

Analysis of Migration Processes and Assessment of their Impact on the Development of International Money Transfers of Ukraine

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Abstract: *The main purpose of the research is to analyse migration processes of Ukraine and to determine the factors influencing the development of the market of international money transfers in Ukraine as a significant direction of strengthening the financial system of the country. According to the purpose, the dynamics of migration in Ukraine according to the geographical structure was analyzed, factors of influence on migration processes in Ukraine were determined. The impact of migration processes on the development of international money transfers was analyzed. Factors that affect the volumes of money transfers by official channels were determined. The estimation of factors according to the degree of influence and the dynamics of influence on money transfers was carried out. Measures to increase migrant remittances were identified.*

Keywords: *migration policy, international money transfers, financial system, transmission, money transfer channel*

JEL Classification: *J18, J61, F22, F24*

1 Introduction

Migration is the redistribution of labour between regions or countries, and it is necessarily connected with the change of permanent residence, the change of the spatial position of migrants in relation to the territorially consolidated structures of the population. In Ukraine, migration process has uncontrolled significance as a result of the ineffectiveness of the state migration policy, which leads to a negative impact on the financial system of the country - reduction of financial resources due to the decrease of revenues to the budget, caused by the reduction in production and consumption, resulting from the outflow of labour force. Taking into account the fact that the intensification of labour migration processes prompts workers to make international money transfers, money flows not only through formal channels (banking system), but also through informal (those that are not controlled by state authorities) ones. In this regard, a significant amount of these funds is being transferred to the shadow sector, which leads to the decrease of the financial potential of the country. Therefore, estimation of migration processes and the increase of money transfers through official channels needs to become an urgent task for strengthening the financial system of the country.

Among the researchers, who investigated Migration processes and their impact on the financial system, are Stark et al. (2017) analyze migration policies comparing entry fee and quota conditions; Rayp et al. (2017) review cross-country immigration policies; Lanati and Thiele (2018) evaluate impact of foreign aid on migration; Markowski (2008) analyses economic aspects of migration; Zapadnyuk (2012) and Kornienko (2017) investigate socio-economic aspect of regional asymmetry; Malynovska (2011) reviews circular migration; Lastovetska (2015) determines mutual influence of the volume of informal money transfers and the level of dollarization of the Ukrainian economy and others.

However, the problem of determination factors which impact on migration processes and determination the factors influencing the development of the market of international money transfers in Ukraine as a significant direction of strengthening the financial system of the country remains unresolved.

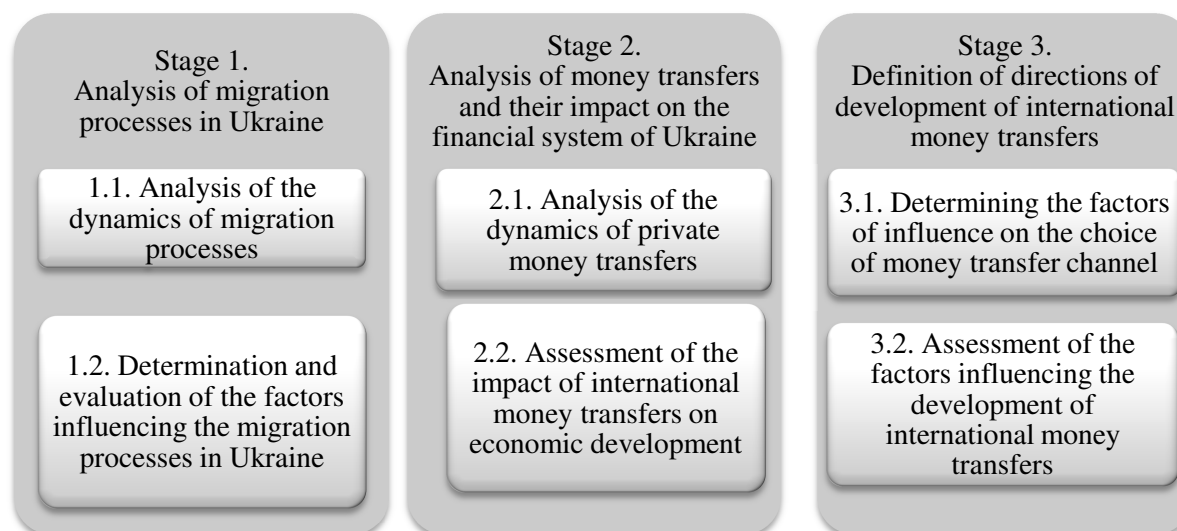
The purpose of the research

The purpose of the research is to analyse migration processes of Ukraine and determine the factors influencing the development of the market of international money transfers of migrants in Ukraine as a significant direction of strengthening the financial system of the country.

2 Methodology and Data

According to the goal established, an algorithm of its accomplishment has been developed. The algorithm of estimating migration processes and determining the factors influencing the development of the international money transfer market of migrants in Ukraine in terms of strengthening the financial system of the country is presented in Figure 1.

Figure 1 Algorithm of Construction a Model of Estimation of Migration Processes and Estimating Factors of Influence on Money Transfers



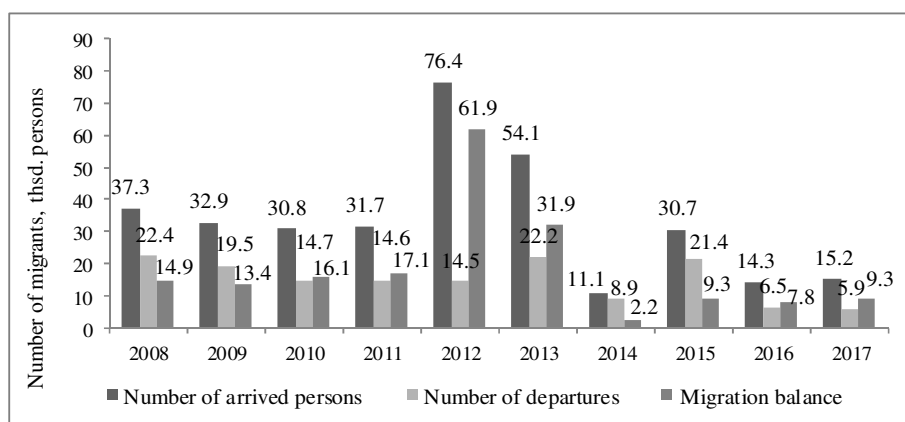
Source: elaborated by the Authors

3 Results and Discussion

The rapidity of migration processes in Ukraine, given the number of crises of the last decade, has a significant impact on the migration worldview of the population and development of the state as a whole. Therefore, migration processes in Ukraine need to be analyzed and identified.

The dynamics of the number of Ukrainian migrants during 2008-2017 is presented in Fig. 2.

Figure 2 Dynamics of the Number of Ukrainian Migrants during 2008-2017



Source: constructed by the authors according to the data <http://www.ukrstat.gov.ua>; <https://dmsu.gov.ua>

As a result of the analysis of the dynamics of the number of Ukrainian migrants, it has been found that throughout the years the country had a positive migration balance, indicating Ukraine's potential of attractiveness for foreign migrants.

Ukraine is the most attractive country for immigrants from Russia, Turkey, Moldova (Fig. 3).

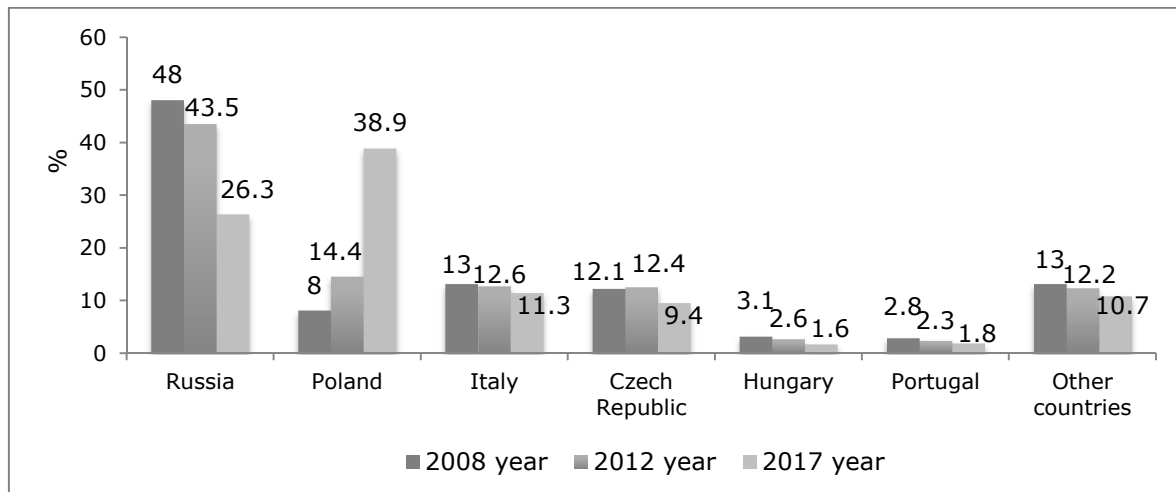
Figure 3 Indicators of Immigration to Ukraine, 2017 Year



Source: constructed by the authors according to the data <http://www.ukrstat.gov.ua>

Regarding emigration, Russia and Poland are the most attractive for Ukrainians (Fig. 4).

Figure 4 Geographical Structure of Ukrainian Emigrants



Source: constructed by the authors according to the data <http://www.ukrstat.gov.ua>

According to the data of the State Statistics Service of Ukraine, the countries leading in the number of Ukrainian migrants are Russia and Poland, the share of which in the structure of emigration in 2008 was 48% and 8%, in 2012 - 43.5% and 14.4%, in 2017 - 26.3% and 38.9% respectively. During the investigation period, Russia gradually passed the position to Poland, the main reason of which was the beginning of military Ukrainian-Russian conflict (potential migrants see danger), and an increase of the number of work visas to Poland for Ukrainians. Thus, Poland ranked out from the 4th place in 2008 to the 1st in 2017, moving Russia to 2nd place with a difference of 12.6 percentage points. Italy and the Czech Republic, respectively, took the 3rd and 4th places. The shares of Hungary, Portugal, and other countries are almost invisible and tend to decline.

As a result of the PESTEL-analysis of the impact of factors on migration, conducted on the basis of literary resources, a model of five groups of factors (economic, political and legal, socio-cultural, natural and environmental, globalization and integration) was presented. Conducted expert evaluation has shown that economic factors (27.55%), political and legal factors (23.4%) have the greatest impact on migration in comparison with the other groups of factors, that confirms the importance of economic and political stability and the level of safety as the main basic elements of life quality.

In 2008, international money transfers in Ukraine made 3.43% of nominal GDP, in 2017 - 0.31% (<https://bank.gov.ua>). On the basis of the decrease in remittances, along with the increase of the number of Ukrainian migrants, it is possible to determine the decrease of trust and expediency of Ukrainian emigrants to transfer money through official channels. Thus, the outflow of labour has a negative impact on the financial system and GDP of Ukraine at the same time as the decrease of the number of transfers. For statistical estimation of such influence the Pearson correlation coefficient is calculated according to the formula (Shapochka et al., 2014):

$$r_{xy} = \frac{\sum_{i=1}^m (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^m (x_i - \bar{x})^2 \sum_{i=1}^m (y_i - \bar{y})^2}} \quad (1)$$

where r_{xy} –value of the coefficient of correlation between GDP and migration balances;

x_i – value of GDP indicator;

y_i –value of the balance of migration;

$\bar{x}$ –arithmetic mean of the GDP indicator;

$\bar{y}$ – arithmetic average of the indicator of the migration balance;

m – number of observations.

The absolute value of the correlation coefficient ranges from -1 to +1. The closer this indicator to 0, the lower is the connection, the closer it is to ± 1 , the closer the connection is. The sign "+" at the correlation coefficient means a direct connection between the signs x and y, the sign "-" - the inverse.

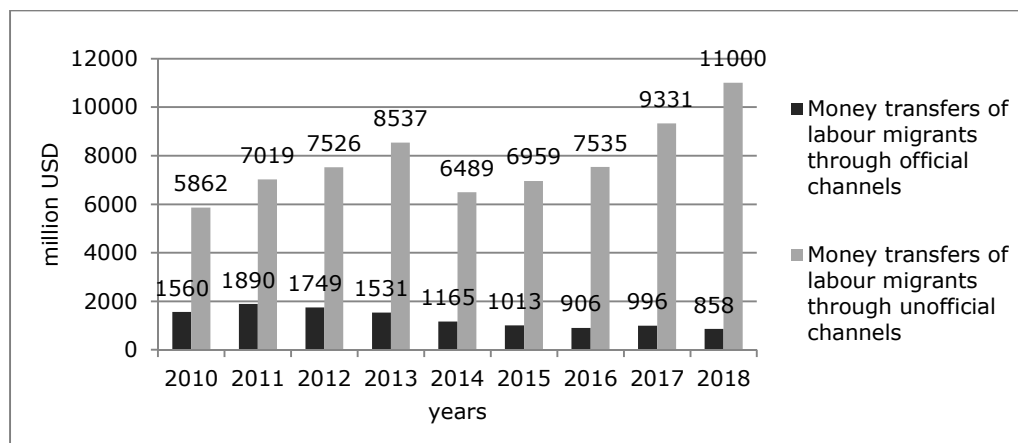
The strength of communication is determined on the Chaddock scale (Shapochka et al., 2014), according to which the value of the correlation coefficient | 0,1 | - | 0,3 | indicates a weak link strength; | 0,3 | - 0,5 | - moderate; | 0,5 | - | 0,7 | - noticeable; 0,7 | - | 0,9 | - high; | 0,9 | - | 1 | - very high.

Based on GDP and migration surplus data for 2008-2017, the correlation coefficient is - 0.63. According to the Chaddock scale, the data value (-0.7) - (-0.5) indicates a noticeable inverse nexus between migration processes and GDP.

Based on the dominance of negative effects, it is concluded that the emigration movement of the population has a devastating effect on the financial system and the state of national economy of Ukraine as a result of the reduction of GDP volumes, consumption volumes and taxes. According to this fact, the role of migration policy as an instrument of regulation migration processes is significant.

Based on the data of the National Bank of Ukraine, the impact of migration on the Ukrainian economy was analyzed. The main means of the analysis are money transfers of labour migrants, which, at the same time, are a major negative factor as a result of the delay in the growth of the number of remittances to Ukraine (Fig. 5). The total amount of transfers by official and unofficial channels until 2013 increased. In particular, in 2013, transfers increased by 13.43%. Since 2014, the amount of money transfers has decreased sharply. The growth was much lower from 2014. Since 2017, the amount of transfers has increased, due to the growth of labour migrants and as a result of introduction of a simplified regime of entry into the EU.

Figure 5 Money Transfers of Labour Migrants



Source: constructed by the authors according to the data <https://bank.gov.ua>

According to the results of 2017, the largest number of money transfers - more than a third - came to Ukraine from Poland. Russia, which received 14.6% of transfers is in the second place. Third place takes the USA, money transfers of which make up 7.3% (Zanuda, 2018). In comparison with the previous years, the share of transfers has changed. Thus, Russia and Poland reversed places: in 2015, Poland gave 19% of transfers, while Russia - 26.4%. Such a change in the structure of remittances is due to changes of the geographical structure of labour migrants (in 2017 Poland had 38.9% of migrants; Russia had 28.3%). However, if we make official transactions, the United

States and Russia will take the first places, while Poland has the 9th place. This situation shows that labour migrants in Poland prefer informal channels of money transfer (self-commissioning of cash, transfer of funds through chauffeurs who carry out international transportation and others).

The dependence of private money transfers of migrants by official channels as well as unofficial one presented on figure 6.

Figure 6 Model of Dependence of Money Transfers from Migration Processes

Regression Summary for Dependent Variable: Var1 R= .66863980 R ² = .44707919 Adjusted R ² = .22591086 F(2,5)=2.0214 p<.22733 Std Error of estimate: 332,19							Regression Summary for Dependent Variable: Var2 R= .90802249 R ² = .82450484 Adjusted R ² = .80632518 F(1,6)=28,13441 p<.02649 Std Error of estimate: 11,4						
N=8	b*	Std.Err. of b*	b	Std.Err. of b	t(5)	p-value	N=8	b*	Std.Err. of b*	b	Std.Err. of b	t(6)	p-value
Intercept			96,2665	10,5437	3,201752	0,023948	Intercept			76,532	10,561	7,288676	0,000340
Var3	0,649692	0,411831	10,0110	0,0070	1,577572	0,175492	Var4	0,148022	0,403751	20,026	2,072	5,366618	0,000649
Var4	0,031309	0,411831	10,0019	0,0251	0,076024	0,942348							

Legend:
 Var1 - volumes of money transfers of labor migrants by official channels;
 Var2 - volumes of money transfers of labor migrants taking into account informal channels;
 Var3 - number of arrived persons;
 Var4 - the number of departures.

Source: constructed by the authors

The constructed regression model confirms the hypothesis of low confidence of migrants in the banking system and confirms the need to find ways to increase remittances through official channels. The model of the dependence of remittance volumes on official channels showed that there was no significant effect of the migration indicators (Var3, Var4) on the amount of money transfers (Var1), which is confirmed by the low determination coefficient (0.44), the F-criterion (2.02 at the tabular value of 5.79), the t-criterion (0.08, 1.58 with table 2.57).

In the model of the dependence of money transfers volumes, taking into account informal channels, the influence of the number of departures (Var4) is statistically significant: the value of the coefficient of determination is 0.82, the F-criterion of Fisher is 28.13, the student's t-criterion is 5.37. Differences in the statistical significance of the constructed models indicate that the major part of private money transfers is carried out through informal channels.

Thus, private money transfers are an important source of currency inflows into Ukraine, their volumes are equated to the efficiency of direct investment of Ukraine. Effectiveness can be achieved by using official channels, especially through the banking system.

In order to increase the volume of international money transfers through the banking system (official channels), it is necessary to determine on which key aspects the state should pay attention to attract migrant workers to remittance through official channels (banking and other financial institutions). Summarizing theoretical and practical studies, we have identified a list of factors influencing the choice of money transfer channel: (1) accessibility - presence of agents of payment systems in a bank; (2) geography - coverage of countries that represents accessibility to recipients; (3) a set of possible currencies for the money transfers; (4) the reliability of the transfer channel; (5) commission for money transfer; (6) velocity of money transmission; (7) time to transfer money.

In order to assess the impact of these factors, they were ranked, which involves assessment of the impact of each of the factors on the choice of transfer of funds through the bank. The assessment was conducted by expert survey: the groups of factors were estimated in the range from 1 to 7: where "1" is the smallest influence, and "7" - the largest.

The process of forming a group of experts was carried out through self-assessment of

experts (which allowed to determine the level of their abilities); mutual evaluation of experts; expert evaluation by independent experts. The minimum required number of experts was determined by the formula (Litvak, 1996):

$$N_{\min} = 0,5 \times \left(\frac{3}{\lambda} + 0,5 \right) \quad (2)$$

where λ is a possible error of the examination results ($0 < \lambda < 1$).

So, if the marginal sample error equals 0.1, the estimated number of experts will be 16. To determine the consistency of expert opinions, the coefficient of concordance, which was developed by M. Kendall in the middle of the twentieth century, should be used. The coefficient of concordance is a value that characterizes the consistency of expert opinions and the reliability of the results of the polling survey (Litvak, 1996).

$$W = \frac{12 \times S}{m^2 \times (n^3 - n) - m \sum_{i=1}^m T_i} \quad (3)$$

where m is the number of experts in the group,

n – number of factors,

S – sum of squares of difference of ranks (deviations from the average).

T_i – intermediate settlement results.

$$S = \sum_{i=1}^n \left(\sum_{j=1}^m a_{ij} - a \right)^2 \quad (4)$$

where a – average amount of ranks assigned to this factor by all experts.

$$T_i = \sum_{l=1}^L (t_l^3 - t_l) \quad (5)$$

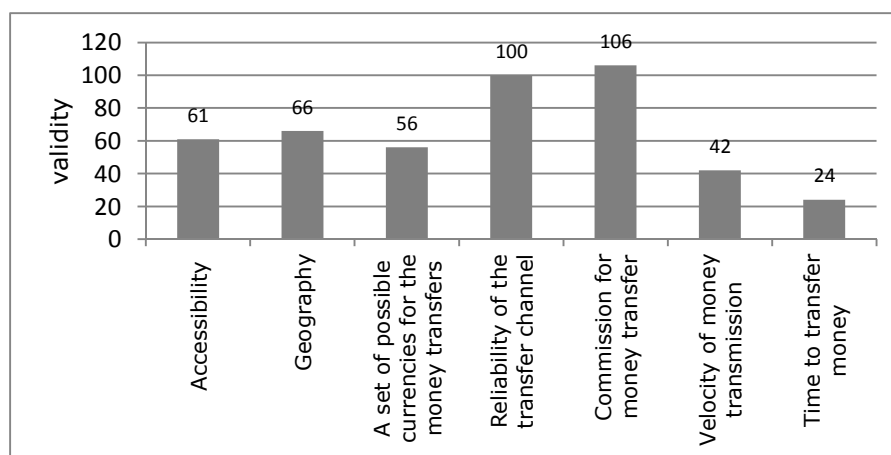
t_l – the number of bound ranks in each group.

Statistical significance of the coefficient of concordance is determined using Pearson's "xi-squared" criterion according to the following formula (for the number of objects $n \geq 7$) (6):

$$\chi^2 = m \times (n - 1) \times W \quad (6)$$

Based on the calculations (Table 1), it is possible to distinguish the most important factors which influence on the choice of a money transfer channel (Figure 7): the commission factor remains the most important influence and almost the same impact has reliability.

Figure 7 Distribution of the Factors which Impact on the Choice of the Channel of Money Transfers



Source: calculated by the authors

Therefore, the value of the coefficient of concordance is:

$$W = \frac{12 \times 5214}{[16^2 \times (7^3 - 7) - 16 \times 186]} = 0,7534$$

Table 1 Estimation of the factors, which impact on the choice of the channel of money transfers

№	Factors	Experts																$\sum_{j=1}^m R_{ij}$	$\bar{d}$	d_j	d_j^2
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
1	Accessibility	3	5	5	3	5	3	5	3	3	3	3	3	4	4	4	5	61	65	-4	16
2	Geography	4	4	3	3	3	3	3	5	5	5	4	5	5	5	5	4	66	65	1	1
3	A set of possible currencies for the money transfers	2	3	4	3	3	3	3	3	3	5	4	5	3	5	4	3	56	65	-9	81
4	Reliability of the transfer channel	7	6	6	6	6	6	6	7	6	7	7	7	5	7	5	6	100	65	35	1225
5	Commission for money transfer	7	7	6	7	7	7	7	6	7	6	7	6	7	6	6	7	106	65	41	1681
6	Velocity of money transmission	2	1	2	2	4	2	4	1	2	3	4	4	3	3	4	1	42	65	-23	529
7	Time to transfer money	1	2	1	2	1	1	1	2	1	1	3	1	1	2	2	2	24	65	-41	1681
	Number of the same values of ranks (t_e)	$(2^3-2)+(2^3-2)$ $-$ (2^3-2) $(3^3-3)+(2^3-2)$ (2^3-2) (3^3-3) (2^3-2) (2^3-2) (2^3-2) (2^3-2) $(2^3-2)+(2^3-2)$ $(3^3-3)+(2^3-2)$ (2^3-2) $(2^3-2)+(2^3-2)$ (2^3-2) (3^3-3) $-$																455		Sum	5214
		12	6	30	6	24	6	6	6	6	12	30	6	12	6	24		186			

Source: calculated by the authors

And the value of the significance of the concordation coefficient is determined by the Pearson criterion "xi-square":

$$\chi^2 = 16 \times (7 - 1) \times 0,7534 = 72,333$$

In case of confidential interval 99.9% and the number of degrees of freedom $df = 7 - 1 = 6$ is a rejection limit is 22.457. The reported value is $72,333 > 24,32$. Therefore, the consistency of expert opinions is not accidental.

Second place was shared by geography and accessibility factors. On the third place there is a set of possible currencies for the money transfers, on the fourth is velocity of money transmission and the most significant is the time to transfer money.

In addition to the static analysis, it is important to analyze these factors in the dynamics to determine the possible change of their impact (Table 2).

Table 2 Estimation of the dynamics of the influence of factors on the choice of money transfer channel

Factors	Change of influence			Weighted average
	much stronger – 2	to intensify – 1	will not change – 0	
	number of expert answers			
Accessibility	10	3	3	1,4375
Geography	6	5	5	1,0625
A set of possible currencies for the money transfers	1	3	12	0,3125
Reliability of the transfer channel	2	4	10	0,5
Commission for money transfer	3	2	11	0,5
Velocity of money transmission	7	5	4	1,1875
Time to transfer money	4	5	7	0,8125

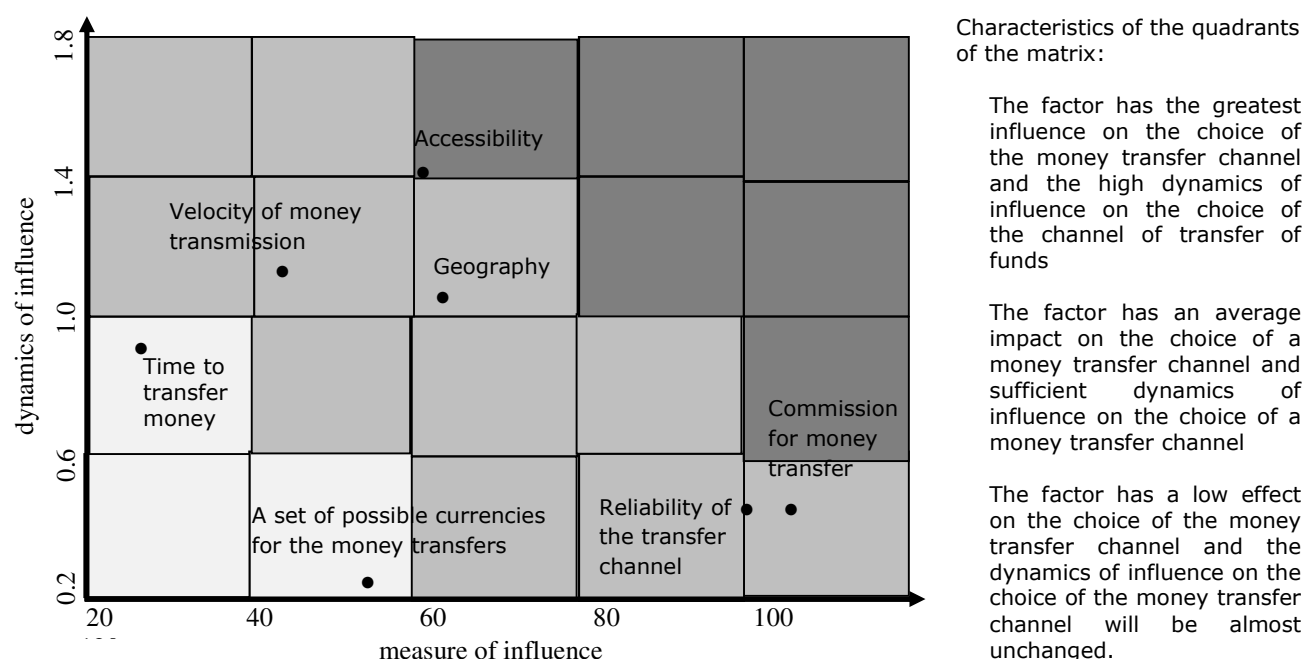
Source: calculated by the authors

In order to obtain a generalized vision, it is expedient to present the calculated results by the degree of influence and dynamics on the matrix (Figure 7).

According to the placement of factors on the matrix, banking institutions need to maintain a high level of transferability and consider possible ways to reduce their own share in the commission for transfers. These factors are most important despite low dynamics. One way is the development of its own money transfer system, such as Welsend (UkrGasBank), PrivatMoney (PJSC CB PrivatBank), IBOX MONEY TRANSFER (PJSC Ai-Box Bank)) payment system ("TYME"), organized by a non-banking institution, which allows it to manage independently the commission for the money transfer, and to be independent from external agents.

At present, the payment system S.W.I.F.T is more widespread (Society for Worldwide Interbank Financial Telecommunications), which allows to make transfers in foreign currency to any country in the world for the benefit of individuals and legal entities in the following currencies: USD (USD), Euro (EUR), GBP (British Pound) Swiss Franc (CHF), Russian Ruble (RUB).

Figure 7 Matrix of Distribution of Factors which Influenced the Choice of the Channel of Money Transfers



Source: calculated by the authors

The most important factor is accessibility, because it has the highest level of dynamics, indicating the need of consumers of this service in the maximum possible choice of the existing channels of money transfer presented in the bank, which also allows access to currencies within each channel. The last factor that requires improvement is the need to expand geography, which is due to recent changes in the foreign policy of the state. Taking into account the insufficient level of labour remuneration in Ukraine, the issue of migration of labour resources, remains rather urgent problem, and citizens are trying to find work in different countries of the world, which becomes an objective reason for the need to expand the geography of remittances.

3 Conclusions

We analyzed the dynamics of migration processes and structure of Ukrainian migrants. As a result, it is determined that during 2008-2017 Ukraine had a positive migration balance, indicating its potential attractiveness for foreign migrants. The most attractive for Ukrainians is Russia and Poland.

The Pearson correlation coefficient (-0.63) indicated a marked inverse nexus between GDP and migration processes, which shows the negative impact of migration on the level of economic development of the country and the financial system.

The constructed regression model of the relationship between migrants and money transfers proved the hypothesis of low confidence of migrants to the banking system and confirmed the need to find ways to increase remittances through official channels. Differences in the statistical significance of the constructed models indicated that the major part of transfers is carried out through informal channels. This tendency has a negative effect on the accumulation of funds in the financial sector, which could not work for the development of the economy

We aim to expand our research in the future to contain more years and possibly, to investigate instruments for the development of the international money transfer market in Ukraine in conjunction with migration processes, on both macro level (state level) and at micro level (level of financial institution).

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