indicators under their control, as well as the indirect – the impact on the spending of economic agents It is possible to show interconnection between the elements with system dynamics model but not only unidirectional effect, so it will be useful to build system dynamics model of transmission mechanism.

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MODELING OF MIGRATION FLOWS AS A REGULATOR OF ECONOMIC GROWTH

International migration is a part of a transnational revolution that changes society and politics around the globe. The dichotomy between donor countries and recipient countries is collapsing. Most states face both problems with emigration, and with immigration (although they usually dominate one over the other), while other countries have assumed the residential zones for migrants. At the same time, there is a lack of scientific work on this issue with the help of mathematical tools that promote the need for in-depth study and the search for new ways of resolving the problem of external migration in Ukraine and the world. The current research proposes the solving of modern issues with movement, which makes a significant contribution to the investigation of the field. The new system dynamics model of migration is based on the data analysis, theories of migration and previously obtained results.

The main factors that influence the regulation of mobility in Ukraine will be assessed not only qualitatively but also quantitatively: the ratio of wages in Ukraine and recipient countries, differences in per capita GDP, the possibility of acquiring (renting) housing, differences in the level of marginal propensity to consume, etc. Based on the created simulation model (see Figure 1), the main problems of current regulation of migration flows existing in Ukraine were identified. The main elements of the model are the stock of workforce in the donor country, the stock of potential migrants, the total population, the number of employed in the economy, the number of unemployed, and the number of working age population.

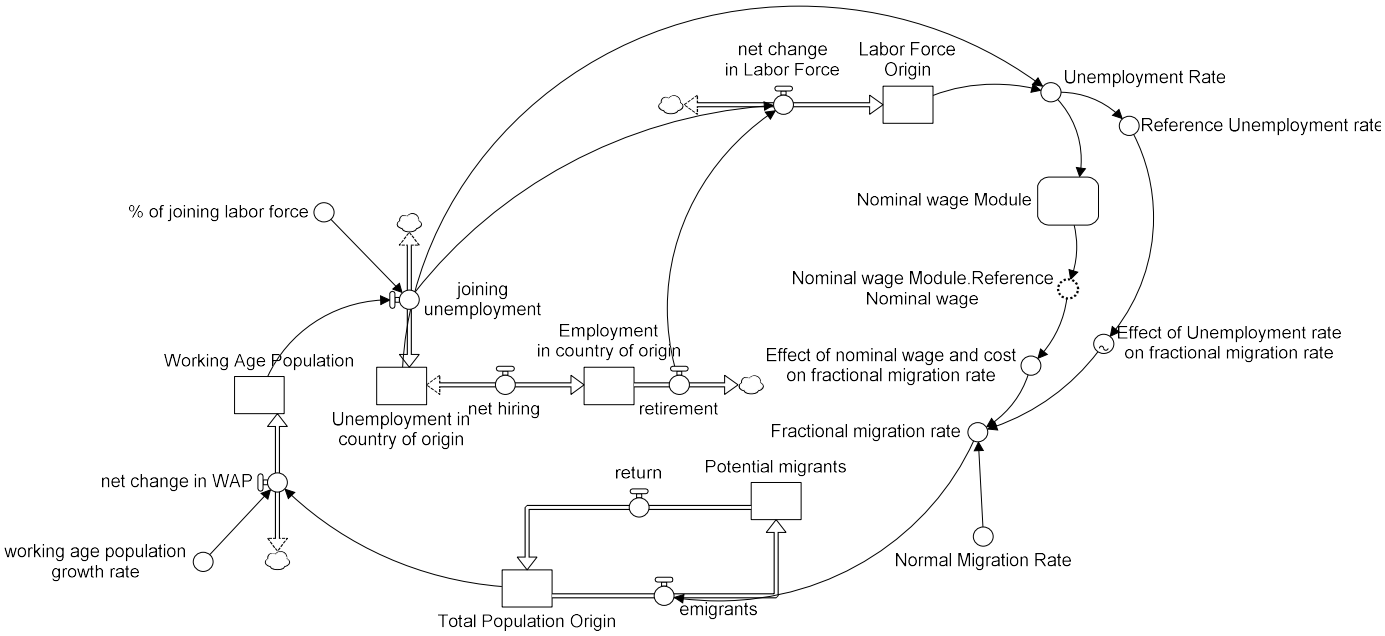

Figure 1. **The general stock-and-flow diagram of external migration model**

The basic theory used in the modeling of migration processes is the push-pulling theory, developed by Everett Lee in the '60s of the twentieth century [1]. The idea is that each country has a pack of factors which influence peoples decisions either stay or move abroad, and these features usually work in the way that they have either more pushing or pulling factors. When making the decision people compare the conditions, they face in the country of origin (potential donor-country) with the conditions in the country of migration (potential recipient-country). The constructed model reflects the decision-making process regarding the emigration of the working population by factors that are inherent to donor countries and recipient countries. The main factors driving Ukrainians when traveling abroad is the comparatively higher wages in Europe, unlike in Ukraine, as well as the possibility of employment. The model aims to balance and equalization of the labor market in donor and recipient countries, so it has a major balancing feedback loop. It shows the impact of inequality on the desire of people to go abroad to work, and works in such a way that migration contributes to the alignment of economic performance in both countries.

Since traveling abroad in the search for employment leads to a labor outflow, the pressure on the labor market in the country of origin decreases, thereby causing a reduction in unemployment. On the contrary, the attraction in the country of migration increases the pressure on the labor market, which can lead to negative consequences in the form of an increase in unemployment. Since unemployment is linked to inflation, as well as wages, the average salary in the donor country should increase, while the average salary in the recipient country will decrease slightly. Thus, there is a correction of the relative magnitudes that influence the decision of potential migrants to travel abroad.

Given the balance of labor markets in both countries, migration flows will slow down, but it is challenging to check this condition due to the current economic situation in Ukraine since the gap between wages in Ukraine and the most popular

migration countries exceeds 20%, which is a sufficient condition for relocation. The constructed model works in such a way that, if the "equalization" of opportunities in both countries, which means the equality in the level of wages, the potential migrants will make a decision to stay in their country of origin. At the same time the number of migrants who are abroad is likely to be reduced, but this will only take place until the moment of equilibrium in the Ukrainian and world labor markets.

The constructed model defines the main factors that influence the desire of individuals to travel abroad, which allows you to see the main problems and to change the intensity of migratory flows through certain managerial decisions. The main directions for further research are the branching of a general model of the functioning of migration flows in Ukraine on a sub-model for each recipient country with the most significant number of Ukrainian immigrants, which will more accurately determine the motives that guide potential emigrants when choosing a state to earn a living abroad.

The importance of a constructed model can be described as its contribution to confirming or refusing the impact of migration on the economic growth of both donor and recipient countries, since the working age population directly affects the number of people employed in the economy, which reflects the acceleration or slowdown of economic growth in both countries, and confirms that migration is not only an important social phenomenon but also requires serious regulation as an important economic factor. Migration policy in Ukraine remains unregulated and ineffective, and while Western European countries are trying to regulate the flow of immigrants, the primary migration trend in Ukraine is the so-called "brain drain", or the loss of the most productive able-bodied population, which can be explained by an increase in quotas for Ukrainians students abroad, as well as easier overcoming high-educated specialists in the entry barrier to the industry abroad. Such tendencies in recent years lead to slower reforms and potential economic growth. Therefore, its further development and use in matters concerning regulation of migration flows are especially important.

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