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DETERMINANTS OF LABOUR MIGRATION IN G7 COUNTRIES

Abstract:
The objective of this paper is to investigate the factors influencing migration flows in the G7 countries, both at the state and business levels, using fixed and random effects models. The analysis showed that the greatest influence on migration flows is exerted by the size of the average wage in the country.

Keywords:
Migration flows, Group of Seven, fixed effects model, random effects model.

Migration forms the demographic structure of the population of a country and determines the labor market situation. Hence, migration of the population is a reliable source of information about the well-being of the territorial units of the country. It brings special relevance to the analysis of its direction and dynamics. In this study, migration is considered as a socio-economic process from the point of view of its relations with real business. The research objective is to identify factors that affect migration flows in the G7 countries at the business level using the fixed and random-effects model.

Most researchers studying the current topic choose for their models such socio-economic factors as life expectancy[1], unemployment [1–3], population [1] as well as the factors explaining the change in migration at the business level: job quality [2,4,5], salaried workers [2], wages [2,3]. Besides, researchers highlight such factors as the distance between countries [1], the attitude of residents to immigrants [6], the openness of the economy[4], the integration of countries[7], the size and growth of GDP[3,5], and environmental factors [8]. These studies confirm that migration is influenced not only by economic factors but also non-economic.

The majority of papers on the current topic [9–13] highlight the factors that determine migration at the state level, which results in a lack of analysis at both state and business levels. However, a model consisting of business determinants only would be unrobust due to the lack of data on factors directly related to the business. Hence, the inclusion of variables at the state level is necessary.

The data about the migration in the G7 countries from 2001 until 2019 is taken for the research. The sample contains 133 observations. This period was chosen to see the influence of migration in the 21st century when people's mobility became higher than ever before. The dependent variable is the inflows of the foreign population. The following independent variables are included in the study:

– Life expectancy. The index reflects the quality of life in the country and represents salary amount, quality of products, environmental pollution, medicine, and pension.

– The unemployment rates. This indicator is closely connected with the economic cycle.

If the economy is in recession, unemployment is rising. High unemployment in a developed country can mean high unemployment benefits. Low unemployment stands for the competitiveness of the labor market.

– Wage and salaried workers as a percentage of total employment. These employees enter written and oral employment contracts, as well as receive basic remuneration that does not depend on the results of the units produced.

– Population. It shows the number of people that usually live in the country including a temporary absence from the state and aliens permanently residing in the state.

– The average wage in the country. This indicator considers the national-accounts-based total wage bill and the average number of employees in the economy. It shows how much each participant in the economy earns on average in each country.

– Quality of work. This variable is integral. It includes three types of indicators: earnings quality, labor market security, quality of the working environment. It allows assessing the quality of the workplace in general.

For analyzing the panel data, two types of models are used: fixed effect and random effect. A fixed-effects model is a statistical model in which the parameters are fixed or non-random variables. Such models help to control the error of missing variables due to unobservable inhomogeneity when this inhomogeneity is constant over time [14]. The random effects model, also called the variance components model, is a statistical model in which the parameters are random variables. Random effect models help control unobservable heterogeneity when the heterogeneity is constant over time and does not correlate with independent variables. [15] We built both fixed and random effect models and analyzed them using the Hausman test. The results of the Hausman test are presented in table 1.

Table 1 – Hausman test for models

Chi-sq	Prob,
84,58	0,000

The null hypothesis of the test is the assumption that the random-effects model is better. The probability is close to zero, the null hypothesis is rejected, an alternative hypothesis that the fixed effects model is better is accepted. Thus, the final research model is the fixed effect model. This model has disadvantages, which are most likely related to the presence of internal problems. The results of the heteroskedasticity test for the fixed effect model are present in table 2.

Table 2 – Heteroskedasticity test for a fixed effect model

Fixed effect model	
Chi-sq	Prob,
566,28	0,0000

The null hypothesis of the modified Wald test for groupwise heteroscedasticity is that the variance is constant. The probability value is close to zero, the null hypothesis is rejected. Heteroskedasticity is confirmed. The results of the autocorrelation test for the fixed-effect model can be seen in table 3.

Table 3 – Autocorrelation test for fixed effect model

Fixed effect model	
F - statistics	Prob,
31,517	0,0014

The null hypothesis of the test is that there is no autocorrelation in the model. The probability value is close to zero, the null hypothesis is rejected, there is autocorrelation in the model. For correct interpretation of the model, we made corrections for heteroscedasticity and autocorrelation. The results of building the model are in table 4.

Table 4 – Fixed effect model with adjustments

Variable	Coefficient	Robust Std. Err.	P-value	Observations	133
Life Expectancy	0,12	0,03	0,008	F(6, 6)	1177,29
Unemployment	-0,04	0,02	0,057	Probability	0,00
Salaried Workers	-0,03	0,02	0,129	R-squared	
Population	-3,33	0,92	0,011	within	0,5757
Job Quality	0,02	0,01	0,066	between	0,4305
Wage	2,51	0,24	0,080	overall	0,3290
Constant	39,60	10,93	0,011		

All variables are significant. The values of the coefficients are confirmed by a review of the literature, empirical observations. The regression is significant, confirmed by the probability values for F-statistics. R^2 in the model takes 3 different values: 57%, 43%, 33%.

The results obtained allow us to draw relevant conclusions about the determinants of migration. The greatest positive impact on migration flows at the business level is the size of the average wage in the country. The integral Job Quality indicator has a relatively small positive impact. These facts mean that migration flows are influenced not only by government policy and general macroeconomic indicators but also by the level of real business. Identifying the factors that influence migration can help in making management decisions to attract labor at the business level. Thus, if there is a need to attract labor from abroad, it is necessary to increase wages, as well as to improve the quality of work, that is to make work safer as well as to build working relationships in the team. It makes it possible to build a policy of transnational companies around attracting a highly qualified labor force from abroad. For instance, the share of Silicon Valley companies with at least one immigrant founder or co-founder was 52%. [16]

This topic is not exhausted, it is planned to include external shocks in the models, for example, the COVID-19 pandemics, which caused significant damage to the global economy and, more importantly, to migration flows.

References:

1. Andrienko Y., Guriev S. Determinants of Interregional Mobility in Russia: Evidence from Panel Data. 2003.

2. Cimpoeru S. Macro-economic determinants of migration. A comparative analysis for old vs. new European member states // Econ. Comput. Econ. Cybern. Stud. Res. 2020. Vol. 54, № 4. P. 5–22.

3. Freguglia R. da S., Gonçalves E., Silva E.R. da. Composition and determinants of the skilled out-migration in the Brazilian formal labor market: A panel data analysis from 1995 to 2006 // EconomiA. National Association of Postgraduate Centers in Economics, ANPEC, 2014. Vol. 15, № 1. P. 100–117.

4. Faggio G. et al. Gross Job Flows and Firm Growth in Transition Countries: Evidence Using Firm Level Data Gross Job Flows and Firm Growth in Transition Countries: Evidence using firm level data on five countries. 1999.

5. McKenzie D., Theoharides C., Yang D. Distortions in the international migrant labor market: Evidence from filipino migration and wage responses to destination country economic shocks // Am. Econ. J. Appl. Econ. 2014. Vol. 6, № 2. P. 49–75.

6. Dalla Valle L. et al. Bayesian analysis of immigration in Europe with generalized logistic regression // J. Appl. Stat. 2020. Vol. 47, № 3. P. 424–438.
7. Kancs d'Artis. The economic geography of labour migration: Competition, competitiveness and development // Appl. Geogr. 2011. Vol. 31, № 1. P. 191–200.
8. Rita A. et al. Does air pollution influence internal migration ? An empirical investigation on Italian provinces // Environ. Sci. Policy. Elsevier Ltd, 2021. Vol. 120, № August 2020. P. 11–20.
9. Lee E.S. A theory of migration // Demography. Springer, 1966. Vol. 3, № 1. P. 47–57.
10. Ravenstein E.G. The Laws of Migration // J. Stat. Soc. London. JSTOR, 1885. Vol. 48, № 2. P. 167.
11. Dingle H., Drake V.A. What Is Migration? // Bioscience. Oxford Academic, 2007. Vol. 57, № 2. P. 113–121.
12. Guriev S., Vakulenko E. Breaking out of poverty traps: Internal migration and interregional convergence in Russia // J. Comp. Econ. Academic Press Inc., 2015. Vol. 43, № 3. P. 633–649.
13. Boyle P., Halfacree K., Robinson V. Exploring contemporary migration // Exploring Contemporary Migration. Taylor and Francis, 2014. 1–282 p.
14. Hsiao K.H., Hsiao K.H., Yan H. Sen. Analysis of Panel Data // History of Mechanism and Machine Science. 2014. Vol. 23. 1–7 p.
15. Wooldridge J.M. Econometric Analysis of Cross Section and Panel Data // MIT Press. 2002. Vol. 58, № 2. 752 p.
16. Toor A. Can Obama's immigration reform stop Silicon Valley's brain drain? [Electronic resource]. 2013.