

5. International Labour Organization [2012] “The youth employment crisis: time for action”, ILO, 101st Session, Report V. A.

6. *McKenzie* [2005] “Measuring inequality with asset indicators”, *Journal of Population Economics*, Vol. 18, pp. 229–260.

7. *Sahn and D. Stifel* [2003] “Exploring alternative measures of welfare in the absence of expenditure data”, *Review of Income and Wealth*, Vol. 49, pp. 463–489.

8. *Shorrocks* [2013] “Decomposition procedures for distributional analysis: a unified framework based on the Shapley value”, *Journal of Economic Inequality*, Vol. 11, No. 1, pp. 99–126.

9. *Solt* [2009] “Standardizing the World Income Inequality Database”, *Social Science Quarterly*, Vol. 90, No. 2, pp. 231–242. SWIID Version 4.0, September 2013.

10. EBRD Transition Report 2013: Stuck in Transition? <http://wiiw.ac.at/ebrd-transition-report-2013>

11. *Vyas and L. Kumaranayake* [2006] “Constructing socio-economic status indices: how to use principal components analysis”, *Health Policy Planning*, Vol. 21, No. 6, pp. 459–468.

12. World Bank [2012] “Youth unemployment and vocational training”, background paper for the World Development Report 2013.

Khrapunova Y. V.,

Post-Graduate Student,

Scientific and Research Institute

of Economics at the Ministry of Economic Development and Trade of Ukraine

STATISTICAL EVALUATION OF THE DEMOGRAPHIC EXPANSION

АНОТАЦІЯ. В останні роки все зростаюча увага приділяється різним аспектам демографічної експансії, яка, думку автора, у деяких країнах суттєво впливає на рівень національної безпеки цих країн. В статті розглянуто наукові підходи до оцінювання демографічної експансії та пропонується авторський підхід до побудови і коректного застосування відповідної системи статистичних показників. За допомогою цієї системи проаналізовано основні соціальні та економічні наслідки процесу нерегульованої міграції в Україну мешканців інших країн протягом останніх 15 років.

КЛЮЧОВІ СЛОВА: демографічна статистика, демографічна безпека, демографічна експансія, статистичне оцінювання демографічної експансії, система показників демографічної експансії.

АННОТАЦИЯ. В последние годы всевозрастающее внимание уделяется различным аспектам демографической экспансии, которая, по мнению автора, в некоторых странах существенно влияет на уровень нацио-

нальной безопасности этих стран. В статье рассмотрены научные подходы к оценке демографической экспансии и предлагается авторский подход к построению и корректному применению соответствующей системы статистических показателей. С помощью этой системы проанализированы основные социальные и экономические последствия процесса нерегулируемой миграции в Украину жителей других стран в течение последних 15 лет.

КЛЮЧЕВЫЕ СЛОВА: демографическая статистика, демографическая безопасность, демографическая экспансия, статистическое оценивание демографической экспансии, система показателей демографической экспансии.

ABSTRACT. In recent years increasing attention is given to various aspects of demographic expansion that, according to the author's point of view, results in some countries a significant impact on national security level in these countries. In the article the different scientific approaches to the evaluation of demographic expansion are considered and the own one that provides methodology to develop and correctly apply for these purposes an comprehensive system of statistical indicators. Using this this system main social and economic consequences of unregulated migration to Ukraine of inhabitants from other countries are analyzed.

KEY WORDS: demographic statistics, demographic security, demographic expansion, statistical estimation of demographic expansion, system of indicators to measure demographic expansion.

INTRODUCTION

Many observers believe that the recent growth of migration into Western Europe from the underdeveloped countries (especially from Asia, Africa and Latin America) and developing countries (especially from the ex-Soviet Union countries) as well as into the Eastern European countries from the area mentioned above is the beginning of a new major wave of immigration. The theoretical and empirical studies made so far, neither give a sufficient basis for answering this question, nor for producing solid predictions about future international migration. Several of the classic questions have to be asked anew. Theories and facts from research in several academic disciplines have to be combined; explanatory factors and their interrelations have to be examined. It is also should be defined what does it mean 'potential migration', 'migration pressure' or 'demographic/migration expansion'. Relevant development factors as well as the impact of these factors on future international migration and economic development have to be measured.

ACTUAL SCIENTIFIC APPROACHES OVERVIEW

European migration policy is currently in a period of crisis and transition. Efforts are being made by states and international organizations to establish a functioning system of migration control into

Europe (both Western as well as Eastern European countries) from all parts of the world, but especially from the Middle East and North Africa. This new control system will be more efficient and restrictive than previous systems. At the same time, the idea is to harmonize the member states' migration policies within the European Union, removing internal borders to create a European free circulation of labor.

There are a number of reasons for this crisis in migration policy. The economic and political insecurity is, of course, one of these reasons. Future mass migration from East to West was initially seen as an immediate threat, but instead came the extraordinarily large refugee flows from the civil wars and terror in former Yugoslavia. As a result, for several decades, and despite all control measures, international population movements have continuously grown and have become more and more global. Forecasts have repeatedly said that migration from the South and East would soon grow out of proportion, if radical measures would not be taken. First of all, the demographic explosion has far from come to an end.

Figures on unemployment are extremely difficult to use in international comparisons. Unemployment and underemployment are measured in various ways within Europe, and statistics from countries in the South and East often underestimate the desperate situation prevailing there. An often quoted scenarios, the inflow of young women and men into the labor market of those less developed countries will grow by more than 500-700 million during the period 2010-2020, and this could be compared to the size of the total labor market of the developed countries in 1990 of about 600 million.

Finally, during the last 15-20 years, several new states have been born in Eastern Europe, and in efforts to build new nation states, inflamed ethnic conflicts have resulted in civil wars, incredible human suffering, and large refugee movements. The idea of the nation state is still extremely strong. One nation and one state remains the ideal, although it is nowhere completely realized. Furthermore, the state still has the central power to decide how material and immaterial values and goods are distributed among its citizens. This distribution takes place via national political institutions, but more power is being transferred to supranational units like the European Union. This is one reason why immigration and immigration policies have become salient issues everywhere in Europe. The states are anxious to preserve their control of what are for them the most basic elements, like their territory, their nation and demos, and their system of national representation. Therefore, they put much effort into their national immigration control, reluctant to give up decisions, for

instance, on the free circulation of those citizens of non-member states who are residents of a member state.

A great deal has been written about the causes of international migration. Given the background sketched above of a crisis in immigration and refugee policy, and given several other serious global problems of the 1990s, it is obvious that not just labor migration, or economic factors must be explained. Political factors and refugee migration must be explained as well. Furthermore, a study must be made of family migration, migration for learning or self-realization, or for the sake of adventure or for ethnic, religious, cultural, racial reasons, etc. Indeed, various kinds of international migration must be explained, but models are also required, which are able to account for a great number of explanatory factors, as well as for the dynamics in their interrelations.

So far, studies of international migration have primarily emphasized labor migration and therefore economic theories about 'push and pull', about wage differentials, about supply and demand of labor in two or more labor markets, about the mobility of the production factor labor, and several combinations of these and others. However, these economic theories have, up until recently, underestimated or even completely ignored the role of the state. This neglect seems to imply that there would be no difference between internal (free) and international (controlled) migration, nor between regulated and controlled migration between states and international migration within an area of free circulation of labor.

In fact, almost all states do their best to control and regulate immigration. It is in this way that states determine which migration flows are legitimate and which are not. Legitimacy is not established by high abstract principles, but by inducement, control, and deterrence usually established unilaterally by the receiving state, but sometimes in agreements or treaties between receiving and sending states. The size and composition of migration flows into a West European country have regularly been under political control since beginning of the last century, with the exception of a period of relaxed control between 1945 and 1975.

METHODOLOGY OF THE DEMOGRAPHIC EXPANSION STATISTICAL EVALUATION

Trying to define migration pressure is a problem, not to mention operationalisation and measurement. The ILO has devoted several publications to this topic that have described migration pressure as building up «because more people seek to obtain better employment and income-earning opportunities or relief from political repression and human rights abuses than other countries are prepared to make

available» (2001). In other words these publications include economic, political and ethnical migration, and they see pressure and/or expansion as the result of more people wanting to go than there are destinations available for them. Already here the problem is encountered of measuring how many 'seek' to go. We could make a narrow delimitation and lose most of those who might be inclined to emigrate, or at the other end of the spectrum everyone could be included. The decision will have to be a subjective one.

Of course it is just as difficult to say how many countries are prepared to admit the migrants. Very few countries have fixed the amount of annual intake. Most countries allow for some immigrants and not for others, for example, for some professionals but not for unskilled workers, or for 'genuine' refugees but not for war refugees.

Democratic welfare states cannot live without immigration control. But completely closed borders are not a realistic option. Most states are unable or unwilling to make their control fully efficient. They cannot close all illegal routes into the country, nor ruthlessly hunt illegal residents or illegal workers. Economic interests are often involved and furthermore, immigrants from some countries may be given some extra privileges.

But it still seems as if recent, more restrictive control has had a remarkable impact on immigration, from both Eastern Europe and from non-European countries. Selection among applicants also takes place in such states where the immigration stop is said to be absolute. A few aliens are always welcome. And even at present, in this restrictive period in Europe, immigrants are relatively easily admitted at least as temporary residents, under the condition that they come from affluent parts of the world, and if they are qualified professionals or artists, or (in some countries) if they have enough money. Tourists and visitors are also selectively allowed to enter. Persons coming from some neighbouring countries or from countries with special relations with the receiving state or people of the same ethnicity or nationality may be given special preference and may be exempted from visa requirements.

An immigration country's general prevention strategy is of course based on its regulation policy and on how strict this policy is being applied. Visa requirements and requirements to obtain residence and work permits before arrival give clear signals to the rest of the world, especially when they are combined with agreements with transit countries that potential migrants will not be allowed to pass through their territory. In combination with the first asylum principle, this also implies that asylum-seekers will not easily be able to find their way to more distant countries.

But general prevention is first of all the result of how liberal or how restrictive an image a country has created through its policy over a long period of time, and also of how it can change this image by drastic measures (detention of asylum-seekers, deportation of those refused, or other forms of deterrence), or by information campaigns, including targeted information to certain groups of people in one country. As mentioned, democratic welfare states cannot be completely closed societies. They will always allow selected immigration and, among these, family reunion and political refugees. On the other hand, through strict controls and after a rigid selection, they may exclude those who from their point of view are undesirable potential migrants, such as migrant workers or citizens from certain parts of the world.

Within the migration pressure it is very important and valuable to distinguish the demographic expansion.

According to the author's definition, the *demographic expansion* — is the process of reducing the proportion of indigenous people in the country (community, specific area) that results, basically, in reducing the role of indigenous population in the political, social and economic life due to the natural movement and migration of non-indigenous people, who are not willing to accept the social, ethnic, religious, etc. foundations and traditions of this country (community, specific area).

Emigration statistics show that emigrants are usually relatively young (18 to 30 years of age), often unmarried men, sometimes recently married couples with or without a first child. In other words, age may be a hindrance to emigration. It may be more difficult to move when children are already in schools or when they are teenagers than before these ages. It may be easier for men than for women because of prevailing gender roles, but the extent of this may differ from country to country and from time to time. Emigration of women may often follow the emigration of men, but the opposite may also be true.

Emigration may be more difficult for those who have a job, have rented accommodation or even possess a house, have started a family, are active in some secular or religious community, etc. etc. Migration may be easier when people start working and form their families than any other time in life. A job, a house, property, family, social relations, and commitments may be seen as obstacles to emigration. It may require something extra to overcome these obstacles.

A number of factors related to the individual's age and gender may neither further nor impede emigration. A few characteristics tied to

the individual have been mentioned here. Several others might be mentioned, including personality factors. But let us turn to some of the many obstacles to emigration which follow from the organization of those states and societies in which potential emigrants are living. We should also look for 'structural' or 'cultural' obstacles to emigration and study them closely. Here follows only a first list of a number of possible suggestions. Each one must be qualified in individual cases. Here they are merely listed, as they cannot be further elaborated in this paper.

The premise here is that immigration control is and will be seen as an absolute necessity for a democratic welfare state, but this does not imply a policy of zero migration. Control is needed for the protection of the ethnic nation, and of the economic labor force, all crucial to a European state's understanding of itself as a state, a nation, and a national economy, where the state has the authority to decide about the distribution of goods, where there is a public sector requiring taxation, and where social equality, welfare, full employment, and no inflation are central goals. Immigration control can be coordinated with other states, harmonized within a larger supranational unit like the European unit, but cannot be dispensed with. Sudden mass migration to a country, unforeseen and beyond the control of the state, could become a major threat to the state's security, a threat which states try to avoid by various means.

However, there are many types of control: external control at or outside the borders, or internal control of aliens already in the state. Control in some countries is to a large extent explicit in laws and regulations, while in others it is implicit in social and political institutions. Furthermore, control may be public but also partly private. It may be rude, militarized, discretionary, including the right to search individual persons, to detain non-citizens, and divide husband and wife, in short, showing little or no respect for aliens as individual human beings on visits, only because these visits are irregular. Or control may be the opposite: in other words, a decent, civilized legal control system in which due process and just treatment is guaranteed. Finally, control may be more or less efficient, and it may infer not only monetary costs, but also have a great number of other foreseen or unforeseen consequences.

It is quite important to determinate the system of statistical indicators to be used for the quantitative and qualitative measurement of the demographic expansion. There are so many researches who consider the relevant development factors as well as the impact of these factors on economic development have to be measured.

Table 1

**POINTS OF VIEW IN REGARD TO THE DEMOGRAPHIC EXPANSION
STATISTICAL EVALUATION**

Authors	Indicators suggested
Dr. Gromann, Belgium (http://languages-study.com)	Number of children and young people (pupils) of non-indigenous population as a percentage to the TOTAL NUMBER OF POPULATION OF THE COUNTRY
Dr. Igor Berkut, Ukraine (http://bratbook.com.ua)	1. Number of non-indigenous population or non-indigenous persons affiliated to other religious as a percentage to the TOTAL NUMBER OF POPULATION; 2) Availability of informal parallel institutions created by the non-indigenous population; 3) Number of stocks and/or marches, etc. with the requirements to the Government, organized by non-Aboriginal people.
Ariel Gordon, Israel, (http://gazeta.rjews.net)	1) Number of non-Aboriginal people; 2) Dynamics of the non-indigenous population; 3) Share of non-Aboriginal people; 4) Dynamics of the share of the non-indigenous population.
Joan Putchinina, Russia (http://darial-online.ru)	1) Number of non-Aboriginal people; 2) Dynamics of the non-indigenous population; 3) Number of households of non-indigenous population; 4) Ratio of the fertility levels of the indigenous and non-indigenous populations.

Taking into consideration all mentioned above and summarizing all of the points of view in regard to the to the demographic expansion statistical evaluation, we would like to suggest the following conceptual scheme of the system of the demographic expansion statistical indicators.

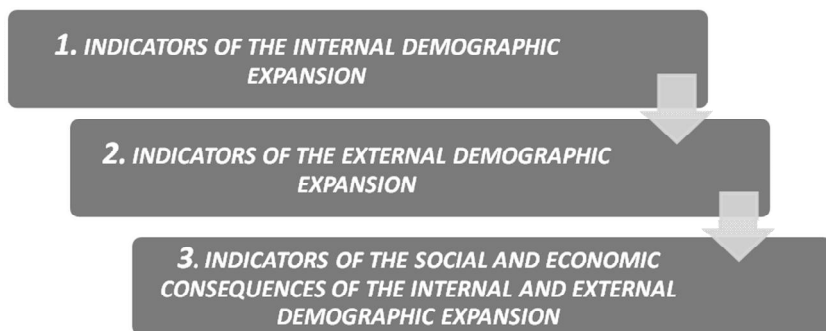


Chart 1. Logical structure of the system of the demographic expansion indicators

Once the conceptual framework is finalized, the next step in completing the monitoring and evaluation framework is selecting indicators. Indicators are signs of progress — they are used to determine whether the programme or/and intervention is on its way to achieving its objectives and goals.

It is well-known that an indicator is a specific, observable and measurable characteristic that can be used to show changes or progress a programme is making toward achieving a specific outcome. Obviously that according to the statistical methodology it should be:

- at least one indicator for each outcome (objective);
- the indicator should be focused, clear and specific. The change measured by the indicator should represent progress that the programme hopes to make;
- an indicator should be defined in precise, unambiguous terms that describe clearly and exactly what is being measured.

Very often one has to answer a simple question — *How many indicators are enough?* Responding to this question it is necessary to take into consideration some guidelines to follow when selecting indicators:

- At least one or two indicators per result (ideally, from different sources);
- At least one indicator for every core activity;
- No more than 8-10 indicators per area of significant programme focus;

It is also important to remember the difference between process and results indicators. **Process Indicators** are used to monitor the number and types of activities carried out, while **Results Indicators** are used to evaluate whether or not the activity achieved

the intended objectives or results. Monitoring and evaluation frameworks and plans should incorporate both process and results indicators.

Following this conceptual guidelines, the system of the statistical indicators needed for the demographic expansion evaluation has been developed.

Table 2

SYSTEM OF THE DEMOGRAPHIC EXPANSION STATISTICAL INDICATORS

1. Indicators of the internal demographic expansion	2. Indicators of the external demographic expansion	3. Indicators of the social and economic consequences of the internal and external demographic expansion
<ul style="list-style-type: none"> • Ratio of the fertility levels of the indigenous and non-indigenous population; • Ratio of mortality of indigenous and non-indigenous population; • Ratio of replacement levels of indigenous and non-indigenous population; • Ratio of the levels of life expectancy of indigenous and non-indigenous population; • Ratio of the coefficients of the natural growth of indigenous and non-indigenous people 	<ul style="list-style-type: none"> • Number and dynamics of the non-indigenous population, who came to the territory during the last year; • Total number of non-indigenous population, who arrived in the country during the certain period of time (cumulative val); • Ratio of the number of non-indigenous people, who had come to the territory for the year, the average annual number of indigenous people; • Level and dynamics of immigration rate of non-indigenous population in the Total number of population 	<ul style="list-style-type: none"> • Proportion of the indigenous population in the total population; • Dynamics of the proportion of the indigenous population in the total population; • Proportion of the indigenous population in the total population growth • Dynamics of the proportion of the indigenous population in the total population growth • Ratio of the rate of growth of the indigenous and non-indigenous population; • Proportion of indigenous people in the state and local Governments; • Proportion of Aboriginal people in key sectors of the economy; • Proportion of indigenous people in the business and private property (land, real estate, finance) • Dynamics of the expansion of the territorial enclaves of non-indigenous population.

Next step of the demographic expansion statistical evaluation is in the corresponding composite indicator development. Composite indicators (CIs) which identify common trends across many separate indicators are increasingly recognized as a useful tool in policy analysis. Such composite indicators provide simple comparisons of

countries (specific areas) with a significant numbers of migrants that can be used to illustrate complex and sometimes elusive issues in wide-ranging fields.

However, composite indicators can send misleading policy messages if they are poorly constructed or misinterpreted. Their “big picture” results may invite users (especially policy-makers) to draw simplistic analytical or policy conclusions. In fact, composite indicators must be seen as a means of initiating discussion and stimulating public interest. Their relevance should be gauged with respect to constituencies affected by the composite index.

In general terms, an indicator is a quantitative or a qualitative measure derived from a series of observed facts that can reveal relative positions (*e.g.* of a country or/and specific area) in a given sphere. When evaluated at regular intervals, an indicator can point out the direction of change across different units and through time. They can also be helpful in setting policy priorities and in benchmarking or monitoring performance. A composite indicator is formed when individual indicators are compiled into a single index on the basis of an underlying model. The composite indicator should ideally measure multidimensional concepts which cannot be captured by a single indicator.

The strengths and weaknesses of composite indicators largely derive from the quality of the underlying variables. Ideally, variables should be selected on the basis of their relevance, analytical soundness, timeliness, accessibility, etc.

While the choice of indicators must be guided by the theoretical framework for the composite, the data selection process can be quite subjective as there may be no single definitive set of indicators. A lack of relevant data may also limit the developer’s ability to build sound composite indicators. Given a scarcity of internationally comparable quantitative data from population census, for instance, composite indicators often include qualitative data from surveys or policy reviews mentioned above (in Chapter connected to the//).

Thus, the quality and accuracy of composite indicators should evolve in parallel with improvements in data collection and indicator development. The current trend towards constructing composite indicators of country performance in a range of policy areas may provide further impetus to improving data collection, identifying new data sources and enhancing the international comparability of statistics.

Taking into account all mentioned above, the following formula of the demographic expansion composite indicator has been suggested:

$$\text{CIODE} = \sum B_i d_i, i=1,$$

where **CIODE** — value of the composite indicator (average composite level of the demographic expansion);

i — number of the individual indicators included into the **CIODE** calculation;

B_i — raw value of individual indicator $_i$ (number of balls obtained by the each individual indicator the gives statistical characteristic of the corresponding demographic expansion component);

d_i — weight associated to individual indicator included in the **CIODE** calculation.

The value of such composite indicator will be calculated in the further research while the complete statistical data would be available. However, even in the meantime it is possible to obtain the following conclusions and recommendations.

SUBSTANTIAL CONCLUSIONS

Taking into consideration that during the last years increasing attention is paid to various aspects of population expansion, it is quite important to consider issues related to the definition, theoretical background as well as to the economic and social consequences of this phenomena.

Using several statistical methods, author achieved results that make possible to formulate the following important conclusions:

- More than half (about 57 per cent) of the increase of the Ukrainian population between 2001 and 2014 was due to the direct contribution of net migration and extremely high fertility rate of legal and mostly illegal migrants.

- Differences in net migration assumptions between the ‘low’ and the ‘high’ variant projections produce a range of variation of 0.60 million in the projected size of the Ukrainian population in 2030 (between 45.6 and 46.2 million).

- In the principal projection the cumulative net inflow of post-2013 migrants accounts for 43 % of total population growth until 2030. A further 17 % of projected population growth is attributable to the additional contribution of new migrants to natural change (i.e. births and deaths).

- The projected contribution of net migration to population change considerably differs across the three Ukrainian constituent nations. Without net immigration the Ukrainian’s population would stagnate over the next two decades and decrease in the longer term.

- Net migration assumptions should be continually revised in the projections, reflecting rising levels of net migration and the high uncertainty of migration forecasting.

References

1. *Adepoju, A.* [1994], Preliminary Analysis of Emigration Dynamics in Sub-Saharan Africa. In: *International Migration*, Vol. 32, No. 2, pp. 197-216.
2. *Appleyard, R.T.* [1994], IOM/UNFPA Project on Emigration Dynamics in Developing Countries. In: *International Migration*, Vol. 32, No. 2, pp. 179-195.
3. *Castles, S and M. Miller* [1993], *The Age of Migration: International Population Movements in the Modern World*. Basingstoke, MacMillan.
4. *Massey, D.S.* [1994b], Continuities in Transnational Migration: An Analysis of 19 Mexican Communities. In: *American Journal of Sociology*. (Forthcoming).
5. *Massey, D.S. and F. Garcia-Espana* [1987], The Social Process of International Migration. In: *Science*, Vol. 237, pp. 733-738.
6. *Mullan, B.P.* [1989], The Impact of Social Networks on the Occupational Status of Migrants. In: *International Migration*, Vol. 27, No. 1, pp. 69-86.
7. *Okolski, M.* [1993], *International Migration in Poland: A Country Report*. Manuscript prepared for Workshop on the Causes and Consequences of Emigration from Central and Eastern Europe, Geneva, UN Economic Commission for Europe.
8. *Pyrozshkov, S.I.* [1993], *International Migration in Ukraine: A Country Report*. Manuscript prepared for Workshop on the Causes and Consequences of Emigration from Central and Eastern Europe, Geneva, UN Economic Commission for Europe.
9. *Rogers, R. and E. Copeland* [1993], *Forced Migration, Policy Issues in the Post-Cold War World*. Medford, Mass., The Fletcher School of Law and Diplomacy, Tufts University.

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Джалладова І. А., д.фіз.-мат.н.,
професор кафедри комп'ютерної математики та інформаційної безпеки,
Київський національний економічний університет імені Вадима Гетьмана

ПОЛІТИКА ІНФОРМАЦІЙНОЇ БЕЗПЕКИ: НАУКОВО-ПРИКЛАДНІ АСПЕКТИ І ПРОБЛЕМИ ПІДГОТОВКИ ФАХІВЦІВ

АНОТАЦІЯ. У роботі наведено аналіз найважливіших проблем сучасності: безпеки інформаційних і комунікаційних систем, захисту від атак за наявності інформаційних війн, розробки при цьому моделі власної поведінки учасника кіберпростору. Показано, що підґрунтям для істотної протидії зростанню злочинів у кіберпросторі може стати грамотна політика національних кадрів у галузі інформаційної безпеки.