenario Gregg & Gardiner (2016) find that disabled people would experience an increase in their employment-to-population ratio of 10.3 percentage points, low-qualified by 9.0 percentage points, and black, Asian and minority ethnicities by 8.3 percentage points.

While this subsection has focused on unemployment and employment, other variables of labour market slack may also be used for maximum/minimum approaches in an historical perspective. For example, U-6 is an expanded definition of unemployment that includes some part-time workers and some non-participants. Policymakers may ask what the historical minimum of U-6 is, and how the current situation compares to this. Furthermore, the quits rate is the number of workers who have left their job voluntarily in percentage of employment – which is arguably a useful measure of labour market slack because a higher number of individuals is expected to leave their jobs voluntarily when they think that they will be able to find a better job (e.g. Gittleman 2022). Policymakers routinely trace whether the quits rate is high in historical comparison or not (e.g. Yellen 2014).

4.3. UNFILLED VACANCIES APPROACH

The measurement of full employment through the ratio of unemployment to unfilled vacancies offers a dynamic perspective and avoids reliance on using revision-prone estimates based on statistical filters as in the NAIRU approach. A large modelling literature measures the degree of labour market tightness by using the ratio of vacancies to unemployment (e.g. Pissarides 2000; Benigno & Eggertsson 2023).

The Beveridge curve captures an inverse relationship between unemployment and job vacancies. Beveridge defines full employment as ‘having always more vacant jobs than unemployed men’ (Beveridge 1960, 18). He establishes a specific numerical benchmark of full employment, whereby the number of unemployed individuals should not surpass 3% of the total number of employees (accounting for seasonal fluctuations in employment). This numerical benchmark of full employment underlines the importance of fostering job openings while keeping unemployment levels relatively low. According to Beveridge, the determination of the specific threshold/benchmark for full employment depends on the relative priorities assigned to unemployment reduction versus inflation control.

The downward slope of the Beveridge curve reflects the relationship between economic expansion, decreasing unemployment and increasing job vacancies. As the economy grows and unemployment declines, firms encounter challenges in finding available workers in a tighter labour market, leading to a rise in job vacancies. While such movements along the Beveridge curve are considered to be due to the business cycle, possible inward and outward shifts reflect structural changes in the labour market. For example, an outward shift can reflect workers’ general difficulty in finding jobs due to structural factors that change the matching efficiency between job vacancies and unemployed workers- This can be

based on out-of-steady state dynamics, or reflect an increase in the employment separation rate (Ahn & Crane 2020). Empirical evidence on Beveridge curves of European countries suggests that outward shifts are due to changes in labour market institutions, long-term unemployment, as well as cyclical shocks (Bouvet 2012). While movements in the Beveridge curve show similar dynamics over time as the Phillips curve (Ball & Mankiw 2002), the Beveridge curve is based on improved matching and demographic shifts and can offer additional clues to explain structural changes in the job market (Katz et al. 1999). Decreasing union membership and increasing international competitiveness would shift the Phillips curve but not the Beveridge curve.

Concerns about data quality in job vacancy statistics have been raised in previous literature (Kettner and Stops, 2008; Elsby et al., 2015). The job vacancy rate can be derived from Job Vacancy Surveys, where differences in sampling and definitions can raise concerns. Alternatively, it can also be based on registered data from private jobs boards or Public Employment Agencies. In the context of online private job boards, there is a risk of overestimating vacancy rates due to 'phantom vacancies' which are job listings that appear available but do not present genuine job openings (Cheron & Decreuse 2017). However, using data from Public Employment Agencies may lead to the underestimation of vacancies, especially for high-skilled positions often advertised directly by companies or on private job boards. We address these issues by adjusting administrative data using survey data (Gökten et al. 2024a). In the EU, job vacancies are collected in accordance with Regulation 453/2008, and Eurostat and national statistical institutes are responsible for harmonising the survey sampling and definitions to ensure comparability.

In recent contributions, Michaillat and Saez (2021, 2022) conceptualise full employment as the unemployment rate that minimises the non-productive use of labour in terms of both job seeking and recruiting. Gökten et al. (2024a) provide estimates for European countries for this measure that has also been called BECRU – 'Beveridge (full-employment-consistent) rate of unemployment'.² Based on these contributions, we show estimates of the BECRU in Figure 6 below. Figure 6 shows that BECRU estimates can vary over time and differ across countries. For example, the BECRU stood at 3.6% in the US in the fourth quarter of 2000, but increased to 4.8% in the fourth quarter of 2022.

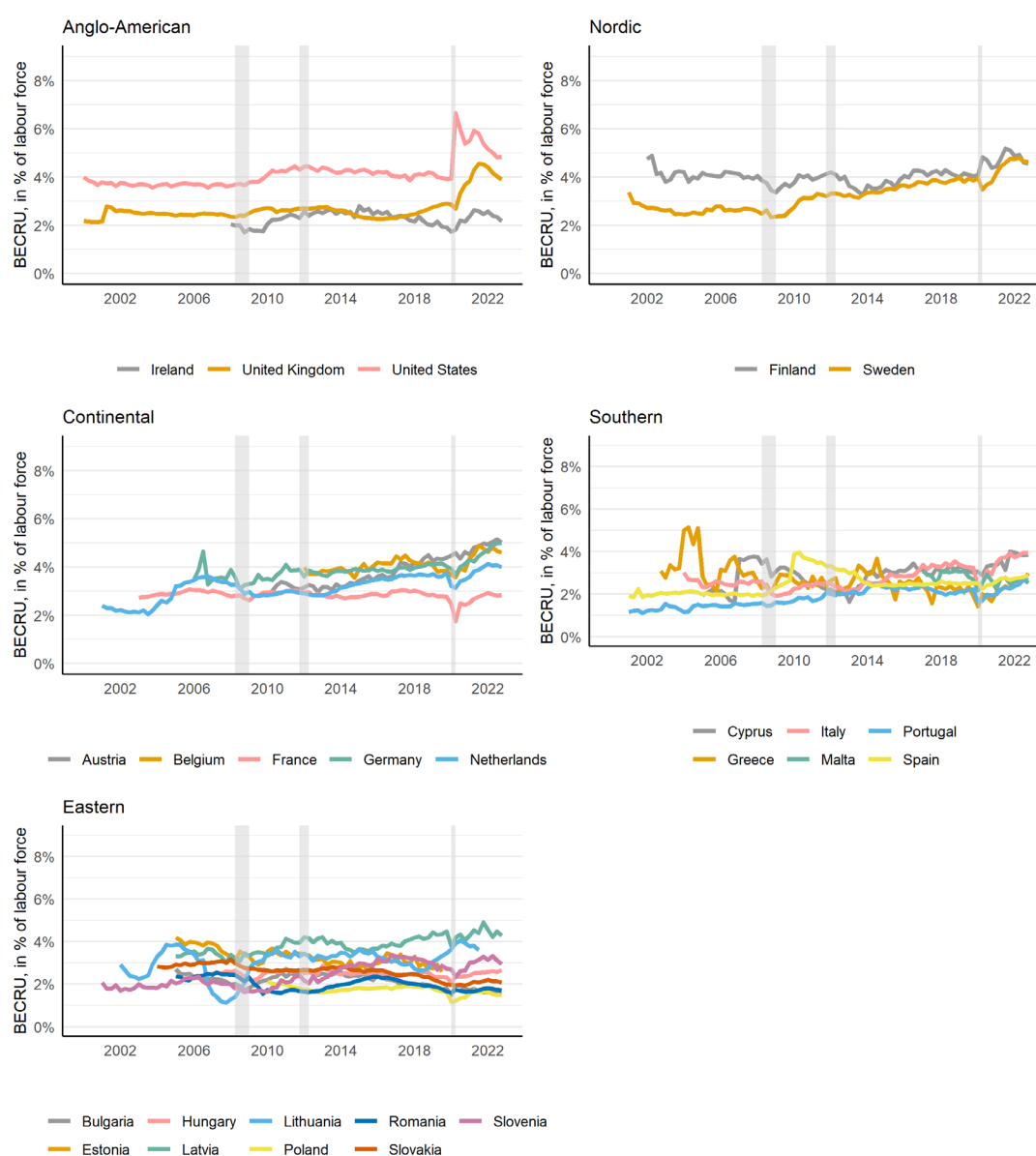
The BECRU is the solution to the social planner's problem of maximising social welfare, subject to the relationship between unemployment and vacancies. Similarly to the NAIRU, unemployment rates above the BECRU reflect a slack labour market, and below the BECRU an overly tight labour market (Michaillat & Saez 2021). The BECRU is a very useful measure as it can be computed based on observable data, whereas the NAIRU relies on strong assumptions concerning non-observable variables and may suffer from estimation bias due to inherent problems with multi-variate statistical filtering models (e.g. Galbraith 1997; Heimberger & Kapeller 2017). A limitation of the BECRU approach relates to restricted data availability. Especially changes in the underlying job vacancy rate are hard to measure due to employer recruiting practices. The officially reported rate of vacancies might therefore not represent an accurate measure in describing the state of full employment in an economy. In the case of Spain, for example, vacancy rates are very low, with almost no dynamic changes over the past fifty years (Boscá et al. 2017). Additionally, longer time series are either not available or have to be reconstructed by using proxies. An approach that has become standard for proxy vacancy data between 1951 and 2000 for the

² The acronym BECRU is thought to offer an alternative acronym to the commonly used non-accelerating rate of inflation (NAIRU; Gökten et al. 2024). A beneficial aspect of the BECRU is that it can be computed based on observable data in contrast to the NAIRU which relies on strong assumptions concerning non-observable variables and may suffer from estimation bias due to inherent problems with multi-variate statistical filtering models (e.g. Galbraith 1997; Heimberger & Kapeller 2017; Rudd 2021).

US uses a help-wanted advertisement index which is based on advertisements in newspapers and websites (Barnichon 2010; Shimer 2005).

While the availability and cross-country comparison of unemployment data is more straight-forward, it is also argued that official measures of unemployment may not correctly represent labour market conditions. Komlos (2021) points out that the official rate of unemployment in the US does not regard underemployed workers and if they were included in the definition of unemployment, the measure would be twice as high as the official unemployment rate in 2019. Hence, outcomes of the unfilled vacancies approach should be discussed in the light of issues concerning the availability and choice of data.

Figure 6 / BECRU estimates for selected countries



Notes: The grey areas in the figure indicate periods of recession in the aggregated OECD Europe sample. A recession is defined as two consecutive quarters of negative real GDP growth.

Source: OECD Registered Unemployment Dataset, Eurostat, Michaillat and Saez (2022); own calculations

5. Full employment policy programs

History offers a source of learning opportunities regarding the design and difficulties that have come with policies related to the promotion of full employment.³ This section presents historical policy program examples from western democracies (the US, Sweden, France, Austria), the Global South (Argentina, India, Pakistan, South Africa), and planned and post-Soviet economies (the USSR, Belarus, Hungary, Kazakhstan).

The cases, which are discussed in more detail in Appendix D, are prominently discussed in the literature and many are also considered as public employment initiatives by the ILO (2020). Due to the limited availability of empirical evidence, this is in no case a final verdict on how public employment programs have to be designed. However, taking the specific circumstances of each respective country into account, the programs highlighted in this section do stand out among their peers. This is a non-exhaustive collection of stylised facts that might lead one to insights as to what a public employment program in the context of a full employment strategy might attempt to implement and achieve in a variety of contexts.

The first group of programs (1) refers to a mix of public-private arrangements regarding the labour market and public welfarism. As a prominent example, we argue that the corporatist model of Sweden is such a case. The restructuring of the labour force has been subject to detailed state intervention (including active labour market support through retraining programs or relocation allowances) and corporatist bargaining in the postwar period (Pontusson 1991; Pollin 2012). Swedish episodes of full employment up to the 1970s took place before a surge in globalisation and pro-market policies brought major political changes. The Swedish model is on the one hand related to the effective alignment of workers and firms, including centralised wage bargaining and ‘no-strikes’ clauses, as well as Swedish welfarism that grew household services and especially increased female employment numbers (see Table 2 and Appendix D). For the Swedish case, Mudge (2018) discusses political changes in Sweden since the 1970s, making the case that changes in the economics profession led to the displacement of economic experts in public policy and party politics, so that Sweden’s ruling Social Democratic party over time downgraded the priority of achieving full employment compared with other policy goals.

³ Appendix C surveys general full employment policy recommendations.

Table 2 / Summary of selected countries with pro full employment policies

Country	Program	Timeframe	Main Points
(1) Public-private employment coordination (institutional arrangement of market mechanism, without fiscal stimulus)			
Sweden	Corporatist Model	1950s-1991	<ul style="list-style-type: none"> › 'Right to work', effective alignment of workers and firms, including through centralised wage bargaining, 'no-strikes' clause, and financial incentives to reinvest the gains › public investments by welfare state grew household services (e.g. child- or health care) and increased female employment (lion's share of employment growth) › Unemployment very low over long stretches, e.g., less than 2% in the 1970s. › Ended with intensified globalisation pressures and a change of the ruling party
(2) Public employment programs (providing job opportunities to unemployed; possibly connected with other social or environmental goals)			
USA	The New Deal, and involvement in WWII	1933-1936, 1940-1944	<ul style="list-style-type: none"> › Public works programs and public investment of roughly 5.7% per year. › The unemployment rate stood at 25% in 1933, averaged 17% throughout the 1930s and never went below 14% until WWII started. › World War II: 1.2% of unemployment in 1944, compared to 25% in 1933
Argentina	Plan Jefes de Hogar	2002-2009	<ul style="list-style-type: none"> › Household heads with disadvantaged family members were offered positions in community service, with a minimum of 4 working hours per day › In 2006, unemployment rates fell to 10.4%, compared to 21.5% in 2002
India	National Rural Employment Guarantee Act (NREGA)	Since 2005	<ul style="list-style-type: none"> › Direct job creation program, employing 28% of rural population in 2019-2020 › Approx. 80% of participants are women
Pakistan	Ten Billion Trees Tsunami Program (TBTP; part of Clean Green Pakistan from 2023 onwards)	2018-2023 (1 st stage)	<ul style="list-style-type: none"> › Short-term manual labour employment, distributed across agricultural localities with 65,000 daily workers involved (0.1-1% of labour force) and a yearly cost of 0.018% of GDP › Environmental aims, including reforestation of precarious ecological conditions › Employment initially intended for those less well-off, but weaker involvement of such people due to human capital effect on the distribution of opportunities › Reported problems with payments, undermining the credibility of, and involvement with, the program › Unclear long-term contribution and sustainability of the impact
South Africa	Presidential Employment Stimulus	2020-2024	<ul style="list-style-type: none"> › Large scale investment, that is part of a larger 2020 Covid-response plan, intending to create job opportunities for 3% of the labour force, with an annual program cost of 0.07% of GDP › The largest scale of activities subsidised by a single contemporary program › Areas of support: young teachers, doctors, and nurses; arts, education, farming, infrastructure, innovation, etc. › Continuity issues due to the country's overall fiscal position
Kazakhstan	Employment Roadmap(s)	2020-2021	<ul style="list-style-type: none"> › Employment and infrastructure stimulus › Weak implementation control; numerous cases of fraud and KPI misreporting › Most positions provide only short-term, unstable employment

Contd.

Table 2 / Continued

Country	Program	Timeframe	Main Points
(3) Public employment guarantee experiment (ensuring all long term unemployed have access to employment)			
France	Territoires zéro chômeur de longue durée (TZCLD)	From 2016	<ul style="list-style-type: none"> › 58 municipalities involved as of 2023 with 1500 placements (< 0.00% of labour force) and funding of 34 million EUR (< 0.00% of GDP) › 'Job-Oriented Companies' that hire long-term unemployed for positions that do not crowd out regular private firms
Austria	Modellprojekt Arbeitsplatzgarantie Marienthal (MAGMA)	2020-2024	<ul style="list-style-type: none"> › Job guarantee for all long-term unemployed with 250 3-year positions (< 0.00% of labour force) and a program budget of EUR 7.5 million (< 0.02% of GDP) › Focus on one municipality (Gramatneusiedl) › Wages at least at the level of the collectively bargained minimal wage › Regular labour market or social employment, with positions tailored to one's skillset › evaluation findings available
(4) Public employment enforcement			
USSR	Constitutional Duty to Work	1917-1991	<ul style="list-style-type: none"> › Every able-bodied citizen is by law obliged to work › Full employment is a result of the socialist organisation of economy › Unemployment officially declared non-existent at the end of the 1930s (hidden unemployment) › A political program rather than a specific single policy › Data availability issues, difficult to estimate the true scope
Belarus	Parasite Tax	2015-2018	<ul style="list-style-type: none"> › Only-sticks approach, with no active job promotion or creation by the state › Unclear policy goal: increased employment or 'windfall' tax revenues? › Tax on those not officially employed and thus not paying the income tax (10% of working-age population); › Only 11% of the targeted group found jobs after implementation; › Expected tax revenue of USD 43m, resulting revenue – 6.28% of the USD 43m › Policy shift from taxing to de-subsidising utility prices for non-compliers
Hungary	Public Works Scheme (PWS)	Since 2011	<ul style="list-style-type: none"> › Targeting long-term unemployed (specifically untrained and uneducated) to bring them back into the labour market › Usually labour-intensive and low-skilled physical labour in public infrastructure and maintenance with salaries below national minimum wage level › Program is considered to have contributed to a rise of the in-work poverty rate

Source: own compilation based on multiple data sources, for details and references see Appendix D.

The second group (2) covers sizeable but limited public employment programs (PEP) for people who cannot find work elsewhere, due to a shortage of market-based employment opportunities (ILO 2020; Narayan 2022). Though policy programs in this category are designed as 'employer of last resort' programs, they did not contribute to reaching full employment due to underfunding or discontinuation. As the job guarantee ideal reflects the accommodation of all workers in need of employment at a fixed basic wage, which is not the case for programs in this category, they are therefore not framed as job guarantee models (Mitchell & Muysken 2008). A well referenced program aiming at higher employment is the New Deal during the era of Franklin D. Roosevelt. The New Deal's major effects came after the Great Depression, which had led to a large increase in unemployment. The New Deal was a series of programs that focused on the goals of relief for the unemployed, recovery from the Great Depression

and reform of the financial system. In particular, the New Deal created new agencies that helped fund (infrastructure) projects across the US that provided jobs at a time when unemployment was high. However, the New Deal program was highly contextualised and can hardly be seen as a universally applicable scheme (e.g. Crafts & Fearon 2013).

In terms of the scale of public employment programs, the developing countries of South Africa, India, and Argentina have catered to very large population groups both in absolute terms and as a proportion of their population. The costs of South Africa's Presidential Employment Stimulus program are well below 0.1% of national GDP per year. South Africa's program strategy targets the widest range of jobs from education and healthcare to innovation, business development, and community service. Argentina's *Jefes* only offers conditional and limited community service employment for one person from a household, and India's NREG is specifically oriented towards the rural population. In the case of South Africa, the program is related to promoting future job opportunities for a rapidly increasing population that is outgrowing its own economy. In the cases of Argentina and India, the programs are related to efforts at alleviating rural poverty. Concerns about fiscal stability and mismanagement appear to be the main threats for such ambitious public employment programs, followed by outright corruption, which seemed to have effectively stalled or at least majorly diminished a sibling program in Kazakhstan (see Table 2 and Appendix D for a fuller discussion).

The third group (3) covers job guarantee experiments, which are small-scale policy experiments with the aim of giving a job to every long-term unemployed in the participating municipalities. In this group we present municipal programs implemented in France and Austria. While these might provide valuable insights into certain processes of implementation of a full employment policy, the question of upscaling from the municipal to the national level remains open. While the Austrian program has been implemented in just one municipality, the French *Zero Long-Term Unemployment Territories* program has been disseminated in 58 regions as of 2023 – which is about every second region – and has spilled over across the border to Belgium (Markowitsch & Scharle 2024). A notable feature of the French *Zero Territories* is the commitment towards non-interference with private actors. Whether such projects should create widespread opportunities across sectors or merely compensate for market failures is an important question for policymakers, drawing upon the primary political views on how full employment should be defined and what the role of the government should be in achieving it.

The fourth group (4) is characterised by public employment procurement based on enforcing regulations. The cases of the Soviet Union, Hungary, and Belarus are not blueprint cases for long-term and sustainable full employment policies. The USSR was a totalitarian or hard authoritarian state throughout its existence, and thus was in the position to mobilise the labour force on a larger scale than democratic counterparts. The Soviet system did come with major inefficiencies, non-reporting or misreporting of data, human rights abuse, and human life loss (see Appendix E for a discussion of full employment in planned economies). Due to their illiberal and obligatory character the programs in Hungary and Belarus are also put into the group of 'public employment enforcement', whose societal implications have been much criticised in the literature (see the program discussions Appendix D).

In conclusion, the points discussed regarding contemporary and historical cases of full employment-related programs provide some guidance for future research and discussions. First, while there is some historical evidence of implemented policies, we are mostly dealing with cases with limited policy evaluation. We are also looking at several highly contextualised cases from the past. The field would

certainly benefit from more policy experiments that are accompanied by scientific evaluation (e.g. Kasy & Lehner 2022). Second, there is a somewhat clear divide between developed industrialised democracies and their municipal-level programs, and the vast, ambitious projects in developing countries across the globe. This complicates direct comparisons, as these two groups of countries are different when it comes to institutions and political systems. New large-scale projects may arise in countries such as the US, and full employment projects at the local level may also be initiated in emerging market economies, with Argentina's *Jefes* probably being the closest match as of now. At the EU level, there is still no evidence that programs such as MAGMA or *Zero Territories* are scalable to the national level, thus we cannot conclude as of now that these programs will serve as templates for new, more encompassing public employment programs. Finally, policy-making does not seem to draw sharp distinctions between employment of last resort programs, job guarantee programs or other potential types of job creation – neither in writing nor in practice. This could mean that real-world policies will turn out to be quite eclectic in the future as well.

6. Discussion

6.1. A TYPOLOGY OF FULL EMPLOYMENT CONCEPTS

In summary, we offer a new theoretical framing of a full employment typology by bringing together the different aspects of full employment that were introduced in the previous sections. We utilise the theoretical tool that was initially developed by Max Weber (1904) who pioneered the work on the *ideal-type* approach. It is a method with an interpretative component that helps to understand historical and social phenomena (Stapley et al. 2021). While none of these ideal types really exist in their pure form, they do provide an orientation to locate different positions.

Based on the reviewed material we detect three ideal types of full employment concepts that express themselves (a) on a policy level, (b) through empirical measurements, (c) strains of economic thought, and (d) deeper ontological assumptions. Taking inspiration from the field of epistemology, ideal type construction in the literature, and Friedmanite linguistics (see Galbacs 2020; Friedman 1953), we are utilising the notion of ‘instrumentalism’ and ‘realism’ to build moments of treating full employment only as a tool vs. seeing it as a fundamental aspect of economic life with an integral value. Instrumentalism views scientific theories as tools for predicting and controlling phenomena without necessarily representing reality, while realism holds that scientific theories aim to provide accurate descriptions of how the world really is. The third group stands in agnostic relation to the conception of full employment in the current economic system, and based on this group’s views of more fundamental change to the system than to achieving full employment within the system, is therefore considered a ‘re-constructivist’ group. A summary chart is depicted in Figure 7.

Full employment instrumentalists do not see full employment as an end in itself but instrumentalise it and the labour market to achieve other higher-priority policy goals. Changing interest rates as a main policy variable uses deviations from full employment to maintain price stability: according to the transmission mechanism of monetary policy, an interest rate hike is supposed to reduce aggregate demand, thereby putting downward pressure on economic growth and employment so that eventually, higher unemployment disadvantages workers in wage bargaining, and lower wage growth helps to bring down inflation (e.g. Walsh 2017; Mishkin & Serletis 2022; ECB 2024).

The main empirical approach to measure (deviations from) full employment and advise policy makers is the NAIRU. The arguments of full employment instrumentalists are mainly informed by the New Macroeconomic Consensus stream of thought or pro-market type Classical Political Economists. On a deeper level, their labour market perspective considers involuntary unemployment to be compatible with operating the economy at full employment due to the inherent link with price stability issues. They consider full employment as a policy variable that often stands in macroeconomic conflict with (and is often overshadowed by) the price stability goal. States of full employment are also not linked to discussions about standards of living or the meaning of work beyond its economic role.

Full employment realists consider the achievement of full employment based on its multiple ‘real’ benefits as a primary policy objective. The desirability of the full employment state is real and should be a guiding

star for policymakers. Policy proposals such as a more active fiscal policy or job guarantee programs with an anchored basic wage are suggested to bring about such a desired state. An empirical measure that coincides with full employment realist perspectives is a maximum employment or minimum unemployment measure. Theoretical strands that align with full employment realism are Modern Monetary Theory, Post-Keynesian Economics, Social and Welfare Economics, and Green Growth type Climate Economics.

In contrast to full employment instrumentalists, realists do not see an incompatibility of full employment and price stability but suggest other possibilities to keep inflation in check without hindering the achievement of full employment. This also involves active government interventions. Full employment conditions are essential and should not only check the box of providing working opportunities to everyone but also consider forms of decent living and basic wage conditions. In addition, many full employment realists consider the role of work beyond pure economic reasoning, as labour is not just an economic activity but 'how human beings socialise and develop a sense of accomplishment and involvement in their community.' (Tymoigne 2013)

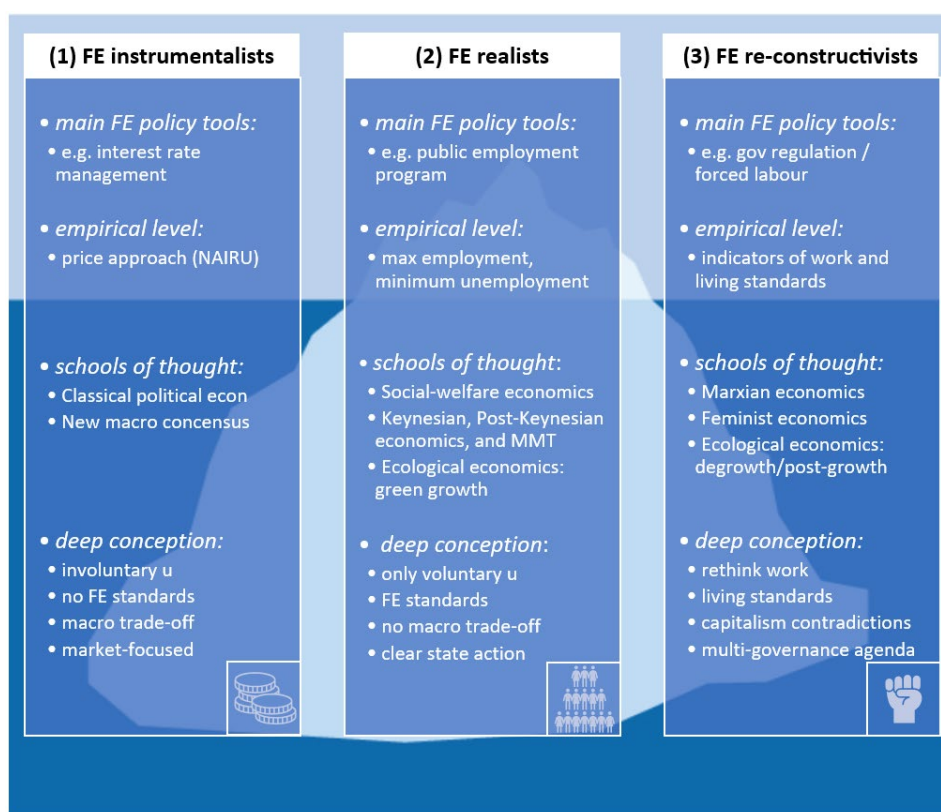
The third group (full-employment agnosticism/re-constructivism) identifies full employment fostering policies neither as a means nor as an end in itself. The understanding is rather to question the overall prevailing setup of institutions, leaving behind the status-quo of market performance, growth, or production goals. In this view, sustained full employment is impeded by the logic of the current system and full employment would require a switch from a profit-based to a sufficiency-based system. Instead of proposing full employment enhancing policy options, adherents of this group seek to reshape the idea of work in a more profound way that transcends the market-based role of labour as it is currently embedded in existing wage-profit relations.

Full employment measures in the understanding of full employment re-constructivists would not focus on established measures as the NAIRU or maximum employment concepts, but propose a broader range of measures to include also dimensions of social justice, wellbeing, or the environment. As such, this group counts scholars of Marxian, old Institutional, radical Feminist, and Degrowth/Post-Growth Ecological Economics. Full employment re-constructivists try to bring more radical changes to the economic system and ideas of labour. They do not only de-construct the political economic aspects around labour in capitalism but also re-define economic concepts of work with a more fundamental role of social provisioning, that places social and planetary goals at its centre. Hence, we identify this group as 'full employment re-constructivists'.

In this sense we do locate ideal types regarding the economic policy making of full employment as a debate that goes beyond a demarcation of mainstream vs. alternative schools of economic thought. Ramazzotti (2022) suggested a differentiation of a price-centred vs an institution centred approach, which is similar to the 'full employability framework' vs 'full employment framework' of Mitchell and Muysken (2008). The price centred approach suggests that prices form the principal coordination mechanism in the economy (e.g. Walras, Hayek), while the institution-centred notion does not strictly relate coordination to pricing signals but institutional acting (e.g. Veblen, Marx, or Keynes). We do find similarities with his proposed concept and also see a tendency of full employment instrumentalists being more price-centred, while full employment reconstructivists tend to be more institution-centred. However, we recognise that there is also a mixed position of full employment realists who aim to combine the pricing issues with institutional coordination.

Similarly, the ‘full employability framework’ resonates with our full employment instrumentalist type. It reflects the hallmark of the neo-liberal era where individuals have to accept responsibility, be self-reliant, and face broad obligations (Mitchell & Muysken 2008). The ‘full employability framework’ highlights the primacy of market-based economic outcomes (e.g. inflation targeting, full employability and compliance programs) where unemployment is rather a problem of welfare dependence than a deficiency of jobs and reduces state intervention to stimulating market outcomes (e.g. policies to force participation, deregulation, compliance testing).⁴ In contrast, the ‘full employment framework’ stresses aspects that relate to our full employment realist type like a commitment to full employment (e.g. employer of last resort, public sector employment) and state intervention to ameliorate market outcomes (e.g. regulation, transfer payments, services to enable participation). Compared to their frameworks our typology also reflects a vertical dimension in the sense of a superficial policy level, observable empirical measurements for full employment, and deeper levels of accepted streams of economic thought and political economic assumptions.

Figure 7 / Summary of full employment dimensions



Source: own depiction. FE is the abbreviation for full employment.

⁴ ‘The full employability framework allegedly prepares the unemployed worker for paid employment as opposed to providing the policy environment that ensures there are enough jobs. This preparation is achieved through training and compliance programs designed to re-skill the worker and/or create more work-oriented attitudes and intensive search endeavour. The motivation for this emphasis comes directly from the theoretical underpinnings of the NAIRU that we examined in Chapter 3. The focus is on the supply-side characteristics of workers and returns macroeconomics to the days when the aberrant Say’s Law was thought to explain the impossibility of generalised gluts in production through deficient aggregate demand. Importantly, the role that public sectors previously played as employers of last resort was abandoned. This role was critical to the maintenance of true full employment in the post-Second World War period’. (Mitchell & Muysken 2008, 125)

6.2. DECIDING ON MEASUREMENTS AND CONCEPTUALISATIONS OF FULL EMPLOYMENT UNAVOIDABLY IMPLIES NORMATIVE ASPECTS

The selection of a definition of full employment depends on the nature of policy goals as well as the chosen and available statistical tools. While there is no pre-defined idea of what relative importance should be attached to competing goals of policy, Rees (1957) argued that transparency regarding policy priorities is key when deciding on a specific full employment measurement. For instance, minimum unemployment approaches or maximum employment approaches would prioritise the reduction of unemployment over other goals. Other approaches are flexible so that they can be used to give either a very high or rather low priority to avoiding unemployment (like the Beveridgean unfilled vacancies approach), and others clearly show a priority for competing policy objectives in relation to the costs of further reducing unemployment (in particular the price approach represented by the NAIRU). Even in the case of giving a high priority to price stability, other full employment measurements could also be chosen that would not be inflationary if adopted as a guide to policy: the historical minimum of unemployment could be taken as a starting point with a selected increase in the unemployment target compared to the historical minimum to reduce the danger of low unemployment fuelling higher inflation; or a ratio of unfilled vacancies to unemployed workers could be set so that it reduces the dangers of inflation (Rees 1957). The intended policy implications might be a primary motivation for choosing the respective full employment measure.

We have surveyed policy experiences in section 5, where recent field evidence suggests the beneficial effects of worker environments in public employment programs (e.g. Kasy and Lehner 2022). Heterogeneous designs of implemented policies partly reflect the degree to which the willingness to tackle unemployment is a matter of conscious economic policy and political courage (Baker & Bernstein 2014, Pressman 1995, Mitchell & Watts 1997). This also echoes the voice of Beveridge when he writes that the goal of full employment can only be reached by 'conscious continuous organisation of all our productive resources under democratic control' (Beveridge 1945, 16). Kalecki (1943) argues that establishing full employment requires creating social and political institutions to foster the power of the working class.⁵

Our full employment survey reveals that technical arguments and empirical measures are only at the surface of a body of thought that rests on specific ontological and epistemological assumptions. This means that the choice of data, technical tools, and conceptual arguments regarding full employment are not merely technical questions, as they have normative aspects and relate to political choices. While several definitions and theoretical approaches appear in the literature, a manifest difference lies in the political economic implications of different measures of full employment. Therefore, political economic preconceptions are foundational in making policy decisions and normative aspects are unavoidable in deciding how to conceptualise and measure full employment.

⁵ Appendix B.4 discusses the political economy of full employment in more depth.

6.3. LIMITATIONS AND AVENUES FOR FUTURE RESEARCH

The aim of our study has been to shed light on full employment from conceptual, theoretical, empirical, and policy perspectives. This approach also guides the types of limitations and further research avenues that we encounter. Our review (mostly) focuses on conceptual and theoretical contributions that relate to the field of economics, however, there is much overlap with other fields such as mental health research, sociology, political science, history, or philosophy, and this overlap could be further explored; e.g., what would an historical analysis on the development of different full employment conceptions look like? Or inspired by general questions on the nature of labour: how would goals, benefits, or difficulties of a full employment realism view translate into a labour system that is not based on wages?

The empirical section on different measures of full employment is a first prototype of contextualising different empirical lenses to vitalise the debate about varying full employment measures. Much more needs to be done, such as applying the measures to countries in the Global South, going beyond a time frame of recent years and decades, comparing the results of different full employment measures regarding specific country cases and political-historical episodes, or conducting an analysis of the current quality of data (e.g. with regard to vacancies in the unfilled vacancies approach) and the actual requirements to generate conclusions that enable policy guidance. A further shortcoming of our work is that it does not differentiate between working time schemes (e.g. [involuntary] part-time work vs full time jobs), and misses the economically inactive, i.e. those who are not looking for a job or who are unavailable for work due to retirement, health, or family responsibilities. Excluding them from full employment measures is a limitation since some in these groups express interest in working (more) or might be interested to do so under different policy conditions.

Section 5 on policy experiences features an eclectic way of analysing full employment-related policy experiences. As there is great heterogeneity among policy implementations and the accompanying scientific monitoring of such programs is only available in a few cases (e.g. Kasy & Lehner 2022), it is difficult to draw general conclusions. A relevant question for the policy debate is to ask: *cui bono*? What are the population groups in the labour market that benefit most from a full employment policy scheme, and how? In which ways could full employment policies be designed to specifically target the most disadvantaged groups? Each policy scenario could also be further studied by applying and comparing different full employment measures.

Finally, our proposed typology of ideal types could be further applied to generate new research approaches that have not yet been explored. For instance, one could combine full employment measurements and policy matters of different types, e.g. applying a maximum employment measurement to a question focusing on the implications for price stability. Or one could ask how using different conceptual assumptions would affect the analysis of empirical full employment measurements, e.g. how would a quality of life view differ when using the price approach in comparison to the unfilled vacancies approach?

7. Conclusion

This paper has provided a literature survey on full employment regarding conceptual, theoretical, empirical, and policy issues. We have developed an analysis that combines different strands of literature on political economy, labour economics, socioeconomics and macroeconomics. We have integrated various aspects of the literature to provide an improved understanding of contemporary full employment research. The existing evidence on different full employment-related policy programs is not conclusive. While several full employment measurements have been suggested and continue to be developed, there are research gaps when it comes to experimenting with different theoretical approaches and empirical measurements. We have argued that technical choices in conceptualising and measuring full employment are informed by political economic pre-conceptions and normative judgments. Our paper is intended to provide a starting ground for future research endeavours.

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Appendix

APPENDIX A: EMERGENCE AND RELEVANCE OF HISTORICAL FULL EMPLOYMENT POLICY APPROACHES

Full employment policies help maintain skills and human resources in society. It is argued that supporting full employment policy programs can especially support more vulnerable groups that do not have many alternatives and are disadvantaged in the private sector. Minorities as well as elderly people are often less educated and have little savings; the long-term unemployed therefore often benefit most from public employment programs (e.g. Bernstein 2014; Theurl & Tamesberger 2021). Therefore, some authors argue that a full employment policy is the 'surest route to delivering progressive living standards gain' (Gregg & Laurdiner 2016). An experimental study with a job-guarantee program in an Austrian municipality finds substantial positive impacts on employment, income, and security feelings among program participants as well as on non-economic wellbeing related to social recognition, time structure, social interactions, and collective purpose (Kasy & Lehner 2022).

From a macroeconomic point of view, full employment programs such as a public job guarantee have been argued to function as countercyclical stabilisers similar to unemployment benefits and income tax revenues, which supposedly ensure that the economy is continuously operating at full capacity (e.g. Ehnts & Höfgen 2019).⁶ However, the extent of countercyclical stabilisation depends on how the jobs program is designed. Persistently high unemployment comes with macroeconomic inefficiencies and economic losses that may be avoided with full employment policies (Mitchell & Watts 1997). Such programs can be in place on a permanent basis and may operate as a general buffer and economic stimulus, but they can also be flexibly introduced when needed (Tcherneva 2018).

Full employment may also help the government address fiscal problems by achieving higher tax revenues due to more people in work. Those funds can be used to finance broad-based public investment and other social expenditures. Such aspects add an additional component to the observation that full employment conditions are typically accompanied by reductions in economic inequality. Slack labour markets are a key driver of economic inequality, while tight labour markets can facilitate reductions in inequality (e.g. Mason et al. 2021; Autor et al. 2024). While there are many policies to address the problem of economic inequality, it has been argued that none of the options is as straightforward and as politically difficult as ensuring full employment (Baker & Bernstein 2014).

Over the course of the 20th century several authors developed economic ideas to establish a full employment framework. In 1941, John Pierson published his book *Full Employment* which came with the basic premise of an *Economic Performance Insurance*. A government that acted as the 'employer of last resort... [or] disemployer of first resort' (Pierson 2006) could guarantee full employment and thereby would also support the maintenance of high consumer demand. Guaranteeing current aggregate

⁶ A recent study by Meija & Albrecht (2022) criticises the non-accelerating price aspect of public job guarantee programs. Public job guarantee programs here are understood as public works programs with decent social standards. Therefore, the case of the Hungarian public works scheme that paid salaries below the minimum wage threshold would not qualify as a public job guarantee (Albert 2019).

demand would further support future economic activity by boosting expectations and, thereby, investment. In 1945 John Philip Wernette developed a *Full Employment Standard* concerning the government's responsibility for full employment in a long-term economic policy proposal. The *Full Employment Standard* envisioned itself as a new fiscal-monetary system complementing the unstable capitalist system through the establishment of a *Federal Stabilisation Board*. This board would be similar to the functions of the Fed but also take up new duties such as controlling the total amount of money, and creating new money for financing federal government expenditures and/or paying off debts (Wernette 1945). The predominant dichotomy of fiscal and monetary policy is absent in the Full Employment Standard, which understands these two matters rather through meticulous coordination. In this framework, the primary function of taxation is to prevent inflation but not to collect money for expenditures. At about the same time, Abba Lerner came up with the *Functional Finance Theory*, according to which 'money is the creature of the state', created when a government spends and destroyed when it levies taxes, but there is no financial constraint on the monopoly-issuer of money (Lerner 1947). Hence, fiscal policies should only be results-oriented and not focus on ideas of budget constraint as in *sound finance* theory. For Lerner, the government is the employer of last resort as well as the spender of last resort. Minsky argued in a similar fashion, when he developed a strategy for full employment that does not lead to instability, inflation, and unemployment: based on an infinitely elastic demand for labour and an income floor (e.g. based on minimum wage) the government could use its power to divorce the offering of employment from the firm-based profitability motive in hiring workers (Minsky 1986; Tcherneva & Wray 2005).

Contemporary discussions touch upon policies where the government guarantees job opportunities with a fixed socially-established wage plus benefits for anyone who is willing and able to work (Kaboub 2007). In that way the government works with a buffer stock of employment mechanisms where displaced workers in times of recession receive a public employment option, but when the economy booms the workers can go back to finding employment in the private sector. Hence such a job-guarantee program operates as a buffer stock employment program. It is common to use the terms job-guarantee (JG) program and employer of last resort (ELR). Yet, due to negative connotations of the 'employer of last resort' wording, the name ELR was mostly dropped, giving rise to other labels such as Public Service Employment (PSE), Buffer Stock Employment (BSE), or Job Guarantee (JG) (e.g. Kaboub 2007; Godin 2023).

APPENDIX B: CONTEXTUALISATION OF FULL EMPLOYMENT IN ECONOMIC POLICY DEBATES

As highlighted in section 2.1, full employment can be taken up as a public policy goal in itself but is also regularly instrumentalised to achieve other policy goals. Additionally, policy perspectives such as a job guarantee program involve a special conceptualisation of the state and also emphasise the role of socioeconomic perspectives. Here we present four policy perspectives that involve full employment by discussing priorities and trade-offs: (1) price stability: full employment and macroeconomic policy making; (2) balanced budget, zero deficit, and debt repayment; (3) realising full employment through public employment programs; and (4) political aspects of economic policies related to full employment.

B.1 Price stability: full employment and macroeconomic policy making

Macroeconomic policymaking is routinely informed by NAIRU estimations, which represent how low the unemployment rate can fall before inflation accelerates (e.g. Rusticelli 2015; Ellis 2019). Monetary policymaking aims to adjust the observed unemployment rate in comparison to a theoretically constructed target unemployment rate. During recessions the observed unemployment rate is higher than the NAIRU. If central banks (CBs) decide on a countercyclical policy response, they will lower interest rates to ease credit constraints and stimulate the economy. Ideally, businesses and consumers pick up on the lowered borrowing costs and increase their investment and consumption. Workers and job-seekers will benefit from such a situation because the increased demand for labour leads to firms offering new jobs and eventually drives up wages. On the other side, periods of economic overheating are typically characterised by actual unemployment falling below the NAIRU. The textbook answer for a countercyclical policy reaction of central banks in such times is to increase the policy interest rate to raise credit costs and reduce economic activity, including employment rates, and thereby help drive down inflation by putting downward pressure on aggregate demand. This chain of events reflects the inflation-targeting of the New Consensus Macroeconomics, which aims to keep inflation low and stable, with unemployment rates in market economies close to the NAIRU (e.g. Argitis 2008). Or in a more nuanced wording by the ECB, central bankers take the NAIRU not as a normative concept of a full employment objective but as a measure to ‘guide monetary policy, helping to assess future price developments and achievement of the price stability objective’ (ECB 2021b).

A classical representation of the central bank optimisation equation is the minimisation of a quadratic loss function with the sum of squared deviations of efficient amounts on a structural macro-level (see equation 1; ECB 2021b). There π represents current inflation and π^* efficient inflation, u unemployment and u^* the NAIRU, and λ the weight for deviations of unemployment from its natural rate.

$$L(\pi, u) = \min \left\{ \frac{1}{2} (\pi - \pi^*)^2 + \frac{\lambda}{2} (u - u^*)^2 \right\} \quad (1)$$

The role of employment comes in through the inflation-targeting part, namely via the idea of the Phillips curve. This concept links inflation and unemployment. Phillips (1958) was the first to find a stable pattern in US and UK labour markets between wage inflation and unemployment rates. Samuelson and Solow (1960) observed high inflation in times of low unemployment and vice versa. However, Friedman (1968) argued that a trade-off between inflation and unemployment always remains temporary, as he formulated the concept of a natural rate of unemployment. Modigliani & Papademos (1975) developed this into the NAIRU concept. The argument goes that if policymakers want to reduce unemployment

below a certain point, the economy will produce rising rates of inflation due to rising wage bids of workers and unions. To avoid overheating of the economy, economic activity is to be weakened in times when labour markets are overly tight.

The ECB has only one primary mandate – price stability (i.e., setting $\lambda = 0$ in equation 1) –, and exercises inflation-targeting, though it changed the monetary policy strategy framework in July 2021 to include the policy objectives of balanced economic growth, full employment, and environmental protection ‘without the prejudice to the objective of price stability’. (ECB 2021a) It has been argued that inflation and unemployment generally move in different directions in the medium-term, although this might not hold in the presence of a flat Phillips curve, or with anchored expectations in the long-run pursuing price stability (ECB 2021a,b). The Fed in the US, however, is a dual-mandate central bank and therefore is obliged to target price stability and full employment simultaneously (e.g. Gali 2008, Brainard 2021, Barcena & Wessel 2022).

Unemployment in this framework is a choice to keep ‘a percentage of the population in involuntary unemployment’ where ‘the NAIRU is a policy benchmark’ (Tcherneva 2018, 3). Labour does not hold any incommensurable value in this context but stands in a direct payoff relationship with price stability. The labour market only plays an instrumental role in achieving macroeconomic policy goals such as economic development and price stability.

B.2 Balanced budget: zero deficit and debt repayment

From the perspective of private sector actors, there is no universal remedy for eliminating unemployment. Profit-seeking firms and the state’s inability to manage its currency and monetary system will lead to cyclical ups and downs of the unemployment rate. Through active government the public sector could absorb more employees in a direct way by employing more people or in an indirect way through stimulating the private sector and thereby subsidising the employment of more workers (Wray 2007). However, arguments about small fiscal deficits and sustainable debt levels for stable economic development have been made repeatedly in the literature (e.g. Daniel et al. 2006; Leon et al. 2019; Neaime 2015; El-Mahdy & Torayeh 2009). In this view, high unemployment rates are interpreted as the cost of bad fiscal performance and continually rising government debt. The pursuit of balanced budgets further narrows the range of policy instruments and possibilities to stimulate aggregate demand by public spending (Mitchell & Watts 1997).

B.3 Job guarantee programs: Realising full employment through public employment programs

There are numerous variants of job guarantee programs within and without MMT. The government-based job guarantee (JG) – also called employer of last resort (ELR) – approach works through the creation of an infinitely elastic demand for labour at a socially accepted minimum wage (Minsky 1986). The key idea is that only the government can separate the offering of employment from the profitability of hiring workers through the creation of infinitely elastic labour demand. In that way it eliminates involuntary unemployment and guarantees that jobs are offered to ‘anyone who is ready, willing and able to work, regardless of race, gender, education, work experience, or immigration status, and regardless of the performance of the economy’ (Tcherneva & Wray 2005, 5). Such a public employment program

also stabilises the price of the buffer-stock, namely wages, at the bottom. The wage paid is understood as a decent living wage with a guaranteed compensation package, which eliminates working poverty, while maintaining wage and price stability (Paul et al. 2018). Obviously, living wages depend on specific country conditions. Through the hiring-off-the-bottom approach, a JG program is argued to establish full employment while maintaining private labour markets, i.e. private firms will still be able to find available labour in the pool of JG-employed workers.

With its roots in a fusion of Keynesian and neo-chartalist monetary thought (Palley 2001), a key requirement of a JG program is only met when the government enjoys truly sovereign control over its national currency, which means that it is not subject to a monetary regime such as fixed exchange rates, currency boards or monetary union. This means strong coordination between the government and something like a central bank, implying that the central bank is not fully independent. Funding a public JG program in such a case will not necessarily crowd out firm investment, burden future generations, or lead to financial ruin because 'all government spending for nations with sovereign control over their currency is, in the first instance, financed by crediting a member bank's account at the central bank, that is, government spending is 'financed' by money creation.' (Tcherneva & Wray 2005, 6). Based on a theory of endogenous money, governments serve as issuers of this money, and taxes are not required to finance government spending that has already occurred, but to generate demand for this money. While governments act in many cases as issuers of their own currency, critics argued that policy proposals that are based on such an understanding of monetary theory do not account for a global hierarchy of world money that makes money an essential relation of class and constrains state policy (e.g. Lapavistas & Aguila 2020, Heubusch 2018).

It is argued that a job guarantee program could enable all workers to draw from an income generating activity, without exposing them to the dynamics of capitalist markets and technological changes. Additionally, it would provide a permanent stimulating effect on the economy that reduces the need for aggregate demand management policies and social policies (Marsh et al. 2017). Public employment policies to address the shortage of market-based employment opportunities have already been undertaken by many countries (ILO 2020).

An operational blue-print of what a job-guarantee program looks like was provided by Tcherneva (2018). The mission that her proposal outlines is to employ the unemployed, prevent and reduce outsized costs of unemployment, support the production of valuable public goods, and invest in and empower people. The core policy objective that she describes is to 'provide decent jobs at decent pay on demand to all individuals of legal working age who want to work, irrespective of labour market status, race, sex, color, or creed' (Tcherneva 2018). As central features the program should be: a permanent one; pay a living wage; targeted by creating jobs in communities with the greatest number of unemployed people; federally funded and locally administered; an 'add-on' program that complements existing social policies such as unemployment insurance; and complement the private labour market. For example, via community-supported agriculture (CSA) groups, local unemployed residents are occupied building and running greening projects. Produce from the community gardens can be sold in local farmers' markets or be given out to low-income families for free. This option also offers several work time formats and possibly even youth apprenticeships. In another example, schools could offer job guarantee occupation opportunities like expanding their playgrounds, repainting and weatherising their facilities, or offering more variety for after-school activities. This could provide employment opportunities for recent college

graduates who can't find a job, or stay-at-home parents who are ready to work again, or other skilled workers who can be of help in the weatherisation projects.

The fear of inflation is pre-empted by two institutional features of the JG program: (a) the JG program ensures that budget deficits are never too large or too small, and (b) the JG wage is set exogenously by the government and hence provides a stable benchmark price for labour (Mitchell & Wray 2005; Tcherneva & Wray 2005; Mitchell & Muysken 2008; Ehnts & Höfgen 2019). Importantly, decent social standards also need to apply to public work schemes. A counter example to such public employment opportunities in the spirit of a job guarantee is the Hungarian public works scheme by Hungarian Prime Minister Orbán. It represents a direct employment program in the form of an authoritarian employment obligation that cuts social benefits if workers do not submit to a government-determined project, with wages in the public work scheme that range below the domestic minimum wage (Albert 2019).

The claim about an absence of inflationary pressures from job guarantee programs is contested by critics (e.g. Lopez-Gallardo 2000; Palley 2001; Ramsay 2002; Sawyer 2003); at least, it is argued that to implement such a program would require institutional mechanisms that maintain wage restraint in more productive and higher wage sectors while wages in lower wage sectors can increase (King 2020). Other voices questioned whether job guarantee schemes by themselves would be sufficient to create the fundamental institutional change necessary to overcome capitalist contradictions and ensure that full employment becomes achievable as a permanent state (Heubusch 2018; Kriesler et al. 2020) and in how far it also perpetuates unwanted aspects of capitalist regimes such as a producerist orientation that obscures uncompensated social reproductive labour (King 2020).

B.4 Political economy of full employment

Kalecki (1943) addressed three reasons for political-economic opposition that would arise in the face of full employment promoting governments: (i) The interference of the government regarding employment *as such* can be disliked as it takes away the market power of firms in determining employment levels. (ii) Opposition may arise based on the direction of government spending, if public spending would compete with private business, as the profitability of private investment might be impaired. (iii) Aiming for permanent full employment conditions would disable the disciplinary role of the labour market and question the authority of private enterprise in determining the contours of economic order (Dennis 2017). 'The social position of the boss would be undermined, and the self-assurance and class-consciousness of the working class could grow. [...] The workers would 'get out of hand' and the 'captains of industry' would be anxious to 'teach them a lesson'.' (Kalecki 1943, 5) In this light, business and rentier interests are likely to join forces in creating a narrative to declare such a situation as economically unsound and influence government departments to implement more orthodox policies of cutting budget deficits. What follows are 'political business cycles' where opposing class interests would switch between accepting employment generating policy actions in times of slumps and opposing full employment (e.g. through lobbying in favour of fiscal retrenchment) when labour markets tighten. Price increases of tightened markets would squeeze incomes of rentiers, making them 'boom-tired' and thereby be conducive to forming a powerful alliance between rentiers and big business (Toporowski 2023).

However, the strong growth developments during the 'golden age' of capitalism with high employment rates between the 1950s and 1970s led to a reformulation of Kalecki's political economic evaluation. Even though the existing relations of production were not altered, the labour market situation for workers provided them with satisfactory levels of real income while firms realised higher profits (Haim 2022). This 'crucial' reform process' led to a 'transformation of the working class, which on the whole became radically reformist in its attitude toward capitalism' and as a result weakened their 'anti-capitalist attitudes [...] considerably' (Kalecki 1991 [1971], 467). According to the Bhaduri-Marglin model this phase can be explained as a cooperative 'wage-led regime' of capitalism, where demand as well as growth were wage-led (Hein 2014, 297; Bhaduri & Marglin 1990). Then in the early 1970s, the 'neoliberal turn' set in, which favoured a stronger pro-business attitude and laissez-faire economics of policymakers. Finding priorities in controlling inflation and the money supply while coining full employment as dangerous and damaging found its political expression in conservatism (Cooke & Dolphin 2013). This development implied a comeback of conditions that were more in line with the conflictual situation of workers and firm interests that Kalecki had analysed. In the Bhaduri-Marglin model, this contrast is reflected in an antagonistic 'intermediate regime' in which demand remains wage-led although the growth process turns into a profit-led regime (Hein 2014, 297).

Distributional dynamics can also pose a challenge to full employment. Under tight labour markets, the dynamics of power at the work place are tilted away from the employer; there will be more benefits to low-paid, lower-skilled, and marginalised workers (Sawyer 1995). Due to the equalising effect on income distribution, more privileged and higher-skilled people at the upper end of the income distribution would also encounter full employment measures as a threat to their social position and potentially form another opposing counter force (Minsky 2013 [1969]; Haim 2022). To mitigate the concerns of this social group, Minsky argues to couple the effect of income equalisation with the provision of public goods in order to address the self-interest of the well-off (Minsky 2013 [1969]).

Kalecki (1943) argued that establishing full employment in capitalism would require creating additional social and political institutions to foster the power of the working class. Such institutions could be a combination of workers' councils which are freed from the threat of unemployment and represent workers, technical personnel, and managers and central planning on investment to ensure full employment (Nuti 1986). The involvement of workers in the organisation of labour can stabilise and increase productivity growth, a work-enforcing function that has been associated with the threat of unemployment (Sawyer 1995). In addition, such democratic control from below has been linked to a more radical worker-friendly change from above with a change to a government that prioritises the goal of full employment to protect the system from reversing to forms of monopoly capitalism which would compromise full employment of labour in favour of profit and interest over a long period (Sawyer 2023).

It has been argued that social provisioning through full employment policies can also help stabilise socio-political systems and support social harmony. Market-based systems can create major losers and due to path dependency and cumulative causation, increasing disparities can develop between regions and social groups (e.g. Sawyer 1995). Challenging economic periods and times of long-term decline of social welfare can lead to feelings of being 'left behind' as the literature on the 'geography of discontent' shows for Eastern Germany, which has experienced a major rise in right-wing populist voters (Greve et al. 2022). The loss of welfare and high unemployment rates were also factors that spurred fascist developments in Germany in the early 1930s as policymakers were unable to counteract the strong rise in unemployment (e.g. Straumann 2020; Toporowski 2023). Hence, it is argued that fighting 'of the

progressive forces for full employment is at the same time a way of preventing the recurrence of fascism.’ (Kalecki 1943, 6)

A major point of discussion on how the government may promote full employment relates so-called public job guarantee programs. There are numerous variants of job guarantee programs within and without MMT. The government-based job guarantee (JG) – also called employer of last resort (ELR) – approach works through the creation of an infinitely elastic demand for labour at a socially accepted minimum wage (Minsky 1986). The key idea is that only the government can separate the offering of employment from the profitability of hiring workers through the creation of infinitely elastic labour demand. In that way it eliminates involuntary unemployment and guarantees that jobs are offered to ‘anyone who is ready, willing and able to work, regardless of race, gender, education, work experience, or immigration status, and regardless of the performance of the economy’ (Tcherneva & Wray 2005, 5). Such a public employment program also stabilises the price of the buffer-stock, namely wages, at the bottom. The wage paid is understood as a decent living wage with a guaranteed compensation package, which eliminates working poverty, while maintaining wage and price stability (Paul et al. 2018). Obviously, living wages depend on specific country conditions. Through the hiring-off-the-bottom approach, a JG program is argued to establish full employment while maintaining private labour markets, i.e. private firms will still be able to find available labour in the pool of JG-employed workers.

The literature discusses potential advantages and disadvantages of public job guarantee programs. Critics argue that job guarantee programs are difficult if not impossible to combine with price stability (e.g. Sawyer 2003). More radical critics have argued that job guarantee schemes are not a proper tool to overcome capitalist contradictions and ensure that full employment becomes achievable in the long run (e.g. Heubusch 2018).

When it comes to potential benefits of job guarantee programs, it is argued that a job guarantee program could enable all workers to draw from an income generating activity, without exposing them to the dynamics of capitalist markets and technological changes. Additionally, it would provide a permanent stimulating effect on the economy that reduces the need for aggregate demand management policies and social policies (Marsh et al. 2017). Such public employment policies have already been undertaken by many countries to address the shortage of market-based employment opportunities (Kaboub 2007; ILO 2020).⁷

⁷ Appendix D provides an expanded discussion of full employment programs.

APPENDIX C: GENERAL FULL EMPLOYMENT POLICY RECOMMENDATIONS

The existing literature discusses how changes in economic policies could help promote edging closer towards full employment, e.g. policy changes in fiscal policy, trade and manufacturing policy, and apprenticeships and on-the-job training (Bernstein 2014, Pressman 1995, DeLong et al. 2014).

Reducing working hours per week and similar arrangements have been named as simple measures to ameliorate involuntary unemployment, by redistributing the number of hours worked over a larger number of people (Delsen 1997). Attractive side effects mentioned include the provision of flexibility and contribution to power sharing in the workplace (Papadimitriou 1999). However, the last significant changes in working hours took place in the 1970s in the aftermath of the oil crisis, and since the early 1980s working hours have not declined more sharply or have even risen at times (Behringer et al. 2024). Other similar policy measures include ideas such as job-sharing or splitting, elimination of overtime, phased-in retirement, phase entry through extended education and training, and in general working part-time. The part-time work option was also promoted by the OECD in their Jobs Study (1995) to increase flexibility, and enhance job creation and employment prospects. While work-time reduction rations existing work by redistributing to more individuals, it does not increase total working hours. It is noteworthy that schemes of part-time employment should be utilised in agreement with employees and not on an involuntary basis, a phenomenon that is also more concentrated among relatively disadvantaged groups (Glauber 2013).

Many countries have used active labour market policies to reduce (long-term) unemployment and move towards full employment. This may include job-search assistance, classroom or on-the-job-training, or employment subsidies (e.g. Card et al. 2018). Public employment services may help reduce mismatches between the demand for and supply of jobs. Government-sponsored training programs may help enhance employment prospects. Employment subsidies may provide incentives for firms to hire more or fire fewer people.

Keynesian type economic policies suggest stimulating the economy through *active fiscal policy* as key in operating near potential levels of output and employment (DeLong et al. 2014). The Financial Crisis in 2008 was a turning point among economists in rethinking the old lemma that using monetary policy alone would be sufficient for macroeconomic stabilisation. In an environment of a liquidity trap where interest rates are near the zero lower bound and when there is little risk of crowding out private investment, a properly designed fiscal stimulus can be especially beneficial in reducing long-term debt and moving towards full employment (DeLong et al. 2014).

Another policy recommendation is that *reducing the trade deficit* and decreasing the export of labour demand may help boost domestic production and employment rates. Making use of cheap foreign labour markets through outsourcing and offshoring appears as a serious driver in the context of aggregate productivity growth in the US. This matters, since it fosters the perspective that it is not increasing manufacturing productivity that killed job growth in the US, but that globalisation and the implementation of trade policies played a relevant role in the change in the employment landscape (e.g. Autor et al. 2013; Asquith et al. 2019).

High-school graduates or school drop-outs can face special difficulties in entering job markets. In this context, the literature discusses that *apprenticeships can form effective public policies* in supporting the search for decent jobs for young workers with limited prospects. It is argued that such programs can be beneficial for upward mobility and prepare young people for 'middle-skill' careers in high demand sectors (Holzer & Lerman 2014).

A *wage-subsidy approach* has been proposed to subsidise the employment of low-wage, lower-skilled workers by requiring firms to employ additional workers and offset their costs via public purse payments (Phelps 1997). Over time, the wage subsidies concept fell out of fashion. However, with the advancement of the 'natural' unemployment level theory and the inflation-targeting of central banks, employment subsidies returned, although evidence for subsidies as successful measures to fight unemployment are at best mixed (Papadimitriou 1999). Minsky's critique of employment policies based on subsidies was that they would lead to inflation, financial crisis and serious instability (Minsky 1986).

But even with supporting policies such as the ones outlined above, it is still possible that the quantity of jobs available to lower skilled workers is simply not adequate to get rid of involuntary unemployment. A *publicly subsidised job program* represents a policy initiative that can address such difficulties. There have been several examples of subsidised employment programs in the US. Programs between the 1930s and 1940s include the Works Progress Administration (WPA) which provided employment support to individuals in times of high unemployment, and the Civilian Conservation Corps (CCC) provided jobs in the sector of natural resource conservation (Pavetti et al. 2011). These large-scale government interventions were an important factor in infrastructure building and provided employment to many people: The WPA employed 8.5 million workers over eight years and the CCC gave jobs to another 3 million men through state park and hiking trail creation. However, these programs failed to dismantle race and gender discrimination and, in some ways, reinforced them (Roosevelt Institute 2020). The next nationally subsidised job program came 30 years later when the Public Sector Employment (PSE) component of the Comprehensive Employment and Training Act (CETA) helped individuals in areas characterised by high unemployment at a time when economic growth weakened. The Temporary Assistance for Needy Families Emergency Fund (TANF EF) is a more recent example of such a policy initiative in the US that provided families in need with subsidised job opportunities (Pavetti et al. 2011).⁸ While the TANF did not reach the size of earlier countercyclical programs such as the WPA, it achieved results in a short operational time, placing about 260,000 low-income individuals in subsidised jobs between 2009 and 2010 (Pavetti et al. 2011). It is argued that such programs are an effective way of placing low-income workers in jobs when such workers cannot find unsubsidised employment (Pavetti 2014).

⁸ Note that the statutory language refers to this program as the "Emergency Contingency Fund" while there has also been the TANF Contingency Fund which was created in 1996 when the TANF block grant was created.

APPENDIX D: REAL-WORLD FULL EMPLOYMENT PROGRAMS

This appendix provides additional information to the discussion provided in section 5 in the main text.

1) Sweden, Corporatist Model: The Swedish corporatist model envisioned a way of guaranteeing non-inflationary full employment. Its welfarism approach relies on a 'right to work' instead of a 'right to income' where wage bargaining was centralised, and active labour market policies were issued to maintain price stability without compromising high employment levels (Kaboub 2007). It was in the 1950s when a unity of interest between workers and firms was established through a combination of (a) centralising wage bargaining with potential wage-restraint gains and a 'no-strikes' clause and (b) a profit taxation system for financing capital accumulation under workers' control (Marshall 1995). The latter was realised through tax exempt 'investment funds' for excess profits that encouraged capital accumulation and were a central driver of private investment, in Keynes' sense of a 'socialisation of investment' (Pontusson 1991). Between 1975 and 1980, unemployment rates in Sweden ranged between 1.6% and 2.2% (Moy 1985). The unity of interest started to fade away in the 1970s and 1980s though unemployment rates in Sweden remained below 3% until the late 1980s (Marshall 1995). The years between the 1960s and 1990s were also the period when the Swedish welfare state generated many vacancies in the local government sector by massively extending household services such as childcare, health care, day care or education services. This increased the market value of women's time, which, paired with rising wages and work opportunities for women, was key for a low unemployment rate (Rosen 1996). Wage-earner funds with partial control of unions were dismantled by the conservative government in 1991; support for the 'socialisation of investment' declined and many Swedish firms moved to locations with cheaper labour costs. Unemployment reached 9.6% in 1993 and ranged between 4% and 7% in the following decade (Kaboub 2007).

2a) US, New Deal and WWII period: The Great Depression is typically seen as the primordial example of the failure of the capitalist system to provide a humanitarian and socioeconomically decent environment. In 1933 the level of unemployment in the US reached 25% and in the same year President Roosevelt introduced the *New Deal* program with a series of public employment agencies that were introduced between 1933 and 1936 (e.g. Public Works Administration, the Civil Works Administration, the Works Progress, the Federal Emergency Relief Administration) (Kaboub 2007). Over a seven-year period with a volume of USD 41.7bn, the program was composed of 40.1% of US GDP in 1929, amounting to 5.7% per year (Dupor 2021). Unemployment rates decreased substantially, however were far from full economic recovery, since they still dropped from 25% in 1933 to an average of 17% throughout the 1930s but never went below 14% until WWII hit (Kennedy 2009). However, after the emergence of business opposition to the New Deal and inflation fears Roosevelt promised again a balanced budget. After these changes unemployment rose again from 14.3% in 1937 to 19% in 1938 and the efforts of the New Deal were insufficient to achieve the long-term impact on employment that the employment supporters sought (Paul et al. 2018). With the involvement of the US in WWII unemployment radically dropped again to the lowest recorded value in the US of 1.2% in 1944. Besides massive public investment in war production, low interest rates, equal rationing and price controls were used to keep inflation under control (Hetzel 2013; Rosalsky 2022). Between 1942 and 1947, the Office of Price Administration set March 1942 prices as a ceiling for residential rent and for almost 90 types of food products. The government also enacted rationing on key commodities during that time (Kaboub 2007).

2b) Argentina, *Plan Jefes de Hogar*: Argentina installed a Head-of-Household Program in April 2002 after a dire economic period with unemployment rates above 20%, consumer inflation reaching 40% and a currency depreciation of more than 200% (Kaboub 2007). The government provided employment opportunities of Argentine peso (ARS) 150 per month to the heads of households for a minimum workload of four hours a day. However, employment opportunities were only granted to household heads, the so-called *Jefes*, who were living in a household with children of age 18 or below, handicapped persons, or pregnant women (Kaboub 2007). Typical activities involved community projects like agricultural micro-enterprises, social services, cleaning and environmental support, small construction activities, or directed training programs. While 80% of the funding was provided by the government, private companies and NGOs contributed with their own resources. After only four months, poverty rates among participating households dropped by almost 25%; between 2002 and 2006 unemployment rates fell from 21.5% to 10.4% (Kostzer 2008). In 2005 government spending for the *Jefes* program amounted to ARS 1.6m, which was less than 1% of that year's GDP, while the multiplier effect of additional private spending was estimated to be slightly above ARS 2.5m (Kaboub 2007; Kostzer 2008). Another positive outcome of the program was its high participation rate of women (more than 60%), who were outside of the labour force before and entered the labour market (Tcherneva & Wray 2007). Arguments for this observation are that women were designated as the 'head of the household' to receive the benefit as supplementary income, while the man attempted to find other types of work (Tcherneva & Wray 2005), that men have occasional jobs in other sectors or some cultural factors like stigmatisation of men getting an unemployment benefit (Kostzer 2008). Yet, to provide jobs to all willing to work at the base wage the *Jefes* program would have needed to target household heads, pay living wages, and increase the education and training components (Tcherneva & Wray 2005). The government phased out the program starting in 2008 as it lost political support while some government officials also argued that the private sector would be more efficient in producing the needed goods by fewer and more skilled workers (Tcherneva & Wray 2007, Haim 2022). While the succinct universal child allowance program *Plan Familias* was more successful in reducing absolute poverty rates of families with children, it did not prove as successful in providing jobs to poor women as the *Plan Jefes de Hogar* (Tcherneva 2012).

2c) India, *National Rural Employment Guarantee*: In September 2005 India introduced a rural public employment program, the *National Rural Employment Guarantee Act* (NREGA), which is the largest public works program in the world to date, employing 28% of the rural population in 2019-2020 (Narayan 2022, 779) with one third of the places reserved for women, and overall female participation at almost 55% (Singh 2024, 829-830). In the initial phase of the program a 100 day-per-year employment opportunity in rural public works projects was offered to one member of a household in 200 out of India's 600 districts. Within 15 days after the application and within 5km around the household, an applicant was offered a labour-intensive rural work opportunity, including in the field of environmental conservation and restoration. The cost for 100-days-limited employment was estimated at Rs 40 crores per year in 2004-05 prices, or 1.3% of GDP (Drèze 2004). Ravi & Engler (2015, 58) find that since the start of the program, it brought tangible improvements to the poorest Indians, including in household savings, food security, and mental health.

NREGA could be seen as a first step towards a fully-fledged national ELR program. Its design is tailored to the needs of the implementing country, offering an important example of a massive-scale, environmental, employment stimulation policy introduced in a developing country. One could argue that increasing the working time and/or diversifying the scope of activities from exclusively rural employment could help with upscaling the program.

2d) Pakistan, *Ten Billion Trees Tsunami* (part of *Clean Green Pakistan* from 2023 onwards): Clean Green Pakistan, including its component Ten Billion Trees Tsunami Program (TBTP), is exemplary compared to other projects listed here in that its main aims are environmental: drinking water, waste management, sanitation and hygiene promotion, and tree plantation (Shahid, 2022; Watts et al., 2020). The country is facing a plethora of dire environmental problems (see, e.g., Razzaq et al., 2020, on drinking water pollution in Karachi, the largest city of the country and its former capital, or Rehman et al., 2019, on the three-fold deforestation that happened from 2000 to 2016), therefore such a program has the potential to not only create jobs, but also to assist in mitigating the ecological crisis. After the success of the 2014-2018 One Billion Trees program, the TBTP was launched, aiming to plant and regenerate 3.29 billion trees during the first 2019-2023 stage. The program's scope is too broad for a short overview to sufficiently cover it, and we will focus on the ILO-listed Ten Billion Trees initiative rather than the whole project (ILO, 2020).

While job creation is the topic of this paper, the quality of the created jobs and their social value and impact should be considered. With ecological programs, in turn, there are numerous caveats that may diminish their actual effect if one is to look deeper than at the stated objectives of, e.g., reforestation or improving water supply or air quality. There is a considerable body of literature on the uneven distribution of benefits and burdens from such programs, and on the susceptibility of local populations to changes in livelihood, land access, and cultural expression. One systematic literature review analyses 92 studies, most of which find overwhelmingly negative effects across the board (Malkamäki et al., 2018).

Support recipients are themselves a precarious group, as participation in the program can be due to factors which a top-down approach will not consider, such as friendship with a local forester in charge of distributing the benefits (Nketia et al. 2020; Ullah et al., 2021). Evidently, all the local issues mentioned above are also relevant for participants of such programs, as they focus on the local level. At the same time, from the recipients' side, foul play is an option if monitoring is not sufficient: there is evidence that Pakistani farmers, who stand to gain from planting trees, frequently chose the fast-growing but environmentally challenging eucalyptus; there are also no mechanisms which will protect these trees from being cut down when the program is over.

Overall, with its reported budget of USD 700m, the TBTP gave employment to 164 thousand dayworkers with nonconcrete, most likely short-lived, tenures (Ashraf 2022, 28, 41); researchers register a lower participation rate among disadvantaged groups, including the landless, within a respective community (Ullah et al. 2021). The employment rate could have been greater if not for the 2019-20 and 2020-21 budget cuts of 52% and 78% respectively, and some of the labourers claimed that they received partial or no payments (Ashraf 2022, 7, 17). As the project had only achieved 43% of its plantation and generation goals by the end of 2022 (Ashraf 2022, 19), one could assume that the number of those who could have been in employment under a full-budget scenario might have been more than two times larger, at around 330 thousand people.

While such initiatives have clear environmental benefits in mind, the large scope and administrative difficulties may seriously diminish the effect and in some cases even put the credibility of results to a test, including the sustainability and appeal of the jobs created. On the one hand, they do create jobs where people are located and employ those who have fallen behind, but on the other hand, participation may contradict local ways of life and forego minority groups. By focusing on short-term manual labour, the TBTP provides disproportionate opportunities for individuals and does not create a guarantee or

fallback option, rather offering quick gains conditional on an individual's human capital within a community, and on their health.

2e) South Africa, *Presidential Employment Stimulus*: South Africa's Presidential Employment Stimulus (PES) is part of the larger 2020 Covid-response Economic Reconstruction and Recovery plan, aimed at recovering from the crisis and developing the country through infrastructural, energy, and business-oriented projects (Presidency of South Africa 2023, 2021, 2020; see also Mosala 2022). The funds for the program are confirmed until March 2024 (Presidency of South Africa, 2023), although there are some fiscal planning issues at the governmental level. In 2020, the PES set out to create 700,000 'opportunities' with the budget of South African Rand (ZAR) 12.7bn, or approximately USD 671m at the current exchange rate, or about USD one thousand per opportunity (Presidency of South Africa, 2020). With a GDP of USD 338bn in 2020 and a budget distributed over three years, the annual program cost is on average 0.07% of GDP. Given an active population in 2020 of 22.9 million people (World Bank, n.d.), the amount of 700,000 'opportunities' is equivalent to new jobs for 3% of the labour force. The lion's share of the program, ZAR 7bn, was earmarked for school support and teaching assistant positions for young people with the relevant education. The 2021 stage focused on both supporting some of the active elements of the program and introducing new ones, with a budget of ZAR 9.5bn for employment opportunities, a separate ZAR 958m for support for young entrepreneurs, subsistence farmers, and early childhood development service providers, as well as a package of ZAR 438m for 'catalytic interventions' developing broadband internet access and a job search network. Two official reports of the PES displayed a 91% achievement of the job creation goal, 67% of the expected job retention, and 59% of livelihood support, or 90%, 80%, and 67% by December 2022 respectively (Presidency of South Africa 2023, 6; 2021), which demonstrates commitment and stable progress, given that the first two goals increased almost twofold over the year -- the job count plan grew from 434 thousand to 879 thousand, and the number of livelihoods supported grew from 199 to 311 thousand respectively. The number of participants reached one million by October 2022 (Presidency of South Africa, 2023).

2f) Kazakhstan, *Employment Roadmap(s)*: The most recent Kazakhstani employment and infrastructure stimulus is dubbed 'Employment Roadmap' (see, e.g. ILO 2020). To present the analysis more succinctly, we will not go into the details of each constituent program and the process of their development, focusing mainly on the most recent iteration from 2020 to 2021. For a quick summary: in 2011-2014, according to the government, 462 thousand citizens in economically precarious conditions got involved with the program (i.e., 5.5% of the 8.8 million labour force in 2011), with 66%, or 3.5% of the labour force finding permanent employment (Government of Kazakhstan 2015). There seems to be a continuation of the program from 2015 to 2019 under the name 'Employment Roadmap 2020', although we were not able to find audit reports or quality sources discussing the results of the stage (Atameken 2023).

At the onset of Covid a stimulus was launched, aiming to offset the pandemic effects by creating 241 thousand positions that year, and 12 thousand in 2021 (Accounts Committee of Kazakhstan 2022, 145). After 2021, the Employment Roadmap program appears to have been discontinued, as it does not appear in the 2022 audit of the Accounts Committee of Kazakhstan (2023), while national media mention its transformation into a regional format (Astana Times 2023). The 2020 plan was exclusively focused on infrastructural projects, and the number of jobs created dropped twenty-fold in 2021, with the program diversifying its scope of activity to cover other areas. These included measures to kick start infrastructural and agricultural projects, support startups with microcredits, conduct smaller-scale public jobs, provide resettlement from depressed areas, etc. (Government of Kazakhstan 2020).

In terms of the Employment Roadmap's performance, the Accounts Committee of Kazakhstan highlights in its reports of 2020 and 2021 a multitude of issues with the program, some persistently ignored over the years (Accounts Committee of Kazakhstan 2021, 2022). Nazarbayev's successor, President Tokayev, reflected publicly on the same (Bektenova 2021; Vlast.kz 2020). In 2020 and 2021 respectively, 30% and 22% of expected pension contributions from those employed through the program were missing, implying either tax evasion by the employer, or fictitious employment. The latter was confirmed through random checks, uncovering double counting in local employment centers, as well as the cases of assigning program-related positions to the people already occupied in the same enterprise, including in-house lawyers, managers, and directors. Evidently, these issues dilute the key performance indicators of the program and overstate what had been achieved. The over-reporting is complicated by under-delivering, given that, for example, the 2021 promises, with a total of four plan revisions, fluctuated markedly (Government of Kazakhstan 2021; Sarsenova 2021). In addition to the ambiguity of its key performance indicators, the program is less sustainable than most of its counterparts: in 2021, out of the 10.3 thousand jobs created, 10 thousand were not permanent (Accounts Committee of Kazakhstan 2021, 147). Clearly, this is far below the 35.6 thousand new jobs, 55% of them permanent, which were promised by the head of the implementing ministry in May of 2021 (Government of Kazakhstan 2021). In 2020, 72% of the projects financed were temporary in nature, which implies that the reported figure of 241 thousand positions for 2020 could be misleading in that the jobs might have disappeared by the next year, with media putting the 2020 share of permanent job positions at 3% based on a parliamentary inquiry and missing state pension fund contributions (Accounts Committee of Kazakhstan 2022, 145; Bektenova 2021; Markova, 2021). On the profit-loss side, according to President Tokayev, the taxes paid on the total investment of Kazakhstani Tenge (KZT) 1tn (approx. USD 2.4bn) accounted for a revenue of KZT 5.5bn (USD 12.3m) (Bektenova 2021; Markova 2021).

3a) France, Zero Long-Term Unemployed Territory (TZCLD): TZCLD is a French program launched in 2016. The idea of the project was first tested in the 1990s in commune Seiches-Sur-Le-Loir, approximately the size of the Austrian employment guarantee project (MAGMA's in Gramatneusiedl). The launch required the intervention on the level of the National Parliament to deal with the impeding legal ramifications. Since 2016, the number of territories involved has grown from 10 to 58, all across France. Participants are long-term unemployed who are given jobs within so-called Job-Oriented Companies (JOCs) specifically created under the program. Similarly to MAGMA, the salaries are set at the minimum wage level, and jobs are claimed to be tailored to a participant's skills. The positions created should not by design compete with the 'traditional incumbent companies' in the sector, which implies that the program, while not crowding out the existing private initiative, creates opportunities and products in the spheres where business incentives and demand for goods exist (Co-VAL 2023). The money is thus spent not on unemployment benefits but on socially-useful employment that does not interfere with private labour markets and creates value elsewhere. Programs with comparable job guarantee designs are found in Wallonia, Amsterdam, and Berlin, and the talks regarding the potential of such programs are being conducted at the level of the European Commission, including the project's positive evaluation by the President of the European Committee of the Regions, who subsequently presented a new EU cohesion policy initiative in April 2024 (European Committee of the Regions 2024; Ouvinen 2023; Polet 2023).

The main guiding principle of these European programs is that no one is unemployable (Ouvinen 2023; TZCLD, n.d.). Apart from that, the programs share many similar policy principles: municipal focus, permanent or long-term contracts, voluntary basis, attention to individual skills and situations, commitment against crowding out, participatory approach to project planning and engagement with local

organisations, as well as salaries set at the minimum wage level, thus providing a credible fallback option for workers (Ouvinen 2023).

3b) Austria, *Modellprojekt Arbeitsplatzgarantie Marienthal (MAGMA)*: A local job guarantee program was launched as part of a research project in an Austrian municipality (Kasy & Lehner 2022). The program is called MAGMA and stands for 'Modellprojekt Arbeitsplatzgarantie Marienthal' (translated as 'model project job guarantee Marienthal') and ran from October 2020 until 2024 in the municipality of Gramatneusiedl by the Public Employment Service (Arbeitsmarktservice, AMS) of Lower Austria. The target group of the project are persons who were long-term unemployed (12 months or more) or at risk of long-term unemployment (9 to 12 months). People who volunteer to participate are provided with a guaranteed job, complemented by targeted counseling. Salaries for all participants were at least equal to the minimum wage set by collective bargaining. Jobs were created to fit the individual needs and constraints of participants and provide meaningful activity. Expenditures of the AMS per participant were about EUR 29,841 per year. The jobs could be subsidised in the regular labour market or, for most participants, employment in a social enterprise implementing municipality projects. Evaluation findings by Kasy and Lehner (2022) show positive effects of participation on economic wellbeing, and on a number of measures of wellbeing that have been emphasised in the sociology of work, social psychology, and organisational behavior. The evaluation of the Marienthal JG also did not find spillover effects on the local labour market, i.e. the jobs created were additional jobs that did not displace existing jobs. Short-term unemployment did not increase, which could theoretically be a result of moral hazard among unemployed people if they were to reduce their regular job search due to the expected guaranteed job offer (Kasy & Lehner 2022). Local media have hinted at the project's potential to become a template for the EU (Frings 2023; Glösel 2023).

4a) USSR, *Duty to work*: The Soviet Union had a very particular approach to achieving full employment. In 1918, one year after the October Revolution, the Declaration of the Rights of the Labouring and Exploited People established a 'universal duty to work', underpinned by the goal of clearing the society from the 'parasitical strata', with the exact wording taken on later in the first Soviet Constitution of 1918 (Gray & Cameron, 2019, 4). One and a half decades later, the Soviet Constitution of 1936 in its Article 118 included a slightly modified formula with largely the same idea of full employment as a legally enforced but at the same time consequential product of the country's way of life. The new article guaranteed citizens 'the right to employment and payment for their work in accordance with its quantity and quality', achieved through 'the socialist organisation of the national economy, the steady growth of the productive forces of Soviet society, the elimination of the possibility of economic crises, and the abolition of unemployment' (Constitution of the Union of Soviet Socialist Republics 1936; Moskoff 1992, 1). The credibility of this declaration is hard to estimate – after the alleged total liquidation of unemployment in the 1930s, official figures ceased being published (Hutchings 1967, 30, 37; see also Fitzpatrick 2006, 380), as there was no reason to report something (that is, unemployment) that was officially assumed to be non-existent. Rather than being a singular policy program, this decades-long Soviet approach to full employment was a macroscopic goal, promise, and public good embedded in the system. It was also the system's expected corollary. Two assumptions ruled out the possibility of tolerating the degree of unemployment seen in capitalist economies (see, e.g., Gray & Cameron, 2019, 4-5). First, in a socialist economy aiming for communism, all able forces should be involved in social production. Second, the presumed abolition of oppression, greed, and cyclical crises that characterised the capitalist system, was seen as enough of a precondition for ensuring stable growth and employment.

A zero-unemployment stance also meant no tolerance of voluntary unemployment (Moskoff 1992, 2). The approach was that those working for themselves were not participating in the joint project of building communism, and thus were freeloaders or, worse, wreckers. In the post-war era, the forms of enforcing such a view, with some fluctuations, existed from 1951 to 1965, and most importantly in 1961, when, in addition to prostitutes and beggars, the 'anti-parasite' law introduced sentences for the 'gilded youth' and the self-employed, such as bee-keepers, taxi drivers, nut collectors, carpenters, and many others (Fitzpatrick 2006).

The 1965 amendments dropped the harshest punishments against those refusing to do 'socially-useful' work, but less strict disciplining went on well into the 1970s and 1980s (Fitzpatrick 2006, 407; Gray & Cameron 2019, 6). The overall approach was ultimately reconsidered in January 1991, amidst a crisis and under largely new circumstances, with a new decree abolishing the job guarantee (while keeping most of the other state-provided benefits such as retraining), adding the 'voluntariness' clause to the definition of being unemployed, and reinstalling the unemployment benefits system (Moskoff 1992, 16-17). Effectively, by acknowledging the extant crisis, the new measures disavowed the strong assumption of full employment growing organically out of the system's innate features, which in turn reconfirmed the idea that those working outside the state-mandated sphere were not necessarily delinquents, freeloaders, or enemies.

4b) Belarus, 'parasite tax': In April 2015, Belarus, a former part of the Soviet Union, established a law eerily reminiscent of the Soviet approach, levying a tax on those who were not officially employed, with the officials actively using phrases such as 'social parasitism' and 'scroungers' (Gray & Cameron 2019; Hall 2023, 29, 98). The difference with the Soviet version was that the Belarusian government sought to tax non-working people rather than directly forcing them to work (Loushnikova 2015, in Hall 2023, 29), citing employment promotion and citizens' obligation to participate in financing state expenses as the reason to tax those who did not work officially and therefore did not pay income tax (Gray & Cameron 2019, 3). The government's expectations reportedly suggested that 470,000 people, or about 10% of the working-age and able-bodied population, fell under the category of idlers, and that the tax would add USD 43m to the next year's state budget while also forcing people to find jobs or declare their incomes (Gray & Cameron 2019, 2; Hall 2023, 98). The law in this form was comparatively short-lived – it sparked protests across the country in 2017 (Hall 2023), and was consequently amended with No. 1 Presidential Decree of 25 January 2018, whereby, instead of paying the tax, the 'scroungers' would be obliged to pay for utilities in full, without receiving the state subsidies provided to everyone else (Gray & Cameron 2019, 3; Decree No. 1 of the President of the Republic of Belarus, 2018).

At the time of its introduction, while the official unemployment figures were at 1% (Gray & Cameron 2019, 7-8), no jobs were created with the purpose of accommodating the new entrants, which puts the program in contrast to the employment stimulus programs which create carrots (incentives and opportunities) and do not necessarily have sticks. The country was, in addition, in an economic downturn in 2015 and 2016, with falling incomes, rising inflation and increasing poverty rates, and only 46% of the population was employed full-time (Shimanovich 2017). This happened against the background of an economic shock from the Russian invasion of Crimea, with ripple effects in Russia's economy which were retransmitted to the highly integrated Belarusian economy. Another consequence of the conflict were Ukrainian refugees entering Belarus and exacerbating competition in the labour market (Gray & Cameron 2019, 7, 15).

The revenue part of the law also did not work out very well – in 2016, the year following the introduction, profits from the tax were equivalent to USD 2.7m, 6.28% of the intended USD 43m. Out of the 470,000 assumed ‘freeloaders’, approximately 54,000, or 11%, were found to have paid the tax, while others received waivers or paid significantly less. From 2014 to 2017, the overall number of employed contracted by 185,500. In total government tax revenue, the social parasite law accounted for 0.03% of income in 2016 and 2017 (Gray & Cameron 2019, 2-4, 9-10). The most important outcome appears to be the country-wide 2017 protest.

5c) Hungary, *Public Works Scheme (PWS)*: The Public Works Scheme (PWS) was established in 2010 by the Hungarian government to reintegrate long-term unemployed individuals, particularly those with little or no education or professional skills, back into the labour market (Hungary Today 2021). It was thereby designed to gradually replace social benefits such as unemployment benefits, which are linked in Hungary to the acceptance of employment opportunities: if there are no employment opportunities one is obliged to join the public works scheme (Albert 2019). Due to the illiberal implementation of this public works scheme by removing the benefits of the unemployed unless they submit to work in a government-determined program, it has also been coined a ‘Job Obligation’ instead of a ‘Job Guarantee’ program (Tcherneva 2022). In addition, payment grades for this usually labour-intensive and low-skilled physical labour in public infrastructure and maintenance also falls below the national minimum wage threshold (IMF 2017) and has thereby increased the in-work poverty rate while raising employment rates (Albert 2015, Albert 2017)

APPENDIX E. FULL EMPLOYMENT IN PLANNED ECONOMIES

The concept of labour in the planned Soviet economy was strongly influenced by Marxist-Leninist ideas that the maintenance and reproduction of material life is the prime human need but also that work itself is a human need (Lane 1988). The allocation of labour is primarily performed through bureaucratic control, and not through the market process. In this way, socialist economies formally aimed to abolish joblessness and establish permanent full employment (Kornai 1992). Importantly, the starting point for full employment conditions was not the result of a conscious full employment policy but an outcome that went hand in hand with the policy objective of forced growth. The key strategy of forced growth is the extensive method of mobilising labour surplus, i.e. the speedy inclusion of the labour surplus into publicly owned production. However, the process shows a certain path dependency. Once jobs have been created, they become an 'acquired right' of the workers and full employment is then laid down as a guaranteed right. Guarantees are based in the operating mechanisms of the socialist system, as well as through the principles and practical conventions of the employment policy (Kornai 1992).

On the other hand, other forms of unemployment and underemployment remained; the most important types of which were 'structural', 'seasonal' and 'frictional'. Natural cycles like winter weather continuously affected seasonal unemployment in agriculture. More importantly, the ambition of providing full employment in planned economies came at the cost of efficiency and labour productivity. The main disutility of the planned Soviet economy is visible in various forms of underemployment, which means that labour was not used efficiently. Many workers were idle for all or part of the time, or their level of skill was higher than required on the job. Hence, the Soviet labour market was characterised by '(a) the employment of a large proportion of the population leaving no 'reserve army' of unemployed or self-employed; (b) the under-utilisation of labour at the place of work—hoarding, or maintenance of labour reserves, and (c) a market shortage of labour: the labour market is a 'seller's market'.' (Lane 1988) Several disadvantages have also been reported for workers in such an economic system. Socialist economies with clear full employment ambitions show problems in terms of bureaucratic control and the prevalence of the interests of firms and factory managers. The sphere of economics and business is not separated from politics and the state and hence firm and factory managers retain enormous power over their own employees which makes a firm a cell of 'totalitarian power' (Kornai 1992). Firms for instance had the power and freedom to assign specific tasks, set wages and bonuses within the general guidelines and therefore could arbitrarily favour and discriminate against others; firms also functioned as the local representation of crime-prevention authorities and were able to arrange arrests or persecution of 'saboteurs' and 'troublemakers'; firms were able to intervene in family life through preventing a worker from initiating a divorce, or dissuading them to have children (Kornai 1992).

On a moral level it has also been argued that unemployment is a 'necessary evil'. Some people have to lose their jobs in order to fight other economic ills and create an environment of work commitment. In that sense the full employment state of the Hungarian socialist economy during the 20th century has been rendered as economically inefficient (Timar 1983). The author argues in favour of the development of a market led economy instead of a state-based economy that aims to achieve full employment, since the 'respect for well accomplished work is fading'. It is said that the case of labour shortages has a detrimental effect on labour productivity and the general functioning of the economy which makes clear why opinions arise that unemployment has to be created 'if we want order and discipline' (Timar 1983). Comparing the Soviet economy with capitalist market societies, it is also the case that wages were not effective in regulating the supply of labour, and the absence of a pool of unemployed made dismissal

less effective as a means to discipline labour (Lane 1988). Hence, an important task for public employment programs will be not only to emphasise the general provisioning of full employment but also to reflect on ways of keeping high labour motivation on the grounds of technical, managerial, educational, psychological and cultural criteria. Ideas range from collective financial incentive schemes, moral stimulation, development of collective consciousness, to greater reliance on administrative control (Lane 1988).

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