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Transformative EU 27 Labour Markets: Assessing Opportunities, Risks and Trends

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Abstract

The labour markets are in a transformative period due to increased uncertainty and overall volatility. Moreover, they show a socially biased fingerprint affecting the social and economic policies at the EU 27 level. The unemployment rate by 6.0% in the spring of 2024 (Eurostat) indicates that the dynamics become more complex on the background of skill shortages increase. All member states display a mixed image regarding the digital economy potential, and several issues have to be addressed for avoiding employment traps, and social discontent in times of the cost-of-living crisis. The paper uses a mixed methods approach to capture relevant quantitative and qualitative data on the transformative EU 27 labour market, with emphasis on countries of Central and Eastern Europe. A rough DEMATEL Z-score method is used to characterize the main interactions and relevant impact factors. The findings show that policy makers and stakeholders need to (re)focus on education to ensure research development and innovation competitiveness, as 'blue collar' jobs are increasing. A new emergent "triptych" government-business sector-society is required for reducing persistent polarization and inequalities.

Keywords: labour market, polarisation, inequality, education.

JEL Classification: C1, D81, E24, E26, E61, I24, I25.

1. Introduction

Over the past decades, global and European markets were faced with numerous challenges determined by a complex mixture of accelerated technological advancement, geoeconomic, and geopolitical shifts. One of the core sources might be identified in the evolution of labour markets, as polarisation increased. The current

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labour market changes are unprecedented and show clear and distinctive characteristics differentiating them from traditional labour markets. In this context, the Covid-19 pandemic, the accelerated implementation of more digital solutions, the emergence of AI and the war in Ukraine have affected the EU 27 labour market less than expected, as they have shown resilience confronted with "cost-of-living" discontent, high inflation and higher energy prices, supply chain disruptions, and a general silent economic slowdown. This is proven by the fact that unemployment reached an all-time low of 6.0% in spring 2024 (Eurostat). Challenges continue to persist from a diversity of viewpoints starting with reducing gender employment gaps to dealing with increasing skills' shortages as skill needs change, contributing to the transformation of work, or more briefly to the emergence of transformative labour markets that need to be analysed in-depth considering the variety of types and attributes embedded in them. While an unanimously accepted definition of transformative labour markets is still lacking, they should be defined by delineating their main characteristics and attributes, and the various levels where they impact the most important resource: human capital (European Commission, DG Employment, Social Affairs and Inclusion, 2023). One (at least) tentative definition of transformative labour markets would provide a starting point in understanding the multiple facets of the challenges and opportunities they present for individuals, businesses, and societies, including potential risks. The first main root driver is technological advancement in most workplace changes (McKinsey Global Institute, 2017). It facilitated, among others, the emergence and swift spread of the gig economy, which has multiple implications for the functioning of labour markets from the perspective of regulations, social protection, and how work will be performed in the future (De Stefano, 2016). These examples of how labour markets change today in a context dominated by a complex mix of abstract and practical knowledge are currently at the core of social and economic interactions. This is confirmed by a recent survey (Ipsos, Flash Eurobarometer 537, 2023), at the request of the European Commission, that analysed the supply and demand for skilled workforce in the EU 27 SME sector, which is the engine of the European economy and the main source for ensuring economic growth, competitiveness, and innovative capacities for the transition to net zero and the digitalised economy. Applied to companies from microcompanies to large companies, it showed that the lack of workers/employees with the right skills is a first-order concern for 53% of microcompanies, 65% of the SMEs with 10 to 49 employees, 68% for medium-sized companies, and for 72% of large companies with over 250 employees. The next major concerns were the regulatory obstacles or administrative burdens, however, at much lower shares. In this respect, 34% of the microcompanies expressed concerns, followed by 30% of SMEs (10-49 employees), 29% of medium-sized companies (50-249 employees) and 26% of large companies (250 and more employees). These findings are consistent with another important topic: skills' shortages at the EU 27 level. Skill shortage brings to light the necessity of improved cooperation between the educational system and the business world, based on support policies that require the involvement of EU 27 countries' governments for developing mechanisms and tools for mitigating the pressure effects of the current structural

changes, and of the transformative nature of work. One question is whether education and training, which are both key to addressing labour polarisation and social exclusion, can identify new innovative ways of cooperating with business stakeholders. A second relevant question is whether the institutional quality of labour market institutions provides or might provide in the future incentives and solutions for enhanced collaboration. In this context, a new "triptych" government-business sector society is required to reduce polarisation and inequalities, and counter perceptions such as those stating that unemployment diminished because people began accepting jobs for smaller wages. At the same time, new (emerging) types of unemployment might be defined based on this "triptych" as they relate to the most concerning and persistent one: long-term unemployment. The final level of investigation is the one of labour market institutions for the current and foreseeable future, based on analysing 6 of the most relevant components related to the "triptych" (Vlados & Chatzinikolaou, 2024).

2. Theoretical Framework

A definition for transformative labour markets should focus first on the main driver, respectively, technological advancement, which accelerated progressively and is, simultaneously, a major opportunity and risk for the workforce. The concept is not new, but has gained new meanings, as it is correlated with the demand and supply of skills development, contributing to emerging and increasing shortages. The most noticeable is that a complex mix between abstract and practical knowledge becomes the daily tool for all economically active groups. This increases economic and social pressures, indicating the need to review and adjust economic and social institutions to the new realities of transformative labour markets.

2.1 Definitions and Characteristics of Transformative Labour Markets

A possible definition of transformative labour markets starts from the premise that these markets undergo complex transformations differentiating their evolution from the traditional labour market changes. Hence, transformative labour markets are both a driver and a target of significant structural changes based on how and to what extent technologies are used, as globalisation/deglobalisation processes, migration, demographic ageing, and other societal and cultural changes act as mediators for the dominating characteristics of the technologically triggered transformation (Acemoglu & Restrepo, 2018). The impact is most visible for the workforce as it leads to changes in workforce dynamics, employment patterns, and job opportunities. While "transformative" might be sometimes used as substitute for a "dynamic" labour market, it is not exactly the same, as it requires more than the simple capacity to adjust in a given timeframe to implement the solutions delivered by technological innovation. It means new (improved) ways of production, evolving consumer demands (West, 2019), and superior expectations of employers and employees. In brief, the transformative labour market is the expression of current shifts in employment structure, practices, and conditions based on abstract and practical knowledge, and impacting on what types of jobs are available based on required skills, on how the

work is organised, and performed. The transformative labour market expresses and generates the need of creating an improved economic-social framework for dealing with current work realities, by taking on features of "traditional" labour markets, for instance in career advancement and skills development, but by adding new components borrowed from other social sciences: quality of life, and of workplace, thus ensuring higher correlation between governmental and societal objectives. Moreover, by making use of extended ways of cooperation with education and training, facilitated by the technological advancement, it should act towards ensuring inclusiveness and chances for everyone to participate in, and benefit from economic activities fostering social cohesion next to economic resilience. Another relevant aspect is how it impacts existing labour market institutions, and how it might improve, or even generate new ones corresponding to the emerging needs in a period dominated by geoeconomic and geopolitical volatilities. Thus, the key issue dominating the existing and transformative labour markets is the gap between required abstract and practical knowledge, and the structure of the skills, on the premise that within the EU 27 there is a certain network of skills characterising countries, and their structural differences (Gennaioli et al., 2013). The emerging pattern is one of the north-south divide regarding convergence and cohesion (Fulvimari et al., 2016), and some of the causes could be identified in the shared skill shortage issue. One key factor that might assist in identifying the reasons is the specialisation and/or overspecialisation that become persistent in some EU 27 countries, particularly in the central- and eastern European area.

2.2 Current Skill-Shortages EU 27

Skill shortages emerge when the demand for workers with qualifications exceeds the supply of workers, and these instances might have a cyclical but also a structural nature. The premises of the twin transition, associated with factors, such as demographic ageing, have resulted in increasing skill shortages in important fields of economic activity: healthcare, STEM jobs, and occupations, in the services' industry, from low-skilled to high-skilled workers, while the trend of the 'vanishing middle' continues. In this context, the transformative labour market gains considerable social connotations, as skill shortages become also associated with 'quality of work'. Here some difficulties might be noticed for employment, as lack of workforce supply persists for some jobs that still maintain significant work-intensive characteristics from the physical, and psychological perspective (health- and residence care, transport, HORECA, etc.). Emerging and increasing labour shortages were already noticed in 2012, and they continued to increase, even during the pandemic. By NACE 2 subsectors, most member states (19) record significant labour shortages in specialised construction activities, computer programming, consultancy and related activities (17), construction of buildings (17), repair and installation of machinery and equipment (16), while around 12 countries are faced with challenges at the lower end, respectively, in architectural and engineering activities, technical testing and analysis, manufacture of other transport equipment (Employment and Social Developments in Europe, 2023). A more in-depth analysis of these data shows that the "blue-collar"

becomes a necessity in the changing work landscape and the new trend in the demand for skills. This implies that extended cooperation between the education and training system and the business environment, as stakeholders, needs to be fostered in facilitating rapid adjustment between the supply and demand for skilled workforce, and to improve the qualitative side of work. At the same time, in concerted action, both stakeholders should act towards encouraging attitudes that pinpoint "blue collar" as the best option for present, and future opportunities in a quality of personal- and work-life framework, adjusted to the new socioeconomic life. Finally, government involvement is required as the main policy decision factor and agent influencing the institutional quality of the labour market.

2.3 Quality of Labour Market Institutions – Role in Shaping Government-Business-Society Relationships

Economic and social institutions represent the sets of law, regulations, incentives, and sanctions in Northian understanding, determinants for economic growth (Acemoglu & Robinson, 2013). One important component is the institutional setting of the labour market to ensure the sustainability and resilience of the EU 27 and global societies. At EU 27 level, we suggest that we are currently in the stage of building and strengthening the mechanisms contributing to the further consolidation of economic-social institutions, and the generation of "new" ones corresponding to the current work developments. One such tool is the NextGenerationEU, aimed initially at repairing immediate damages from the pandemic. Its future success depends precisely on the quality of institutions and the administrative capacity of the member states. Hence, institutional factors, such as university-business cooperation, and the regulatory capacity of the public administration, become relevant for mitigating potential risks, ensuring performance, and acting towards reducing increasing divergence between EU 27 member states in the context of the emergent transformative labour markets.

3. Methodology

The transformation of the labour market within the EU shows differing intensities, consistent with the various development stages of the member states. An indicator of the change processes is the long-term unemployment rate. It is assumed that as result of implementing new technologies, especially ICT-related ones, and by gradual adjustment of the population to the new requirements of the economic environment, this indicator tends to diminish. The period 2012-2023 seems to confirm this, as the long-term unemployment rate decreased from 4.9% to 2.1%. During the same period, the weight of specialists in ICT-technologies among the employed population increased from 3.2% to 4.8%, while the share of internet users in the total population grew from 73.53% to 92.36%. A series of differences can be observed at the level of the three indicators among member states. If we consider the founding member states (Belgium, Germany, France, Italy, Luxemburg, the Netherlands) on one hand, and some Central and Eastern European countries on the other hand, former CMEA (Council for Mutual Economic Assistance) members (Bulgaria, Czechia, Poland,

Romania, Hungary, Slovakia), the differentiated evolutions can be highlighted (Table 1). The tested hypothesis, based on an econometric fixed panel model, is the existence of a negative correlation between the long-term unemployment rate and the expansion of ICT uses in the context of persistent, presupposed differences.

Table 1. Indicators of labour market functioning and ITC-technologies expansion in some EU 27 member states, 2012-2023

Indicator, year	Long-term unemployment rate		Weight of ITC specialists in the total employed population		Internet use degree among total population	
	2012	**2023**	**2012**	**2023**	**2012**	**2023**
Founding member-states						
Belgium	3.1	2.2	4.3	5.4	81.8	95.3
Germany	2.4	1.0	3.5	5.9	84.0	93.4
France	2.6	1.8	2.7	4.7	83.1	93.8
Italy	6.0	4.2	3.1	4.1	58.0	87.7
Luxemburg	1.6	1.7	5.0	8.0	92.3	99.4
The Netherlands	1.7	0.5	4.5	6.9	93.5	99.3
New Member-States						
Bulgaria	7.2	2.3	2.5	4.3	55.1	84.0
Czechia	3.0	0.8	3.4	4.3	75.8	92.7
Poland	4.2	0.8	2.5	4.3	65.1	88.1
Romania	3.7	2.2	1.6	2.6	49.8	91.6
Slovakia	10.9	3.8	2.5	4.2	79.8	89.1
Hungary	4.8	1.4	3.2	4.2	72.1	91.8

Source: authors' own calculations based on Eurostat database.

The following panel with fixed effects model was estimated, and applied separately for the two groups of member states:

$$LTUR = a + b*WICT + c*IUSE + sum\ Dummy_k \qquad (1)$$

where: LTUR = long-term unemployment rate; WICT = weight of ITC-specialists; IUSE = internet use degree among the total population; a, b, c, $Dummy_k$ = variables to be estimated.

Next, we used a DEMATEL-z score analysis to identify the impact and relationship of economic-social institutional factors on long-term unemployment, and overall, on the EU labour market. First, a linguistic interpretation was made, by reinterpreting a comparable analysis (Zhu & Hu, 2021) for the transformation on the Gabus and Fontel scale. This rough-DEMATEL z-score analysis shows which of the economic-social indicators are most relevant for the transformative labour market in relationship to the perspective of trust shown by business environment, education-vocational training systems, and governance, for the same member states used in the econometric model (Table 2).

Table 2. Linguistic variables for z-scores attribution on Gabus-Fontel scale

Linguistic variable	z-scores	Gabus-Fontel scale
Very Low	0	0 = no influence
Low Influence	0.1-0.3	1 = Low influence
Medium influence	0.4-0.6	2 = medium influence
High	0.6-0.9	3 = high influence
Very high	0.9 – 1.0+ and over	4 = high impact

Source: authors' own concept.

The institutional variables selected were: university-industry cooperation, state of cluster development, government ensuring policy stability, active labour market policies, government responsiveness to change, and government long-term vision. Z-scores were computed in SPSS 26. Thereafter, a matrix of direct relationships was constructed (Table 3) according to the above linguistic variable attributions.

Table 3. Direct relationships matrix

	UnivIndCol	Stateclusdev	GovPoSt	ALMP	GovRCh	GovLTVs
Univindcol	0	1	3	2	4	3
Stateclusdev	2	0	4	1	3	2
Govpost	4	2	0	1	3	2
ALMP	2	3	4	0	3	4
GovRCh	1	2	3	4	0	1
GOVLTVIS	4	2	1	2	2	0

Source: authors' own calculations based on WEF Global Competitiveness Index 4.0.

The second step, was normalising this matrix based on the following equation:

$$X' = \lambda * T \qquad (2)$$

Where: λ = 1/divided by the highest value of summing up each row X; X – Matrix or direct relationships; X' = normalised matrix of direct relationships for each country group of old member states and for the New Member States used in the econometric model. The results were transformed to build the final total influence matrix relevant for all selected countries, and to determine which of the institutional factors are most relevant for all countries included in the analysis.

The matrix of total influence was calculated as follows:

$$T = X'*(I-X')*-1 \qquad (3)$$

where: T – total influence/impact matrix (direct or indirect): X' – standardised matrix of direct relationships; 1 – unitary matrix. The element xij of the matrix T indicates the direct and indirect influence/impact of the indicator I on indicator j.

The final step was to calculate the significance and relationship indicators:

a) Significance indicator:

$$S_i = \sum_{j=1}^{n} t_{ij} + \sum_{j=1}^{n} t_{ji} \qquad (4)$$

b)   Relationship indicator:

$$R_i = \sum_{j=1}^{n} t_{ij} - \sum_{j=1}^{n} t_{ji} \tag{5}$$

The results, included into a cause-effect map of significance and relationship, deliver information about how the institutional factors relate, and interact with each other.

4. Results and Discussion

Estimated parameters and statistical tests of the econometric model in the case of EU-founding member states and new EU member states, ex-members of the former CMEA (Table 4).

RLTU= a_2+ b*RICT + c*IUSE +sum Dammy$_k$; in the case of EU-founding member states   (6)

Table 4. Summary of the results of the econometric model

| Indicator Name	Indicator size	Student Test Statistics	Indicator Name	Indicator size	Student Test Statistics
Group of founding Members of EU			**Group of ex-members of CMAE**		
a	10.4199	9.1121	a	114293	8.8854
b	-0.2937	-3.0525	b	-2.56310	-5.5677
c	-0.0841	-5.9393	c	-0.0189	-0.7120
Dummy Belgium	1.4239	6.5443	Dummy	2.4132	4.4812
Dummy Italy	3.0574	10.4127	Dummy	1.7531	3.3211
Dummy France	0.7046	3.4713	Dummy	-1.8364	-3.1896
Dummy Luxemburg	1.1601	4.6386	Dummy	5.3509	11.1633
Dummy Netherlands	0.7382	3.1420	Dummy	1.8296	3.6448
R^2		0.9325	R^2		0.8129
R^2adj		0.9251	R^2adj		0.7924
D-U		1.0382	D-U		0.5454

Source: authors' own calculations based on Eurostat database.

The estimated models have high coefficients of determination, over 0.80. The Student-test shows that all coefficients corresponding to the dummy variables are significant. The estimates for the founding member-states are better from qualitative viewpoint, compared with the ones for the new central and eastern European member states, if we consider the size of the calculated values for the statistical tests. The negative relationship between the long-term unemployment rate and the expansion of ICT use is confirmed. Moreover, all coefficients corresponding to the dummy variables for the founding countries of the EU are positive, indicating that the long-term unemployment rate was, in all other countries, superior to the one in the

country of reference. For the selected CEE member states, only in the case of Romania the estimated value of the dummy variable is negative.

The rough-Z-score DEMATEL method indicates that all selected economic-social institutional indicators have a high level of significance, and can be used in analysing best interventions for decreasing long-term unemployment, and avoiding increases in other types of unemployment. Also, they can be used for assessing transitions affecting incomes. Active labour market policies have high significance and positive relationship with all other indicators. In the case of the other institutional indicators, despite their high significance, their relationships would require a more refined analysis, according to the significance and relationship diagram in the last step of the DEMATEL analysis (Figure 1).

Figure 1. Significance and relationship matrix of economic-social institutional indicators
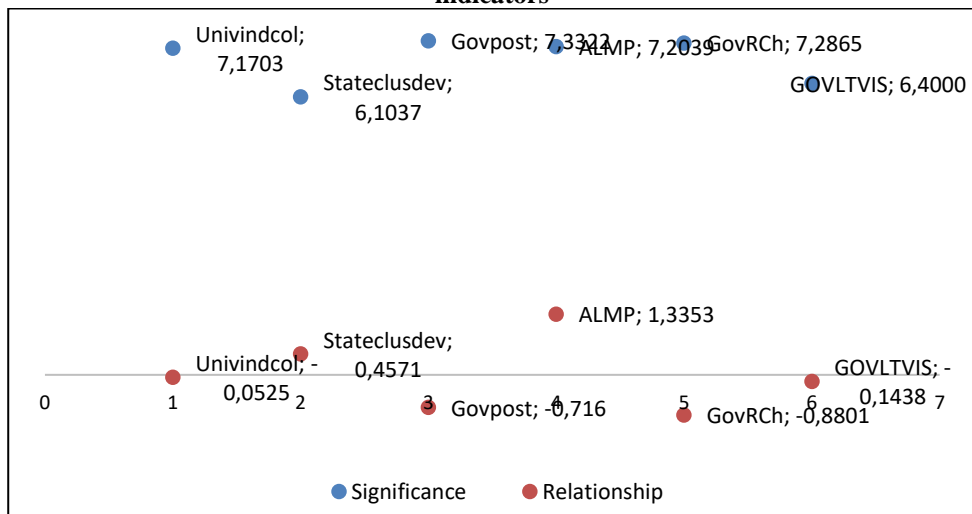
Source: authors' own elaboration.

Moreover, the state of cluster development, which has a positive value in the relationship with the other economic-social indicators seems to signal that "clusters" defined as a complex nexus of abstract and practical knowledge might contribute significantly to simultaneously addressing long-term unemployment (structural in nature), and skill shortages that send a contradictory message, at least at the level of the population.

5. Conclusions

Long-term unemployment had different dynamics if analysed from the perspective of the EU 27 founding member states, against the New Member States included in the present analysis. While structural long-term unemployment will remain a constant also in the foreseeable future, the underlying data of long-term unemployment analysis, associated with the economic-institutional analysis, suggest that the helix government

– business – education, should be developed into a "triptych" allowing for an in-depth analysis of the determinant macroeconomic factors in association with other factors of institutional nature. By further developing this framework, based on MCDM/MCDA methods, new tools might be created for reducing long-term unemployment, but also other types of unemployment related to labour market transitions which are still not enough investigated for preventing their risks and negative impacts at the level of national EU 27 economies and societies. A consistent argument in this respect is the strong relationship identified based on the rough Z- score DEMATEL method between active labour market policies and all the other economic-social institutional factors.

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