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LABOR MARKET FLEXIBILITY AND ECONOMIC PERFORMANCE IN THE EUROPEAN UNION: A DYNAMIC PANEL ANALYSIS

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Abstract. This study examines how labor market flexibility influences real GDP per capita levels and youth unemployment across 27 EU countries from 2000 to 2022. Using a dynamic panel GMM approach (Roodman's two-step system), the results challenge conventional assumptions by showing no significant positive link between aggregate flexibility and long-term economic performance. However, a positive effect is observed in the short term, such as lower unemployment. Decomposition of the flexibility index into seven sub-components reveals that factors such as centralized collective bargaining and firing costs largely explain these unexpected outcomes. The findings indicate that the success of the "flexicurity" model depends on specific regulatory dimensions rather than on overall labor-market deregulation.

1. Introduction

Since the publication of Adam Smith's Wealth of Nations, economists have prioritized the maximization of productivity and the efficient allocation of labor. In the modern era, particularly following the Great Recession of 2008 and the Sovereign Debt Crisis, the debate regarding labor market regulation has intensified within the European Union (EU). The prevailing economic orthodoxy, often influenced by Atkinson (1984) and later integrated into the European Commission's "Flexicurity" principles, holds that a flexible labor market is essential for adjusting to demand shocks and technological change.

However, the EU labor market operates within a unique framework defined by the European Monetary Union (EMU) and the Maastricht Treaty. As Johnston (2016) argues, the loss of independent monetary policy for Eurozone members places the burden of economic adjustment almost entirely on labor markets. Consequently, flexibility is not merely a microeconomic preference but a macroeconomic necessity for the stability of the Eurozone.

Despite the theoretical consensus supporting flexibility, the empirical reality of the last two decades—marked by financial crises and the COVID-19 pandemic—warrants a rigorous re-evaluation. This paper aims to analyze the impact of labor market flexibility on the EU economy using econometric methods. The specific objectives are to test the hypotheses that flexibility negatively influences the unemployment rate (H2) and positively influences economic development (H1).

Unlike previous studies that often rely on static models or limited time series, this paper employs a dynamic panel-data approach (Two-Step System GMM) across 27 EU countries over 23 years. This methodology allows correction for endogeneity and analysis of the persistence of economic shocks.

This paper is structured as follows: in the second section, we review the literature; in the third section, we present the methodology and the dataset; in the fourth section, we discuss the results; in the final section, we draw the concluding remarks of this study.

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2. Literature review

In this section, we review the existing literature on labor market flexibility in the European Union by presenting the most relevant studies. In this sense, we observe two main directions of the study of labor market flexibility, respectively, its impact on (i) the economy and (ii) the labor market.

We expect that an increase in labor market flexibility will have a positive impact on the economy. In other words, a flexible labor market can generate higher per capita incomes than a rigid labor market. From this perspective, we identified a relatively large number of studies that have examined the relationship between labor market flexibility and GDP. Kharroubi (2006) analyzed a series of 15 European countries along with the United States over the period 1981–2004. The author observed that in countries with flexible labor markets, the average rate of growth of production factors is higher. In comparison, countries with rigid labor market systems tend to have higher average productivity levels.

Bassanini and Venn (2007) also showed that labor market flexibility has a positive impact, whereas rigid labor contracts tend to reduce productivity growth. However, by studying a 24-year period (1979–2003) across 18 OECD member countries, the authors noted that the effect of the Employment Protection Legislation (EPL) variable (which indicates the level of labor market flexibility) on productivity at the country level remains unclear.

Other authors have found a negative relationship between EPL and the level of factor growth (and therefore GDP growth). Pagés and Micco (2012) demonstrated this relationship in countries with strong legislative systems. In countries with weak legislative systems, researchers found no significant effect of employee protection legislation on productivity growth. A recent paper by Eshun et al. (2023) analyzed the relationship between labor market flexibility and economic growth (measured by real GDP per capita) across Africa. Using data from 37 African countries over a period of 19 years (2000 – 2019), and using the two-step system econometric modeling GMM (Generalized Method of Moments). They showed a robust positive effect of labor market liberalization on economic growth (approximately 0.16 percentage points per unit, standard deviation). These results should be understood within a specific context: the African continent, rather than a global perspective.

Thus, we can formulate the second research hypothesis regarding the impact of labor market flexibility on the economy as follows:

H1: An increase in labor market flexibility has a positive impact on the level of real GDP per capita (measuring economic development).

Economists have also focused particularly on the relationship between labor market flexibility and unemployment. This interest is rooted in the aim of making the labor market more adaptable. From an economic theory perspective, increasing labor market flexibility facilitates greater access to employment, particularly by promoting part-time and remote work. This is particularly beneficial for young adults, women, and older adults. The European Commission (2008) also supports this line of reasoning.

Nickell et. al. (2005) studied the impact of changes in labor market institutions (flexibilization or rigidity) on the unemployment rate. The analysis was conducted across 20 OECD member states during the period 1960–1999. Using an IGLS (Iterated Generalized Least Squares) model, they show that institutional factors account for 55% of the variation in the unemployment rate, with the remainder attributable to recessions during the period under study. However, a growing number of research papers have demonstrated that labor market flexibilization does not always have positive effects, but, on the contrary, even adverse effects on the population (specifically, young people being the most affected).

Bruno et al. (2017) also highlighted this relationship. For a selection of OECD member states in the years 1981-2009, they used the Least Squares Dummy Variable (LSDV) model and found that the financial crisis is the most crucial variable in explaining youth unemployment. The researchers noted that the labor market flexibility variable does not significantly affect the

sign or magnitude of the unemployment rate. However, reducing protection measures for young employees results in a notable increase in their unemployment rate. It's important to note that the impact of market flexibility on unemployment among mature adults is generally weaker than for young adults.

Liotti (2020) examined this relationship across 20 regions of Italy over 16 years (2001–2016). He finds, as Bruno et al. (2017) report, that the primary factor affecting the youth unemployment rate is financial crises. Additionally, he notes that greater overall labor market flexibility reduces the unemployment rate. As a result, he recommends policies designed to protect young employees, such as Active Labor Market Policies (ALMP), which provide support and security. Another study compares labor market flexibility between France (an EU member state) and the United States.

A key argument for the lower unemployment rate in the U.S. compared to Europe is that labor flexibility, particularly regarding population mobility, is significantly higher in the U.S. Détang-Dessendre, Partridge, and Piguet (2016) present empirical evidence showing that France and the U.S. have similar levels of labor flexibility, which contradicts previous academic consensus. They argue that the issue is not related to immigration but likely stems from institutional mechanisms at the local (regional) level in France.

Moreover, researchers have discovered that the adverse effects of labor market flexibility extend beyond unemployment to impact living standards. Canale et al. (2022) investigated the relationship between two dependent variables," Worker's Relative Poverty" and "Worker's Severe Material Deprivation" and the labor market flexibility index for 15 EU countries from 2004 to 2018. Using econometric models of the Pooled Mean Group (PMG) type, the authors demonstrated that, in the long run, greater labor market flexibility is associated with higher poverty levels, which contradicts prevailing economic theories.

Based on the above, we formulate the second research hypothesis for this paper as follows:

H2: An increase in labor market flexibility is associated with a reduction in the Youth Unemployment rate.

3. Methodology and the dataset

For our study, we develop a specific econometric model to address each of the research hypotheses stated above. We collected data for two dependent variables, real GDP per capita and unemployment rate, from the Eurostat and World Bank databases. Given that our variable of interest is the labor force flexibility index – calculated by the Cato Institute and the Fraser Institute in annual values over the time period 2000 – 2022 (before 2000, data were annually every five years, starting with 1975), the analysis would be limited if a classic linear econometric model on time series were attempted at a country level.

Therefore, all the variables we collected cover the period from 2000 to 2022. To obtain a larger number of observations and a more comprehensive analysis, we estimated the econometric models using panel data (combining time-series and cross-sectional dimensions) for the 27 European Union countries. In total, we have 621 observations.

For each econometric model, the structure is the same: the dependent variables are regressed on the explanatory variable of interest (labor market flexibility) and on a set of control variables. The first model examines the impact of labor market flexibility on economic development. We use the real GDP per capita as the dependent variable. It measures economic performance, a choice substantiated by Eshun et al. (2023), who utilize this indicator to demonstrate the robust positive effect of labor market liberalization on economic outcomes across diverse economies.

We select a set of control variables such as the Inflation (measured as the annual percentage change in the Consumer Price Index), Population growth (as an annual percentage change), Trade (calculated as the sum of exports and imports of goods and services to GDP ratio), Size of Government (a composite index calculated by Cato and Fraiser Institute, made by incorporating Govt. Consumption, Transfer and Subsidies, Govt. Entreprises and Investment and Top Marginal Tax Rate), Money Growth (another index by Cato and Fraiser, representing

the measure of "excess" of money growth relative to the real economy) and the Unemployment rate (as a percentage of the unemployed people to total available labor force aged 15–64).

Economic theory suggests that greater trade integration promotes efficiency and technological transfer, thereby significantly driving wealth accumulation (e.g., Eshun et al., 2023). Inflation, government size, and money growth inform macroeconomic policy (Johnston, 2016). We also included population growth to account for demographic dilution effects (in line with the classical Solow growth model).

The second model studies the impact of flexibility of the labor market on youth unemployment rate, aligning with the approach of Nickell et al. (2005) and Liotti (2020), the former arguing that institutional factors, including labor market flexibility, account for a significant portion – roughly 55% - of the variation in unemployment rates across OECD countries.

For the model analyzing the impact of labor market flexibility on the unemployment rate, our control variables include Urban Population (as a percentage of the total national population), Total Population (in absolute terms), Real GDP per capita, and Adjusted Gross Disposable Income of households per capita (in PPS). Except for the unemployment rate and urban population, all other variables were log-transformed.

Okun's (1963) argues that there is an empirical relationship between the unemployment rate and GDP per capita. The rationale for using population (separated into total and urban) derives from Solow's growth model, in which population serves as a driver of labor supply. Lastly, we include the log of disposable income per capita alongside real GDP to capture distinct macroeconomic dimensions. While GDP per capita proxies aggregate labor demand and the business cycle (Okun's Law), household disposable income controls for family welfare and the reservation wage, which influence the labor supply decisions of young adults (an approach consistent with Nickell et al., 2005, and Liotti, 2020).

For all models, we take into consideration a "dummy" variable to quantify the impact of the three most critical economic crises of the last quarter century, namely: the Global Financial Crisis (2008 - 2009), the Sovereign Debt Crisis (2010 - 2014) and the COVID - 19 pandemic (in the years 2020 and 2021 as in Bruno et al. (2017) and Liotti (2020).

Our variable of interest – Labor Market Flexibility – represents a composite indicator (being calculated as an arithmetic mean) of seven calculated indicators, namely: Employment and Minimum Wage Regulations, Employment and Firing Regulations, Centralized Collective Bargaining, Working Hours Regulations, Imposed Cost of Firing an Employee, Conscription and Foreign Labor Force. All seven indices take values between 1 and 10, with 1 representing the minimum level and 10 the maximum. Public data from databases such as the World Bank, AMECO, Eurostat, and the FRED Institute are used to calculate these seven indices. For this reason, the most recent calculated and available values are for the year 2022.

Table 1 reports descriptive statistics for the variables described above across 27 European countries for the period 2000–2022.

Regarding the labor market indicators, a significant disparity is observed between the Total Unemployment Rate (average of 8.45%) and the Youth Unemployment Rate (average of 19.68%). This high percentage value for the youth population suggests structural difficulties in the labor market integration of young adults (15–24 years).

The table also presents descriptive statistics for the Labor Market Flexibility variable and its compositional indices. The average over the 23 years across the 27 European countries is 6.66 (above the median of 5), indicating that labor markets are flexible rather than rigid. The highest value (on average) among the sub-components is recorded in the Cost of Dismissal (8.03), while the lowest value is in Centralized Collective Bargaining (towards the middle value, respectively, 5.88). Other components, such as Conscription (7.21) and Working Hours Regulations (6.67), also fall within the flexible range.

It is important to note that the variables presented in the table (specifically the logarithmic ones) are generally non-stationary in levels. They were stationarized using first-order differencing before applying the "Two-Step System GMM" econometric model. The distribution of

values (as indicated by standard deviations and ranges) suggests non-normality for most variables, which is not problematic for the GMM methodology, as it only requires valid moment conditions, regardless of the data distribution.

Table 1. Descriptive statistics

Variable	**Mean**	**Max**	**Min**	**Std. Dev.**
Dependent Variables				
Log Real GDP per capita	10.05	11.60	8.33	0.67
Youth Unemployment Rate (15–24 years)	19.68	58.49	4.33	9.64
Control Variables				
Log Trade Openness	4.67	5.97	3.81	0.44
Log Income per capita	9.68	10.52	8.27	0.41
Total Unemployment Rate (%)	8.45	27.69	1.81	4.30
Inflation (CPI)	2.97	43.18	-9.90	3.73
Money Growth	8.43	10.00	0.00	1.02
Size of Government	5.89	7.13	4.64	0.77
Population Growth (%)	0.23	3.93	-3.85	0.89
Log Total Population	15.80	18.24	12.87	1.36
Urban Population (% of total)	72.17	98.15	50.75	12.63
Labor Market Flexibility Indices				
Labor Market Flexibility (Aggregate Index)	6.66	8.60	3.74	0.89
Conscription	7.21	10.00	0.00	3.50
Cost of Dismissal	8.03	10.00	1.01	1.81
Foreign Labor Force	6.54	10.00	3.60	1.31
Centralized Collective Bargaining	5.88	8.75	1.83	1.74
Hiring and Firing Regulations	6.25	10.00	0.78	1.74
Working Hours Regulations	6.67	10.00	2.00	1.97
Min. Wage & Employment Regulations	6.03	9.21	2.12	1.54

Source: Own processing.

We use GMM to estimate the econometric models, specifically the method proposed by Roodman (2009), which builds on the original method introduced by Arellano and Bond (1991). He provided two specifications – the system GMM and the differential GMM. The system-type GMM is recommended when the coefficients obtained from a classical panel linear regression (with fixed effects) are significantly different from those obtained with the differential-type GMM.

Additionally, to improve the robustness of the estimates, it is recommended to perform the GMM in two steps rather than in a single step. Both the system-type GMM and the differential-type GMM assume dynamic linear relationships between the dependent variable and the remaining variables. Having this in mind, we decided to run the models with both specifications: "Two Step GMM System" and "Two Step GMM Difference". We also corrected for heteroscedasticity and autocorrelation. The equations below describe the econometric model.

$$y_{it} = \alpha y_{i,t-1} + \mathbf{x}'_{it}\boldsymbol{\beta} + \varepsilon_{it} \tag{1}$$

$$\varepsilon_{it} = \mu_i + \nu_{it} \tag{2}$$

On the right-hand side, y denotes the dependent variable; the autoregressive term for y is followed by a series of exogenous variables (denoted by $\mathbf{x}$) and the error term (denoted by ε). The error component is composed of the individual fixed effects (μ_i) and the idiosyncratic shocks (ν_{it}).

The equation is rewritten specifically for our models in the following form:

$$y_{it} = \alpha y_{i,t-1} + \mathbf{x}_{it}\boldsymbol{\beta}_x + \mathbf{z}_{it}\boldsymbol{\beta}_z + \varepsilon_{it} \tag{3}$$

where $\mathbf{x}$ represents the control variables specific to each dependent variable, and $\mathbf{z}$ represents the variable of interest (either labor market flexibility or one of its components). The rationale behind this specification is to dynamically assess the impact—expected to be marginal—of labor market flexibility on economic development and the unemployment rate, *ceteris paribus*.

4. Results and duscussions

The results presented in Table 2 provide a differentiated view of the determinants of economic development, distinguishing between long-term structural factors (System GMM) and short-term adjustment dynamics (Difference GMM). A fundamental observation across all specifications is the high statistical significance of the lagged dependent variable, which confirms the dynamic nature of economic development.

In the System GMM models, the autoregressive coefficient is consistently close to unity (approximately 1.05), indicating strong path dependence in which current wealth levels are primarily determined by historical accumulation. Conversely, the Difference GMM estimators show a much lower autoregressive coefficient (ranging from 0.25 to 0.42), suggesting that while persistence is dominant in the long run, there is a significant short-run convergence effect, as countries adjust rapidly to annual shocks.

The System GMM results indicate that the aggregate flexibility index has a statistically insignificant coefficient (0.001), implying that greater labor market flexibility does not automatically translate into a higher long-term level of real GDP per capita. However, the Difference GMM results reveal a positive and statistically significant coefficient (0.064) for the aggregate index.

This challenges the critique that flexibility harms the economy; instead, it suggests that reform efforts toward liberalization generate a positive impulse for short-term economic development, likely by removing immediate frictions in resource allocation. Furthermore, the decomposition of the index indicates that specific policies matter more than others; notably, the "Foreign Labor Force" subcomponent exhibits a highly significant positive relationship with GDP (0.009 in System GMM), indicating to us that policies facilitating the integration of foreign workers are a robust driver of long-term economic prosperity.

Among the control variables, trade openness emerges as a critical driver of adjustments in the economic development, with a strongly positive and significant coefficient in the Difference GMM specifications (approximately 0.38-0.41). In contrast, demographic factors act as a drag on per capita wealth accumulation in the long run, as evidenced by the consistently negative and significant coefficient for population growth in the System GMM models.

Finally, the structural damage of major economic disruptions is evident: the dummy variables for both the Great Recession and the Sovereign Debt Crisis are negative and highly significant in the System GMM models, quantifying the lasting reduction in potential output caused by these events, whereas the COVID-19 pandemic did not show the same level of statistical persistence in this model.

Table 3 examines the determinants of the youth unemployment rate, offering evidence on the structural rigidity of European labor markets. The autoregressive term is highly significant across all models, with a coefficient ranging from 0.92 to 0.96 in the System GMM specifications. This high value indicates considerable hysteresis in the labor market, in which current unemployment rates are strongly predicted by past rates, suggesting that shocks to youth unemployment are absorbed very slowly over time. The Difference GMM results indicate lower but still substantial persistence (approximately 0.60), confirming that labor market adjustments are sluggish even in the short term.

Contrary to the theoretical expectation that deregulation automatically lowers unemployment, the aggregate labor market flexibility index is not statistically significant in either the System or Difference GMM models. This finding suggests that broad-based flexibility reforms alone are insufficient to address the structural causes of youth unemployment in the European Union. However, the analysis of sub-components offers more granular insights.

Specifically, the "Centralized Collective Bargaining" indicator shows a significant adverse effect on unemployment in the Difference GMM model, implying that a move toward more decentralized wage-setting mechanisms (a higher index value) can effectively reduce unemployment in the short run. Conversely, the results for "Cost of Dismissal" in the System GMM model yield a negative coefficient, suggesting a counterintuitive protective effect: higher firing costs (rigidity) might stabilize employment levels for insiders, albeit potentially at the expense of market dynamism.

The control variables provide a robust validation of standard macroeconomic theory. The coefficient for Log Real GDP per capita is strongly negative and highly significant across all specifications (e.g., -81.4), confirming a potent Okun's Law effect in which increases in national wealth lead to dramatic reductions in youth unemployment. Additionally, the "Urban Population" variable consistently shows a positive association with unemployment in the System GMM models, indicating that higher urbanization rates are structurally associated with higher youth unemployment, potentially due to greater friction and competition in dense urban labor markets.

Finally, the crisis dummy variables—particularly for the Sovereign Debt Crisis and COVID-19—are positive and significant, highlighting the vulnerability of the youth demographic to external macroeconomic shocks.

5. Concluding remarks

This study analyzed the impact of labor market flexibility on economic performance within the European Union, specifically focusing on Real GDP per capita and youth unemployment rates across 27 countries from 2000 to 2022. Using the labor market flexibility index developed by the Cato and Fraser Institutes, this research aimed to test the validity of the "flexicurity" model within the EU's unique institutional framework. To ensure robust empirical results, the analysis employed a dynamic panel approach using the Two-Step (System and Dynamic) Generalized Method of Moments (GMM) proposed by Roodman (2009), which corrects for endogeneity and the persistence of economic shocks.

The primary contribution of this paper lies in the granular decomposition of the flexibility index. Unlike previous studies that often rely on aggregate measures, this research isolates the impact of seven specific sub-components—such as centralized collective bargaining, hiring regulations, and the foreign labor force—on economic outcomes. This approach offers a novel perspective on which specific regulatory dimensions drive the success or failure of labor market policies.

The empirical results challenge the conventional assumption that aggregate flexibility is a universal driver of growth. We found no significant positive link between overall labor market flexibility and real GDP per capita. However, flexibility plays a positive role in short-term adjustments, suggesting that liberalization may remove immediate frictions. Regarding youth unemployment, the findings indicate that broad deregulation is insufficient. Notably, the decomposition analysis revealed that specific factors, such as the integration of the foreign labor force and centralized collective bargaining, have significant, distinct impacts on economic performance that are obscured when looking only at the aggregate index.

These findings suggest that EU policymakers should move away from blanket deregulation. Instead, the focus should remain on a targeted "flexicurity" model that emphasizes specific high-impact dimensions. Policies that facilitate the integration of foreign workers and maintain balanced collective bargaining mechanisms appear more effective than general reductions in

employment protection. Future legislative frameworks should prioritize these specific regulatory levers to maximize economic development while mitigating youth unemployment.

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TABLE 2. Results of Two-Steps (System/Diff) GMM models – GDP per capita real levels

VARIABLES	Lag structure															
	-1 System	-1 Diff	-2 System	-2 Diff	-3 System	-3 Diff	-4 System	-4 Diff	-5 System	-5 Diff	-6 System	-6 Diff	-7 System	-7 Diff	-8 System	-8 Diff
Lag GDP per capita real	1.047***	0.272***	1.048***	0.402***	1.081***	0.395***	1.039***	0.391***	1.050***	0.283***	1.040***	0.251**	1.052***	0.278**	1.057***	0.420***
	(0.034)	(0.091)	(0.033)	(0.079)	(0.048)	(0.071)	(0.026)	(0.061)	(0.039)	(0.082)	(0.035)	(0.091)	(0.040)	(0.120)	(0.038)	(0.076)
Flexibility of the labor market	0.001	0.064***														
	(0.010)	(0.022)														
Min. Wage & Emp. Reg.			0.002	-0.004												
			(0.004)	(0.009)												
Hiring & Firing Reg.					-0.004	0.005										
					(0.004)	(0.005)										
Centr. Coll. Bargaining							0.006	0.005								
							(0.004)	(0.010)								
Working Hours Reg.									0	0.023						
									(0.003)	(0.016)						
Firing Costs											0	0.030				
											(0.003)	(0.018)				
Conscription													-0.001	0.016		
													(0.002)	(0.013)		
Foreign Labor Force															0.009***	0.001
															(0.003)	(0.002)
Total Unemploy.	0.002	-0.020***	0.002*	-0.010***	0.002	-0.010***	0.001	-0.020***	0.002	-0.010***	0.001	-0.020***	0.002*	-0.020***	0.002	-0.010***
	(0.001)	(0.004)	(0.001)	(0.003)	(0.002)	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.004)	(0.001)	(0.004)	(0.001)	(0.003)
Log Trade	0.015	0.379***	0.015	0.412***	0.021	0.389***	0.006	0.407***	0.016	0.337***	0.017	0.385***	0.017	0.406***	0.015	0.427***
	(0.036)	(0.075)	(0.030)	(0.072)	(0.056)	(0.067)	(0.021)	(0.052)	(0.033)	(0.100)	(0.032)	(0.120)	(0.043)	(0.069)	(0.027)	(0.074)
Population Growth	-0.035*	-0.014	-0.036**	-0.008	-0.052**	-0.007	-0.027	-0.005	-0.036*	-0.008	-0.030*	-0.001	-0.037**	-0.025	-0.043**	-0.009
	(0.020)	(0.028)	(0.016)	(0.017)	(0.023)	(0.020)	(0.017)	(0.014)	(0.019)	(0.021)	(0.017)	(0.025)	(0.017)	(0.028)	(0.019)	(0.017)
Inflation (CPI)	0.003*	-0.004	0.004*	-0.005	0.003	-0.005	0.003**	-0.005**	0.003	-0.001	0.004*	-0.004	0.003	-0.005*	0.003	-0.005**
	(0.002)	(0.004)	(0.002)	(0.003)	(0.002)	(0.003)	(0.001)	(0.003)	(0.002)	(0.003)	(0.002)	(0.004)	(0.002)	(0.003)	(0.002)	(0.002)
Money growth	-0.002	0.004	-0.003	0.002	-0.002	0.002	0	0.004	-0.002	0.003	-0.002	0.002	-0.002	0.003	-0.004	0.005
	(0.003)	(0.005)	(0.003)	(0.005)	(0.004)	(0.005)	(0.003)	(0.005)	(0.003)	(0.005)	(0.003)	(0.005)	(0.003)	(0.005)	(0.003)	(0.005)
Size of Government	0.020*	0.010	0.021	0.021	0.031	0.024	0.013	0.017	0.020*	0.069**	0.016	0.055*	0.022	0.013	0.021	0.014
	(0.012)	(0.023)	(0.013)	(0.022)	(0.018)	(0.019)	(0.009)	(0.020)	(0.012)	(0.027)	(0.013)	(0.027)	(0.015)	(0.028)	(0.013)	(0.025)
Great Recession	-0.030***	0.011	-0.030***	0.005	-0.030***	0.004	-0.030***	0.004	-0.030***	0.008	-0.030***	0.010	-0.030***	0.005	-0.040***	0.004
	(0.007)	(0.013)	(0.008)	(0.008)	(0.009)	(0.009)	(0.007)	(0.008)	(0.008)	(0.013)	(0.008)	(0.012)	(0.008)	(0.010)	(0.008)	(0.009)

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VARIABLES	Lag structure															
	-1 System	-1 Diff	-2 System	-2 Diff	-3 System	-3 Diff	-4 System	-4 Diff	-5 System	-5 Diff	-6 System	-6 Diff	-7 System	-7 Diff	-8 System	-8 Diff
Sovereignty Debt Crisis	-0.030***	-0.003	-0.030***	0.002	-0.030***	0	-0.030***	0.001	-0.030***	0.012	-0.030***	-0.005	-0.030***	-0.008	-0.020***	0
	(0.008)	(0.009)	(0.008)	(0.007)	(0.009)	(0.006)	(0.007)	(0.007)	(0.008)	(0.013)	(0.008)	(0.009)	(0.008)	(0.008)	(0.008)	(0.007)
COVID-19	-0.011	0.014	-0.011	0.013	-0.012	0.013	-0.010	0.015	-0.010	0.030*	-0.010	0.025	-0.011	0.010	-0.012	0.013
	(0.008)	(0.015)	(0.008)	(0.014)	(0.009)	(0.013)	(0.006)	(0.014)	(0.009)	(0.017)	(0.009)	(0.017)	(0.008)	(0.016)	(0.009)	(0.013)
Constant	-0.644*	–	-0.657**	–	-1.040**	–	-0.507*	–	-0.665*	–	-0.543*	–	-0.689**	–	-0.769**	–
	(0.315)	–	(0.287)	–	(0.408)	–	(0.273)	–	(0.342)	–	(0.315)	–	(0.323)	–	(0.338)	–
Observations	567	540	567	540	562	535	564	537	541	513	544	517	567	540	567	540
Number of Country ID	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
F-statistic	580188	20.74	617933	25.08	500459	37.36	1.31E+06	34.48	534505	54.68	608826	30.43	535495	26.35	459213	25.02

TABLE 3. Results of Two Step (System/Diff) GMM models – Youth unemployment rate

VARIABLES	Lag structure															
	-1 System	-1 Diff	-2 System	-2 Diff	-3 System	-3 Diff	-4 System	-4 Diff	-5 System	-5 Diff	-6 System	-6 Diff	-7 System	-7 Diff	-8 System	-8 Diff
Lag of Unemployment Youth	0.94***	0.58***	0.92***	0.62***	0.96***	0.61***	0.93***	0.66***	0.96***	0.59***	0.95***	0.62***	0.95***	0.54***	0.94***	0.62***
	(0.06)	(0.073)	(0.064)	(0.087)	(0.064)	(0.091)	(0.068)	(0.087)	(0.061)	(0.074)	(0.061)	(0.08)	(0.064)	(0.102)	(0.058)	(0.084)
Flexibility of the labor market	-0.286	2.249														
	(0.595)	(1.33)														
Min. Wage & Emp. Reg.			-0.207	-1.853												
			(0.194)	(1.246)												
Hiring & Firing Reg.					-0.214	0.678										
					(0.138)	(0.707)										
Centr. Coll. Bargaining							-0.411	-1.958*								
							(0.574)	(1.195)								
Working Hours Reg.									-0.155	1.045						
									(0.204)	(1.082)						
Firing Costs											0.147	0.443				
											(0.465)	(1.06)				
Conscription													-0.047	0.960**		
													(0.056)	(0.44)		

Continued on next page

VARIABLES	Lag structure															
	-1 System	-1 Diff	-2 System	-2 Diff	-3 System	-3 Diff	-4 System	-4 Diff	-5 System	-5 Diff	-6 System	-6 Diff	-7 System	-7 Diff	-8 System	-8 Diff
Foreign Labor Force															-0.271	0.005
															(0.219)	(0.253)
Log Total population	0.19	-4.532	0.232	-19.549	-0.039	-37.377	-0.163	-23.966	-0.099	-10.8	0.879	-35.652	0.087	-41.794	0.269	4.448
	(0.664)	(58.4)	(0.306)	(50.336)	(0.773)	(74.333)	(0.639)	(57.696)	(1.011)	(98.129)	(1.662)	(44.111)	(0.117)	(48.873)	(0.542)	(92.067)
Urban population (%)	-0.01	-0.414	-0.018	-0.405	-0.008	-0.239	-0.002	0.019	-0.001	-0.454	0.02	-0.422	-0.011	0.204	-0.01	-0.28
	(0.018)	(0.642)	(0.032)	(0.606)	(0.024)	(0.658)	(0.025)	(0.605)	(0.031)	(0.796)	(0.059)	(0.66)	(0.013)	(0.528)	(0.022)	(0.766)
Log Real GDP per capita	1.334	-81.4***	1.861	-78.6***	0.467	-86.8***	-0.561	-73.3***	0.032	-77.9***	1.164	-76.9***	0.598	-74.4***	1.782	-77.6***
	(2.587)	(6.086)	(2.573)	(11.217)	(3.015)	(10.489)	(3.239)	(9.246)	(3.804)	(11.974)	(2.195)	(10.591)	(0.628)	(8.438)	(2.312)	(8.732)
Log Income per capita	-1.57	44.162***	-1.949	43.477***	-0.399	48.797***	-0.358	41.764***	-0.489	40.986***	-1.834	42.915***	-0.538	34.905***	-2.351	43.558***
	(2.19)	(5.475)	(2.418)	(7.763)	(2.351)	(7.296)	(2.681)	(8.437)	(3.306)	(7.119)	(2.432)	(6.517)	(1.24)	(7.241)	(2.19)	(7.153)
Great Recession	1.991**	0.994	1.914**	1.518*	1.753*	1.991*	1.630**	1.898**	2.400***	1.5	2.519***	1.607	1.937**	0.616	1.810**	1.236
	(0.732)	(0.821)	(0.825)	(0.826)	(0.902)	(0.987)	(0.783)	(0.924)	(0.783)	(1.127)	(0.785)	(1.197)	(0.779)	(1.039)	(0.709)	(0.735)
Sovereign Debt Crisis	3.877***	1.344**	3.747***	1.499*	3.441***	1.404**	3.534***	1.346	3.987***	1.645**	3.972***	1.640**	3.656***	0.639	3.602***	1.716**
	(0.628)	(0.583)	(0.753)	(0.863)	(0.959)	(0.666)	(0.792)	(0.827)	(0.646)	(0.767)	(0.666)	(0.638)	(0.735)	(0.667)	(0.734)	(0.775)
COVID-19	2.803***	1.089**	2.739***	0.948*	2.744***	0.561	2.766***	0.578	2.708***	1.069	2.951***	0.827	2.680***	0.836	2.750***	0.54
	(0.476)	(0.514)	(0.513)	(0.544)	(0.537)	(0.537)	(0.547)	(0.612)	(0.571)	(0.648)	(0.533)	(0.492)	(0.529)	(0.51)	(0.5)	(0.588)
Constant	1.33	–	-0.615	–	1.42	–	14.424	–	6.562	–	-11.014	–	-1.353	–	2.974	–
	(19.92)	–	(9.992)	–	(21.19)	–	(20.98)	–	(23.50)	–	(27.86)	–	(8.28)	–	(14.79)	–
Observations	567	540	567	540	562	535	564	537	541	513	544	517	567	540	567	540
Number of Country ID	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27
F-statistic	8982	46.68	2849	40.34	5606	35.76	2857	36.77	221	61.5	7539	51.94	4714	33.76	2283	48.75

Source: Own processing.
Standard robust errors in brackets.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.