



**TURUN  
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# **HOW HAS THE UNEMPLOYMENT BENEFITS SHAPED THE EUROPEAN LABOUR MARKET?**

The implications of unemployment benefits generosity on unemployment longevity

Master's Degree Programme in Inequalities, Interventions and  
New Welfare State (INVEST)

Master's thesis

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## **Abstract**

Unemployment and the unemployment rates are strongly associated with labour market participation. The principal aim of the study was to investigate the relationship between unemployment benefits generosity and the labour market outcome in terms of prolonged unemployment in the European context. The aim was also to provide information that will lay the groundwork for investigating the efficacy of unemployment benefits on the labour market outcome in terms of unemployment longevity for causal inference and social policy evaluation. This study seeks to answer the question: *does generous unemployment compensations increase the job search duration?* The research methods involved the use of analytical techniques for the quantitative determination of influence of unemployment compensation on unemployment spell. The data was obtained from 25 European countries, with the unemployment duration (from 1 to 12 months) for a period of fifteen years (from 2004 to 2019) and a total of 425,656 observations. Multilevel regression (mixed effects with restricted maximum likelihood, REML) was used. Results showed that more generous unemployment compensations have a positive relationship with unemployment duration thus generous unemployment benefits increase the unemployment durations. The country-level replacement rates are positively correlated with unemployment spells.

Key words: *compensation, EU, labour market, social policy, unemployment benefits, unemployment longevity*

# 1. Introduction

Societal necessity for well-being, education, health, housing, and economic security constitutes the basics of policies aimed at eliminating social exclusion. Such measures frequently include monetary aid to reduce poverty, health care to maintain physical and mental health, housing services to provide shelter, educational opportunities to help citizens become economically independent to fully participate in their respective societies through increased productivity (Hewitt, 1998). In general, governments deploy numerous measures to reduce labour market failures through the implementation of labour market policies. Unemployment insurance schemes are crucial to the operation and effectiveness of the labour market. Such programmes safeguard individual workers from losing income during an unemployment period by ensuring consumption continuation between employment and unemployment cycles. The initiatives are essential for reducing poverty and ensuring a fair distribution of income (Bennett, 2020). In terms of public spending, social protection (including both contributory and non-contributory programmes), public social expenditure accounts for more than 25% of GDP<sup>1</sup> in most countries offering social protection buffers (Spasova et al., 2019).

The broader components of tax and benefit systems, especially social assistance, have an impact on the design of unemployment insurance systems and how they work to redistribute income (OECD, 2020). European member States provide varied unemployment benefit systems influenced by their respective economic and institutional framework. Unemployment insurance programmes have been on the verge of being unsustainable, placing pressure on governments to either raise payroll taxes, or minimize benefits. None of these options are appealing during economic hardships when people are most in need of the assistance and governments can least afford to raise taxes on their citizens.

On the contrary, the basic intent of the unemployment benefits has encountered setbacks citing its negative impact on the labour supply. To that effect, numerous research has been conducted on the association between unemployment compensation and unemployment spell based on various approaches to social policy.

The aims of the study were to; (1) investigate if there is remarkable variability in the unemployment duration between individuals within the same country and individuals from different countries, and (2) whether there are certain individuals' and countries' indicators (unemployment benefits generosity, age, gender, educational attainment, other benefits, tax wedge, and GDP) that explain the variability. The research would also provide the information that will set the foundation for investigating the efficacy of unemployment compensations on unemployment longevity for causal inference and social policy evaluation. Previous research indicates that unemployment compensations increase the unemployment spell, but whether the compensations per se is solely responsible for the prolonged unemployment periods or there are other factors responsible for the prolonged unemployment durations is not fully exhausted.

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<sup>1</sup> Gross Domestic Product

Based on the objectives, this study has two hypotheses. We test the hypotheses regarding the nature of individuals unemployment duration:

*H1.* There is a significant variance in unemployment duration within both individuals, households, and countries.

The unemployed and the countries' characteristics may influence unemployment duration. We then test that:

*H2.* There is an existence of a significant relationship between unemployment generosity and unemployment longevity.

The basic assumption is that there would not be any variation of unemployment longevity:  $H_0$  (null hypothesis). If the assumption does not hold under analysis, then we ought to have a statistical support for the alternative hypothesis:  $H_a$  (alternative hypothesis), that there is a significant variation of unemployment longevity. The second assumption is that there would not be any impact of generous unemployment benefits on unemployment longevity:  $H_0$  (null hypothesis). If the assumption does not hold under analysis, then we ought to have a statistical support for the alternative hypothesis:  $H_a$  (alternative hypothesis), that there is a positive impact of generous unemployment compensation / benefits on unemployment longevity. Both the hypotheses are testing for between-subject design, thus:

$$H_0: \alpha_1 = \alpha_2 = \dots = \alpha_j$$

$$H_a: \alpha_1 \neq \alpha_2 \neq \dots \neq \alpha_j$$

A significant F-statistic implies a rejection of the null hypothesis that all the group means (in fixed effect) are equal. But in our case, we are testing for random effects focusing on the variance (variability):

$$H_0: \sigma_b^2 = 0$$

$$H_a: \sigma_b^2 > 0$$

## 2. Literature Review

This chapter contains a review of relevant literature to the study, this covers an overview of unemployment, unemployment benefits, gender, age, various social benefits from national social security systems in the European countries, the effect of tax wedge, and the causal evidence of unemployment benefits on unemployment duration.

## ***Unemployment***

Unemployment can be defined in several ways, a person is considered unemployed if they are actively seeking employment, are employable, and have not yet found employment. This group also includes those who are working but do not have adequate or quantifiable jobs in terms of working hours. Unemployment rate<sup>2</sup>, is a vital indicator of a country's economic status.

To be classified as unemployed by the ILO, a person (aged 15 years to 64 years) must meet three requirements to be considered unemployed: (i) have not worked had any sort of work during the reference week, (ii) must be ready to take up a job in the next two weeks, and (iii) must be actively looking for an employment in the past four weeks or got a job that commences within the next three months (International Labour Organization, 2022).

Unemployment can be categorized into three main types: cyclical unemployment (common during recession), structural unemployment, and frictional unemployment. The structural unemployment and frictional unemployment both constitute to natural unemployment measure. Because of the cyclical unemployment that results from the economic cycle contraction and the resulting decline in demand for goods and services, employers are forced to minimize labour costs by laying off employees. Technological changes in production often causes a mismatch between the skills workers possess and the skills demanded by the labour market leading to structural unemployment (Anakpo, et al., 2022). Frictional unemployment occurs when individuals leave their previous jobs but have not yet settled on a new employment, this usually happens on their own volition, due to a need to relocate or have saved enough money to look for a different job opening (Soliev, et al., 2022).

The term "eligible population" refers to people who are considered likely to enter the labour force<sup>3</sup>. The eligible groups of working-age people together represent the labour needed in the production of goods and services in exchange for an income. The individuals who do not have jobs, but are available to take up jobs, and have been actively looking for employment in the previous four (4) weeks are recognised as unemployed. A small number of people give up the job search when unemployment is high, which results in their exclusion from the labour force. This means that even though there has not been a fundamental improvement in the labour market, the unemployment rate may decline or stagnate.

### ***Unemployment compensation / benefits***

Unemployment compensation, according to existing research, alters the unemployed behaviour (Mousavi, 2022). In comparison to unemployed individuals who do not have access to the unemployment benefits, the unemployed individuals with access to benefits are less driven to re-join the labour market. Generous replacement rates, on the other hand, may have two types of consequences. First, they may deter workers from looking for possible work. Second, they may raise workers' reservation wage<sup>4</sup>. Unemployment compensation, according to Poterba et al., (1984), alters the unemployed individuals' attitude towards job search. The unemployed set their

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<sup>2</sup> Quotient of the number of unemployed people by the total labour force

<sup>3</sup> The number of people in a population who are employed, self-employed, or unemployed

<sup>4</sup> The amount of income growth that would be necessary for someone to no longer care whether they were working or not, it is less likely that someone will work the higher it is

reservation wage as an equilibrium between the pay offer from the labour market and their preferences (Abraham et al., 2013). The reservation wage allows for a contrast between receiving the unemployment benefits and the drawbacks of looking for work versus staying without a job. Generous compensation may not only increase recipients' reservation wages, but might also encourage the individuals to look for new jobs less actively, which has a detrimental impact on employment and in turn prolongs unemployment spells (Allard, 2005).

The social policy in place has a significant impact on how unemployment benefits affect the labour market. This addresses the eligibility standards, implementation procedures, the condition of the labour market, and the features of the market's labour supply and demand. Another concern on the unemployment insurance programmes is whether they help to alleviate poverty, research shows that such programmes lower the overall poverty prevalence. This aspect tackles both income inequality as well as income distribution (Face, 2010).

Gruber (1997) estimates the appropriate level of unemployment compensation where the ideal benefit level balances the reception versus the costs of job search disruption. The advantages are calculated using the responsiveness to the compensations against their generosity, whereas the costs are calculated using the elasticity of unemployment spell regarding balanced-budget rises in unemployment insurance advantages as well as taxes. According to their results, even at very significant levels of risk avoidance, the ideal replacement rate is less than 50%, though the average replacement rate is 42.6%.

In general, the setup of unemployment compensation schemes differs significantly between EU nations, based on factors such as labour market and social institutions. The unemployment benefit system can include both passive (unemployment insurance, unemployment aid) and active labour market policy tools, and it can be geared either towards the insurance or welfare concept.

### ***Variation of Unemployment durations by gender***

While examining the individual characteristics, research on determinants of probability of leaving unemployment focusing on gender indicate that women do experience higher unemployment durations than men. Aysit Tansel and H. Mehmet Tasci in their study using Turkish Household Labour Force Survey (HLFS) from the year 2000 to 2001 (Tansel et al., 2010) carried out the analysis by deploying *events history analysis*<sup>5</sup> methodology on both men and women separately. Their results indicated that women experience higher unemployment durations compared to men. International Labour Organization (ILO) described that those females who want to work experience difficulties in finding jobs compared to men (ILO, 2018).

Fenglian Du and Jian-Chun Yang carried out analysis on the obstacles pronging job search among women in comparison to men in urban China following restructuring. They concluded “that women's job search efforts are handicapped by lack of access to social networks, social stereotyping (that married women are unreliable employees), unequal access to social re-

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<sup>5</sup> Variety of statistical methods designed to describe, explain, or predict the occurrence of events

employment services stemming from sex segregation prior to the displacement, and wage discrimination in the post-restructuring labour market” (Du et al., 2007).

### ***Unemployment duration among different age groups***

According to OECD, the age specific employment rate is calculated as a percentage of workers in that age group who are employed compared to all other workers in that same age group. People who report having had quantifiable employment (for at least an hour the previous week) or who had a job but were absent from it for a formal job attachment are considered employed if they are 15 years of age or older (where 15 years and 64 years are referred to as the working age), this group includes also those under the age of 24 who are just starting out in the workforce after finishing their education and those between the ages of 25 years and 54 years who are in the prime of their working lives, and ages between 55 and 64 are regarded as the prime of a person's career and the time leading up to retirement (OECD (2022)).

Discrimination against older workers who are unemployed is often noted making a bad situation much worse (Wood et al., 2008). Age discrimination has been linked to several causes, such as market imperfections, irrational behaviour, and structural effects on the labour market resulting from long-term technological in the economy.

### ***Various social benefits from national social security systems in the European countries***

In addition to unemployment benefits or basic income support, the unemployed may be eligible for a variety of national social security benefits such as healthcare, family allowances, and housing assistance. Many European countries offer inexpensive childcare (for example, exemptions from obligatory co-payment and enrolling fees for pre-school centers, as well as exemptions from bearing the fees of public kindergartens). Long-term unemployed people in a variety of European countries may be considered for education-cost assistance such as “Back to School Clothing and Footwear Allowance” at the national, regional, or municipal levels. They can obtain a wide range of advantages at the local level, including municipal tax exemptions and other financial assistance.

Access to housing is also a crucial component of providing a stable living environment for those who are out of work for an extended period (Weckström, 2012). Several countries, in addition to a potential financial compensation, give other assistance such as homeless services, housing mediation, rent guarantee to owners, and support for renting a unit. Belgium is an intriguing example of targeted assistance tied to long-term unemployed designation. In addition to having access to healthcare, the individuals who have been unemployed for a long time may also access subsidized healthcare based on their household income.

For long-term unemployed adults who are enrolled in training, there is supplementary compensation for childcare costs. However, Belgium's housing subsidies are rather meager. Also, in Italy, all unemployed people are qualified for assistance offered to low-income families. This encompasses, for instance, cost exemption or price reductions for healthcare services, childcare



services, books, college and university fees, house rent, gas, electricity, and telephone, public transportation, and school buses fees as well as municipal taxation.

Other benefits and/or services are offered in European countries with the goal of assisting people's career chances through the recuperation and enhancement of their personal skills. For example, debt counseling services, assistance with psychiatric challenges and addictions, language classes for individuals with national language difficulties, and rehabilitation for those with impairments (Staiger et al., 2017).

As per Bouget et al. (2015), experts believe that the efficacy of social services in assisting the long-term unemployed is extremely good in just a few nations while in other countries the services are believed to be of medium efficacy or even unfair. The critical aspects that experts frequently showcase as requiring to be discussed in this sense in relation to the effectiveness of social services for long-term unemployment are, first, the inability of services to target the most underprivileged and to adequately target the long-term unemployed, and second, a shortage of cooperation or insufficient connections between services (Bouget et al., 2015).

### ***Effects of tax wedge on employment rates***

It is believed that a percentage increase in tax wedge<sup>6</sup> adds to the firm's production cost in terms of labour expenses with direct outcomes on the employment rates (Šeparović, 2009). There is an association, thus a higher tax wedge and unemployment are mutually causative, i.e., a high tax wedge leads to a higher unemployment rate. Unemployment rises because of a high tax wedge, which is detrimental to both the employees and employers. The same conclusion is confirmed by Primož Dolenc and Suzana Laporšek in their analysis (Dolenc et al., 2021). The researchers studied the impacts of tax wedge, unemployment, and employment rates in the European context, the analysis was done by deploying linear regression (with panel-corrected standard errors) on a sample of 27 EU Member States from 1999 to 2008 to determine whether the tax wedge influences employment growth. The results confirmed that an increase in the tax wedge was responsible for a reduction in employment by around 0.04 percentage points.

### ***Causal evidence of unemployment benefits on the unemployment duration***

Generosity compensations have major impacts on how actively the unemployed individuals look for work. A study conducted by Lalive (2007), found that males job search lasted at least 0.09 weeks longer for every week of benefits, and females unemployment lasted at least 0.32 weeks longer for every additional week of benefits. This was based on a targeted programme that extended the maximum period of jobless benefits from 30 to 209 weeks in Austria. Similar conclusions were settled upon by Klaauw and Groot, (Klaauw and Groot, 2014) they looked at how a cut in the unemployment compensations would affect the labour market outcome. By using data from Statistics Netherlands and deployed a regression model, they evaluated the impact through empirical analysis.

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<sup>6</sup> the discrepancy between the company's labour expenditures and the employee's net take-home pay

Knut Røed and Tao Zhang (Røed et al., 2003) focused on the question whether growth incentives in form of employment compensation impacts the exit out of unemployment state. The duo analysed the Norwegian unemployment periods from the year 1990 using a hazard rate model with unlimited spell duration. Regardless of the business cycles or the length of the jobless spell, the findings were that instantaneous increase in compensation reduced the rate of unemployment exits by a significant spell. In the months leading up to benefit depletion, the escape rate skyrocketed. The findings were that the shorter the periods of entitlement to the rights, the greater the rate of employment resulting to higher employment rates regardless of whether the occupations were undesirable with less pay or not. In addition to transfer amount, the interval between benefits transfer also plays an important role in job search motivation. According to (Kyyrä et al., 2020), “one extra week of benefits increases expected unemployment duration by 0.16 weeks”. Moral dangers like this are related to the current argument about the right amount of transfer benefits. Unemployment benefit schemes should be designed to find a compromise between the requirement to maintain jobseekers' income during the periods of unemployment and the need to provide enough incentives to seek employment at the same time.

On the contrary, other findings argue that higher unemployment benefits may not necessarily lead to longer unemployment spells. As discovered by Card et al., (2015), a wide range of unemployment length elasticities in relation to the level of unemployment insurance benefits, ranging from 0.3 to 2. Peter Fredriksson and Martin Söderström (Fredriksson et al., 2008) used regional data from Sweden, to investigate the connection between unemployment compensations and unemployment. The two estimated the impact of an increased unemployment compensation on unemployment spell by deploying the ceiling (because of wage differentials) on the benefits, the findings were that the generosity influenced the unemployment. Generous compensations resulted to an increase in unemployment.

Other analysis on the effect of generous unemployment compensations evaluated the increase of the benefits duration on unemployment duration. Using a sizable sample of household heads, the analysis concentrated on the variations in the unemployment periods distributions of recipients and non-recipients of unemployment benefits (Katz et al., 1990). Close to the benefits expiration period, there were noticeable reduction in the rate of unemployment compensation recipients. Non-recipients did not experience identical increases at similar periods in the spell duration. Second, a week's increment in benefit duration prolonged the average spell of unemployment by 0.16 to 0.20 weeks (administrative data from 12 states within the United States).

The experimental findings regarding basic income (in Finland) on the assessment of employment and well-being was based on a basic monthly income of between €550 – €600. The basic income replaced all 'basic' benefits leaving almost all insurance-based benefits intact, plus other income-related benefits, housing, and child allowance. The target group included the entire adult population excluding pensioners (25 – 63 years old), randomization of the control was made possible as an experimental basis to get a full representation of the whole country. The experiment was to assess if the social security already in place were still instrumental in tackling changes in the labour market. The study was also intended to eliminate some incentive traps (in scenarios where work does NOT pay/NOT enough) and finally elimination of bureaucratic machinery by

creating a more transparent system (Kangas et al., 2019). The bureaucratic component could be because of set of conditions an individual ought to meet where: the *treatment* is the reception of the unemployment benefits, the *outcome* was the unemployment longevity, while the *compliance* is being registered as unemployed and constantly seeking for employment and willing to take up a job offer (Bellemare et al., 2019). The results were that there were no major employment effects: basic income did not make people less active but did not help them to find employment. However, significant effects among the immigrants and among those treated who had families (younger, healthier, and closer to the labour markets), in this group the basic income performed better than the activation model with post-treatment condition. In this case both exogenous and endogenous factors such as age, health and labour market accessibility were noted to be vital in securing employment (Allas et al., 2020).

### 3. Data and Methodology

#### Data

Cross-sectional data is useful for examining the variation of unemployment longevity as explained by unemployment benefits generosity. For the sake of this analysis, the data come from two different sources merged into a single dataset. The EU-SILC survey data was the source of our micro data (from 2004 to 2019). The macro data come from Eurostat<sup>7</sup> and OECD<sup>8</sup> with the corresponding years as per the micro data. We have a repeated-measures data set where data is clustered by individual ( $i = 1, 2, \dots, n$ ), collected over several years ( $t = 1, 2, \dots, n$ ), where outcome variable is unemployment duration (1 to 12 months maximum), the key predictor variable is unemployment benefits generosity (0 per cent to 86 per cent), the relationship between unemployment spell and unemployment compensation generosity to be mediated by gender, age, educational attainment, other benefits as well as other economic factors. We are not able to certain the exact duration of unemployment spell among individuals thus censored data. We are solely focusing on the unemployed individuals in the analysis.

The dataset then consists of unemployment longevity or duration/spell ( $ud_{ijk}$ ), age ( $age_{ijk}$ ), gender ( $gnd_{ijk}$ ), educational attainment ( $edu_{ijk}$ ), housing benefits ( $hb_{ij}$ ), child benefits ( $cb_{ij}$ ), generosity index ( $re\_rr_i$ ), tax wedge ( $tw_i$ ), and gross domestic product ( $gdp_i$ ).

Table 1, Summary Statistics

Variables	e (mean)	e (p50)	e (sd)	e (min)	e (max)	e (count)
Unemployment Duration	7.89	9	4.11	1	12	425656
Generosity Index	41.82	41	21.96	0	86	425656
Gender	1.49	1	0.49	1	2	425656
Age	38.51	37	13.13	16	65	425656
Educational Attainment	2.95	3	1.13	1	5	425656
Child Benefits	0.70	0	1.98	0	68	425656

<sup>7</sup> The statistical office of the European Union

<sup>8</sup> OECD

Housing Benefits	58.16	0	628.36	0	148944	425656
Tax Wedge	38.84	38.97	5.57	11.01	56.08	425656
Gross Domestic Product	148.66	23.35	432.99	11	2811	425656

Table 1 shows a summary of the indicators in the models. Unemployment longevity / spell ( $ud_{ijk}$ ) represents the period in which an individual has been unemployed for a continuous period. The unemployment periods are recorded in months ranging from one month to twelve months. Generosity index or replacement rates ( $re\_rr_i$ ), this indicator evaluates the percentage of prior household income from in-work status that is still present after 12 months of being unemployed. Age ( $age_{ijk}$ ) variable refers to the age (between 15 years and 65 years) of an individual at the time of data collection.

Gender ( $gnd_{ijk}$ ) this represents either of the sexes (male or female). The variable gender is recorded as dichotomous, males are coded 1, and females coded 2. The males comprise of 47.25 percent while females are 52.75 percent. Educational attainment ( $edu_{ijk}$ ), this refers to the active population by level of education - tertiary education, refers to those having a college / university degree who are between the ages of 15 years and 64 years. The variable educational attainment is recorded as categorical; primary education and below (group 1), lower secondary (group 2), upper secondary (group 3), post-secondary (group 4), and tertiary (group 5).

Housing benefits / allowance ( $hb_{ij}$ ). Individuals (the unemployed satisfies this category) with low income may be eligible for a general housing allowance from the government. The general housing allowance is intended to help with the housing costs. Child benefits ( $cb_{ij}$ ) are typically paid to the mother, father, or other adult responsible for the child's care. This includes children under the age of 17 who are eligible for the child benefit. The tax wedge ( $tw_i$ ) is the difference between the typical worker's tax burden and the employer's corresponding total labour expense. The average tax wedge calculates the amount of tax on labour income that deters individuals from working. It is stated as a percentage of labour expenses. Gross domestic product ( $gdp_i$ ) is the agreed-upon measure of value addition in a country through the production of goods and services in each period. (calculated in million euros).

Table 2, Data Sources

<i>Variable name</i>	<i>Data source</i>
<b><i>ud<sub>ijk</sub></i></b>	<i>EU-SILC</i>
<b><i>gender<sub>ijk</sub></i></b>	<i>EU-SILC</i>
<b><i>age<sub>ijk</sub></i></b>	<i>EU-SILC</i>
<b><i>edu<sub>ijk</sub></i></b>	<i>EU-SILC</i>
<b><i>cb<sub>ij</sub></i></b>	<i>EU-SILC</i>
<b><i>hb<sub>ij</sub></i></b>	<i>EU-SILC</i>
<b><i>re_rr<sub>i</sub></i></b>	<i>OECD</i>
<b><i>tw<sub>i</sub></i></b>	<i>Eurostat</i>
<b><i>gdp<sub>i</sub></i></b>	<i>Eurostat</i>

## Methodology

In research, randomized controlled settings are usually adopted to demonstrate causality. However, for ethical and sometimes practical reasons, randomized controlled trials cannot always be carried out. In such cases, knowledge can be gained through observational research. To determine causality, observational studies can be deployed where descriptive statistics are used on the sample data to infer information about the population. This paper seeks to ascertain whether changes in unemployment benefits causes changes in unemployment longevity. We use multilevel regression (mixed effects with restricted maximum likelihood, REML) to study the sources of variances in different levels of the unemployment duration. In this case, mixed effects model was deployed as we were looking for a statistical test to predict the unemployment duration (which is continuous in nature) using the unemployment benefits generosity. The model also allows for control of other predictor variables, and since we have repeated measures in the dataset mixed effects model is ideal.

The outcome of interest is the unemployment spell / period ( $ud_{ijk}$ ), with covariates which are individual specific, for instance: age ( $age_{ijk}$ ), gender ( $gender_{ijk}$ ), educational attainment ( $edu_{ijk}$ ), unemployment benefits ( $ub_{ijk}$ ). The second level is household characterized with its own set of covariates: housing benefits ( $hb_{ij}$ ), child benefits ( $cb_{ij}$ ). The third level is the country with covariates: generosity index or replacement rates ( $re\_rr_i$ ), the unemployment benefits generosity is the main independent variable, gross domestic product ( $gdp_i$ ) and tax wedge ( $tw_i$ ).

Each level of the model has a regression equation that accounts for the variance in intercepts or slopes that are assumed to fluctuate, as well as the possibility of including country-level covariates. For the sake of illustration, in the three-level model with individual-level covariate  $x_1$ , level-two covariate  $x_2$ , and level-three covariate  $x_3$ . The data come as  $y_{ijk}$  indicating the  $i$ th individual respondent in the  $j$ th household level which is contained in the  $k$ th country level. By allowing both varying-intercepts and varying-slopes in the regression equation, the model can be written as:

$$unemployment\ duration(ud)_{ijk} = Y_{000} + u_{00k} + r_{0jk} + e_{ijk}$$

The  $ud_{ijk}$  is the observed unemployment duration / spell for an individual  $i$  ( $i = 1 \dots, n$ ) in household  $j$  ( $j = 1 \dots, n$ ) in country  $k$  ( $k = 1 \dots, n$ ),  $Y_{000}$  is the grand mean,  $u_{00k}$  is the effect of country  $k$ ,  $r_{0jk}$  is the effect of household  $j$ , and  $e_{ijk}$  is the individual error term. The residual errors at the country  $u_{00k}$ , household  $r_{0jk}$ , and individual level  $e_{ijk}$  are independent and normally distributed with zero means and constant variances  $\tau_{u000}$ ,  $\tau_{r000}$ , and  $\sigma^2$  respectively.

## 4. Results

We have 25 countries with a total of 425,656 observations. The analysis consists of four models presented in table 3. Model A is the baseline where no explanatory variable is controlled for. In Model B, only the main independent variable, generosity index (replacement rates) is controlled for. In model C all the variables are controlled for except the main independent variable, and finally in model D, all the variables are controlled for.

We start the analysis by estimating the null model (to settle the fact that there is variability in the unemployment durations between individuals from the same country and between these individuals from different countries). For this baseline model, no independent variable is controlled for which then only considers a single intercept and error terms  $u_{00k}$ ,  $r_{0jk}$ , and  $e_{ijk}$  with variances, equal to  $\tau_{u000}$ ,  $\tau_{r000}$ , and  $\sigma^2$  respectively. The model is as follows:

$$\text{unemployment duration}_{ijk} = \pi_{jk} + e_{ijk}$$

$$\pi_{jk} = b_{00k} + r_{0jk}$$

$$v_k = \beta_0 + v_k$$

Which results to:

$$\text{unemployment duration}_{ijk} = Y_{000} + u_{00k} + r_{0jk} + e_{ijk}$$

On the fixed effects component (table 3, model A), the estimation parameter  $Y_{000}$  is 7.8 corresponding to the average of individuals' expected unemployment duration (in months). The estimates of the variances of error terms  $\tau_{u000} = 1.22$ ,  $\tau_{r000} = 4.01$  and  $\sigma^2 = 10.87$  are presented. The interclass correlations were equally obtained.

-Level-2 intraclass correlation:

$$rho_{\text{household}|\text{country}} = \frac{\tau_{u000} + \tau_{r000}}{\tau_{u000} + \tau_{r000} + \sigma^2}$$

-Level-3 intraclass correlation:

$$rho_{\text{country}} = \frac{\tau_{u000}}{\tau_{u000} + \tau_{r000} + \sigma^2}$$

Therefore, the results estimate that the household and country random effects represents 32 per cent of the total variance of the residuals, while the countries' random effects represent 7 per cent of the total variance of the residuals.

The variances were statistically significant as the estimated values of  $\tau_{u000}$ ,  $\tau_{r000}$ , and  $\sigma^2$  were higher than their respective standard errors suggesting a significant variation in the unemployment duration between individuals and between countries satisfying the multilevel choice of analysis instead of the traditional regression using OLS. For the likelihood ratio test,  $\text{sig. } \chi^2 = 0.000$ , we can then reject the null hypothesis (the random intercepts are equal to zero) ( $H_0: u_{00k} = r_{0jk} = 0$ ) making the estimate of OLS irrelevant (having data with repeated measures). The null model demonstrates to us that there is a significant variability in the countries' unemployment duration between individuals of the same country, and there is significant variability in the unemployment duration between individuals from different countries. The first hypothesis ( $H1$ ) is then supported, there is a significant variance in individuals' unemployment duration within both households and countries.

In model B, here only the main independent (level-3 variable, unemployment generosity) variable is controlled for, the mean unemployment duration is 4.83 months. The generosity index

is controlled for in an attempt to determine if the variable explains the variation in the unemployment duration between individuals. Thus, a percent increase in the replacement rates within a year explains the variation in unemployment duration by 0.89 months, *ceteris paribus*. The coefficient is statistically significant with a p-value at 0.001%. The estimates of the variances of error terms are  $\tau_{u000} = 3.11$ ,  $\tau_{r000} = 4.01$  and  $\sigma^2 = 10.87$  respectively. Within the random effects components, the variances are statistically significant as the estimators are greater than their respective standard errors. The variance proportions are lower than in the null model. The results estimate that the households' and countries' random effects represents 40 per cent of the total variance of the residuals, while the countries' random effects represent 17.1 per cent of the total variance of the residuals. The second hypothesis (*H2*) is then supported, the variance in unemployment duration within both households and countries are explained by unemployment benefits generosity.

Table 3, Multilevel Models: Variation of Unemployment spell with respect to unemployment compensation generosity, and other indicators

<b>Unemployment Duration</b>	Model A	Model B	Model C	Model D
<b>Benefits Generosity</b>		0.897*** (0.02)		1.206*** (0.04)
<b>Gender</b> (Ref. Males)				
Females			0.470*** (0.02)	0.450*** (0.02)
Age			0.387*** (0.00)	0.388*** (0.00)
<b>Educational Attainment</b> (Ref. Primary Education & below)				
Lower Secondary			-0.154*** (0.04)	-0.165*** (0.04)
Upper Secondary			-0.598*** (0.03)	-0.615*** (0.03)
Post Secondary			-0.818*** (0.07)	-0.849*** (0.07)
Tertiary			-1.118*** (0.04)	-1.127*** (0.04)
<b>Child Benefits</b>			0.0362*** (0.00)	0.0283*** (0.00)
<b>Housing Benefits</b>			0.000447*** (0.00)	0.000473*** (0.00)
<b>Tax Wedge</b>			0.0328*** (0.00)	0.0340*** (0.00)
<b>GDP</b> (Gross Domestic Product)			0.000352*** (0.00)	0.000224*** (0.00)
_cons: $Y_{000}$	7.783*** (0.19)	4.829*** (0.33)	5.534*** (0.29)	1.615*** (0.46)

Observations	425656	425656	425656	425656
Chi2-LR stat.	9.7e+04***	8.3e+04***	4.0e+04***	4.0e+04***
Country: Identity				
var(_cons): $\tau_{u000}$	1.218	3.108	1.365	4.078
HouseHold Country: Identity				
var(_cons): $\tau_{r000}$	4.010	4.278	2.866	2.860
var(Residual)				
var(_cons): $\sigma^2$	10.87	10.97	11.52	11.41
t-statistics in parentheses				
* p<0.05, ** p<0.01, *** p<0.001				
Source:OECD, EU-SILC, and Eurostat				
<b>ICC</b>				
Country	0.07	0.17	0.08	0.22
Std. error	(0.02)	(0.03)	(0.02)	(0.05)
HouseHold Country	0.32	0.40	0.26	0.37
Std. error	(0.01)	(0.02)	(0.01)	(0.04)

In model C, the mean unemployment duration is 5.53 months. The level-1 variable gender is controlled for to ascertain if this variable explains the variation in the unemployment duration between individuals, male job seekers perform better on job search compared to their female counterparts, *ceteris paribus*. The coefficient is statistically significant with p-value less than 0.001%. By controlling for level-1 variable age to determine if the variation in unemployment duration is explained by the variable. The older job seekers tend to stay longer in unemployment compared to younger job seekers by 0.39 months, *ceteris paribus*. The coefficient is statistically significant with p-value at 0.001%.

Level-1 variable educational attainment was also controlled for to confirm if the variable explains the variation in unemployment duration. The job seekers with lower primary qualification explains the unemployment variation as they exit unemployment by 0.15 months compared to these with primary education, *ceteris paribus*. The coefficient is statistically significant with p-value at 0.001%. These with upper secondary qualifications explains the unemployment duration variation as they exit unemployment by 0.59 months, *ceteris paribus*. The coefficient is statistically significant with p-value at 0.001%. Job seekers with post-secondary qualifications explains the variation in unemployment duration as they exit unemployment by 0.81 months, *ceteris paribus*. The coefficient is statistically significant with p-value at 0.001%, and finally the individuals with tertiary education qualifications explains the variation in unemployment duration as they exit the unemployment status by 1.12 months, *ceteris paribus*. The coefficient is statistically significant with p-value at 0.001%.

Other benefits were also controlled for to determine if they also explain the variation in unemployment duration. The level-2 variable child benefits explain the variation in unemployment as the recipients stay longer in unemployment by 0.036 months, *ceteris paribus*. The coefficient is statistically significant with p-value at 0.001%. Level-2 variable housing benefits also explains the



variation in unemployment duration as the recipients stay longer in unemployment by 0.0004 months, *ceteris paribus*. The coefficient is statistically significant with p-value of 0.001%.

Level-3 variables, Tax wedge and gross domestic products were also controlled for in this model to determine if they explain the variation in unemployment duration. Tax wedge explains the variation in unemployment as it reduces the chances of employment by 0.033 months, *ceteris paribus*. The coefficient is statistically significant with p-value of 0.001%. GDP explains the variation in unemployment duration by increasing the job search by 0.0003 months, *ceteris paribus*. The coefficient is statistically significant with p-value at 0.001%.

The estimates of the variances of error terms are  $\tau_{u000} = 1.37$ ,  $\tau_{r000} = 2.87$  and  $\sigma^2 = 11.52$  respectively. Within the random effects components, the variances are statistically significant as the estimators are greater than their respective standard errors. The variance proportions are lower than in the null model. The results indicate that the households' and countries' random effects represents 26 per cent of the total variance of the residuals, while the countries' random effects represent 8 per cent of the total variance of the residuals.

In model D, the mean unemployment duration is 1.62 months. Level-3 variable generosity index is controlled for to determine if the variable explains the variation in the unemployment duration between individuals. Thus, a percent increase in the replacement rates within a year explains the variation in unemployment duration by 1.21 months, *ceteris paribus*. The coefficient is statistically significant with p-value at 0.001%. This further supports the second hypothesis (*H2*), the variance in individuals' unemployment duration within both individuals and countries are explained by unemployment benefits generosity. Level-1 variable gender is also controlled for to determine if this characteristic explains the variation in the unemployment duration between individuals, male job seekers perform better on job search compared to their female counterparts on average, *ceteris paribus*. The coefficient is statistically significant with p-value less than 0.001%. By controlling for level-1 variable age to determine if the variation in unemployment duration is explained by the variable. The older job seekers tend to stay longer in unemployment compared to the younger job seekers by 0.38 months, *ceteris paribus*. The coefficient is statistically significant with p-value at 0.001%.

Level-1 variable educational attainment was also controlled for to determine if the variable explains the variation in unemployment duration. The job seekers with lower primary qualification explains the unemployment variation as they exit unemployment by 0.17 months compared to those with primary education, *ceteris paribus*. The coefficient is statistically significant with p-value at 0.001%. Those with upper secondary qualifications explain the unemployment duration variation as they exit unemployment by 0.62 months, *ceteris paribus*. The coefficient is statistically significant with p-value at 0.001%. Job seekers with post-secondary qualifications explain the variation in unemployment duration as they exit unemployment by 0.85 months, *ceteris paribus*. The coefficient is statistically significant with p-value at 0.001%, and finally the individuals with tertiary education qualifications explain the variation in unemployment duration as they exit the unemployment status by 1.13 months, *ceteris paribus*. The coefficient is statistically significant with p-value at 0.001%.

Level-2 variable child benefits explains the variation in unemployment as the recipients stay longer in unemployment by 0.03 months, *ceteris paribus*. The coefficient is statistically significant with p-value at 0.001%. Level-2 variable housing benefits also explains the variation in unemployment duration as the recipients stay longer in unemployment by 0.00047 months, *ceteris paribus*. The coefficient is statistically significant with p-value of 0.001%.

Level-3 variable tax wedge explains the variation in unemployment duration as it reduces the chances of employment by 0.034 months, *ceteris paribus*. The coefficient is statistically significant with p-value of 0.001%. Level-3 variable GPD explains the variation in unemployment duration by increasing the job search by 0.00022 months, *ceteris paribus*. The coefficient is statistically significant with p-value at 0.05%.

In this model, the estimates of the variances of error terms are  $\tau_{u000} = 4.078$ ,  $\tau_{r000} = 3.86$  and  $\sigma^2 = 11.41$  respectively. Within the random effects components, the variances are statistically significant as the estimators are greater than their respective standard errors. The results estimate that the households' and countries' random effects represents 37 per cent of the total variance of the residuals, while the countries' random effects represent 22 per cent of the total variance of the residuals. The values are higher than these in the null model.

## 5. Discussions

Social policy scheme is critical because it compensates for income depletion and provides households with basic economic stability. The most serious shortcoming of such a scheme is that it does not encourage proactive job hunting. Our findings validate an existence of a significant variance in unemployment spell within both individuals and countries (*H1*), and that the employment benefits generosity explains the unemployment longevity variation between individuals and between countries for an average of up to 1.05 months (*H2*). Other studies have found that benefits recipients prefer to allow for their assistance to finish out before vigorously looking for work. The projected duration of benefits differs substantially among the European nations studied. In France, Germany, and Sweden, the average qualified worker is eligible for benefits on annual basis (Burtless, 1987). In the United Kingdom (UK), Belgium, and Ireland benefits can remain permanently for some people, albeit usually at a lower amount in the form of means-tested aid beyond the first year of compensation.

In addition, generous unemployment compensations paired with insufficient oversight of search effort may render an economy more vulnerable to rises in long-term unemployment in the event of unfavourable economic shocks. Generous welfare systems have a moral hazard impact, diminishing incentive to pursue new work. The country-level replacement rates are positively correlated with unemployment spells, this is consistent with those of Katz and Meyer (1990). Indeed, studies have indicated that variations in the length of benefits, rather than differences in the replacement ratio, cause the substantial positive association between generous unemployment compensations and the amount of unemployment compensation among European nations. Therefore, this should theoretically culminate in closer monitoring of seekers' behaviours and whether they are diligently looking for work. Other findings (Fujita 2010) provide analytical evidence that unemployment compensations reduce the pressure on the unemployed to take less

suitable or lower paying jobs, resulting in prolonged periods of unemployment. This emphasizes the significance of improving the operation of employment services, as reintegration into the labour market is critical to an individual's performance.

Furthermore, our findings imply that country-level replacement rates and high tax wedge are positively correlated with higher unemployment spells thus preventing people from securing employment. In this perspective, the effects of generous unemployment compensations on the labour market and more specifically, the unemployment spell are particularly dependent on the features of the social policy framework, such as the settings for obtaining and retaining benefits, as well as putting them into practice, labour market environments, and labour supply and demand attributes.

The social policy emphasizes that working is preferable to receiving social assistance. The social paradigm, nevertheless, is harder to implement in wide diverse countries with substantial unemployment. In an environment where there is low labour demand, coaching and assistance for certain sections of the population, such as older job seekers, low-skilled, long-term unemployed, women, is rather difficult to execute. The results also indicate that by focusing on individual level variable gender, women experience longer unemployment duration compared to men, this compares with the Aysit Tansel and H. Mehmet Tasci in their study (Tansel et al., 2010) findings.

Individual level variable educational attainment is seen to be a vital tool in human capital acquisition. The variable is negatively correlated with higher unemployment durations, educational attainment in all the categories enabled the job seekers to secure jobs quickly and exit unemployment status by an average of 0.631 months, a fact which is consistent with Ou, D., & Zhao, Z. (2022) findings as well. Moreover, the results showed that the tax wedge and educational attainment had a considerable impact, this confirms the findings by Šeparović, (2009).

As a result, policy makers and executers must aim for excellent coaching, education, and engagement to encourage people to actively seek professions that fit their abilities and level of education. Furthermore, all initiatives should indeed be accompanied by an active labour market approach, since financial incentives solely will not stimulate people to acquire jobs (Hornstein and Lubik, 2015). In fact, passive labour market policies involving little to no proactive measures for a longer length of time result in a higher percentage of long-term unemployment and longer unemployment durations.

Increased GDP levels are frequently associated with increased demand for goods and services, which in turn leads to an increase in employment levels. Our findings provide otherwise results with regards to the norm. Because of frictional and structural unemployment, unemployment cannot be zero even if the economy is operating at full capacity. The time spent matching workers and jobs determines frictional unemployment. The country-level GDP are positively correlated with higher unemployment spell in our findings could be because of the disruptive nature of growth resulting to frictional and structural unemployment (with the older job seekers in mind), this is also confirmed by Andrei et al., (2009) findings.

Strategies may yield measurable indications in the future. Assessment of outcomes and program assessment are critical since we are not capable of understanding which initiatives are

productive and which just mask societal issues. Furthermore, employment benefits schemes that do not have a favourable impact on human development come at a large expense to the welfare budget. Our results also indicate that it is not just the unemployment benefits per se that prolongs the unemployment period. Often, the state of the economy, regulations, social, health, and demographic issues all influence the supply side of labour markets for older employees. As our results have also confirmed the age factor in unemployment duration variation, this also confirms Wood et al., (2008) and Senou M. et al., (2022) findings. Elder jobseekers require skills to be employable in the labour market. The demand side is also influenced by economic, legislative, and social policies in place, as well as the state of the economy and business cycles. Therefore, developing a social policy framework and determining different criteria including benefit amounts and durations entails striking a balanced compromise between granting assurance to the unemployed without undermining their motivation to pursue employment. They should be structured in a way that allows for smoother reintegration into the labour market. This involves sealing off loopholes to possible long-term unemployment.

## **6. Conclusions**

Unemployment compensations have a wide range of consequences on the labour market as well as on the attitude of the unemployed. They may reduce incentive for job search, particularly if the compensations are generous. It is also likely that some will break the laws and claim to be unemployed just to obtain the benefits rather than to actively seek employment. This implies that claimants either allow for their eligibility to exhaust before starting to look for a new job or just drop from the unemployment registers.

Using data from 25 European countries, we examined the link between unemployment benefits generosity and unemployment duration in this study. Furthermore, the study intends to investigate whether factors such as age, gender, educational attainment, and other societal benefits such as housing and child benefits, are significant indicators of labour-market outcomes.

Considering our main findings, we may infer that generous unemployment benefits accounting for most resources in any passive labour market setup have counter-effects and extend the unemployment spell, reflecting the second hypothesis of our research. According to our estimates, a percent increase in the replacement rate (over the duration of unemployment) would explain the variation in unemployment spell by an extension to approximately 1.05 months.

Reducing unemployment is challenging, especially when feasible solutions are not implemented. It is critical to assess the function of social security and to provide enough unemployment compensation. Nevertheless, reducing a nation's reliance on social assistance and ensuring wellbeing to a greater degree via employment would be important. We believe that social security systems should be restructured, particularly to promote smoother reintegration into the labour market.

Even though our study offers insights into the association between unemployment compensation generosity and unemployment spell, one important caveat cites that, although minimal unemployment benefits may shorten the durations of unemployment benefit claimants,

lack of unemployment compensation may elongate the unemployment spells due to congestion or displacement effects.

Suppose employment is guided by demand and job-matching to specific workers is irrelevant, short-term unemployment periods for a specific category may indicate prolonged durations on average for others. This impact implies that our predictions of the microeconomic effects of unemployment benefits on unemployment duration are overestimated in comparison to the macroeconomic effects. Thus, comparing the macroeconomic with the microeconomic impact of unemployment compensations on unemployment duration is a potential direction for subsequent study.

The conclusions of this study can assist the labour market decision-makers in the formulation of novel engaging recommendations for employment policies with regards to different groups of the unemployed individuals for instance the youth, elderly, and other underprivileged groups within the labour market, customized to the demands of the labour market. The system should be flexible enough to smooth out income fluctuations and allow the unemployed to look for work without financial constraints. Developing trainings on entrepreneurship for self-employment, or social entrepreneurship, are vital in increasing employment possibilities, creating new job opportunities, and improving abilities and knowledge for potential employment, are examples of new innovative ideas towards reducing rate of unemployment.

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