



ECONOMIC INACTIVITY: SUGGESTIONS FOR TAPPING THE POOL OF POTENTIAL LABOUR FORCE IN EUROPE AND TÜRKİYE

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ABSTRACT

Labour force shortages are persistent labour market problems of both Europe and Türkiye although there is a significant pool of inactive people not participating in the labour force. Analyzing every aspect of 'being out of labour force' status of working age population in a country has great importance for monitoring labour market cycles, since shifts in participation in the labour force is a key determinant of economic growth. Having a direct causality with growth, empirical field literature generally focuses on unemployment segment of the labour force whereas people that are out of labour force are in some cases close in numbers to the unemployed and even more than unemployed in some other cases. Therefore the transition of people from 'inactive but willing to work' status to 'active' labour force is of vital importance. This study, motivated by these considerations, aims to fill a gap in the literature employing a model where we tested the effects of social protection expenditures per capita and GDP per capita on five different economic inactivity indicators across European countries and Türkiye in 2010-2022 using panel data techniques. Our findings indicate that cause-specific and fine-tuned policies can induce transition from inactive status to active labour force.

Keywords: Labour Force Participation, Economic Inactivity, Panel Data.

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EKONOMİK İNAKTİVİTE: AVRUPA'DA VE TÜRKİYE'DE POTANSİYEL İŞ GÜCÜ HAVUZUNDAN YARARLANMAK İÇİN ÖNERİLER

ÖZ

İş gücüne katılmayan önemli büyüklükte bir insan havuzu mevcut olmasına rağmen Avrupa'nın ve Türkiye'nin kalıcı iş gücü piyasası sorunları arasında iş gücü kıtlığı bulunmaktadır. Aktif nüfusun toplam nüfusa oranla büyüklüğü ve iş gücüne katılımdaki değişimler ekonomik büyümenin temel belirleyicileri arasındadır. Dolayısıyla bir ülkede çalışma çağındaki nüfusun 'iş gücü dışında olma' statüsünün her yönünü analiz etmek; iş gücü piyasası döngülerini izlemek ve hedefli politikaları uygulamak için büyük önem taşımaktadır. Alan literatürü genellikle, büyüme ile doğrudan bir nedenselliğe sahip olan iş gücünün 'işsizlik' kesimine odaklanmakta, oysa iş gücüne katılmayan inaktif kişiler bazı ülkelerde işsizlere yakın sayıda iken, Türkiye'de işsizlerden daha fazla sayıda bulunmaktadır. Bu nedenle, insanların 'aktif olmayan ancak çalışmaya istekli' statüsünden aktif iş gücüne geçişi büyük bir öneme sahiptir. Bu düşüncelerden yola çıkarak, bu çalışmada inaktiviteye dair literatürdeki kıtlığı gidermeye katkıda bulunmayı amaçlanmaktadır ve panel veri teknikleri kullanılarak 2010-2022 yılları arasında Avrupa ülkelerinde ve Türkiye'de kişi başına düşen sosyal koruma harcamalarının ve kişi başına GSYH'nin beş farklı ekonomik inaktivite göstergesi üzerindeki etkileri analiz edilmiştir. Bulgularımız, inaktivitenin ülkeden ülkeye farklılaşan nedenlerine odaklı ve ince ayarlanmış kamu refah politikalarıyla, inaktif nüfusun önemli bir kısmının aktif iş gücüne geçişinin sağlanabileceğini göstermektedir.

Anahtar Kelimeler: İş Gücüne Katılım, Ekonomik İnaktivite, Panel Veri.

INTRODUCTION

An elaborate categorization and examination of ‘being out of labour force’ status of working age population in a country has great importance for monitoring labour market cycles and for implementing targeted labour market policies since significant changes and shifts in participation in the labour force is a key determinant of economic growth. Having a direct causality with growth, empirical field literature generally focuses on unemployment whereas people that are out of labour force are in some cases close in numbers to the unemployed. This may be caused by the fact that the latter state consists of relatively heterogeneous types of individuals. Usually defined as ‘economic inactivity’, being out of labour force may be more persistent than persistence in unemployment since individuals who have not participated in the labour force for a long time may get their human capital to depreciate or may get discouraged (Ordine, 1992; Niedergesäss, 2012; Quarina, 2017). In return, this persistence leads to long-term ‘scarring effect’ which can be defined as interruptions to employment that bring loss of current income during the period of ‘non-employment’ (unemployment or inactivity), and in addition to that, inflict a longer-term ‘scar’ through the increased future incidence of non-employment and lower subsequent earnings in employment (Arulampalam, Gregg & Gregory, 2001; Ralstom et al., 2021). The existence of persistence or scarring effects related to economic inactivity indicates that short term labour market policies would have an impact in the long term and policies to reduce non-employment should be implemented as early as possible during an increased phase of non-employment to prevent long-term non-employment (Arulampalam et al., 2000; Quarina, 2017). Given this importance of labour force participation for economies, we first attempt to briefly explain the factors that affect labour market status of working age population. These factors include individual-level characteristics such as age, gender, and education along with macro-level factors, i.e., the fluctuations of GDP, the average income per capita or the expectations of income, and technological advancement level of the economy. These factors are in many cases closely linked to each other. To start with, labour force participation may decrease due to business cycle periods or other shocks. ILO (2020a) emphasizes that economic crises and epidemics have disproportionate labour market impacts on certain segments of the population, which are young persons, older workers, women, and migrant workers. Labour market status of young people is more vulnerable to any kind of economic shocks as compared to that of the adult labour market hence increased economic inactivity of young population (Bell & Blanchflower, 2010b, 2011; Marcus & Gavrilovic, 2010). While being in education or training seems to be a major reason for temporal inactivity of young population, dropping out of labour force may contribute to longer term inactivity of youth (Freeman, 1982). Moreover, this group showed a significantly higher relative probability of becoming economically inactive for a longer term rather than being unemployed since the Covid-19 outbreak (Park & Cho, 2022). ILO (2020) points out the possible long-term scarring effect of Covid-19 pandemic on both youth and women’s economic inactivity. While the negative impact of the pandemic on both young people’s education/training and employment status are massive enough for causing them to be named “the lockdown generation”, being “not in employment, education or training (NEET)” state reached concerning levels, especially in young women (Barford, Coutts & Sahai, 2021). Gender roles still play an important role in labour force participation. World labour statistics indicate inactivity rates where women are significantly more likely to be outside the labour force than men (Ordine, 1992; Gammarano, 2019). Marital status and household task sharing (such as childcare, housework, care of elderly or disabled family members) structures are the main reasons for this situation. Being married and having children are generally associated with higher participation of men, but lower participation of women. More children are generally correlated with lower participation of women, consistent with the traditional allocation of household work across genders (Grigoli, Koczan, & Topalova, 2018). Even, advancements in economic development, higher GDP per capita, lower fertility rates or increased access of women to education may not boost female participation to labour force in some cases due to social and cultural factors (Cameron, Suarez & Rowell, 2020; Lopez-Acevedo et al, 2021).

Besides young individuals and women, in some cases, concerning rates of disengagement of elderly adults who are economically inactive call for policies which aim at re-engaging elderly to labour force mainly for social security needs (Haardt, 2005; Cappellari et al., 2005). As mentioned so far, retirement, childcare, housework, and being in education or training are common reasons for not participating in the labour force which increase especially in economic downturn periods except for being in education subgroup (Park and Cho, 2022; Gammarano, 2019).

Furthermore, a subgroup of individuals outside the labour force are ‘discouraged jobseekers’, defined as ‘persons not in the labour force,

who though available, did not seek employment on account of such labour market reasons as past failure to find a suitable job, lack of experience or qualifications, lack of jobs matching the person’s skills, absence of any jobs in the area, recent job loss, or the fact of being considered too young or too old by prospective employers’. Regardless of their reasons for being discouraged, these potential workers are generally considered underutilized (ILO, 2013; Martins and Seward, 2020). The heterogenous distribution of this subgroup across countries point to the important role for policies and institutions that influence the decisions of people to participate, remain in, or re-engage to the labor force.

Another factor leading to increased rates of being out of labour force state in some other cases is the effect of technological advances and trade that may have depressed long-term demand for workers with certain skill sets (Acemoglu and Autor, 2011; Autor and Dorn, 2013; Grigoli, Koczan, & Topalova, 2018). Grigoli et. al (2020) argue that persons previously employed in routinized occupations are more likely to drop out of the labor force while higher spending on active labor market programs and education are linked with reduced negative effects of technological advancement on labour force participation.

While labour market programs to promote job creation have a great impact not only on employment rates, but also on labour force participation, it is crucial to monitor and analyze the working age population who are out of labour force since they constitute the potential enhancement of the labour supply.

Policies which aim to increase labour supply considers financial incentives which strongly affect the labour supply decisions of individuals. While there is a vast literature on the effects of tax reforms and in-work benefits on employment, the effects of social protection benefits has received less attention. And while there are many studies on the various explanatory factors regarding employment or unemployment, drivers of inactivity gained less attention. Motivated by these considerations, this study aims to contribute to the scarcity in the literature employing a model where we tested the effects of social protection expenditures per capita and GDP per capita on different economic inactivity measures across European countries, including Türkiye.

The rest of the study is organized as follows: The conceptual frame of classification of economically inactive population is presented in section 2. A summary of the related empirical literature is given in Section 3. Section 4 describes the data and methodology. Findings of the analysis are given in Section 5. Discussion, further considerations, and our suggested policy implications are presented in Section 6.

I. THE CLASSIFICATION OF ECONOMICALLY INACTIVE POPULATION

A significant portion of the debate in the recent field literature emphasizes the importance of analyzing different economically inactive groups across the population separately since individuals outside the labour force may be misleadingly categorized as inactive or they may have close ties to labour markets (ILO, 2013). Persons who are neither employed nor unemployed, that is, persons outside the labour force are not considered a part of the workforce and are usually considered as dependents (Gammarano, 2019). People outside the labour force is a key measure of labour underutilization along with time-related underemployment and unemployment. These three measures, when used separately, would enable more detailed monitoring of cycles, since each component is likely to respond differently at different stages of the business cycle and in different settings (Greenwood, 1999). Persons outside the labour force were categorized as the “economically inactive population” until the adoption of the new terminology by ICLS in 2013¹. However, individuals outside the labour force may or may not be inactive since they may be involved in own-use production work, volunteer work, or unpaid trainee work, which are all productive activities. ICLS (2013) taps into this pool of inactive by identifying situations of inadequate absorption of labour, beyond those captured by unemployment. The resolution introduces a definition of “potential labour force” and proposes that the definition cover individuals who have indicated some interest in employment but who are currently counted as being outside of the labour force. It distinguishes three sub-categories: a) Unavailable jobseekers, referring to persons without employment who are seeking employment but are not available; b) available potential jobseekers, referring to persons without employment who are not seeking employment but are available; and c) willing potential jobseekers, comprising persons without employment who are neither seeking nor available for employment but who want employment. These groups comprising the potential labour force share certain characteristics with the unemployed but fail to meet all the criteria

¹The resolution concerning the statistics of work, employment, and labour underutilization, adopted by the 19th International Conference of Labour Statisticians (ICLS).

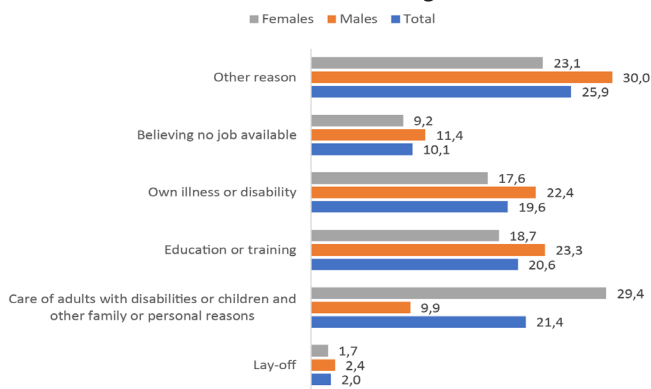
needed to be counted among them. Their analysis will enable the design of more targeted policies aimed at improving access to employment for specific groups of the population, since a simple two-fold distinction of the non-employed population into unemployment and inactivity is unable to reveal the heterogeneity of labour markets (Jones & Riddell, 1999, 2006; Martins & Seward, 2020). Some individuals classified as inactive can be considered close to unemployment if they were not recently seeking a job, but available to work. Or some other individuals may exhibit little or no attachment to the labour force by expressing no desire to work. The latter group is less likely to occupy a job compared to the first group, however the first group may have a closer chance to find a job as the unemployed group. These facts emphasize the importance of analyzing the out of labour force population, namely the ‘potential labour force’ according to their willingness and/or availability to seek employment.

Not participating in the labour force, which is one of the failures in the labour market, may become a more important problem for a country than the unemployment problem because of especially discouragement of the young population and scarring effect. According to the ILO 2018 Labour Survey, 39 per cent of the world’s working-age population was outside the labour force, meaning that well over a third of all working-age individuals around the world were not part of the labour supply to the economy (Gammarano, 2019).

When it comes to Europe, the inactivity rate was 25% for 27 EU countries while in Türkiye, almost half of the individuals (47%) of working age did not participate in the labour force in 2023, while the unemployment rate was respectively 6% and 9.4% for the EU and for Türkiye. From the gender perspective, according to the latest report of the Turkstat, 64.2 percent of females and 28.8 of males are not participated in labour force while these ratios are respectively 29.5% and 39.8% in EU-27 (Eurostat, 2024; Turkstat, 2024). While the inactivity rates are so high, and many countries experience labour shortages and skill gaps/skill mismatches in their labour markets, it has become increasingly important to employ the part of the inactive population that wants to work.

Figure 1 shows the main reasons for inactivity of those who want to work but are inactive (in the EU-27, in 2023). The data shows that most of those who want to enter the labor market in EU-27 countries but still remain out of it are in the “other reasons” category, and this category largely consists of retirees. This situation points to the importance of programs that will make it easier for individuals who want to work but are over a certain age and retired to find a suitable job. It is important to bring the experience of this group to the economy with suitable measures such as by implementing quotas that consists a certain percentage of employment in the public institutions and private enterprises or providing incentives to employers such as insurance facilities.

FIGURE 1 | Inactive Population Not Seeking Employment by Sex and Main Reason, Eu-27, 2023, (Percentage of Population Outside the Labour Force and Wanting to Work)



Source: Eurostat, 2024

The second biggest reason of inactivity in EU-27 is the family care obligation category, and it is striking that the rate of those who want to work but are inactive due to the “care of the elderly, care of children or care of adults with disability” is high in women, while this rate is significantly lower in men.

Those who want to work but remain inactive due to their educational status constitute another large group. It is of great importance to offer additional education program options to those who are out of the active labor force due to their low level of education in this group. Another sub-group is those who are inactive, although with higher level of education. Providing these individuals with the skills/competences which are needed by the labor market and thus integrating this group

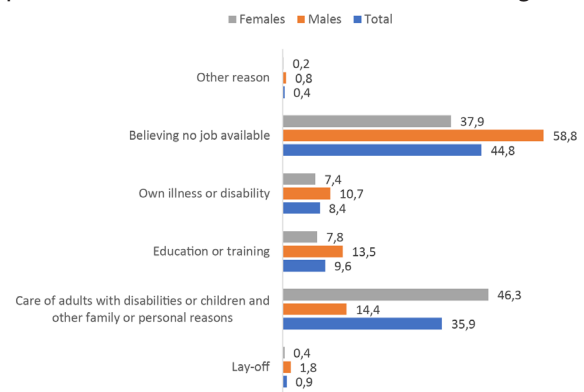
into the active workforce should be among the most important priorities of European countries at the moment.

Another group consists of individuals with illness or disability. The transition of this group who are inactive due to disabilities into employment can be increased through regulations such as implementing quotas that consists a certain percentage of employment in the public institutions and private enterprises or providing incentives to employers such as insurance facilities. Flexible and remote working options are also a necessary facilitator for disabled or ill individuals to participate in working life.

The share of those who are inactive because they believe there is no suitable job is also significant. This situation points to the importance of effective mechanisms that will improve and increase coordination between private and/or public employment institutions, the business world and unemployed or inactive –but potential- labour force.

The distribution of reasons for inactivity varies from country to country. Türkiye is an example of this disparity. Figure 2 shows the main reasons for inactivity of those who want to work but are inactive (in the Türkiye, in 2023).

FIGURE 2 | Inactive Population Not Seeking Employment by Sex and Main Reason, Türkiye, 2023, (Percentage of Population Outside the Labour Force and Wanting to Work)



Source: Eurostat, 2024

In the EU, the main reasons for those who want to join the workforce but do not participate are retirement, education and family care. However in Türkiye, retirement and education categories are significantly lower than EU. The main reasons for those who do not participate in the workforce are a) family care responsibilities and b) believing no job is available, i.e. being discouraged. Almost half of the women who do not participate in labour force in Türkiye remain inactive because of the care duties of children, elderly or adults with disabilities in the family. There is a wide gap in this category between females and males. This situation shows that effective and extensive programs should be implemented to bring women into employment in Türkiye. These programs should include measures such as providing quality, accessible and affordable care services (especially child care), extending the paid parental leave period, and increasing the financial motive by increasing expected income (i.e. average wages), considering the vast number of women who withdraw from the labor market because child care is expensive and costly.

“Discouraged jobseekers” are another large sub-group of inactivity in Türkiye. Bringing this group into employment requires intensive efforts mainly in three areas: Increasing job creation, preventing skill mismatches and establishing strong coordination mechanisms between “labor supply” and “labor demand”. Needless to say, all of these areas necessitate comprehensive policy design and implementations.

These statistics indicate the massive magnitude of economic inactivity especially in Türkiye. These very high inactivity ratios also indicate underutilized human resources and a negative contribution of inefficient resource allocation to economic growth. In this sense, specific policies are needed to reduce the high levels of inactivity and also to avoid long-term scarring effects. This necessity brings along the urgency to examine inactivity, considering many different dimensions.

II. EMPIRICAL LITERATURE

There are several studies in the literature that examine economic inactivity empirically. A significant part of these studies are focused on the analyses of individual factors such as educational attainment, gender and/or age. Another group of studies, less numerous, examines the correlation between social assistance via in-work benefits or tax regulations, per capita income, other public policies such as childcare incentives and inactivity. A summary of some prominent quantitative studies examining economic inactivity is presented in Table 1.

TABLE 1 | A Brief Summary of the Empirical Literature on Economic Inactivity

Author(s) & Year of Publication	Country/ Years	Data	Findings
Reeves, et.al, 2024	UK 2015-2018	Capped and uncapped individual numbers of not in employment, economically inactive and unemployed categories OLS difference-in-differences model	Limiting welfare payments of low-income families may increase employment for some but it can also push others out of the labour market altogether, thus increasing economic inactivity.
Maloney, 2004	New Zealand 1977,1993, 1995, 1998, 2002	Economic inactivity rate, education, family background, gender, age, being a parent, and region variables Maximum likelihood probit estimation	There is clear evidence of path dependence in the inactivity histories of the young people in the sample. Indications of scarring effect is present.
Marinova, 2015	Bulgaria 1992-2011	Gender, age, marital status, place of residence, employment and level of education Eurostat's demographic projection methodology	The impact of the demographic factors over the inactivity levels is relatively low whereas the changes in the age-specific inactivity rates are closely related to the economy and labour market conditions.
Jaumotte, 2003	17 OECD countries 1985-1999	Tax wedge between second earners and single individuals, public childcare spending per child benefits, paid parental leave, various employment data, the degree of employment protection legislation, the degree of product market regulation. Two-stage least squares with heteroskedasticity-consistent standard errors panel data estimation	Childcare subsidies decrease inactivity of women. Unlike childcare subsidies, child benefits reduce female participation due to an income effect and their lump-sum character. Finally, female education, the general labour market conditions, and cultural attitudes remain major determinants of female participation.
Franzen & Kassman,2005	Sweden 1993-1994, 2001	Gender, year of birth, region of residency, country of origin, educational level, receipt of social assistance, and income. Logistic regression model	There is strong evidence for scarring effects of inactive population. The analyses show that individuals who were economically inactive when they were 20-24 years old have a significantly elevated risk of being economically inactive when followed-up seven years later.
Lattimore, 2007	OECD Countries 2005	Age standardized participation rate for those aged 15+ years, population share 50+, dummy for transition economies, dummy for poorer countries, GDP per capita Panel data regression	Government policy reactions to ageing around the world may not have made a substantial difference to participation rates of older male workers. Aging is not a major determinant whereas macro variables have explanatory power on inactivity levels of different age groups.
Ralston, et. al,2022	Scotland 2011	Census 1991 and 2011 data. Economic inactivity, NEET numbers, educational attainment, geographical deprivation index, age, gender, health status. Logistic regression model	The results presented in this paper show long-term scarring effect associated with NEET status.
Christl & De Poli, 2021	Austria 2019	Age, gender, marital status, parental status, educational attainment, citizenship Discrete choice model	Labour supply elasticities when taking into account inactive persons are found to be higher, meaning that the estimates of the labour supply reaction to changes will be larger.
Little, 2007	UK 1995-2004	Age, gender, marital status, parental status, educational attainment, workforce status Binary logit regression	A substantial degree of behavioral heterogeneity exists between inactive individuals, and the social security system appears to influence both the timing and probability of moving between labour market states.
Little, 2009	UK 2003-2005	Age, gender, marital status, parental status, educational attainment, workforce status, region, health status, house ownership Multinomial regression	The indications of the previous study of the author remains. The social security system appears to influence both the timing and probability of moving between labour market states.
Jones, et. al, 2003	UK 1985-2000	Reasons of being inactive, gender, age Logit regression	Inactive population has played an important role in adding to effective labour supply since the mid-1980s. Inactivity shows more persistence even when unemployment reaches low levels.
Danner, et. al, 2021	UK, France 2009-2015 for UK 2010-2015 for France	Gender, parental status, family background variables Logistic regression	The data show that young women with children in France and the UK have a greater likelihood of being economic inactive and to remain in NEET status.
Bicakova, 2005	France, UK and US 1994-2001	Wage, age, marital status, parental status, being immigrant or native, educational attainment Partial-equilibrium job search model	An employed individual's decision whether to work or leave the labor force (be inactive) is affected by his/ her wage. A jobless individual's decision whether to be unemployed and search for a job or be out of labor force is affected by his/ her potential wage.
Lauzadyte, 2007	Denmark 1994-2003	Age, gender, marital status, parental status, educational attainment, being immigrant or native, place of residence, experience Discrete time hazard model	Results indicate that women and individuals over fifty are more likely to experience the long-term unemployment and inactivity which also suggests scarring effect. Being previously employed reduces the risk of non-employed, and increases the re-entry to employment probability.
Nieuwenhuis, 2014	30 OECD countries 1985-2018	Women's employment, women's unemployment, women's inactivity, welfare supports, public employment service, employment incentives Panel OLS regression, panel fixed effects model	These findings provide support for the notion of welfare pluralism, in the sense that different government policies work together in improving women's employment rates in different ways: Some of them achieve this through reducing women's unemployment rates, whereas some lower inactivity rates.

Source: Created by the authors.

As can be seen from the summary table, studies on inactivity are quite heterogeneous. Nevertheless, most of them emphasize the different nature of inactivity from unemployment. Most of them emphasize that a significant portion of inactivity can be transferred into employment with appropriate policies.

III. DATA, MODEL AND METHODOLOGY

While there are many studies on the various explanatory factors regarding employment/unemployment, inactivity gained less attention in literature. And the existing studies on inactivity are usually more focused on individual characteristics of the inactive population. However when considered together with the under-utilized and potential workers, financial incentives should significantly affect the labour supply decisions of individuals. This study aims to contribute to the scarcity in the literature by analyzing inactivity in this manner employing a model where we tested the effects of social protection expenditures per capita and GDP per capita on different economic inactivity measures across 36 European countries², including Türkiye.

Data and methodology are explained in the following section.

A. Data

All data used in the analyses are annual and are retrieved from the Eurostat database. Detailed explanations about the variables are presented in Table 2.

TABLE 2 | Definition and Structure of the Variables

Label	Structure	Period
<i>Inactivity-1</i>	Inactive population by sex, age and citizenship (1000) (age 15-64)	2010-2021
<i>Inactivity-2</i>	Inactive population as a percentage of the total population, by sex and age (%) (age 15-74)	2010-2021
<i>Inactivity-3</i>	Inactive population not seeking employment by sex, age and willingness to work (1000) Total (age 15-64)	2010-2021
<i>Inactivity-4</i>	Inactive population not seeking employment by sex, age and willingness to work (1000) Would like to work but is not seeking employment (age 15-64)	2010-2021
<i>Inactivity-5</i>	Inactive population not seeking employment by sex, age and willingness to work (1000) Do not want to work (age 15-64)	2010-2021
<i>GDPpc</i>	Real GDP per capita, (at 2010 market prices)	2010-2021
<i>SPROTECTION</i>	Expenditure on social protection per inhabitant total expenditure, (at 2010 prices)	2010-2021

Source: Created by the authors.

We tested the effects of explanatory variables on 5 different inactivity indicators. The first inactivity series consists of the number of the inactive population between the ages of 15 and 64, while the second series is the ratio of the inactive population to the total population over a slightly wider age range (15-74). These first two series are conventional inactivity series. However, inactivity series 4 and 5 are of particular interest because those who are “willing to work” and those who “do not want to work” are two very different segments of the inactive population which may respond differently to similar factors. This means they would also require different policy measures to be incentivized into employment. This analysis will show whether “willing to work”

and “do not want to work” segments of the inactive population can be motivated to work by financial incentives.

B. Model and Estimation Issues

In this paper we analyze the relationship between social support dispensed by governments, real GDP per capita as a proxy of average expected income and economic inactivity between 2010 and 2022.

As argued by Lattimore (2007), labour force participation rates are affected by GDP per capita, therefore it would be misleading to focus solely on individual features such as gender or age. Bicakova (2005) also mentioned that an employed individual’s decision whether to work or leave the labor force (be inactive) is affected by her/his wage. Similarly, a jobless individual’s decision whether to be unemployed and search for a job or be out of labor force is affected by her/his potential wage. Hereby it is reasonable to consider GDP per capita as a proxy of average income for an employed individual and income expectations for a jobless and/or inactive individual.

Following Nieuwenhuis (2014) and Florence Jaumotte (2003) we also employed social protection expenditures per capita as financial incentives effect the decision of being economically active or inactive such as taxes or welfare benefits such as subsidies provided under social protection are important, as also mentioned by Lattimore (2007) and Christl & De Poli (2021).

This study aims to contribute to the scarcity in the literature employing a model where we tested the effects of social protection expenditures per capita and GDP per capita on different economic inactivity measures across European countries. In different words, this paper analyses labour supply responses to changes in social assistance.

Our model is based on endogenous growth model in its core. The endogenous growth model does not have a specific formula, as different economists propose various versions and formulations. Nevertheless, these formulas are based on the $Y=AK$ model, where A represents technology, K is a proxy of physical, human, and technical capital. The $Y=AK$ model was updated by economists such as Paul Romer, Harrod Domer, and Robert Lucas. In these models, GDP (Y) is found by multiplying technological development (A) by a production function consisting of factors such as human resources, physical capital, and labor (Romer, 1986). Based on these models, we estimate an empirical model within panel data framework. Specifically, our panel regression is defined as

$$\text{Inactivity} = f(\text{gdppc}, \text{protection})$$

$$LINA_{it} = \alpha_i + \beta_1 LGDPpc_{it} + \beta_2 LSPROTECTION_{it} + \varepsilon_{it} \quad (1)$$

Where INA is the measure of inactivity, $GDPpc$ is GDP per capita, and $SPROTECTION$ is the expenditure on social protection per inhabitant, $i=1, \dots, N$ denotes the cross-sectional dimension, $t=1, \dots, T$ denotes the time dimension, α_i are individual fixed effects, and ε_{it} is the error term.

Baltagi (2013) outlines that most panel data applications utilize the error component model for the disturbances to eliminate unobservable individual fixed effects. Since pooled ordinary least squares (OLS) ignores unobservable fixed effects in estimations, it is straightforward to estimate model (1) using the fixed-effects model when panel data consists of a specific set of N individuals (such as in European countries).

The panel data model in equation (1) may suffer from inconsistency and invalid statistical inference because the fixed effects estimation is inconsistent as N increases for a fixed T (Nickell, 1981) - known as the Nickell bias- arising from a possible endogeneity problem with a correlation between regressors and regression errors, i.e. $\text{cov}(X_{it}, \varepsilon_{it}) \neq 0 \forall i, t, j$, and s . As a solution for this kind of endogeneity problem, the generalized method of moments (GMM) approach by is widely used in the empirical literature (see among others Blundell and Bond, 1998).

The inconsistency and invalid statistical inference problems may also stem from cross-sectional dependence, implying that some common factors affect cross-sectional units in the panel. Hence, current efforts have focused on estimating the panel data models under cross-sectional dependence. The common factor representation of the regression error can be defined as $\varepsilon_{it} = \lambda_i' F_t + u_{it}$ where F_t and λ_i are a $r \times 1$ vector of unobserved common factors and factor loadings, respectively. The factor representation of equation (1) can be written as

²Belgium, Bulgaria, Czechia, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden, Iceland, Norway, Switzerland, United Kingdom, Bosnia and Herzegovina, Montenegro, North Macedonia, Serbia and Türkiye.

$$LINA_{it} = \alpha_i + \beta_1 LGDPpc_{it} + \beta_2 LSPROTECTION_{it} + \lambda_i' F_i + u_{it} \quad (2)$$

which is called as the common correlated effects (CCE) model (Pesaran, 2006). Pesaran (2006) employs the cross-sectional averages of dependent and explanatory variables as common factors.

IV. FINDINGS

Table 3 represents the results from four panel estimation methods -namely pooled ordinary least squares (POLS), fixed effects model (FEM), generalized method of moments (GMM), and common correlated effects (CCE) for the sake of the robustness of estimations for Panel A. At a glance, the estimators appear to lead similar inferences with respect to sign, but they tend to differ in terms of magnitude significance of the estimated coefficients. We should note that POLS ignores unobservable fixed effects in estimations, and FEM is an appropriate method to take into account the individual fixed effects. Nonetheless, FEM may lead to inconsistent and invalid statistical inference arising from a possible endogeneity problem with a correlation between regressors and regression errors. It is well documented that GMM approach is employed to deal with this endogeneity problem. However, GMM may still lead to inconsistent and invalid statistical inference, stemming from a possible cross-sectional dependence. CCE allows cross-sectional dependence and permits the common factors and factor loadings to exhibit an arbitrary degree of correlation among themselves and with the regressors. Since CCE is a more flexible tool in a panel framework with common factors, we henceforth proceed with inferring the estimated coefficients based on this approach.

TABLE 3 | Results from Panel Estimators

Inactivity-1	POLS	FEM	GMM	CCE
	-0.3388	-0.5884	-0.3534	-0.3017
<i>lnGDPpc</i>	(-1.035)	(-6.223)	(-1.400)	(-6.182)
	[0.300]	[0.000]	[0.161]	[0.000]
	-0.4117	0.4525	-0.0632	-0.1188
<i>lnSProtection</i>	(-0.783)	(2.358)	(-0.140)	(-1.155)
	[0.434]	[0.018]	[0.888]	[0.248]
Inactivity-2				
	-0.1811	-0.4595	-0.1805	-0.1787
<i>lnGDPpc</i>	(-3.302)	(-6.592)	(-4.224)	(-4.415)
	[0.001]	[0.000]	[0.000]	[0.000]
	-0.1226	0.1431	-0.0987	-0.0086
<i>lnSProtection</i>	(-1.439)	(1.018)	(-1.453)	(-0.082)
	[0.150]	[0.309]	[0.146]	[0.935]
Inactivity-3				
	-0.3572	-0.6027	-0.3727	-0.3009
<i>lnGDPpc</i>	(-1.093)	(-6.281)	(-1.484)	(-6.113)
	[0.274]	[0.000]	[0.138]	[0.000]
	-0.4173	0.4599	-0.0536	-0.1044
<i>lnSProtection</i>	(-0.787)	(2.292)	(-0.119)	(-0.962)
	[0.431]	[0.022]	[0.906]	[0.336]
Inactivity-4				
	-0.2139	-0.8817	-0.0153	-0.6801
<i>lnGDPpc</i>	(-0.600)	(-2.495)	(-0.053)	(-2.080)
	[0.548]	[0.013]	[0.958]	[0.038]
	-0.3318	15.958	-0.1969	29.776
<i>lnSProtection</i>	(-0.672)	(2.578)	(-0.444)	-4.577
	[0.502]	[0.010]	[0.657]	[0.000]
Inactivity-5				
	-0.3533	0.0191	-0.3781	-0.2996
<i>lnGDPpc</i>	(-1.061)	(0.050)	(-1.467)	(-2.270)
	[0.289]	[0.960]	[0.142]	[0.023]
	-0.4744	-0.1813	-0.0906	-0.529
<i>lnSProtection</i>	(-0.862)	(-0.392)	(-0.196)	(-1.820)
	[0.389]	[0.695]	[0.844]	[0.069]

Notes: The numbers in parentheses and brackets are the robust t-ratios and p-values, respectively. The robust t-ratios were estimated based Newey-West HAC standard errors. POLS: Pooled ordinary least squares estimator. FE: Panel fixed effects model within estimator. GMM: Two-step GMM estimator. The level of dependent variable and explanatory variables are used as the instrumental variables. CCE: Pooled Common correlated effects estimator of Pesaran (2006). The cross-sectional averages of the dependent and explanatory variables were used as the estimated common factors. ***, **, and * indicate statistical significance at 1, 5, and 10 percent level of significance, respectively.

The CCE estimations reveal that per-capita income has a statistically significant negative impact on all the measures of inactivity. The elasticity of inactivity with respect to per-capita income ranges from -0.18 for Inactivity-2 to -0.68 for Inactivity-4. The sensitivity of inactivity to the expenditure on social protection per inhabitant does not seem to be uniform since the coefficient on *lnSProtection* is not significant for Inactivity-1, Inactivity-2, and Inactivity-3 while it exerts a statistically significant impact for Inactivity-4 and Inactivity-5. Nonetheless, the sign of this significant effect is positive for Inactivity-4, but negative for Inactivity-5.

CONCLUSION

The vast majority of studies on the labour market tends to focus on the unemployment rate as being the most important data to evaluate the degree of imbalance in the labour market. This situation causes the significant potential contribution to labour supply of inactive population to be ignored in the studies and unfortunately in policies. However, the examination of 'being out of labour force' status of working age population aka economic inactivity in a country has great importance for monitoring labour market cycles and for implementing targeted labour market policies since significant changes and shifts in participation in the labour force is a key determinant of economic growth. Having a direct causality with growth, people that are out of labour force are in some cases close in numbers to the unemployed. Usually defined as 'economic inactivity', being out of labour force may be more persistent than persistence in unemployment since individuals who have not participated in the labour force for a long time may get their human capital to depreciate or may get discouraged. However, the decreasing active population due to ageing and the problem of labour and skills shortages in many countries, call for prioritizing effective policy actions to reduce inactivity by increasing the motivation to participate in the labour force. Activation on different subgroups of the economically inactive population (which mainly consists of young people and women) is crucial to ensure a sufficient labour supply, secure the financial stability of social security systems and to promote social inclusion and a more inclusive labour market (Business Europe, 2023).

As some studies in the literature suggest, higher public expenditure on active labour market programs are important to increase the share of young and prime-age women working or seeking employment (Grigoli et. al, 2018). Since the ratio of inactive population is significantly high in some European countries and much of this population consists of women and NEET youth, it is obvious that counter policies against inactivity and scarring effect considering age and gender along with other dimensions must be implemented.

Given this importance of labour force participation for economies, we analyzed whether there is a significant correlation between social protection expenditures of governments, per capita income and inactivity. We employed multiple panel data techniques on different measures of inactivity in order to handle possible estimation issues. Our results indicate both a positive and a negative correlation between social protection expenditures per capita and inactivity, which highlights the importance of fine-tuning of welfare payments. Social protection expenditures per capita negatively affect the inactive population who want to work but are not looking for a job while they have a positive effect on the inactive population who do not want to work. One might link these two correlations to a transition from the segment who want to work but are not looking for a job to the inactive population who do not want to work. Valuable inferences can be drawn from this finding. Social transfers should be designed in a way that does not lead people

to make a transition from active labor force to inactivity or from willing to work to not wanting to work. Social transfers have very important functions in social and economic life and it is not advocated to reduce them. However, they should be used in a very focused and specific-to-the-cause manner. In Türkiye it is equally important to prevent the abuse of social assistance by ineligible individuals.

Main reasons of inactivity can vary from country to country and even from region to region within countries. Therefore we recommend that policymakers analyze the reasons for inactivity in their areas of responsibility and, if these reasons can be eliminated, try to bring these people into employment, via fine-tuned or tailor-cut social transfers. Each reason for inactivity requires different support mechanisms that can help people transit into work. For instance mandating childcare facilities for large enterprises, subsidizing childcare facilities for medium sized enterprises or giving preschool benefits to working parents would reduce inactivity which is caused by childcare responsibilities (especially for women) by providing quality, accessible and affordable care services. Increasing the financial motive by increasing expected income (i.e. higher welfare benefits, higher wages), considering the vast number of women who withdraw from the labor market because child care is very expensive relative to their income, would bring many women back to work. Longer paid parental leaves for families and remote/ hybrid workplace options are other benefits which would make inactive individuals with care responsibilities willing to work.

Welfare payments should be redesigned to mitigate the reasons of not participating in labour force instead of just aiming to reduce unemployment and roughly subsidizing the labour costs of firms. Social assistance should aim to mitigate both unemployment and inactivity.

Our results also indicate a negative correlation between per capita GDP and economic inactivity. This finding implies that better average income or expectations of income of inactive persons can lead them to transit to active labour force or vice versa (opting out of active labour force because of insufficient earning prospects). This finding demands a more rigorous consideration by policy makers when determining minimum wages. Moreover, firms especially that are suffering from labour shortages and/or skill gaps should also consider extending financial incentives in the form of higher salaries, better insurance and retirement schemes, and better personal benefits such as longer parental leaves, longer sick leaves, increased remote/ hybrid work options.

Needless to say, appropriate policies to mitigate skill gaps/ skill mismatches in labour markets by updated education schemes are of vital importance to reduce inactivity especially in young people. Finally, building effective mechanisms that will improve and increase the coordination between private and/or public employment institutions, the business world and unemployed or inactive –but willing to work– individuals. This improved coordination is expected to reduce the number of discouraged jobseekers whose inactivity is caused by “believing no job available”. Specific and targeted efforts are required to bring willing to work but inactive population into employment and to avoid long term scarring effects.

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