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Analysis of the Relationship Between Tax Wedge and Unemployment in OECD Countries

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ABSTRACT

The primary objective of this study is to empirically analyze the impact of labor-related fiscal burdens—specifically the tax wedge and social security contributions—on unemployment rates in OECD member countries over the period 2000–2023. By distinguishing between the short-run and long-run effects of labor taxation on employment dynamics, the study aims to address the inconsistencies in the existing literature and provide more robust insights for policymakers. To achieve this aim, the analysis employs advanced panel econometric techniques that account for cross-sectional dependence and long-run heterogeneity, thereby overcoming methodological limitations associated with cross-country differences in tax structures and labor market institutions. The empirical strategy integrates the LM bootstrap cointegration test of Westerlund and Edgerton (2007), which yields reliable inference under cross-sectional dependence, with the Pooled Mean Group (PMG) estimator developed by Shin et al. (1998), which allows short-run heterogeneity while constraining long-run coefficients to be homogeneous across countries. The findings reveal a statistically significant and positive long-run relationship between unemployment rates and both the tax wedge and social security contributions in OECD economies. These results indicate that increases in labor-related fiscal burdens systematically elevate unemployment levels, confirming the persistent and distortionary effects of labor taxation on employment outcomes. By offering a methodologically rigorous and up-to-date comparative analysis, the study contributes to the empirical literature and provides evidence-based recommendations for the design of more labor-market-friendly tax reforms.

Keywords: Tax Wedge, Unemployment Rate, Panel Data Analysis, Labor Taxes, OECD.

JEL Classification Codes: H24, E24, C33, J38, L31

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INTRODUCTION

In an era marked by the restructuring of global economic dynamics and the rapid transformation of labor markets, the relationship between labor taxation and unemployment has gained increasing prominence among policymakers, scholars, and international institutions. Unemployment not only leads to the underutilization of productive resources and a consequent decline in economic efficiency but also deepens structural socio-economic challenges such as income inequality, social exclusion, and poverty. Understanding the extent to which labor taxation—particularly the tax wedge—influences labor market performance is therefore essential for designing sustainable growth strategies and effective social welfare policies.

The tax wedge, defined as the difference between the total labor cost borne by employers and the net income received by employees after mandatory deductions, primarily arises from income taxes and social security contributions. In economies characterized by a high tax wedge, rising labor costs may restrict employers' capacity to create new jobs, while diminishing net wages may weaken individuals' incentives to participate in the labor force or to remain in formal employment. Moreover, a substantial tax wedge may encourage informal employment, narrow the tax base, distort resource allocation, and ultimately undermine the efficiency and equity pillars of the fiscal system. As such, labor-related tax burdens have implications that extend beyond employment outcomes, influencing the broader sustainability of public finances and the functioning of the social state.

Although a substantial body of research has examined the taxation–unemployment nexus, much of the existing literature focuses on isolated tax components or relies on linear empirical specifications. However, OECD countries exhibit considerable heterogeneity in their tax structures, social security systems, labor market institutions, and macroeconomic performance. This institutional

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diversity suggests that the effect of the tax wedge on unemployment is shaped by the interaction of country-specific factors such as tax policy flexibility, the scope of welfare arrangements, the degree of labor market protection, and the prevailing economic environment. Consequently, a comprehensive understanding of this relationship requires econometric approaches that account for cross-sectional dependence, heterogeneous short-run dynamics, and long-run equilibrium adjustments.

Positioned within this context, the present study offers an original contribution to the literature by employing an integrated empirical framework to evaluate the effects of both the tax wedge and social security contributions on unemployment in OECD countries over time. The study's originality rests on three key dimensions. First, it jointly analyzes two major components of labor taxation, thereby providing a holistic assessment of labor-related fiscal burdens and their long-term structural implications for unemployment. Second, the use of the LM bootstrap panel cointegration test developed by Westerlund and Edgerton (2007) enhances the reliability of inference by accounting for cross-sectional dependence and small-sample distortions. Third, employing the Pooled Mean Group estimator of Shin et al. (1998) enables the estimation of common long-run relationships while accommodating heterogeneity in short-run adjustment processes, thus offering a methodologically robust and innovative analytical framework.

The central hypothesis guiding this research is that higher labor-related tax burdens—captured through the tax wedge and social security contributions—exert upward pressure on unemployment rates in both the short and long run across OECD economies. Empirical findings strongly support this hypothesis, revealing that the tax wedge has a statistically significant and positive long-term effect on unemployment. Social security contributions similarly impose upward pressure on labor costs in the long run, while short-run responses vary considerably across countries due to differences in their institutional configurations and labor market conditions. By jointly analyzing short-run heterogeneity and long-run convergence, the study provides a nuanced and comprehensive understanding rarely addressed in the existing literature. In this respect, the study deepens theoretical debates on labor taxation, offers robust empirical evidence derived from cross-national analysis, and contributes to the development of fiscally sound and employment-friendly policy recommendations. The subsequent sections present the theoretical background, describe the dataset and methodological framework, outline the empirical findings, and discuss their implications for sustainable labor market policies.

RELATIONSHIP BETWEEN TAX WEDGES AND UNEMPLOYMENT

The tax wedge is defined as the ratio of the total amount of taxes and social security contributions levied on employees' earnings, combined with the payroll-based obligations paid by employers on behalf of the employee, to the overall labor cost. The tax wedge denotes the gap between the full employment costs borne by firms and the actual earnings workers take home, serving as a crucial determinant of labor market dynamics by affecting both the willingness of individuals to work and the hiring decisions of employers. While employees are subject to income taxation, employers are responsible for paying social security contributions (Tvrdon, 2011). Rising tax rates widen the gap between the total labor costs paid by employers and the net income obtained by employees. As a result, an expansion in the tax wedge escalates the overall cost of labor for firms, thereby imposing indirect constraints on employment levels and potentially contributing to a rise in unemployment rates (Šeparović, 2009). Therefore, tax policies are among the most critical factors influencing individuals' willingness to participate in employment and the overall supply. In conclusion, the tax wedge, which reflects the overall tax burden on labor, is recognized as an effective instrument of tax policy due to its impact on employment.

At the macroeconomic level, two fundamental theoretical approaches stand out in the analysis of labor markets. The first is based on the classical model, which assumes that markets operate under perfect competition, while the second emphasizes bargaining power and information asymmetries in wage determination, arguing that labor markets are characterized by imperfect competition (Deskar-Škrbić et al., 2018). The classical approach assumes that labor markets operate under conditions of perfect competition, whereby wages and employment levels are determined through the interaction of supply and demand. Within this framework, workers are assumed to be homogeneous, and firms hire labor by setting wages at the market equilibrium level. Unemployment is considered voluntary or temporary; that is, as long as wages are sufficiently flexible (with high unemployment emerging when they are not), the market naturally converges to full employment, rendering government intervention unnecessary. Within the framework of the classical labor market theory, the forces of supply and demand for labor are assumed to operate

without constraints. In this context, The tax wedge—defined as the gap between the employer's total labor cost and the employee's net income—is widely regarded as an exogenous distortion that disrupts the natural equilibrium of labor markets. This gap increases the cost of labor and may reduce employers' willingness to create employment. According to the classical model, this situation leads to higher labor costs and a reduction in employment levels. Therefore, a negative relationship can be established between the magnitude of the tax wedge and unemployment.

The imperfect competition model posits that decision-making processes in labor markets are more complex, characterized by power imbalances and information asymmetries among stakeholders. According to this approach, wage negotiations between trade unions and employers play a significant role in determining labor costs and employment levels. Moreover, firms evaluate labor based on varying skill levels, and wages are shaped not only by market forces but also by strategic behavior. In this context, unemployment may be not only voluntary but also structural or driven by economic stagnation. In the imperfect competition model, the effects of the tax wedge are assessed within a far more complex and dynamic framework. Given that this model assumes wages are determined through bargaining, information is asymmetric, and firms behave strategically, the tax wedge may influence not only employment decisions but also the trajectory of wage negotiations. As cost pressures on employers intensify, employees may enter negotiations demanding higher gross wages to compensate for reductions in their net income. This situation may encourage informal employment or adversely affect the labor market participation of low-skilled workers in particular (Góra et al., 2006). Figure 1 illustrates that, in the context of overall labor supply and demand curves, a large tax wedge can significantly affect unemployment, particularly in labor markets with comparatively low wage levels.

As illustrated in Figure 1, *Dh* represents the initial demand for skilled labor, while *Dh′* denotes the adjusted demand after accounting for the influence of the tax wedge. In parallel, *Dl* signifies the baseline demand for unskilled labor, and *Dl′* captures the corresponding shift in demand once the tax wedge is incorporated. These graphical distinctions underscore the differential impact of labor taxation on various segments of the workforce. AB illustrates the reduction in skilled employment caused by the tax wedge, CD refers to the decline in unskilled employment attributable to the tax wedge in the absence of a minimum wage, and CE captures the reduction in unskilled employment resulting from the tax wedge under the presence of a minimum wage.

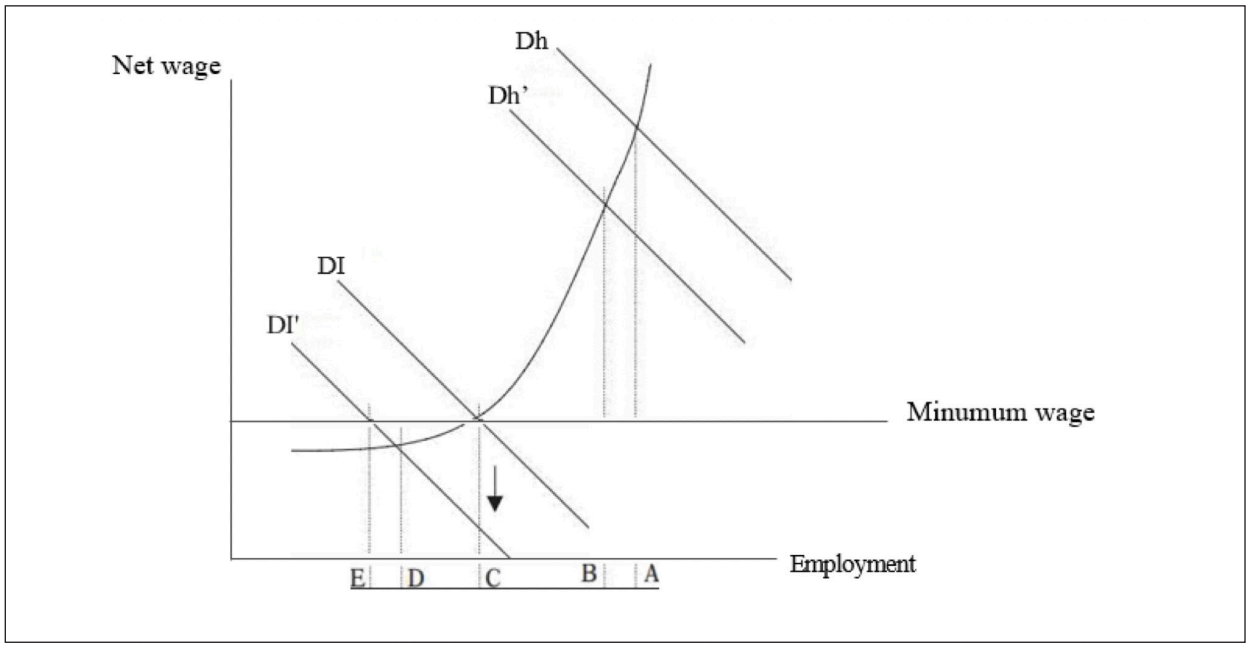

Figure 1. The Tax Wedge in Relation to Labor Demand and Supply

Source: Góra et al., 2006

The interplay between the tax wedge and employment outcomes hinges significantly on the responsiveness of labor supply and demand. If either side of the labor market demonstrates high elasticity, a rise in the tax wedge tends to result in more substantial adverse

effects on employment levels. Such elasticity implies that even small changes in labor costs can result in significant fluctuations in employment levels. Therefore, an increasing tax burden may raise labor costs, reducing firms' demand for employment, while also diminishing workers' labor supply. However, when the supply or demand curve is vertical—indicating extremely low elasticity—the tax wedge has a limited impact on employment. In such cases, the increase in labor costs is largely offset either by a reduction in wages or by a greater burden on employers. However, since the level of employment remains relatively stable, the effects on income distribution and welfare become more prominent than those on quantity.

When the labor supply curve is horizontal, employees are not expected to accept lower net wages; therefore, in this context, the tax burden falls entirely on employers. However, due to the downward-sloping nature of the labor demand curve, employers may be reluctant to fully absorb the increased labor costs. In this case, an increase in the tax wedge prompts employers to respond by reducing employment levels. Rather than reallocating cost increases across production factors, employers may opt to strategically lower their demand for labor. This situation entails the risk of excluding low-skilled or marginally productive workers from the labor market. A high level of tax burden on labor, reflected through the tax wedge, may negatively affect firms' demand for labor, as rising costs can prompt businesses to reassess their employment levels. This situation may lead to structural consequences such as a decline in overall employment and a rise in unemployment rates. Moreover, when employees perceive a tax-induced reduction in their net income, it can distort their perception of the marginal benefit-return equilibrium. This may also undermine work motivation and slow down productivity growth. Therefore, a high tax wedge creates a dual pressure mechanism that negatively affects not only the volume of employment but also the efficiency of the labor force (Festa, 2015).

A high tax burden on labor, when combined with substantial contributions to the state and low net earnings, may become a disincentive for re-entering the labor market. This effect is particularly pronounced among low-income groups, where the gap between net wages and unemployment benefits is minimal. Indeed, at income levels where marginal benefit is limited, individuals may not feel a strong incentive to participate in the labor force. On the other hand, a lower tax wedge both increases the employee's net income—enhancing job search motivation—and reduces the employer's labor costs, thereby encouraging the creation of new employment opportunities. Thus, tax policy influences labor market equilibrium through both supply-side and demand-side channels (Šeparović, 2009).

However, the extent to which elevated tax burdens influence employment contraction or rising unemployment rates is contingent upon the structural and institutional configurations of the labor market. In this context, factors such as the elasticity of labor supply and demand, the scope and effectiveness of collective bargaining systems, the level of minimum wages, and regulations concerning unemployment benefits play a critical role. Moreover, several key elements shape how the tax wedge affects employment outcomes. These include the distribution of skills within the labor force, the manner in which tax liabilities are shared between employers and workers (i.e., tax incidence), the institutional mechanisms that regulate wage-setting processes, and the broader policy environment surrounding labor market operations. Consequently, assessing the effects of tax policies on employment requires consideration not only of fiscal measures but also of institutional and structural characteristics (Dolenc et al., 2011).

Reducing the tax wedge can alleviate cost-based barriers to job creation in the labor market, thereby enhancing firms' willingness and capacity to open new positions. At the same time, higher expectations for net wages may lead to an increase in individuals' tendency to participate in the labor force. When considered together, this dual effect—rising labor demand and increasing labor supply—is likely to result in a downward trend in unemployment rates. In this context, tax policies function not only as instruments for regulating public revenues but also as strategic tools for stimulating economic activity and enhancing employment. Moreover, the tax wedge is not only a factor influencing national labor markets, but also a strategic component that directly affects a country's global competitiveness (Stähler, 2019). High tax and social security burdens on labor increase firms' production costs, leading to higher final goods prices, which may negatively affect price competitiveness in global markets. Conversely, reducing the tax wedge allows businesses to lower unit costs and offer more competitive prices. This development particularly benefits firms operating in labor-intensive sectors by enhancing their competitive advantage in foreign markets, thereby contributing to the expansion of export volume and market share. Consequently, it can

generate positive effects not only on the trade balance but also on long-term economic growth.

LITERATURE REVIEW

Recent research increasingly examines the impact of labor taxation on labor market outcomes. Many studies assess the tax wedge's effect on employment using theoretical and empirical approaches, focusing on microeconomic factors (e.g., incentives, wage bargaining) and macroeconomic determinants (e.g., growth, unemployment, inflation). The aim is to show how these elements shape the tax wedge's influence across countries and institutional contexts (Góra et al., 2006). Empirical and theoretical studies show an inverse link between the tax wedge and employment. Higher labor taxes raise employer costs, limiting job creation and increasing unemployment, while lower wedges stimulate labor demand (Öztürk, 2021). Reducing the wedge boosts net income, supports labor participation, and encourages hiring, highlighting the critical role of tax policy in employment outcomes.

Nickell and Layard (1999) show, using a panel of 20 OECD countries for 1983–1994, that a five-percentage-point reduction in the tax wedge lowers unemployment by roughly 13 percent. Similarly, Daveri and Tabellini (2000) find for 14 EU countries (1965–1995) that a 14 percent rise in the tax wedge increases unemployment by 4 percent, reduces output by 3 percent, and slows annual growth by 0.4 percent. Nickell (2003), analyzing OECD labor markets from 1960–1990, finds that a 10 percent increase in the tax wedge reduces labor input by 1–3 percent of the working-age population. Comparing France, Germany, and Italy to the United States, he further shows that a 16 percent tax-wedge gap explains about one-quarter (3.2 percent) of the employment-rate differential.

Bassanini and Duval (2006), using a macro panel dataset for 21 OECD countries over 1982–2003, show that a 10 percent reduction in the tax burden decreases the unemployment rate by roughly 2.8 percent. Anspal and Võrk (2007), using a GMM framework for 15 EU countries and 8 new member states (1979–2000), find that a higher tax wedge significantly depresses labor force participation and employment—most notably in the new member states. A 1 percent increase in the tax wedge corresponds to a 0.2–0.7 percent reduction in employment.

Šeparović (2009), using correlation and hierarchical cluster analyses for Croatia and OECD countries, finds that a high tax wedge adversely affects employment in Croatia. Similarly, Dolenc and Laporšek (2010), applying linear regression to 27 EU countries (1999–2008), show that high tax-wedge countries exhibit lower employment and higher unemployment, with a one-point increase in the tax wedge reducing employment growth in the EU-27 by about 0.04 percent. Tvrdon (2011), analyzing 16 EU members, 12 euro area countries, and 4 Visegrád states (2000–2009), identifies a negative tax wedge–employment relationship, with a 1 percent increase in the wedge reducing employment by 0.7 percent.

Trpeski and Tashevska (2012), using cluster analysis for 43 countries, show that OECD and EU members split into high–tax-wedge/low-employment and low–tax-wedge/high-employment groups, indicating that lower tax wedges are generally associated with more favorable labor market performance. Catalano and Pezzolla (2015), using a general equilibrium framework for Italy, show that moderating price–wage dynamics and reducing the tax wedge can, in the long run, boost GDP and employment.

Giray and Çınar (2017), analyzing OECD countries from 1965 to 2015, find that a 1 percent increase in social security contributions raises unemployment by 0.35 percent in the long run, while the short-run effect is positive but not statistically significant. Deskar-Škrbić et al. (2018), analyzed the impact of the tax wedge on employment in Croatia during the period 2000–2016 using the VAR method. The results indicate that an increase in the tax wedge reduces employment and that labor taxation policy has a statistically significant effect on the level of employment.

Todorović et al. (2018), analyzing 36 countries (OECD members and Serbia) for 2015–2017, identify a positive tax wedge–unemployment relationship, noting that Serbia exhibits both high wedge levels and high unemployment. They also report that OECD countries reducing the tax wedge experienced significant declines in joblessness. Yılancı et al. (2019), using panel causality tests for six emerging OECD economies (2000–2017), find no causal link between the tax wedge and unemployment in the Czech Republic, Korea, and Turkey, while detecting a unidirectional causal effect from the tax wedge to unemployment in Hungary, Mexico, and Poland, indicating that the wedge directly drives unemployment in these cases.

Akalin (2021), using GMM for 36 OECD countries (2000–2019), finds that increases in the tax wedge significantly raise unemployment. Likewise, Kalaš et al. (2022) report, based on a 2000–2020 OECD panel, that the tax wedge

exerts a negative effect on employment, with a one-point increase lowering employment by 0.33 percent. Karakuş and Atabey (2023), applying Fourier causality to G-7 economies (2000–2022), identify bidirectional causality between the tax wedge and youth unemployment, indicating that higher wedge levels intensify youth joblessness. Similarly, Liko (2025), using ARDL for Albania (2000–2023), finds a strong long-run negative tax wedge–employment relationship and recommends lowering employer social security contributions to support employment expansion.

DATA SET and METHOD

This research examines how the tax wedge and public expenditures on social security influence unemployment rates across OECD countries. By employing a panel data methodology, the study captures both cross-country disparities and temporal dynamics, offering a comprehensive view of fiscal pressures on labor market outcomes. Within the empirical model, unemployment is operationalized as the proportion of the labor force not engaged in formal employment; the tax wedge was quantified as the ratio of labor-related taxation to overall labor costs, and social security spending was represented as a percentage of GDP. The study utilizes tax wedge data sourced from the OECD (2025a), where it is conceptualized as the proportion of a typical single worker's tax obligations relative to the overall labor expense incurred by the employer. This indicator illustrates how labor income taxation may act as a deterrent to employment. Information on social security spending was drawn from the OECD (2025b) and encompasses benefits for work-related accidents, injuries, and health issues; reimbursements for medical and hospital costs or direct provision of healthcare services; pensions for retirees, individuals with disabilities, and surviving family members; child and family support payments; and unemployment insurance benefits and supplements.

Table 1. Descriptive Statistics

Variable	Variable definition	Data source
UNEMP	Unemployment rate (% of total labor force)	World Bank (2025)
TAXWEDGE	Tax wedge (% of labor cost)	OECD (2025a)
SSC	Social security payments (% of GDP)	OECD (2025b)

The empirical analysis utilizes data from 38 OECD economies, covering the period from 2000 to 2023. Econometric analyses were conducted using the software packages Stata, Gauss, and EViews. As shown in Table 2, the average values for unemployment (UNEMP), tax wedge (TAXWEDGE), and social security contributions (SSC) are 6.7%, 35.1%, and 8.6%, respectively.

Table 2. Dataset OECD Average

Years	UNEMP	TAXWEDGE	SSC
2000	6.7	36.21	8.4
2001	6.6	35.87	8.4
2002	7.1	35.74	8.5
2003	7.3	35.59	8.4
2004	7.2	35.67	8.3
2005	6.8	35.48	8.3
2006	6.3	35.42	8.2
2007	5.9	35.39	8.2
2008	6.2	34.93	8.3
2009	8.4	34.44	8.7
2010	8.5	34.49	8.6
2011	8.1	34.94	8.6
2012	8.1	35.07	8.7
2013	8.0	35.18	8.8
2014	7.4	35.19	8.8
2015	6.9	35.22	8.8
2016	6.4	35.16	8.9
2017	5.9	35.03	8.8
2018	5.5	34.90	8.9
2019	5.4	34.87	8.9
2020	7.1	34.65	9.2
2021	6.2	34.60	9.0
2022	5	34.72	8.7
2023	4.8	34.87	9.0
2000-2023 OECD Average	6.7	35.10	8.6

This study seeks to explore the effects of labor-related taxation and social security contributions on employment outcomes. The econometric model is specified as follows;

$$\mathrm{UNEMP}_{it} = \alpha_0 + \beta_1 \mathrm{TAXWEDGE}_{it} + \beta_2 \mathrm{SSC}_{it} + u_{it} \quad (1)$$

In the econometric framework of the study, preliminary tests were initially performed to evaluate cross-sectional dependence and the level of homogeneity in the model. Building on the outcomes of preliminary evaluations, the study proceeds with the application of the CIPS

unit root test proposed by Pesaran (2007) to assess the stationarity of the panel data series. To examine long-run relationships among the variables, the study employs the LM bootstrap panel cointegration method introduced by Westerlund and Edgerton (2007), which provides reliable inference even in the presence of cross-sectional dependence. This is complemented by the Pooled Mean Group (PMG) estimator developed by Shin et al. (1998), which accommodates heterogeneity in short-run dynamics while imposing homogeneity on long-run coefficients across panel units. Together, this integrated methodological framework enables robust estimation of long-run relationships, effectively addressing both cross-sectional dependence and dynamic heterogeneity across countries.

The LM bootstrap panel cointegration method proposed by Westerlund and Edgerton (2007) offers a robust framework for detecting long-run relationships in panel data by explicitly accounting for cross-sectional dependence among units. This enhancement significantly strengthens the reliability of statistical inference, particularly in settings where conventional cointegration tests may yield biased results due to ignored interdependencies. This feature is especially valuable when dealing with relatively small sample sizes, where conventional cointegration tests may suffer from reduced reliability. This methodology addresses key econometric issues, including autocorrelation and heteroskedasticity within the cointegration framework, and is grounded in the Lagrange Multiplier (LM) test introduced by McCoskey and Kao (1998). The cointegration test is formulated from the following equation:

$$Y_{it} = \alpha_i + X_{it}^{'}\beta_{it} + Z_{it} \quad (2)$$

In the equation above, $t=1....,T$ and $i=1...., Z_{it}$ denotes the error term.

$$Z_{it} = \mu_{it} + v_{it} = \sum_{j=1} nij \quad (3)$$

In the equation above, nij denotes a zero-mean error term. The LM test statistic is calculated as follows:

$$LM_N^+ = \frac{1}{NT_2}\sum_{i=1}^{N}\sum_{t=1}^{T} W_i^{-2}S_{i,t}^2 \quad (4)$$

EMPIRICAL ANALYSIS

To assess the presence of cross-sectional dependence among the variables, the study employed a comprehensive set of diagnostic tests: the LM test framework introduced by Pesaran et al. (2008), the LM CD test proposed by Pesaran (2004), and the classical LM test formulated by Breusch and Pagan (1980). As indicated in Table 3, the null hypothesis of cross-sectional independence is decisively rejected at the 1% significance level, offering compelling statistical evidence of interdependence among panel units.

Table 3. Cross-Sectional Dependence Test Results

Test	Test statistics	P value
Breusch-Pagan LM	3503.314	0.000
Pesaran LM	74.68167	0.000
Pesaran CD	27.53858	0.000

To determine whether cointegration coefficients exhibit uniformity across countries, the study applies the adjusted delta-tilde ($\tilde{\Delta}$) test, as formulated by Pesaran and Yamagata (2008). This test is tailored to detect parameter consistency in panel data models. Table 4 reports the empirical findings, demonstrating a statistically significant rejection of the null hypothesis at the 1% significance level. This outcome provides strong evidence that long-run relationships differ substantially across national settings, thereby confirming the existence of structural heterogeneity within the panel. The null hypothesis of homogeneous cointegration coefficients across countries was decisively rejected at the 1% significance level. This outcome highlights pronounced cross-national variation in the estimated parameters, thereby affirming the existence of heterogeneity within the panel structure.

Table 4. Results of Homogeneity Tests

Test	Test statistic	P value
Delta	18.835	0.000
Adjusted Delta	20.633	0.000

To examine the stationarity characteristics of the panel data series, the analysis applies the Cross-sectionally Augmented IPS (CIPS) unit root test, developed by Pesaran (2007). The corresponding results are detailed in Table 5. The analysis indicates that all three series contain unit roots at levels and are therefore non-stationary; however, they become stationary after first differencing.

Table 5. Pesaran (2007) CIPS Unit Root Test

Variables	Fixed + Trend
UNEMP	-2.425
d(UNEMP)	-3.034***
TAXWEDGE	-2.186
d(TAXWEDGE)	-3.127***
SSC	-1.621
d(SSC)	-2.757***

*** It is statistically significant at the 1% significance level.

To examine the long-run interdependencies among unemployment, the tax wedge, and social security contributions, the study employs the LM bootstrap panel cointegration technique introduced by Westerlund and Edgerton (2007). This technique is particularly suited for panel data settings characterized by cross-sectional dependence. Accordingly, the analysis integrates bootstrap-based p-values to improve the robustness of statistical inference. The empirical findings are summarized in Table 6. The Pt and Pa statistics reveal significant cointegration across the sample, suggesting a persistent and stable relationship among the examined variables. These results indicate that both the tax wedge and social security contributions play a quantifiable role in shaping unemployment trends over time.

Table 6. Westerlund ve Edgerton (2007) LM Bootstrap Cointegration Test Results

Test	Test statistic	Z-value	P-value	Bootstrap P value
Gt	-2.415	0.829	0.796	0.140
Ga	-7.241	5.374	1.000	0.080
Pt	-14.541	-0.487	0.313	0.040
Pa	-7.372	2.841	0.998	0.030

Long-run cointegration estimates are obtained using the Pooled Mean Group (PMG) estimator proposed by Shin et al. (1998), which accommodates both short-run heterogeneity and long-run homogeneity across panel units. The empirical results, as reported in Table 7, reveal that a one-unit increase in social security contributions corresponds to a 1.09-unit rise in long-term unemployment, highlighting a strong and enduring link between these variables. Likewise, an incremental one-unit increase in the tax wedge is associated with a 0.27-unit elevation in unemployment, underscoring the persistent influence of fiscal pressures on labor market outcomes.

Table 7: PMG Results

Variables	Coefficient	P value
TAXWEDGE	0.2773291	0.000
SSC	1.094387	0.000

The increase in social security contributions appears to exert a stronger long-term impact on unemployment rates, indicating that unemployment rises disproportionately relative to the growth in labor costs. This finding is consistent with a substantial body of literature. For example, Nickell and Layard (1999) demonstrate that the tax wedge, including social security contributions, exerts a strong and negative effect on employment rates, particularly among men in OECD countries. Similarly, Daveri and Tabellini (2000) argue that increases in the tax wedge played a significant role in driving higher unemployment levels in Europe during the period 1965–1995.

The increase in the overall tax wedge exerts a comparatively weaker long-term impact on unemployment rates than social security contributions. Nevertheless, its role in raising unemployment remains a matter of concern. This result is consistent with the findings of Bassanini and Duval (2006), who report that the tax wedge has a negative effect on employment across OECD countries, although the magnitude of this impact varies depending on institutional structures (e.g., unionization rates, minimum wage levels).

Considering that the tax wedge comprises income taxes and social security contributions, the findings suggest that the primary pressure on unemployment stems from social security contributions—particularly the employer's share—which directly increase labor costs. The impact of income tax is primarily on labor supply, as it influences individuals' willingness to work. For income tax, the income effect and substitution effect may offset each other. However, social security contributions—particularly the employer's share—have a much more pronounced negative effect on labor demand.

DISCUSSION and CONCLUSION

The tax wedge refers to the difference between the employer's total labor cost and the employee's net income, functioning as a critical structural factor that inflates the cost of employment. In particular, income taxes on wages, social security contributions, and other mandatory deductions directly influence employment decisions. A high tax wedge can disrupt the balance between labor supply and demand in the labor market, leading to employers' reluctance to create new jobs and, consequently, to rising unemployment. Unemployment, in turn, is a multidimensional issue with significant economic and social implications, directly affecting the development processes of countries. Unemployment is influenced not only by economic fluctuations but also

by structural and institutional factors. Therefore, the design of tax systems emerges as a key determinant shaping the dynamism of labor markets across countries. Consequently, examining how the tax wedge influences unemployment holds significant value for policymakers. Within this framework, the interaction between labor-related taxation, social security contributions, and joblessness plays a critical role in informing labor market strategies and optimizing the efficiency of fiscal systems.

This study investigates the relationship between the tax wedge, social security contributions, and unemployment levels across OECD countries from 2000 to 2023, using a panel data approach. The results demonstrate that both the nature and strength of the influence exerted by these fiscal factors on labor market dynamics are statistically meaningful. Specifically, the analysis shows that elevated tax wedges and higher social security contribution rates tend to correlate with rising unemployment figures. This outcome is consistent with theoretical expectations suggesting that labor costs reduce employability, particularly for low- and medium-skilled workers. The findings obtained are in line with numerous empirical studies in the literature. For instance, Nickell (2003) and Bassanini & Duval (2006) emphasize that fiscal burdens on labor exert adverse effects on employment. Moreover, the analysis conducted by Daveri & Tabellini (2000) indicates that, especially in Continental European countries, the magnitude of the tax wedge exacerbates structural unemployment. In this context, the results of the present study corroborate the decisive role of the tax wedge in shaping unemployment, in accordance with both theoretical and empirical evidence.

In this context, the study offers several policy recommendations. First and foremost, restructuring the tax burden on labor—particularly for low-income and young workers—is crucial for promoting employment growth and combating informal labor. Making the tax system more progressive could encourage labor market participation among individuals employed in low-wage jobs, while also contributing to improvements in income distribution. On the other hand, maintaining employer-side social security contributions at a reasonable level and offering tax incentives to sectors that generate new employment may help reduce unemployment rates. In the short term, employers tend to adapt to rising labor costs by relying on their existing workforce. However, in the long run, they may fundamentally alter their investment, technology, and employment strategies—such as shifting toward automation—which can have lasting effects on unemployment.

When formulating policies to ease the tax burden on labor, emphasis should be placed on reducing the social security contributions borne by employees. The high level of these contributions increases employment costs and limits net wages, thereby weakening the motivation to participate in the labor force. In this framework, reducing social security contributions can help alleviate the tax burden on the labor market; however, it also necessitates comprehensive reforms to ensure the sustainability of social insurance systems—particularly health and pension funds. In conclusion, the tax wedge and social security contributions should not be viewed merely as fiscal policy instruments, but also as key factors influencing the efficiency of labor markets. Therefore, tax and social security policies should be designed not only with a focus on budgetary balance, but also with an emphasis on being employment-friendly. Future research could be expanded to examine the sectoral impacts of the tax wedge and social security contributions, as well as cross-country institutional differences.

REFERENCES

Akalin, G. (2021). OECD ülkelerinde vergi takozu ve işsizlik ilişkisi. *Uluslararası Ekonomi ve Yenilik Dergisi*, 7(1), 37-49. https://doi.org/10.20979/ueyd.815697

Anspal, E., & Võrk, A. (2007). *Labour market institutions and productivity in the new EU member states*. PRAXIS Center for Policy Studies, Working Paper, No. 27.

Bassanini, A., & Duval, R. (2006). *Employment patterns in OECD countries: Reassessing the role of policies and institutions*. OECD Economics Department, Working Paper, No. 486. https://dx.doi.org/10.1787/846627332717

Breusch, T. S., & Pagan, A. R. (1980). The Lagrange multiplier test and its application to model specification in econometrics. *Review of Economic Studies,* 47(1), 239–253. https://doi.org/10.2307/2297111

Catalano, M., & Pezzolla, E. (2015). The interaction between the labour tax wedge and structural reforms in Italy. *Revue de l'OFCE*, 141, 185-222.

Daveri, F., & Tabellini, G. (2000). Unemployment, growth and taxation in industrial countries. *Economic Policy*, 15(30), 48–104. http://doi:10.1111/1468-0327.00057

Deskar-Škrbić, M., Drezgić, S., & Šimović, H. (2018). Tax policy and labour market in Croatia: effects of tax wedge on employment. *Economic Research-Ekonomska Istraživanja,* 31(1), 1218-1227. http://10.1080/1331677X.2018.1456359

Dolenc, P., & Laporšek, S. (2010). Tax wedge on labour and its effect on employment growth in the European Union. *Prague Economic Papers*, 19(4), 344-358. https://doi.org/10.18267/j.pep.381

Festa, A. (2015). Employment and productivity: The role of the tax wedge. *EuroEconomica*, 34(2), 139-150.

Giray, F., & Çınar, M. (2017). The impact on unemployment of social security contributions: The empiricial analysis in Turkey. *European Journal of Multidisciplinary Studies*, 2(6), 142-150. DOI:10.26417/ejms.v6i1.p142-150

Góra, M., Radziwiłł, A., Sowa, A., & Walewski M. (2006). *Tax wedge and skills: Case of Poland in international perspective*. Centre for Social and Economic Research Reports, No.64, Poland: CASE.

Kalaš, B., Zelenović, V., & Andrašić, J. (2022). Relation between tax wedge and employment rate: The case of OECD countries. *Industrija*, 50(2), 7-20. http://10.5937/industrija50-40175

Karakuş, M., & Atabey, A. Ö. (2023). Vergi takozu ve genç işsizlik ilişkisi: G7 ülkelerine yönelik fourier panel nedensellik analizi. İçinde Yılmaz, M (Ed.), *İstihdam, İşsizlik, İşgücü Alanında Güncel Çalışmalar* (ss. 37-50). İstanbul: Eğitim Yayınevi.

Liko, E. (2025). Employment and tax burden on labor: A legal implication. *Corporate Law & Governance Review,* 7(1), 18–27. https://doi.org/10.22495/clgrv7i1p2

McCoskey, S., & Kao, C., (1998). A residual-based test of the null of cointegration in panel data. *Econometric Reviews*, 17(1), 57–84. https://doi.org/10.1080/07474939808800403

Nickell, S., & Layard, R. (1999). Labour Market Institutions and Economic Performance. In Ashenfelter, O. & Card, D. (Eds.), *Handbook of Labor Economics* (pp. 3029–3084). Amsterdam: North Holland.

Nickell, S. (2003). *Employment and Taxes*. CESifo Working Paper, No. 1109.

OECD (2025a). *Average tax wedge*. Retrieved June 25, 2025, from https://data-explorer.oecd.org/vis?tm=DF_TW_COMP&pg=0&snb=1&vw=tb&df[ds]=dsDisseminateFinalDMZ&df[id]=DSD_TAX_WAGES_COMP%40DF_TW_COMP&df[ag]=OECD.CTP.TPS&df[vs]=&pd=%2C&dq=.AV_TW..S_C0.AW100._Z.A&to[TIME_PERIOD]=false

OECD (2025b). *Social security contributions (SSC).* Retrieved June 25, 2025, from https://data-explorer.oecd.org/vis?lc=en&tm=comparative%20tables%20tax%20revenue%20data&pg=0&hc[Topic]=&hc[Unit%20of%20measure]=&snb=153&df[ds]=dsDisseminateFinalDMZ&df[id]=DSD_REV_COMP_OECD%40DF_RSOECD&df[ag]=OECD.CTP.TPS&dq=OECD_REP%2BGBR%2BUSA%2BTUR%2BCHE%2BSWE%2BESP%2BSVN%2BSVK%2BPRT%2BPOL%2BNOR%2BNZL%2BNLD%2BMEX%2BLUX%2BLTU%2BLVA%2BKOR%2BJPN%2BITA%2BISR%2BIRL%2BHUN%2BISL%2BGRC%2BDEU%2BFRA%2BFIN%2BEST%2BDNK%2BCZE%2BCRI%2BCOL%2BCHL%2BCAN%2BBEL%2BAUT%2BAUS..S13.T_2000..PT_B1GQ.A&to[TIME_PERIOD]=false&pd=1991%2C2023&vw=tb&lb=bt

Öztürk, Ö. F. (2021). Impact of tax wedge and social security contributions on the unemployment: Evidence from selected EU transition economies. *Uluslararası Bankacılık Ekonomi ve Yönetim Araştırmaları Dergisi*, 4(2), 59-77.

Pesaran, M. H. (2004). *General diagnostic tests for cross section dependence in panels*. CESifo Working Paper Series, No. 1229.

Pesaran, M. H. (2007). A simple panel unit root test in the presence of cross- section dependence. *Journal of Applied Econometrics*, 22, 265-312. https://doi.org/10.1002/jae.951

Pesaran, M. H., & Yamagata, T. (2008). Testing slope homogeneity in large panels. *Journal of Econometrics*, 142(1), 50-93. https://doi.org/10.1016/j.jeconom.2007.05.010

Pesaran, M. H., Ullah, A., & Yamagata, T. (2008). A bias-adjusted LM test of error cross-section independence. *Econometrics Journal,* 11(1), 105–127. https://www.jstor.org/stable/23116064

Šeparović, A. (2009). The influence of the tax wedge on unemployment in OECD countries in comparison with Croatia. *Financial Theory and Practice*, 33(4), 449-463.

Shin, Y., Pesaran, M. H., & Smith R. P. (1998). *Pooled mean group estimation of dynamic heterogeneous panels.* Edinburgh School of Economics Discussion Paper Series, No 16.

Stähler, N. (2019). Who benefits from using property taxes to finance a labor tax wedge reduction? *Journal of Housing Economics*, 46, 1-15.

Todorović, J. Đ., Đorđević, M., & Ristić, M. (2018). The Tax wedge as the determinant of unemployment: A comparative overview of OECD countries and Serbia. 18 October 2018. In *49th International Scientific Conference Quantitative and Qualitative Analysis in Economics*. University of Niš, Faculty of Economics.

Trpeski, P., & Tashevska, B. (2012). Labour tax wedge in the republic of Macedonia-trends and international comparison. *Annales Universitatis Apulensis Series Oeconomica*, 14(2), 571-585.

Tvrdon M. (2011). Relationship between taxation of labour and employment in the European Union: mathematical simulation, *International Journal of Mathematics and Computers in Simulation*, 5(3), 274-281.

Yılancı, V., Yavuz, H., & İnce, T. (2019). Seçilmiş OECD ülkelerinde vergi takozu işsizlik ilişkisi. *Maliye Dergisi*, 176, 286-297.

Westerlund, J., & Edgerton, D. L. (2007). A panel bootstrap cointegration test. *Economics Letters,* 97(3), 185-190. http://dx.doi.org/10.1016/j.econlet.2007.03.003

World Bank (2025). *Unemployment, total (% of total labour force)*. Retrieved June 25, 2025, from https://databank.worldbank.org/reports.aspx?source=2&type=metadata&series=NY.GDP.PCAP.CD#