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## MIGRATION IN THE NORTH AND THE SOUTH CAPITALS OF KAZAKHSTAN: THEORY, FACTORS AND ECONOMETRIC ANALYSIS

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**Abstract.** *The article reveals the theoretical positions that influenced the development of migration processes in the Northern and the Southern capitals of Kazakhstan during 2001-2021. The novelty of the work lies in the comparative analysis of the main causes or factors that influenced migration processes in the both capitals of the country. As part of the mathematical formalization of the social attractiveness of the immigration city, the Social Attractiveness Index has been developed and proposed for use. The main tool of research and analysis was econometric data analysis based on Pooled OLS model using the STATA program.*

*As a result, conclusions were drawn that an important factor immigration to the Northern capital was the geographical factor or the close distance of the city of Karaganda. An important factor immigration to the Southern capital was a relatively high index of attractiveness of social infrastructure or the presence of a more numerous and developed educational infrastructure (schools, universities, colleges and healthcare systems (medical institutions, hospitals)).*

**Key words:** *immigration, Northern capital, Southern capital, Attractiveness index.*

**Introduction.** With the acquisition of independence in 1991, Kazakhstan moved its capital from Almaty to Akmola, which was soon, renamed Astana. Following the example of some countries, these cities began to be perceived as the Southern (Almaty) and the Northern (Astana) capitals of the state.

It should be noted that the timing of the relocation of the new capital was not the most favorable. With independence, Kazakhstan in the 90s began to transfer the planned Soviet economy to a market structure. During these years Kazakhstan's economy was in severe crisis. For example, inflation in these years reached almost 2960.8% in 1992, 2265.0% in 1993 and 1258.3% in 1994. Due to the economic crisis, almost half million or 477.068 people left or emigrated from the country in 1994. It was the highest peak of emigration for the entire period of development of Kazakhstan.

In order to solve negative problems with high emigration from the country, the government pursued a special immigration policy. Following the example of such states as Germany and Israel, it began to stimulate the return of former citizens of the country who left the country during the period of Stalinist political repressions. In this context, various laws and documents were adopted that provided various benefits for relocation and adaptation.

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Despite the fact that upon arrival these migrants had been allocated special regions to live in, over time they changed their place of residence and moved to those regions where they felt more comfortable. Many of them moved to cities and, in particular, to the Northern and Southern capitals of the country. Movement to the cities was also observed among the local population living in villages, towns, and single-industry towns that had no prospects for further development.

In spite that the country's Parliament officially decided to relocate the capital in 1994, its actual relocation began in 1997. It was also an unfavorable period. As it is known, during this period in the world, in particular in 1998, the global financial crisis erupted. This crisis also had a negative impact in Kazakhstan. In this regard, the country was faced not only with the problem of relocating its capital, but also with emigration. Due to the financial and economic crisis of 1998, the largest number of people emigrated from the country.

The picture began to change dramatically with the beginning of the new millennium when the economy of Kazakhstan quickly expanded and people were more transformed. It should be noted that in 2000, the European Union, and in 2002, the United States, recognized Kazakhstan as the first country which transformed Soviet planned economy into a free market.

With the economic growth, the migration processes have been taking place with certain character and directions. In particular, the country began to experience intensive urbanization, urban population growth, and especially in the Northern and Southern capitals of the country.

It should be noted that during the 2001-2021 years the migration processes in both capitals were consequences of influence of different factors

**Main provision.** The paper analyzes the main causes of migration to the cities which have almost identical economic attractiveness but different peculiarities. Among these peculiarities are social infrastructure, crime situation, ethnic issues. On the base of theories, the paper presents the module of group of factors of migration. In systematic form these factors and variables are pictured. As exploratory research the paper includes two hypotheses and in conclusion explains results of research from these points of view

**Research methodology.** This paper reflects analysis of immigration process in the context of immigration of people to two cities. The peculiarity or novelty of the research is that these two cities are not casual cities. Both cities have a lot of positive factors to attract people as places of destination, Among different factors the paper underlines importance of economic, social, ethnic and geographic issues. These factors are theoretically justified by references to some scientific schools. With aim of correspondence and comparability of data to each other the article analyzes official secondary data. Data cover more than 20 years or period of one generation.

Econometric analysis of data is performed with STATA software with application of Pooled OLS models.

**Literature review.** *Theoretical foundations and main factors of migration.* In order to gain a deeper and clearer understanding of the factors of migration related to the migration processes in both capitals, we will reveal their theoretical foundations.

First of all, according to the main provisions of the theory of development of the dual economy [1], modern sectors of the economy, in particular, industry, urban construction, and the service sector, can expand at the expense of the traditional agricultural sector, in which labor productivity is low and its wages are extremely low. People migrate from traditional sectors of the economy to sectors with higher wages in the oil and gas industries.

Since the supply of labor in the agricultural sector is usually high, hence wages remain low and are the basis for the extensive development of this sector of production. Using the growing opportunities from the increasing demand for labor in modern sectors of the economy,



which usually arise in modern cities, migration creates a leverage effect that is economically beneficial to both the city and the village.

This theoretical position explains to some extent the main reasons for population migration from villages to cities, from regions with a larger share of the agricultural sector to industrial centers. In this regard, it should be noted that in Kazakhstan there is significant potential for internal migration from agricultural regions to industrial centers and, in particular, to North (Astana) and South (Almaty) capitals.

In order to create the competitiveness of agricultural products, with the introduction of new technologies into this industry that reduce the labor intensity of products, the demand in the labor market in Kazakhstan's agriculture will, one way or another, decrease. Based on this, it is obvious that employment in rural areas and, accordingly, the rural population will decline. This will be an important reason for the further increase in migration flow villages to cities and, in particular, to Astana and Almaty.

Noting the theoretical foundations of the study of migration in Astana and Almaty, it should be noted that in the 1990s a theory appeared that explains the main motives for migration - the theory of migration networks. The author of this theory, Massey [2], defines a migration network as a composition of interpersonal relationships in which migrants interact with their families, friends, and compatriots abroad. Communication covers information exchange, financial assistance, job assistance, and other forms of support. This interaction facilitates migration, reducing the costs and risks associated with it.

The migration network establishes certain channels, giving a significant effect from migration to the persons participating in it. Due to the fact that migration, by its nature, is constantly increasing, the migration network is becoming denser and more ramified, thus providing migrants with a wider choice of migration destinations and opportunities. Some networks enable migrants to pay for their trip, find work and even a place to live.

In this case we would like to note that in Kazakhstan ethnic migration network is very developed. It should be noted that with independence many European nationalities like Germans, Poland, Ukrainians, Russians etc. emigrated from the country. At present time, more than 100 nationalities live in Kazakhstan. Some of them have own schools, theatres, newspapers etc. And many of them move to the cities under frame of their own hidden unofficial migration networks.

As we mentioned in our book [3], it is important to take into consideration, from the space and time point of view, Gravity Theory. Analysis of migration in Astana and Almaty underlined importance of this theory again.

The main theoretical foundation of this theory is gravity forces. Some works [4] note that the gravity force of economic relation [5] and migration of people [6-8] depends on the number of people living in areas  $P_1$  and  $P_2$  and the distance  $D$  between these areas, which can be reflected in the following form:

$$G = \frac{P_1 * P_2}{D} \quad (1)$$

Where  $G$  is the force of gravity;

$P_1$  – population of  $P_1$  area

$P_2$  – population of  $P_2$  area

$D$  – distance between the areas  $P_1$  and  $P_2$ .



Among the theoretical foundations for studying migration flows in Astana and Almaty, it is necessary to note the theory of economic development [9] (Ranis G, and Fey). According to this theory, at the macro level, migration is the result of an imbalance in the geographical distribution of labor and capital. Migrants will move to places where jobs, wages and other economic factors are more attractive. Migrants choose migration destinations where the benefit network is expected to be greatest.

Additionally, to existing theoretical approaches of migration analysis we would like to note importance of social infrastructure. At present time with development of living standard of people the questions of getting better education, high quality of health care, different cultural opportunities etc. has become more important for a migrant than economic factors. Infrastructure of education, health care etc. in the place of destination are important questions for migrants and it was important cause of migration to both Astana and Almaty.

From this point of view, as one innovation to the theoretical part we could express the Index of Social Attractiveness (ISA) of place of destination by such formula:

$$ISA = \frac{H+E}{Cr} \quad (2)$$

Where, ISA - index of social attractiveness in the place of destination;

H - Health infrastructure (number of hospitals, policlinics etc.) in the place of destination;

E – Educational infrastructure (number of schools, colleges, universities etc.) in the place of destination;

Cr – Crime events.

This formula is one of the first attempt to express the Index of Social Attractiveness (ISA) of the destination. We do not consider it reflects the final version and completely all variables are included here. We could add here cultural, ecological etc. issues. We need to note, in the age of digitalization or creation of Artificial Intelligence when we try to express any social economic phenomena by different formula or equations such attempts are very relevant. From our point of view implementation of the ISA Index elucidates the causes of migration to both capitals. Like above mentioned theories the theory of Attractiveness of Social Infrastructure and ISA indexes could be important factors and indicator of scientific analysis of the migration process.

An important factor which reflects attractiveness of the place of destination is criminal situation. High crime in the place of destination plays a negative role and it decreases the ISA index as we can see in the above formula.

We do not suggest that the proposed index is not without flaws, but hold that it offers a frame for furthering discussion and development of migration theory. Like Human Development Index we hope that expressed Theory of Attractiveness of Social Infrastructure and ISA index would be good cause and platform of future discussion and polemic among scholars who study migration.

**Results.** *Conceptualization and Operationalization of the Main factors and Their Variables.* Based on the above theoretical principles, we classify and systematize the main factors determining the development of migration processes in Astana and Almaty for the period 2001-2021. In particular, we identify the main categories, concepts and specific indicators that reflect these factors. Finally, we construct the module of main factors which define migration processes of these cities.



Thus, first of all, based on the above-mentioned theory of the development of a dual economy (W. Lewis), we note that in the system of economic factors influencing the development of migration processes is wages. But there are real wages and nominal wages.

According to the methodological provisions of the Agency of the Republic of Kazakhstan on Statistics [10], the real wage is considered as the main indicator of the purchasing power of employees and as an equivalent to the level of their income. It should be noted that the resolution adopted at the 8th International Conference of Labor Statisticians (ILO, 1954) provides the following concept of real wage: – these are goods and services that can be purchased with wage or that are issued as wage.

For the purpose of a broader analysis of the connection between wage and migration processes in both capitals, we note that their connection can be manifested through such indicators as the nominal wage.

Based on the above, according to the neoclassical theory of migration, migration is the result of an imbalance in the geographical distribution of labor and capital. Thus, operationalization of this theoretical concept can be reflected by such economic indicators as unemployment.

In Kazakhstan in most cases unemployment is reflected by unemployment rate or number of unemployed persons. As the most specific indicators characterizing the certain state of the labor market, they can in some degree correlate with emigration and immigration of the population of both cities. The ability to quickly find work, and especially in new capital could be important reason for the high immigration to the northern capital and emigration from the southern one.

As an indicator of unemployment, we have been based on the methodology adopted by the International Labor Organization and, in particular, we consider unemployed people those persons who during the survey period (mostly within a month) were looking for work but could not find it.

Another indicator could be reflected by investment capital. With construction of north capital, a lot of investments were used there and as consequences many workers migrated temporary or permanently to Astana. But strong investment policy we could observe in Almaty too. Huge number of populations in Almaty any way requested huge volume of investment into construction and existing social infrastructure. A fairly important economic factor influencing migration processes is the economic potential of cities. The main indicator reflecting this factor is the Gross Domestic Product.

According to the methodological provisions of statistics, the Gross Regional Product is an indicator identical to the Gross Domestic Product in its economic content, thus Gross Regional Product of Astana and Almaty reflect the value of final goods and services produced by residents of both capitals

As it is mentioned above, among theoretical foundations the migration network is defined as a composition of interpersonal relationships in which migrants interact with their families, friends, and compatriots [11]. In our opinion in many cases these interactions are expressed through the national ethnic factor. Same languages, traditions, norms of behavior create in the cities some specific living regions. An example would be such regions as Chinatowns in USA or Europe.

In Kazakhstan, due to high emigration, different laws were adopted encouraging the immigration of former compatriots from other countries. These migrants are mainly represented by the Kazakh ethnic group. Upon arrival in Kazakhstan, in most cases they are highly mobile and move to various regions of the country, including both capitals. Based on this, the ethical





factor (number of Kazakh) has been included as indicator determining migration flows in both capitals.

According to Gravity Theory the main flow of migration is between regions which have geographically short distance. Thus, scientific and practical implementation of this geographical factor includes such indicators as number of migrants moved from the closest city. One of the closest cities to Astana is Karaganda. From this point of view the number of migrants from these cities have been included as main indicators reflecting Gravity Theory.

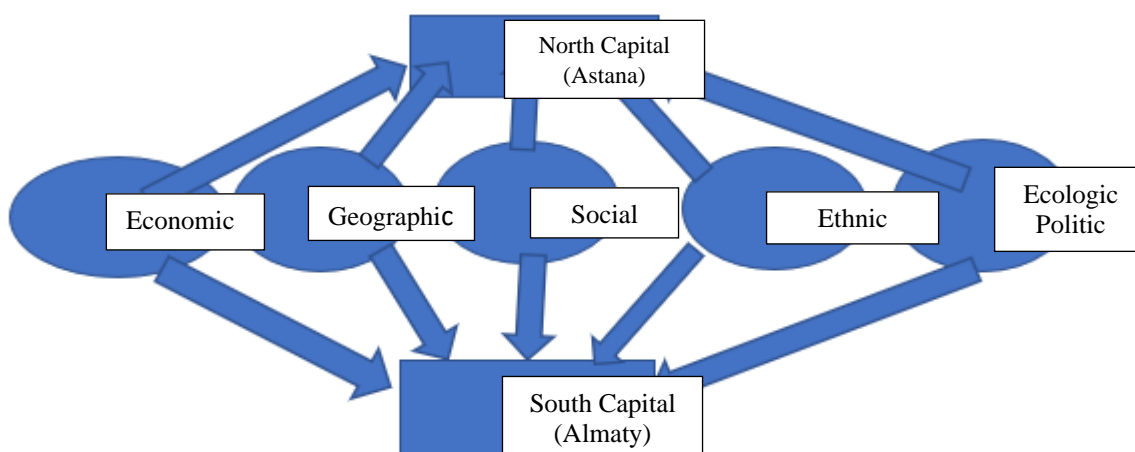
As it was noted above the social infrastructure of place of destination plays very important role in the sphere migration. Astana and Almaty from this point of view have different positions. Almaty as old capital in comparison to Astana at the time of relocation had much more developed social infrastructure. People migrate to the places where they find more schools, colleges, universities and hospitals. And it was the main factors why many people preferred to live in Almaty in contrast to Astana.

To the number of social indicators, we could add crime issues. People migrate to the places where level of crime situation is low. In the northern and southern capitals of the country, despite more enhanced measures to protect public order, crimes also occur, and they are different in severity.

According to government statistics, these crimes are divided into minor crimes, moderate crimes, serious crimes and especially serious crimes. To identify any connection between migration process and crimes occurring in both cities, we include into our analysis such indicator as number of registered crimes in general for the year.

Among the factors determining migration flows, it is necessary to note not only economic factor. For example, relocation of the capital from the south to the north, closer to the Russian Federation, was associated not only with the formation of a EuroAsia Economic Union but also with ecological, political motives. However, these factors lie outside the scope of our research and require a more interdisciplinary political-economic study and analysis.

Finally, we have identified the following module of group of factors which had been defining migration processes in both capitals (Figure 1).



**Figure 1** - Factors of migration to both capitals



In the table 1 we can see variables or indicators which reflect four factors of migration to the North (Astana) and South (Almaty) capitals.

**Table 1** - Four factors of migration to the North and South capitals

Indicators	Economic	Geographic	Social	Ethnic
Wage	+			
Number of Unemployed	+			
GRP	+			
Number of Qazaqs				+
Migrants from Karaganda		+		
Health (number of hospitals)			+	
Education (number of schools, colleges, universities etc.)			+	
Crimes (number registered)			+	
Investment	+			

Of course, the systematization and classification presented in the table are not final and variables do not strictly belong to those factors where they have been assigned to. In some cases, some variables could reflect not only one but other factors too. For example, emigration from Karaganda can express not only by geographic but economic factor too.

*Hypothesis construction.* From the theoretical point of view and main factors which were presented above we have constructed next hypotheses:

H1. Economic factors were main causes of migration to both capitals

H2. Gravity forces of migration or geographic factors played important role between Karaganda and Astana.

H3. Social factors of migration played stronger role for immigration to Almaty

*Econometric analysis of migration in both capitals.*

Certainly, econometric analysis includes special procedures which confirm the reliability and validity of results. We have different methods of econometric analysis and it is important to use those methods which allow high reliable results.

Among different methods of econometric analysis, the panel data analysis is most appropriate one which allows cross-sectional and time series analysis of different entities. This method is a good tool of analysis of main factors of migration in North and South capitals of Kazakhstan during more than 20 years or during one generation. But panel data analysis does not allow to get more deep information about degree of influence of independent variables on dependent variables separately for each entity. On the base of panel data analysis we can get coefficient of dummy variables which reflect mostly the intersect coefficient.

From these points of view, we have analyzed migration processes in both capitals on the base Pooled OLS Models separately.

*Immigration to Astana.*

The process of econometric analysis of migration to Astana has included such steps as multiple liner regression of all variables reflected in the table 1. These variables were tested by normality tests (sktest/jb test) and VIF test. After deleting some variables with high multicollinearity and checking the rest with Homoscedasticity indicators, Finally, we received the follow results of multiple liner regression (Table 2).



**Table 2 - Results of multiple liner regression with Astana**

Immigrants	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
Qazaqs	-.377	.697	-0.54	.596	-1.854	1.101	
Migrs From Karaganda	23.592	4.129	5.71	0	14.839	32.345	**
Crime Events	.988	.379	2.61	.019	.185	1.791	*
Unemployed	8.406	3.09	2.72	.015	1.855	14.958	*
Constant	-202973.9	67511.59	-3.01	.008	-346092.2	-59855.8	**
Mean dependent var		66477.524		SD dependent var		46105.615	
R-squared		0.813		Number of obs		21	
F-test		17.374		Prob > F		0.000	
Akaike crit. (AIC)		484.402		Bayesian crit. (BIC)		489.625	
Note: *** $p < .01$ , ** $p < .05$ , * $p < .1$							

On the base of this table, we could conclude that immigration to Astana was positively linked with unemployment, crime and migration from Karaganda. We could note that the positive link of unemployment with immigration contradicts economic logic. But constant growth of number of immigrants as consequences could lead to unemployment. Thus, we can conclude that growth in one unemployed person was linked with arriving of 8 immigrants

Same contradiction and explanation we can see in case of analysis of crimes and number of immigrants. We can conclude that one crime event was linked with one arrived immigrant.

Another interesting result of calculation is that one unit of migration was linked with 24 migrants from Karaganda. Actually, this finding confirms Gravity Model Theory and our hypothesis H2 . Gravity forces of migration or geographic factors played important role between Karaganda and Astana.

#### *Immigration to Almaty.*

In comparison to Astana our econometric analysis of migration to the South capital (Almaty) shows different results.

After econometric analysis which have included all steps which were performed with Astana, finally, we received the follow table 3 of multiple liner regression.

**Table 3 - Results of multiple liner regression with Almaty**

Immigrants	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
SchoolsHospitals	94.775	15.809	6.00	0	61.421	128.128	**
Qazaqs	.72	.388	1.86	.081	-.097	1.538	*
MigrsFromKaraganda~y	-18.956	16.328	-1.16	.262	-53.404	15.493	
Constant	4514.234	7637.809	0.59	.562	-11600.135	20628.602	
Mean dependent var		78725.857		SD dependent var		29975.570	
R-squared		0.876		Number of obs		21	
F-test		40.072		Prob > F		0.000	
Akaike crit. (AIC)		455.657		Bayesian crit. (BIC)		459.836	
Note: *** $p < .01$ , ** $p < .05$ , * $p < .1$							

According to the multiple liner regression results we can conclude that the most important factor of immigration to Almaty was social factors. Developed infrastructure or many schools, colleges, universities and hospitals were one of the main causes of immigration to Almaty. As we can see in the table 12 P-value of the Schools Hospital is significant (P-value =





0) and thus we can conclude that the increasing number of Schools or Hospitals in one unit were linked with increasing 95 migrants. This finding confirms H3 hypothesis that social factors of migration played stronger role for immigration to Almaty.

**Conclusion.** Results of econometric analysis are confirmed by real data and reflected in the table 4.

**Table 4** - Characteristics of North and South capital of Kazakhstan in 2001 and 2021years

Indicators	North Capital (Astana)		South Capital (Almaty)	
	2001	2021	2001	2021
Population, thsd. persons	440.2	1184.4	1128.8	1977.3
GDP, mln. tenge	204425.9	8923711.8	570867.2	15000060.4
Educational organizations, units	128	570	513	1300
Number of hospitals, units	18	37	52	91
Qazaq' migrants, persons	6965	24791	10240	21717
Migrants from Karaganda city, persons	545	4728	600	1385
Nominal wage, tenge	22717	344691	23386	295985
Number of unemployed, persons	18300	28100	60000	53500
Crime, events	3985	15693	19394	27722

During more than 20 years or one generation the number of people in North capital increased from 440.2 thousand people till 1184.4 thsd. people or in 2.7 times. At the same time in South capital from 1128.8 thousand people till 1977 thousand. people or 1.8 times.

During these time GRP in Astana increased from 204425.9 mln. tenge in 2001 year till 8923711.8 mln. tenge in 2021 year or in 43.7 times. At the same time in Almaty from 570867.2 8 mln. tenge till 15000060.4 8 mln. tenge or in 26.3 times respectively.

Same changes we can see in the sphere of education and health. If in the sphere of education, the total number of schools, colleges and universities in the North capital increased from 128 till 570 units or in 4.5 times, but in the South capital they increased from 128 till 570 units or only in 2.5 times. In the sphere of health care, the total number of hospitals increased in the North capital from 19 units till 37 units or in 1.9 times but in the South capital from 52 units till 91 units or only in 1.8 times.

From the ethnic point of view, we can see that number of Qazaq' migrants in the South capital exceed their number in the North capital. One important factor which can explain this issue is that in the South regions of Kazakhstan number of Qazaq population exceed their number in the North regions. It is important to note that in North capital of Kazakhstan temps of growth of qazaq population was very high, if in 2001 number of Qazaq migrants were 6965 people but in 2021 their number was 24791 people or had been increased in 3.6 times.

This table confirms Gravity Theory which was reflected above and was approved by econometric analysis. Karaganda city is close city to North capital (215.4 km) and is very far from South capital (1003.6 km.). As we can see in the table the number of migrants who migrated from Karaganda to Astana exceed the number of migrants who migrated to Almaty, if in 2001 their number was almost same but in 2021 the number of migrants from Karaganda to Astana exceeded their number from Karaganda to Almaty in 3.4 times.

Also, we can see interesting picture in the sphere of nominal wage analysis. As we can see in 2021 year the wage in Astana exceeded wage in Almaty but in 2001 year we could see opposite picture. Thus, the North capital gradually occupy the position of the highly paid city and attracted more people. It is again the confirmation of H1 hypothesis that economic factors were main causes of migration to both capitals.



One negative element of North capital development is increasing the number of criminal events, as we can see in the table their number increased from 3985 events in 2001 till 15693 events in 2021 year or 3.9 times. But if we make analysis and make comparison with population growth we should note it is consequences of population growth. By this finding we confirm our finding which were expressed in econometric analysis.

As we noticed in theoretical part and checked by econometric analysis the social infrastructure of the city is very important factor of attractiveness for immigrants. Results of econometric analysis have confirmed it and we can see it in the table 14. In 2001 and in 2021 the number of schools and hospitals in Almaty exceed their number in Astana.

Of course, it was clear. Almaty as old capital had advantages in this issue. But as it was reflected in the formula of ISA index criminal situation plays negative role and because of it in some case ISA index is higher in the city of with lower number of schools, colleges, universities, hospitals etc. As confirmation we can see it in the table 5.

**Table 5** – Index of Social Attractiveness of Astana and Almaty

Indicators	North Capital (Astana)		South Capital (Almaty)	
	2001	2021	2001	2021
Population, thsd. persons	440.2	1184.4	1128.8	1977.3
Educational organizations, units	128	570	513	1300
Number of hospitals, units	18	37	52	91
Crime events	3985	15693	19394	27722
ISA*	0.036637	0.03868	0.029133	0.050177

Note: \* Index ISA was calculated in according to the formula 2.

From the table 14 we can see that in 2001-year ISA index was higher in Astana (0.036637) in comparison to Almaty (0.029133) in spite of a smaller number of educational organization and hospitals. One of causes of it was high number of criminal events in Almaty relative to Astana. In this case we need to note that in 2001 population in Astana (440.2 thousand. people) was less in comparison to Almaty (1128,8 thousand. people) and Astana as new capital of Kazakhstan attracted a lot of attention including crime security.

The comments and short discreet analysis of main characteristics of North and South capitals reflected in the tables 13 and 14 do not explain peculiarities of migration processes dynamic. Dynamic of development and especially the degree of influence in the form of coefficients of regression we can get on the base econometric analyses.

Finally, on the base of our research and analysis we can conclude that the one of the main factors of migration to the North capital (Astana) was geographic factor. Because of short distance many migrants emigrated from Karaganda to Astana. It was clear confirmation and reflection of provisions of Gravity Theory.

Main factor of immigration to South capital (Almaty) was social factor. Many migrants (mostly qazaqs) immigrated to Almaty because of more developed education and health infrastructure and migration network. It was clear confirmation of theoretical provisions which were introduced above.



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## ҚАЗАҚСТАННЫҢ СОЛТҮСТІК ЖӘНЕ ОҢТҮСТІК АСТАНАЛАРЫНДАҒЫ КӨШІ-ҚОН: ТЕОРИЯ, ФАКТОРЛАР ЖӘНЕ ЭКОНОМЕТРИЯЛЫҚ ТАЛДАУ

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**Түйін.** Мақалада 2001-2021 жылдар аралығында Қазақстанның Солтүстік және Оңтүстік астаналарындағы көші-қон процестерінің дамуына әсер еткен теориялық ұстанымдар ашылған. Жұмыстың жаңалығы еліміздің екі астанасындағы көші-қон процестеріне әсер еткен негізгі себептерді немесе факторларды салыстырмалы талдауда жатыр. Иммиграция қаланың әлеуметтік тартымдылығын математикалық формалдау шеңберінде Әлеуметтік тартымдылық индексі әзірленіп, пайдалануға ұсынылды.

Зерттеу мен талдаудың негізгі құралы STATA компьютерлік бағдарламасын пайдалана отырып, Pooled OLS үлгілеріне негізделген эконометрикалық деректерді талдау болды. Нәтижесінде Солтүстік астанаға көшіп келудің маңызды факторы географиялық фактор немесе Қарағанды қаласының жақын қашықтығы болды деген қорытынды жасалды. Оңтүстік астанаға иммиграцияның маңызды факторы әлеуметтік инфрақұрылым тартымдылығының салыстырмалы жоғары көрсеткіші немесе неғұрлым көп және дамыған білім беру инфрақұрылымының болуы (мектептер, университеттер, колледждер және денсаулық сақтау жүйесі (медициналық мекемелер, ауруханалар)) болды.

**Түйін сөздер:** иммиграция, Солтүстік астана, Оңтүстік астана, Тартымдылық индексі.

## МИГРАЦИЯ В СЕВЕРНОЙ И ЮЖНОЙ СТОЛИЦЕ КАЗАХСТАНА: ТЕОРИЯ, ФАКТОРЫ И ЭКОНОМЕТРИЧЕСКИЙ АНАЛИЗ

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**Абстракт.** В статье раскрываются теоретические положения, повлиявшие на развитие миграционных процессов в северной и южной столицах Казахстана в 2001-2021 гг. Новизна работы заключается в сравнительном анализе основных причин или факторов, повлиявших на миграционные процессы в обеих столицах страны. В рамках математической формализации социальной привлекательности иммиграционного города разработан и предложен к использованию Индекс социальной привлекательности.

Основным инструментом исследования и анализа стал эконометрический анализ данных на основе Pooled OLS модели с использованием компьютерной программы STATA. В результате были сделаны выводы, что важным фактором иммиграции в Северную столицу является географический фактор или близость города Караганды. Важным фактором иммиграции в южную столицу стал относительно высокий показатель привлекательности социальной инфраструктуры или наличие более многочисленной и развитой образовательной инфраструктуры (школ, университетов, колледжей) и систем здравоохранения (медицинских учреждений, больницы).

**Ключевые слова:** иммиграция, Северная столица, Южная столица, индекс привлекательности.

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