

On the factors associated with bridge employment in Ukraine

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Abstract. The article investigates a phenomenon of bridge employment referring to the empirical example of the Ukrainian labour market. Over the last decade the technological advances had changed the nature of the work performed by a modern employee. In the labour market, there are fewer occupations that require the use of physical labour. Instead, the demand for knowledge and skills of the workers is increasing. The theory of human capital concentrates on the processes of accumulation and loss of the ability of an individual to perform skilled labour, consequently it explains an increase in the level of bridge employment. The article offers a new approach to the model of the life cycle of a modern employee through the prism of the theory of human capital. Using the example of Ukraine, there were three groups of factors tested that, in our opinion, are associated with the level of bridge employment, namely: the characteristics of the labour market, the innovations in the economy and the financial well-being of the pensioners. An analysis of the available statistical data for Ukraine's administrative-territorial units suggests that there is a moderate and negative linear relationship between the level of financial well-being and the level of bridge employment in Ukraine.

Keywords: retirement, bridge employment, human capital, labour market.
JEL Codes: J21.

1. Introduction

This article is focused on a phenomenon of bridge employment, an important aspect of the economic life of the pensioners, which allows mitigating the negative effects of aging population in the developed countries. In this type of employment, a pensioner has a permanent source of income paid by a retirement fund; therefore, she

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or he decides to continue a career based not solely on financial motives. On the other hand, the employer, when making a decision on the employment of this individual, must take into account pensioner's age, or, rather, the correspondence of her or his psychophysiological abilities to the nature of the work performed. Thus, there are two parties to the employment decision: a pensioner who will be guided by financial and non-financial motives, and an employer who will try to find an employee at the lowest price.

The technological advances of the last decade had changed the nature of the labour performed by a modern employee. On the labour market, there are fewer occupations that require the use of physical labour. Instead, the demands for knowledge and skills of the workers are increasing. Under these conditions, the theory of human capital provides a sound explanation for the increase in the level of bridge employment: during a professional career an employee has the opportunity to accumulate the stock of own human capital in the form of specific knowledge and skills. In the modern economy, this stock of human capital is becoming a critical factor of production.

The reasons for rising bridge employment rates in the developed countries are well-studied. Authors focus on the United States and Canada [Shultz 2003; Wang et al. 2008; Zhan, Wang 2015] and EU member states [Henkens, Schippers 2008; Oude Mulders et al. 2014; Oude Mulders, Henkens, Schippers 2015], which are characterized by a high level of social security and a fairly high standard of living. Instead, little attention has been paid to the factors associated with the level of bridge employment in transition economies, and in particular in Ukraine. To the best of our knowledge, there are no substantial and focused studies on bridge employment produced by Ukrainian scholar community.

This article offers a new approach to the model of the life cycle of a modern employee through the prism of the theory of human capital, which states that an individual achieving retirement age remains competitive on the labour market due to accumulated human capital and can successfully continue a professional career. Three groups of factors were tested that, in our opinion, are associated with the level of bridge employment, namely: the characteristics of the labour market, the innovations in the economy and the financial well-being of the pensioners. An analysis of the available statistical data for Ukraine's administrative-territorial units suggests that there is a linear relationship between the level of financial well-being and the level of bridge employment in Ukraine.

2. Pension reform in Ukraine (1991 to 2018)

After independence in 1991, Ukraine faced an acute need of reforming the pension system, as the existing solidarity system was not able to cope with the challenges of transition from a socialist to a market economy. It is possible to distinguish three main stages of reforming the pension system in Ukraine:

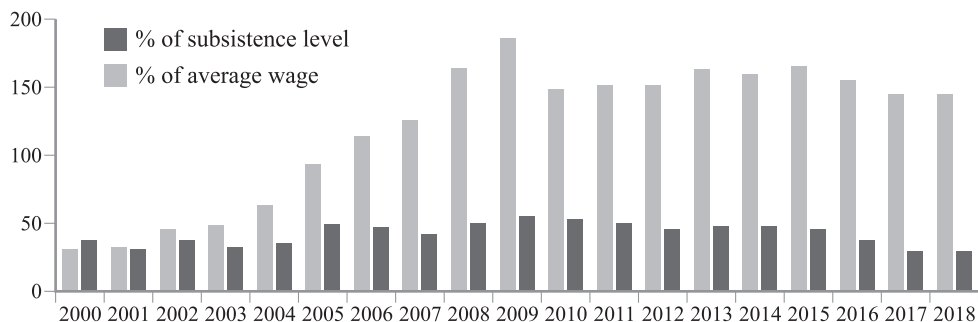
- In 2004, the solidarity pension system inherited from the USSR was replaced by a two-tier system, consisting of contributory public defined-benefit part and

- private voluntary one. Unfortunately, due to the poor development of financial markets in Ukraine, voluntary private part has not been functioning efficiently.
- In 2011, the pension and insurance age was raised (the retirement age increased from 55 to 60 years for women and the threshold insurance record increased from 20 to 30 years for women and from 25 to 35 years for men).
 - In 2014, the next stage of the reform was carried out: the government changed the retirement age (60 years for persons with 25 years of insurance record, 63 years for persons having more than 15 years of insurance record and 65 years for persons, who have less than 15 years of insurance record) and reduced the number of pensioners eligible for an increased pension.

Despite the mentioned attempts to reform the pension system, Ukrainian Pension Fund (PFU) deficit is increasing and requires annual subsidies from the national budget. As of January 1, 2019, PFU incomes were formed from the payments of 13,2 million insured persons, 13.9% of them received the minimum wage, while the number of pensioners amounted to 11,47 million people [PFU 2019]. Due to the fact that contributions of the insured persons remain PFU's main income source, the gap between fund's revenues and expenditures in 2018 amounted to UAH 156,52 billion (UAH, *hryvnia*, is Ukraine's national currency). This provides for 43.6% of its budget, or 4.4% of Ukraine's GDP.

Demographic crisis is one of the main reasons behind this situation. Ukraine is among the top-10 countries in the world in terms of depopulation rates. According to the UN estimates, the country's population will decline from 44.2 million in 2017 to 36.4 million in 2050 [UN 2017]. The earlier fertility decline in 1990-2000 has led to present reduction in the number of working-age population. At the same time, the proportion of people over 60 will increase from 23% in 2018 to 32.5% in 2050 [Ptoukha Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine 2014].

Figure 1. Dynamics of the ratio of the average pension to the average wage and subsistence level in Ukraine in 2000-2018



Source: www.ukrstat.gov.ua

In addition, the average pension is rather low both in real and relative terms. In 2018 it was UAH 2 479 (about 88 EUR), which amounted to 32% of the average wage in Ukraine, or 146% of the subsistence. Figure 1 illustrates the change in average pension with relation to the average wage and to the subsistence level. Despite this, in 2017 the pension payments amounted to 17.5% of the total income of the population of Ukraine [Ukrstat 2018a]. In 2018 the share of working pensioners in Ukraine was 19.9% [Ukrstat 2018b].

To sum up, Ukraine faced a situation typical for the majority of the developed countries: an increase in the number of the elderly, decline of the working-age population, and, consequently, the challenges associated with rising pensions spending. Moreover, given the lack of a solidarity pension system, further growth of expenditures of the PFU may become an unbearable burden for the country's economy, and will force the government to pursue painful reforms.

3. Literature review

Increased life expectancy of the population and, consequently, greater number of retirement-age individuals has led to growing number of studies on the forms and reasons for the continuation of professional career (bridge employment) by those who have reached retirement age. Bridge employment is generally defined as labour force participation status of individuals who have reached the retirement age [Shultz 2003; Topa et al. 2014; Alcover et al. 2014]. Bridge employment is a form of retirement that prolongs working life, in contrast to the full retirement, which provides for a complete exit from the labour market [Shultz 2003; Gobeski, Beehr 2009]. An increase in the proportion of older people who continue their careers after reaching the retirement age has changed researchers' perception of bridge employment. In the late 20th century, bridge employment was defined as a part-time job, self-employment, or temporary employment after full-time employment ends [Feldman 1994]. At the same time, increased awareness that after the retirement a person can continue working at the same position in the same organization, or in a similar organization (career-consistent bridge employment) [Alcover et al. 2014; Alpass 2016], or can proceed with working in the other field (a non-career bridge employment), at a typically less paid position [Shultz 2003], or remain self-employed [Alcover et al. 2014; Kim, DeVaney 2005], made the researchers' understanding of the phenomenon of bridge employment more nuanced.

In the context of this study, bridge employment will be understood as the continuation of a person's career after the retirement. It can take various forms, namely: bridge employment as decision making, bridge employment as a career development stage, bridge employment as an adjustment process, and bridge employment as a part of human resource management [Zhan, Wang 2015].

Researchers developed several theories explaining the decision to work after the retirement, namely continuity theory, role theory and life course theory. Continuity theory emphasizes the adaptation of the individual to change, namely

the desire to maintain a habitual lifestyle, social connections, avoid stress associated with environmental change, and so on. It stresses the importance of planning during retirement [Atchley 1989]. Role theory emphasizes the importance of losing or changing an individual's initial role in retirement. An individual who occupies certain position is involved in a specific work role that will be lost as a result of retirement. Thus, creating conditions for a gradual change of role, for example through partial employment, involving a person in the life of a family or volunteer activity, creates the preconditions for a more comfortable role change [Barnes-Farrell 2003]. Life course perspective determines a decision on employment by the influence of various individual attributes, such as social connections, previous work experience, financial or health status [Wang et al. 2008].

Consequently, when studying the decision-making process for employment after reaching the retirement age, researchers focus on the individual-level factors, usually socio-psychological, that will be unique to each person. At the same time, the above studies do not account that the decision to employ a pensioner is taken both by the owner of the capital and the lessee of the capital owned by a pensioner. Here we, first and foremost, refer to the stock of human capital generated during a pensioner's lifetime. Therefore, the use of the macroeconomic approach, in particular of the theory of human capital, can potentially broaden the theoretical discourse on the reasons for the continuation of active economic life by pensioners.

Older people are often considered an unproductive part of the society, and their increasing number is associated with a burden on the economically active population. On the other hand, changes in the mode of production, characteristic to a transition from the industrial to the post-industrial society [Toffler, Toffler 2006], create the preconditions for transforming the older people into a high-performing part of the society, given that they own knowledge and skills that are the main productive factor of the post-industrial economy. The theory of human capital, which explains the rationale behind investing in knowledge and skills of an individual [Schultz 1961], provides an opportunity to explain how exactly this transformation occurs.

The early studies on human capital distinguished three main stages of the life cycle of a human capital carrier. Some assumed that investing in human capital takes place at the beginning of life, as at this stage the knowledge and skills of a worker are formed [Ben-Porath 1967; Blinder, Weiss 1976]. The life of the carrier of human capital was divided into productive (professional realization) and retirement stages. During the professional realization phase, a slight increase in the human capital of an individual would occur due to the acquisition of professional knowledge, production skills and advanced training. Becker referred to this increase in human capital as a "special human capital" [Becker 2009]. Special human capital makes its carrier a more attractive worker, and, consequently, increases her or his revenue. At the retirement stage, human capital of the carrier is not used at the enterprise. The reason is that at this stage there is usually a gradual natural degradation of human capital due to aging.

These considerations influence the decision on the recruitment of a pensioner by the employer. There is a strong belief among some employers that the older workers perform less effectively at work [Henkens, Schippers 2008], because their physical capacity (health capital) is decreasing in the old age. Numerous studies demonstrate that the working ability peaks at the age of 35-40 years old, especially when it comes to manual labour, which requires physical strength (for example [Ilmakunnas, Maliranta, Vainiomäki 2004]). As a result, in 2009, only 12% of European companies hired pensioners, and only 13% of companies encouraged their employees to stay after reaching the retirement age [Conen, Henkens, Schippers 2012].

At the same time, as we argued elsewhere, it is crucial to take into account that the modern economy needs workers who acquire new knowledge and skills throughout the entire life, thus accumulating own human capital (cf. [Revtiuk 2015]). Another factor that affects the life cycle of a carrier is the development of health care and the increase in the average life expectancy. In this way, we developed own view of the life cycle of human capital carriers under the conditions of a post-industrial economy, which consists of four stages, namely investment, professionalization of knowledge, professional implementation and retirement stages.

It is important to highlight that the latter model changes the characteristics of the retirement phase of the life cycle. It is no longer possible to separate the stage of professional realization from the retirement stage. Even after the formal end of a professional career, the carrier of human capital in one form or another is involved in the economic processes. For example, she or he may continue working after reaching a retirement age, by providing counseling services or volunteering. Despite the degradation of individual's physical abilities with age, some of the cognitive abilities, such as the ability to use the acquired knowledge and skills, called "crystallized cognitive skills", are increasing [Baltes, Staudinger, Lindenberger 1999]. The possession of the crystallized cognitive skills is a prerequisite for the formation of a special human capital, which, under the conditions of the knowledge economy, has become one of the most valuable resources. Therefore, in the 1990s, more than 60% of private companies in the United States had employed workers who had reached a retirement age [Hirshorn, Rousseau 1994]. Apart from the physical ability, employee's unique skills and knowledge (intellectual capital), social connections (social capital), motivation to stay in the workplace (motivational capital) influence the decision of an employer [Oude Mulders et al. 2014]. The nature of labour is changing; the number of professions that do not require intensive working hours, significant physical activity, or the need to be present at the workplace is increasing. Application of different types of flexible employment, such as part-time or on-call employment, which, according to the researchers, increases the productivity of pensioners, has a positive effect on employers' decisions regarding the employment of those who reached the retirement age [Armstrong-Stassen 2008; Oude Mulders, Henkens, Schippers 2015].

Proposed model of the post-industrial life cycle of human capital carriers provides another perspective at the factors associated with the decision-making regarding

the employment of pensioners. We argue that the decision regarding the bridge employment depends on reaching an agreement between the employer and the carrier of human capital. Thus, we can formulate the following proposition:

Proposition 1. The deficit of skilled workforce in the labour market is positively associated with a proportion of working pensioners.

Moreover, many modern professions require unique intellectual capital of the worker, which is mostly characteristic of research-related, creative, innovative occupations that require not only a stock of specific knowledge and skills, but also practical skills and experience in applying this knowledge. Thus, we formulate the following proposition:

Proposition 2. The number of innovative enterprises and a proportion of employed pensioners are positively associated.

Alongside with this, although the above models do not take this into account, the carrier of human capital can change a profession for certain reasons, such as lack of market demand, emergence of highly paid jobs in the market or change in personal preferences. On the other hand, in line with the life course perspective, the decision of a pensioner will greatly affect her or his financial position. At the same time, low levels of retirement benefits, lack of an accumulative pension component and, therefore, low level of financial well-being might encourage pensioners to consider bridge employment. These considerations influenced the formulation of the third proposition:

Proposition 3. Financial well-being and a share of employed pensioners are negatively associated.

Testing the above propositions will help the research community to formulate a better understanding of the factors associated with the decision to continue professional career made by Ukrainian pensioners.

4. Methodology and analysis

To test the above propositions, we used the statistical data of the State Statistics Department of Ukraine (UkrStat). Since, to the best of our knowledge, there are no individual-level surveys focused on factors associated with the decision-making regarding employment of pensioners in Ukraine, we had to rely on the best available data at the level of Ukraine's administrative-territorial units. In particular, we analyzed the indicators for Ukraine's oblasts for 2017. Ukraine consists of the Autonomous Republic of Crimea, 24 oblasts and two cities with special status (capital Kyiv and Sevastopol in Crimea). For this research, however, we used statistical indicators for 22 oblasts only. We had to omit the Crimea, Luhansk and Donetsk oblasts, cities of Kyiv and Sevastopol due to the following considerations:

- in 2014 the Autonomous Republic of Crimea and the city of Sevastopol were occupied by the Russian Federation, which made obtaining reliable statistical data impossible;
- since 2014 Luhansk and Donetsk oblasts remain partly controlled by the Russian-backed military units, which led to the evacuation of all Ukrainian governmental offices, including UkrStat oblast units. Some of the paper-based statistical information was left behind, and some data are now collected for Ukrainian-controlled territory only. These factors jointly made obtaining the reliable statistical data impossible;
- the capital Kyiv is characterized by a high concentration of financial and labour resources, which makes it an outlier and distorts the oblast-level statistics.

We chose the following statistical indicators provided by UkrStat at the level of oblasts²:

- 1) The level of bridge employment in oblast. Official statistics on the number of working pensioners at the level of oblasts are not available (this number is only provided at the national level), so in order to distinguish the working pensioners we had to rely on the share of oblast population who had reached a certain age and are working. We operationalize bridge employment as the share of employed individuals among those who reached 60 years of age (as mentioned above, to date, 60 years is the limiting age for retirement) [UkrStat 2018c]. An important nuance, the 2014 pension reform led to a gradual increase in the retirement age for women from 55 to 60 years. As of 2017, the retirement age of women was 58 years. But we believe that the level of employment rate of persons (both genders) over 60, used as a bridge employment indicator, should not distort the results of the study.
- 2) Labour market characteristics in oblast, operationalized with the level of unemployment and the load per one vacancy on the labour market (the ratio of vacancies to the number of job seekers) [UkrStat 2018c].
- 3) We operationalized the innovations in oblast with the number of researchers employed in the oblast's economy, expenditures of research and development (R&D) enterprises in oblast per capita, number of enterprises engaged in innovative activities, expenditures on the production of innovative products in oblast per capita, sales of innovative products in oblast per capita [UkrStat 2018d].
- 4) The level of financial well-being of pensioners in oblast was operationalized as the average income per capita, the amount of consumer spending per capita,

² These indicators were chosen based on the considerations of the available official data for Ukraine's regions, produced and published by UkrStat in the relevant statistical publications. As specified by the Ukrstat methodology, statistical indicators on the level of bridge employment, and labour market characteristics, are based on the results of the state statistical observations (survey data aggregated at the level of oblast). Statistical indicators on the innovations in oblast and the level of financial well-being are registered (reported by relevant authorities to UkrStat). Micro-level data for the year 2017 (detailed survey of the individuals) are not available for Ukraine (in case of commonly used Labour Force Survey, available for the EU and some other countries).

average salary, average pension and the gross regional product (GRP) per capita [UkrStat 2018d].

All per capita data were calculated with relation to the population of the oblast. Table 1 illustrates the characteristics of variables used in this study.

Table 1. Operationalization of bridge employment and its potential correlates

Variable	Mean	Std. Dev.	Min	Max
Level of bridge employment in oblast				
Employed individuals who reached 60 years of age, %	14,10	10,57	4,40	48,50
Labour market in oblast				
Unemployment rate, %	9,84	1,90	6,10	12,50
Load per vacancy	13,05	15,14	3,00	74,00
Innovations in oblast				
Number of researchers, persons	1455,82	2299,23	275,00	9988,00
Expenditures of R&D enterprises per capita, UAH	135,78	195,80	8,04	739,81
Number of innovative enterprises, enterprises	28,86	22,17	8,00	111,00
Expenditures on innovations per capita, UAH	180,78	211,72	6,30	808,59
Sales of innovative products per capita, UAH	281,65	450,14	7,98	2204,07
Financial well-being in oblast				
Income per capita, thousand UAH	42,87	5,47	33,28	54,2154
Consumer spending per capita, thousand UAH	59,71	7,95	47,72	75,2454
Average salary, UAH	6183,91	455,34	5554,00	7188,00
Average pension, UAH	2244,04	229,70	1930,55	2853,34
Gross regional product (GRP) per capita, thousand UAH	46,51	15,57	23,42	82,24

Source: authors' calculations.

In order to test the propositions of this study we analyzed strength and direction of correlations between the level of bridge employment and the indicators of labour market, the innovations in the economy, and the financial well-being at the oblast level. In particular, we used the correlation analysis tools provided by Stata 10. We present the results of the analysis for each group of indicators.

4.1. Characteristics of the labour market and bridge employment

As Table 2 illustrates, the Pearson correlation coefficients between the bridge employment and the labour market variables range from -0.06 to -0.27. The linear relationship between the level of bridge employment and the indicators characterizing the labour market in Ukraine's oblasts is negative and weak. This outcome does not

allow to confirm the proposition 1 that an increase the deficit of skilled labour in the labour market is positively associated with a proportion of working pensioners, given the available data. Also, it should be noted that correlations are statistically insignificant.

Table 2. The results of the correlation analysis of the bridge employment and labour market characteristics in oblast, coefficients and significance (p-value)

	1	2	3
1. Employment among individuals over 60 years of age	1.0000		
2. Unemployment rate	-0.0593 0.7931	1.0000	
3. Load per vacancy	-0.1666 0.4587	0.2044 0.3616	1.0000

Source: authors' calculations.

4.2. Innovations and bridge employment

The correlation coefficients between the employment rate among individuals aged 60 and the indicators of innovations in the oblast's economy vary from -0.15 to -0.31, and are statistically insignificant.

Table 3. The results of the correlation analysis of the bridge employment and the indicators of the innovations in the oblast economy, coefficients and significance (p-value)

	1	2	3	4	5	6
1. Employment among individuals over 60 years	1.0000					
2. Number of researchers	-0.1507 0.5032	1.0000				
3. R&D expenditures of enterprises	-0.1508 0.5030	0.8700 0.0000	1.0000			
4. Number of innovation enterprises	-0.3086 0.1623	0.9286 0.0000	0.8343 0.0000	1.0000		
5. Expenditures on the manufacture of innovative products	-0.1673 0.4569	0.2805 0.2060	0.5578 0.0070	0.3784 0.0825	1.0000	
6. Sales of innovative products	-0.1862 0.4068	0.1138 0.6140	0.3975 0.0670	0.2756 0.2145	0.7124 0.0002	1.0000

Source: authors' calculations.

As Table 3 demonstrates, the linear relationship between the level of employment and the analyzed indicators is negative and weak. Therefore, proposition 2 cannot be confirmed. Subject to the available data, we cannot argue that level of employ-

ment of pensioners in Ukraine's oblasts is associated with greater innovations in the economy at the oblast level. One could assume that pensioners in Ukraine do not own large stock of highly skilled special capital, the loss of which would be significant for enterprises, but such explanation would require further research.

4.3. Financial well-being and bridge employment

The correlation coefficients between the employment rate among individuals aged 60 and financial well-being in oblast vary from -0.31 to -0.46. There is a moderate and negative linear relationship between the level of bridge employment and indicators of financial well-being, coefficients being at the edge of statistical significance. We, thus, found a partial confirmation of proposition 3; there is a negative association between increased bridge employment and increased financial well-being.

Table 4. The results of the correlation analysis of the bridge employment and financial well-being indicators, coefficients and significance (p-value)

	1	2	3	4	5	6
1. Employment among individuals over 60	1.0000					
2. Income	-0.3626 0.0972	1.0000				
3. Consumer spending	-0.4225 0.0501	0.8616 0.0000	1.0000			
4. Average salary	-0.3627 0.0972	0.7707 0.0000	0.6794 0.0005	1.0000		
5. Average pension	-0.3115 0.1582	0.9215 0.0000	0.8417 0.0000	0.7832 0.0000	1.0000	
6. GRP	-0.4552 0.0333	0.8704 0.0000	0.7457 0.0001	0.7588 0.0000	0.8533 0.0000	1.0000

Source: authors' calculations.

4. Conclusions and discussion

An increase in the life expectancy poses new challenges to national social security systems. The recent advances in health care and technology, which changed the nature of labour from physical to mental, created conditions for the continuation of the active economic life of individuals who have reached the retirement age. Proposed arguments on changing stages of the life cycle of an individual carrier of human capital provided theoretical explanation for the increased number of working pensioners in the developed economies.

However, the empirical test of the factors associated with the level of bridge employment in Ukraine does not support the propositions we put forward in full. In particular, we were not able to support the proposition regarding a linear

relationship between employment level of individuals over 60 and the indicators of the labour market demand, as well as between pensioners' employment and the innovations in the economy at the oblast level. In our opinion, this outcome may be partially explained by the fact that Ukraine is a transition economy with a large proportion of outdated enterprises. As of today, the country might not need highly specialized human capital, which was formed during the life of its carriers. Instead, active representatives of the younger generation have access to the developed higher education system. As a result, the labour market enjoys the excess of persons with the required level of knowledge to fill in the open vacancies. In short, there is no demand for continuous employment of pensioners.

At the same time, our analysis partially confirmed the proposition of the life course perspective on negative association between the higher bridge employment and the indicators of financial well-being. A moderate negative relationship between the indicators of financial well-being and the level of employment of individuals over 60 may be associated with a low level of pension payments. Reduced level of financial well-being drives the pensioners to seek employment.

We are also aware of the factors that potentially limit the generalizability of the results. Firstly, high level of aggregation and possibly high disparities within oblasts could have led to statistical insignificance of the presented results. Yet, both the propositions and the outcomes of the study are dependent on the available data, and we recognize all imperfections associated with a small sample of 22 regions of Ukraine. The results require further testing on samples with more observations, including at the micro (individual) and meso-level (at the level of Ukrainian communities), as well as scrutinizing on the examples of other countries. In addition to testing associations, it would be useful to carry out a regression analysis and conduct qualitative research that will offer a better understanding of causal mechanisms and motivations behind individual bridge employment decisions. We also recognize that, alongside with the military developments, the high level of the shadow economy in Ukraine could distort the official statistics, and make the UkrStat data a less reliable source of information.

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