Comparative analysis of labour markets in Ukraine, Armenia, Moldova, and Estonia: Institutional approach, 1995–2020

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The study investigates the labour market and economic transformation in Armenia, Estonia, Moldova, and Ukraine. After the 30th anniversary since gaining independence. all 15 former Soviet states demonstrated different speeds and results of economic transition. While Estonia is known as the most successful post-Soviet state, Ukraine and Moldova are still transforming their economies towards joining the EU, and Armenia is part of the pro-Russian economic bloc. This study aims to compare labour markets through the prism of institutional transformations. The econometric modelling revealed the relationship between institutional aspects of the labour market and further economic development.

The labour market of the post-Soviet countries in general, and those of Ukraine, Armenia, Moldova, and Estonia in particular, do not constitute a significant part of the global labour market. However, their important regional features allow us to assess the level of institutional transformations of the economies of these countries. The tools and methodological approaches used in this study can be used for further research in the field of labour and institutional economics to understand the transformational processes of different speeds that are taking place in the post-Soviet space.

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this study had the opportunity to visit these countries in 2020–2021.
The random-effect regression model results indicated that the life expectancy at birth has a statistically significant impact on GDP, unlike traditional labour market indicators such as years of schooling, unemployment, and female participation in labour force.

Introduction

The objective of this study originated during the discussion in the course of labour economics as part of the evidence that countries with strong human capital can be competitive in terms of economic development when coupled with longer life expectancy, which positively impacts gross domestic product (GDP) per capita (Uzzoli 2016, Pál et al. 2021). Following the 30th anniversary of gaining independence, all 15 former Soviet states demonstrated different speeds and results of economic transition (Lee 2021). While Estonia is known to be the most successful post-Soviet state, Ukraine and Moldova are still transforming their economies towards joining the European Union (EU), and Armenia is part of the pro-Russian economic bloc. The main purpose of this study is to compare labour markets through the prism of institutional transformations. Econometric modelling revealed the relationship between institutional aspects of the labour market and further economic development.

The labour market of the post-Soviet countries in general, and those of Ukraine (Karácsonyi et al. 2014), Armenia, Moldova, and Estonia in particular, do not constitute a significant part of the global labour market, but they have important regional features that allow us to assess the level of institutional transformations in these countries' economies. The tools and methodological approaches used in this study can be used for further research in the field of labour and institutional economics to understand the transformational processes of different speeds that are taking place in the post-Soviet space.

The choice of countries for research is due to their inclusion in the economic complex of the *Union of Soviet Socialist Republics* (*USSR*), being in Europe, the polarity of the integration course, similar demographic trends, and as the authors of the article had the opportunity to visit these countries in 2020–2021.

The main focus is on unemployment, wages, the gender structure of the labour market (Akbash et al. 2018), personal remittances, years of compulsory schooling, and life expectancy at birth. North (2000) argues that economic change depends largely on 'adaptive efficiency', a society's effectiveness in creating productive, stable, fair, and broadly accepted institutions and, importantly, which are flexible enough to be changed or replaced in response to political and economic feedback.

Literature review

The comparative analysis of the four countries aims to examine the impact of the institutional environment on labour markets (Bite et al. 2020). Addressing the sources and factors of socioeconomic development in economics has been key since its inception and development. Modern economists – supporters of the popular institutional direction – argue that it is 'institutions that determine long-term functioning economies'. Their conclusion is based on research by the World Bank, which confirms that countries with inadequate economic policies but a quality institutional environment develop on average twice as fast as countries with an inverse combination of quality levels of relevant factors. The same trend was also confirmed by the study (Karácsony 2020) that found that the degree of influence of the institutional indicator on the rate of increase in real per capita income was almost twice as high as the measured influence of political indicators. It should also be noted that informal institutions are common stereotypes and norms of behaviour in the individual and social consciousness, which are gradually changing. Although these changes are slow (30–50 years), they are effective and significant. Changes in informal institutions are a prerequisite for socioeconomic development.

Markosian et al. (2013) examine the impact of the regional Nagorno-Karabakh conflict on the Armenian economy. They essentially argue that funding the war is straining the economy and citizens, preventing the rest of the market economy from properly developing, as the government can only supply the bare minimum of social products to its citizens and is unable to adequately develop aspects like social security. They conclude by stating that the Armenian economy urgently requires stronger trade with its neighbours and a reduction in the amount spent on war funds to bring the majority of citizens out of poverty and develop its social institutions. This study is relevant because it provides insight into the development of the Armenian economy and the importance of the regional war in understanding the state of that economy. However, their study lacks any empirical study and is purely informative, which is something our study attempts to reconcile. Vardomsky et al. (2016) suggest that with the dynamic development of the Armenian economy, serious transport complications will likely arise in the near future.

Maslak et al. (2016) present a series of charts demonstrating Ukraine's complicated relationship with human capital. They praise Ukraine's willingness to offer mostly free education to all its citizens and acknowledge that the country ranks high in its ability to produce educated and skilled labourers. However, they also note that Ukraine has lost production and labour due to the conflict with Russia, and the standard of living is low enough that many of its most skilled and talented labourers are leaving Ukraine to seek more lucrative employment elsewhere. This is relevant because it directly discusses the labour market in Ukraine and how that market is developing and reacting to Ukraine's political decisions.

However, their study is not an experiment and is simply informative. While it does directly discuss the labour market and human capital, it rarely connects those trends with Ukraine's broader economic direction, which is a gap our study aims to fill. Görlich–Lücke (2011) examine the effect of migrant remittances on the Moldovan economy. They first discuss the economic history of Moldova following the fall of the Soviet Union. Following this, they utilise regression to examine how Moldova's GDP has risen since 2000 due to considerable migrant remittances, mostly due to Moldova's unique access to migration to the EU and Russia. Their study lists several ways that Moldova has developed in recent years, thanks in large part to its remittances; their study also utilises a clear regression analysis on how paths to the EU and Russia have enhanced the poverty-reducing effects of migration. However, they focus on migrant remittances and ignore many other important areas of economic development that could contribute to Moldova's development, and the study is restricted to Moldova. Our study aims to fill both of those gaps in research. Finally, Tvaronavičiene et al. (2009) compare the economic development of Latvia, Lithuania, and Estonia. They use three different modelled situations: one that emphasises economic development, one that emphasises institutional development, and one that weighs the two equally. They find that Estonia has had the most successful economic development of the three; their study is relevant because it tracks Estonia's economic development and compares it to that of other post-Soviet states (see Müller-Frączek 2019).

Burroni et al. (2019) introduce the important economic category 'triangle of growth' into economic discourse – labour market, human capital, and innovation. In our opinion, this list can be used to analyse not only the labour market but also the quality of the institutional environment.

Considering the abundant literature on labour markets, we decided to concentrate on the institutional indicators and their impact on labour markets in Armenia, Estonia, Moldova, and Ukraine.

However, another side of the institutional approach in analysing the labour market and economic growth should focus on the informal rules of the game. Along with traditional economic indicators, it is worth mentioning the ones that show the 'bottom of the iceberg' – life expectancy, level of happiness, subjective well-being, traditional habits, and so on, and causality with institutional environment in post-Soviet countries. For example, Kossova et al. (2020) use panel data analysis to confirm that alcohol consumption significantly influences the gender gap in life expectancy and reduces the life expectancy of men in particular as they are more inclined towards unhealthy behaviours. They determined that employment and income support policies should be implemented in conjunction with anti-alcohol policies. However, this aspect of the institutional approach and comparison with that in Armenia, Estonia, Moldova, and Ukraine is beyond the scope of the current study and will be conducted in further research.

We posit that life expectancy is a comprehensive and condensed institutional indicator that deals not only with economic development but also with the medicare system and labour market. Arrow (1963) starts this discussion with the statement that healthcare is a special social category and free market economic principle that does not apply.

Barthold et al. (2014) determine robust differences in health spending efficiency. They find that a 1% annual increase in health expenditures is associated with percentage changes in life expectancy, ranging from 0.020 in the United States (95% confidence interval [CI] = 0.008, 0.032) to 0.121 in Germany (95% CI = 0.099, 0.143).

Gupta et al. (1999) prove that expenditure allocations within two social sectors (education and health) improve both access to and attainment in schools and reduce mortality rates for infants and children. Nixon–Ulmann (2006) reveal that increases in health care expenditure are significantly associated with large improvements in infant mortality but only marginally in relation to life expectancy. Williamson (2000) examines the progressive development of new institutional economics over the past quarter-century, showing empirical success and public policy applications. Thus while analysing the labor market one should consider the „beyond GDP" approach which contains social, medical, institutional aspects and we aim at including at least partially those indicators to our models.

Institutional specifications of employment relations in post-Soviet countries

The main institutional precondition to develop employment relationships in post-Soviet countries is that the right to work in the recent past was guaranteed by the Constitution of the USSR and was a guarantee of survival. The primary advantage of the planned economy – full employment of labour resources – has become a spoke in the wheel of formulating market relations in the field of employment and labour market development. This is primarily due to informal institutions – traditions and stereotypes of labour behaviour, which were formed during the Soviet period, when there was no concept of competition in people's minds, which is the basis of market economic behaviour.

Round (2004) states that 'for the majority of those marginalized by the collapse of the Soviet Union, operating in Russia's informal economies only provides for an extremely uncertain everyday. The social impacts of the dislocation Russian society has endured are startling. Life expectancy for men fell from 63.4 to 58.6 between 1991 and 2001, with murder, suicide, divorce and alcohol abuse rates all soaring during this time'.

The concept of 'full employment' in a planned and market economy significantly differ (Hajdú–Koncz 2022). In a planned economy, full employment is compulsory, that is, the maximum involvement of the able-bodied population in work. In a market economy, full employment is also a policy goal but is characterised by enough jobs

for all those who want to work voluntarily if the jobs are economically viable. These jobs allow an individual to achieve high productivity and receive a salary that provides a decent life, that is, the satisfaction of both tangible and intangible needs. Silagadze (2015) posit that since the 1990s, the average unemployment rate in the world is 5.9–6.3%, with the highest rate in 2002 and the lowest in 2007 before the global financial crisis, while in the former Soviet Union, almost all able-bodied citizens were employed.

The transition to the labour market in post-socialist countries occurred against the backdrop of economic globalisation, which was renewed in the 1960-1970s and the twentieth century. Thus, the countries studied faced several problems related to both internal and external conditions. Their economies not only underwent a period of transformation but also suffered from internal instability due to external factors. The quantitative and qualitative parameters of labour, which differ in the nature of the relationship with the means of production, technical equipment, level of organisation, and conditions of its implementation, were dictated by the economic development of the country as well as the world economy. The latter was developed by expanding the automation of production and reducing the supply of traditional labour.

The labour market is perhaps the most complex element of a market economy, which not only intertwines the interests of employees and employers regarding the price of labour services and its operating conditions, but also reflects all socioeconomic changes. The extremely important role of crime (see Preciado–Torrero 2021) in the functioning of a market economy is because this market

- is a tool for the inclusion of labour resources in social production;
- ensures the distribution and redistribution of labour resources among sectors of the economy, regions, and enterprises in accordance with the demand and supply of labour;
- promotes the competitiveness of the workforce and the creation of better working conditions to attract quality labour;
- plays an important role in the reproduction of labour, which meets the requirements of modern production;
- increases the role of market levers in wages and, accordingly, strengthens work motivation, and ensures the formation of the market price of labour services;
- accelerates the adaptation of the population to market relations;
- activates labour mobility and
- welcomes the formation of effective employment.

The implementation of the last three functions of the labour market is hampered by institutional factors of labour behaviour in post-socialist countries, based on the principle of state paternalism of social and labour relations in the Soviet period, that is, the full state regulation of these relations and full employment. This institutional factor led to the restructuring of post-Soviet countries' economies, which was not accompanied by adequate liberalisation of labour. This 'hidden unemployment'

spread in the post-Soviet region. Quantitatively hidden unemployment refers to the number of workers who have become redundant due to a decline or structural changes in production but are formally considered employed.

Hidden unemployment exists in the following forms:

1. The excess number of employees who received full pay. In fact, these individuals were not unemployed, but their maintenance was a heavy burden on the economic condition of the enterprises and led to higher prices, ultimately untwisting the inflationary spiral.

2. Persons who worked part-time received part-time wages. They wanted to work full time, but due to reduced production, they did not have such an opportunity. However, it may be that employees voluntarily want to work part-time for one reason or another. This form of employment is not considered to be hidden unemployment.

3. People who were on administrative leave without saving their salary or with partial preservation of wages.

Hidden unemployment in post-Soviet countries in the early 1990s can be explained by the fact that in difficult economic conditions, companies found it easy to keep a significant number of hidden unemployed than to carry out formal redundancy that required full wage arrears and considerable compensation pay. Thus, hidden unemployment was evidenced through low living standards and inefficient management. There was a paradox: with the almost mass cessation of production, the level of registered unemployment was low. Thus, in 1994, it was 0.3% in Ukraine, 1.0% in Moldova, 6.0% in Armenia, and 5.0% in Estonia (UNECE 2001).

People who officially had jobs but did not earn money were moved to the informal employment sector. It can be assumed that the volume of informal employment is inversely proportional to a country's economic level. One reason for the expansion of the informal sector is the possibility of tax evasion. First are institutional factors, such as the lag of legislative reforms from structural changes in the economy, as well as the lack of efficiency of law and order in post-Soviet countries. Another purely economic factor is the decline in the income of a large portion of the population because of the crisis of the transition period.

Another institutional factor in the low level of registered unemployment in post-Soviet countries is the inefficient operation of public employment services and their unwillingness to provide significant material assistance to the unemployed, mainly due to a lack of funds. The range of active programs in the labour market and the number of vacancies offered to the unemployed were limited and of low quality, that is, unattractive to more competitive applicants (Table 1).

Table 1

The main macroeconomic data, 2020

Indicator	Ukraine	Moldova	Armenia	Estonia
Population, million	44.1	2.62	2.96	1.33
Unemployment, %	9.48	3.82	18.3	6.8
Youth unemployment	19.2	10.8	32.6	17.8
Monthly salary, EUR	472	435	422	1455
Labour force, female (% of total labour force)	53.6	52.1	52.9	52.6
Personal remittances received (% of GDP)	9.7	15.7	10.4	1.6
Inflation, %	2.73	3.76	1.21	–0.44

Data source: World Bank (2021).

The main assumption of this study is that the four countries being examined as well all post-Soviet states inherited the same economic issues when the Soviet Union collapsed in 1991 (see Vusal 2022). However, in less than a decade, the path of economic transformation has led to very different results in terms of GDP per capita, inflation, unemployment rates, and so on. Thus, wages in Estonia are three times higher than those in the other three countries and close to the EU average of EUR 1,903. The lowest unemployment rate among the surveyed countries is observed in Moldova (3.82%). This is partly because Moldova has the highest percentage of remittances (15.7%), so people agree to low-paid work, as they have a significant additional source of income. However, a significant percentage of remittances from abroad does not offset the high unemployment rate in Armenia. Here, the factor in the plane of informal institutions, namely, the traditions of behaviour and features of national mentality, works. Both men and women run the household in most post-Soviet families in Armenia. In addition, men in Armenia are more likely to resort to labour migration than to accept low-paid work in their home country. The relatively high level of youth unemployment in all the studied countries is explained by the work behaviour of modern youth, which is characterised by greater flexibility, adaptability to change, and professional and territorial mobility compared to their parents' generation. Yüksel et al. (2018) conclude that higher GDP is associated with higher bank profitability in post-Soviet countries. Lastly, there is a negative relationship between the loan-to-GDP ratio and the profitability of banks in post-Soviet countries (Csiszárik-Kocsir–Garay-Fodor 2018, Garai-Fodor et al. 2021). Young people are willing to join the ranks of freelancers and resort to the model of labour relations based on short-term contracts or informal agreements. This model of labour relations is called the gig economy.

Eggertsson (1997) emphasises the implications of the institutional design of incomplete knowledge and endogenous politics for economic analysis. Fal'cman (2020) uses economic growth as an indicator of a comprehensive dependent variable for economic forecasts until 2050 in Russia using different statistical methods.

According to Sayrs (1989), pooled time-series analysis combines time-series and cross-sectional data to provide the researcher with an efficient method of analysis and improved estimates of the population being studied.

Further, we analyse the data on some key economic indicators, along with institutional indicators. We use World Bank's data for the analysis.

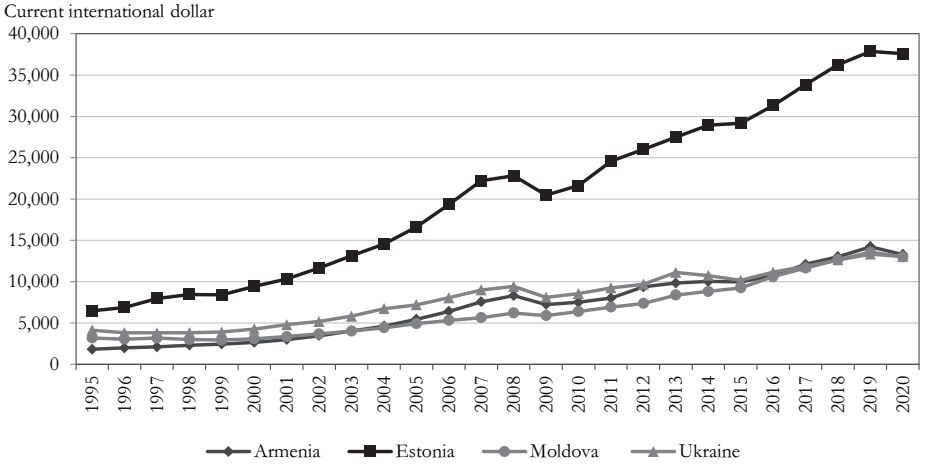
Data, methodology, and hypothesis development

In this section, we focus on the key variables of our econometric models to better understand the transition of GDP and labour markets in the four countries.

By 1995, all four countries had realised the importance of market changes and initiated reforms; however, the path of the transformations has been different since the very beginning (Figure 1).

Figure 1

GDP per capita, purchasing power parity (PPP)



Data source: World Bank (2021).

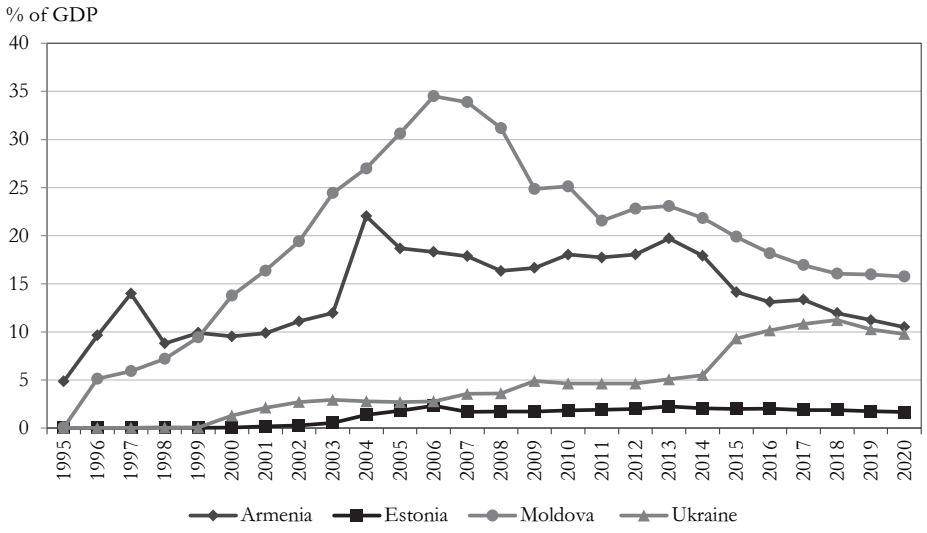
Starting with relatively similar income GDP per capita, Estonia has been leading in the GDP per capita not only among the three other countries we analyse but also among all 15 post-Soviet states, considering that the Estonian population was the smallest. At the same time, Ukraine, being the second largest state in terms of population, is still among the poorest nation in Eastern Europe. However, the level of shadow economy in Ukraine is as high as 60% of the official GDP.

Another feature of Europe's poorest countries is that they suffered less from the effects of the 2008 global economic crisis, which also indicates a lower degree of integration of these countries (especially Armenia and Moldova) into the world economic system.

The economies of the post-Soviet countries have been open to world markets almost simultaneously as a result of political and economic measures since the mid-1990s. This intensified the processes of both legal and illegal labour migration of workers. Thus, in Ukraine, since 1995, there has been a steady trend of increasing remittances (Figure 2). In particular, rapid growth of the indicator was observed in 2014–2015, which coincided with the beginning of the military conflict in eastern Ukraine and a sharp decline in living standards.

Figure 2

Personal remittances received



Data source: World Bank (2021).

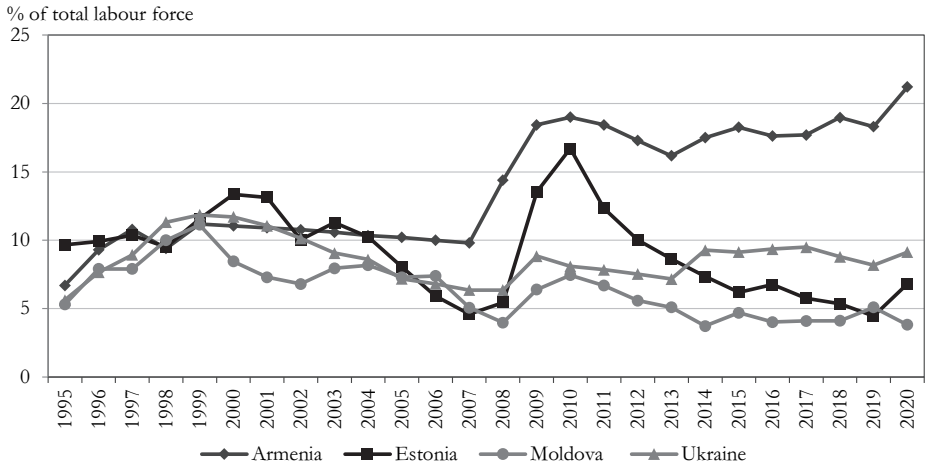
Moldova and Armenia have the highest levels of private income, due to economic difficulties and high unemployment, as well as some cultural factors. However, for both Moldova and Armenia, the decline in personal remittances began with the global economic crisis in 2008 when many employees not only lost their jobs but also faced a reduction in wages.

Figure 3 reflects the opposite trends in the unemployment rate in Armenia and Estonia in 2008–2010 (in Armenia, a decrease; in Estonia, an increase), which is a direct consequence of the macroeconomic situation in these countries and the multivector orientation of integration into the world economy. Thus, during this period, Armenia was one of the first Commonwealth of Independent Countries (CIS) countries in terms of per capita GDP growth. Investments in fixed assets were the primary player in the dynamic development of Armenia in 2000-2008 as well as rapid development of construction and real estate. If investments in fixed assets amounted to 0.2 billion dollars in 2000, they reached 1 billion dollars in 2005, and 2.8 billion

dollars in 2008, and their share in GDP increased from 10.5 up to 20.4 and 23.9, respectively.

Figure 3

Unemployment, total



* Modelled International Labour Organization (ILO) estimate.
Data source: World Bank (2021).

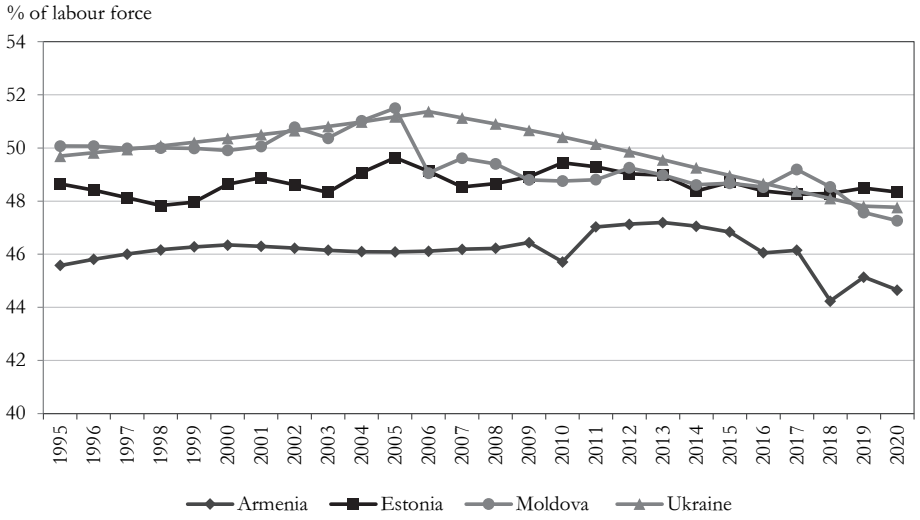
The Estonian economic crisis of 2008–2010 was a direct consequence of the 2008 global financial crisis. The economic crisis in Estonia was primarily caused by a sharp drop in investment, followed by a fall in the real estate market. The total decline in GDP during 2008–2009 was 18.3%. As a result of this crisis, the unemployment rate rose from 4.7% in 2007 to 17.5% in 2010 (Figure 3). At the end of 2010, negative trends were overcome; the Estonian economy began to grow again.

Another important indicator that helps analyse the institutional environment is the share of women in the labour force (Figure 4).

During the Soviet era, Moldova had the highest level of women in the workforce due to the presence of many enterprises in the light industry (garment production) and the food industry, where women are traditionally employed. However, due to market transformations and the bankruptcy of most Soviet-era enterprises that could only operate in a planned economy, the share of women in the labour force gradually declined.

Figure 4

Labour force, female

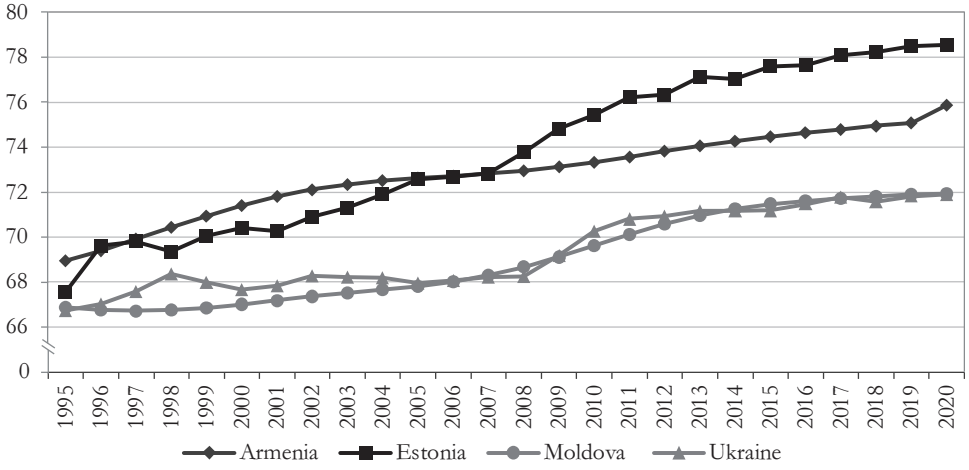


Data source: World Bank (2021).

The lowest rate of women's participation in the labour market is in Armenia because of certain cultural traditions, where women mostly work as housewives. However, Armenia, Moldova, and Ukraine have a large share of informal employment, not only within the country but also abroad, which is also reflected in the statistics.

Figure 5

Life expectancy at birth, total



Data source: World Bank (2021).

Finally is the life expectancy at birth rate, which indicates how economically developed the country is, as well as how it effectively implements institutions in the field of health care, disease prevention, availability of medicines, and the level of competence of doctors (Figure 5).

Life expectancy during the Soviet era was among the lowest in Europe. The situation worsened after the collapse in 1991. However, the countries had the opportunity to reform their healthcare systems. Armenia and Estonia are the among the forefront in this regard. Among the sample countries in this study Estonia is the best with regard to healthcare reforms, and the worst are Moldova and Ukraine. Life expectancy plays a key role in the labour market, and considering the decreasing population, special attention should be paid to this indicator by the government.

In further research, we will continue estimation of different institutional factors on life expectancy.

The methodological part of the study is the statistical modelling of institutional transformations in the labour market using panel data. This special panel data structure allows the creation of more flexible and meaningful models to answer questions that are not available in models based on, for example, spatial data for individual national economies.

We conducted three types of models for panel data:

1) integrated regression model for panel data;

2) panel data model with fixed effects;

$$y_{it} = \alpha_i + \chi_{it}\beta + \varepsilon_{it},$$

where α_i is the value of t that expresses the individual effect of an object that does not depend on time t, and the regressor $\chi_{it}\beta$ does not contain a constant, ε_{it} – free term.

3) panel data model with random effects

$$y_{it} = \mu + \chi_{it}\beta + \upsilon_i + \varepsilon_{it},$$

where μ is a constant, υ_i- random error.

After modelling, the model that fits better using the Hausmann test should be selected. The null hypothesis of the test is that a model with random effects is better matched and the alternative hypothesis is a model with fixed effects. The selection is based on the p-level value.

Unit root tests for all panels were conducted using the Levin-Lin-Chu unit-root test.

Empirical results and discussion

We conducted econometric modelling on panel data for four countries, considering that to provide proper treatment to modern cross-section and panel data methods, we must choose a stochastic setting appropriate for the types of cross-section and panel data sets collected for most econometric applications (Woolridge 2002). This

allows us to explore the behaviour of a variable across a sample of data and inside the groups, along with finding dependencies and similarities among the four countries.

We propose the following panel data regression model:

$$GDP = f(\text{rem, edu, unempl, female\_labour , lifeexp}) \quad (1)$$

where: GDP – GDP per capita, PPP (current international $) (annual data), rem – Personal remittances received (% of GDP) (annual data), unempl – Unemployment, total (% of total labour force) (modelled ILO estimate) (annual data), edu – Compulsory education, years, female_labour – Labour force, female (% of total labour force), lifeexp – Life expectancy at birth, total (years) (annual data).

Before conducting regression models, we ran unit root tests for all panels using the Levin-Lin-Chu unit-root test (Green 2003) (Table 2).

Table 2

Levin-Lin-Chu unit-root test for panel data

	GDP	rem	edu	unempl	female_labour	lifeexp
c	–	–	–	–	–	*
ct	–	–	–	–	–	*
c-diff	***	***	***	***	***	***
ct-diff	***	***	***	***	***	***

*p < 0.10; ** p < 0.05; *** p < 0.01;

We conducted three panel data regression models using STATA 16.0 (Table 3).

Table 3

Panel data regression analysis

Denomination	Pooled OLS, ΔGDP	Fixed effect model, ΔGDP	Random effect model, ΔGDP
Constant	–4,951 (0.059)**	–5,022 (0.043)**	–5,913.8 (0.06)**
Δrem	–0.153 (0.874)	–0.33 (0.993)	0.42 (0.991)
Δunempl	0.007 (0.910)	0.005 (0.900)	0.005 (0.900)
Δedu	1.487 (0.486)	1.498 (0.439)	177.4 (0.480)
Δfemale_labour	54.97 (0.59)	55.51 (0.78)	86.46 (0.66)
lifeexp	68.1 (0,091)*	78.89 (0.023)**	91.74 (0.003)***
Model-Significance			
F-stat (p-value)	0.1054	0.008	0.028
Adjusted R-Sq, %	16	54	61
Model Specifications			
Hausman Test		1.32	1.32
Chi-square (p-value)		0.2506	0.2506

*p < 0.10; ** p < 0.05; *** p < 0.01;

In the random-effects model, it is assumed that individual effects do not correlate with the regressors. It is important to check whether the assumption of such a

correlation is true, which can lead to the insolvency of most model estimates with random effects. The only exceptions are intragroup estimates of β-coefficients, which are based on a transformation that eliminates the individual effects in the model. As a result, the assumption that they do not correlate with the regressors is not related to the bias and inconsistency of intragroup assessments. The best way to fit a model is to conduct.

The Hausman test: the p-values of the independent variables are statistically significant, along with the adjusted R-squared. The Durbin-Watson (D.W) test showed a value close to 2, which indicates that the reported models have no autocorrelation problem.

The model revealed that despite the different paths of economic, political, and institutional changes, the impact of the independent variables on countries' GDP per capita is similar.

We proved that the random-effects model fits best and gives us some valuable results that can be given economic interpretation.

- Traditional economic indicators such as the rate of unemployment, years at school, female labour force ratio, and personal remittances do not have a statistically significant impact on GDP per capita. This is evidence that countries are facing new challenges determined by the new economic order and the interdependencies between economies and labour markets.
- The most statistically significant indicator that positively impacts GDP is life expectancy, which has a p-value of 3% < 5%. That is a good illustration that among the state goals for labour market, the most important one is how to increase life expectancy along with its quality.

Conclusions

This study emphasises the importance of the institutional approach in investigating the specific features of the labour market in post-Soviet states. Considering the common past of the countries, we investigated whether the main institutional precondition for the development of employment relations in 4 post-Soviet countries is that the right to work in the recent past was guaranteed by the Constitution of the USSR and was a guarantee of survival. The main advantage of the planned economy – full employment of labour resources – has impeded the formation of market relations in the field of employment and labour market development. This is primarily due to informal institutions – traditions and stereotypes of labour behaviour, which were formed during the Soviet period, when there was no concept of competition in people's minds, which is the basis of market economic behaviour.

We stated that the dynamics of the economic and political transformations shaped the current conjuncture of the labour markets in Armenia, Estonia, Moldova, and Ukraine under the impact of different inclusive and extractive factors.

Despite the long mutual history of being part of the Soviet Union, the four countries showed reforms of different speeds which had impacts far beyond GDP. We sought to estimate how some labour market-related institutional indicators impact GDP per capita. We explored important indicators such as personal remittances, life expectancy at birth, female share of the labour force, and unemployment rate. The limited size of the article did not allow a comprehensive estimation of each of these important indicators; however, it showed a significant amount of remittances as a share of GDP in Ukraine, Moldova, and Armenia, which means a significant share of the labour force migrated and thus lowered the unemployment rate.

Female participation in the labour force is low in Armenia due to cultural aspects (informal institutions) and the social situation in the country.

Estonia reached the highest level of GDP per capita among all 15 post-Soviet states, proving the importance of developing an inclusive institutional environment.

We conducted statistical modelling using panel data and concluded that only life expectancy has a statistically significant positive impact on GDP per capita, unlike the traditional indicators of the labour market. Therefore, this study provides an important basis for further research on the institutional aspects of the labour market. Furthermore, implementing other statistical methods (Hausman-Taylor panel regression) and enlarging the set of countries are research challenges.

The authors of this study started working on the article before Russian aggression toward Ukraine began. Further research will undoubtedly be devoted to the prospects of the Ukrainian economy, its labour market, and overall recovery after the tragic events of 2022.

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