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BRAIN DRAIN OF KAZAKHSTAN IN 1999-2008

Master Thesis

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Prague 2010 Thesis Supervisor: RNDr. E.Janska, PhD.

I declare that this thesis is my own work under the supervision of RNDr. Eva Janska. Where other sources of information have been used, they have been acknowledged.

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Brain drain of Kazakhstan in 1999-2008

Abstract

The objective of this study is to analyze and evaluate the main trends and development of brain drain process in Kazakhstan for period from 1999 to 2008. Several key topics are discussed in this work: the economic and social context of skilled migration: employment patterns of highly skilled persons in Kazakhstan; the role of educational migration. In the first part of the work was given general patterns of brain drain in the world and overview of relevant literature. In the second part were analyzed trends of highly skilled migration in Kazakhstan.

The data are taken from censuses and other relevant data sources. The data collection is provided by the Agency of Statistics of the Republic of Kazakhstan.

Keywords: brain drain, migration, socio-economical situation, remittances, oralmans, education.

CONTENTS

LIST OF ABBREVIATIONS

ASNMR	Age-Specific Net Migration Rate
CIS	Commonwealth of Independent States
CNMR	Crude Net Migration Rate
FDI	Foreign Direct Investment
GALLUP	Global Atmospheric Launch & Leave Upper Air Platform
GDP	Gross Domestic Product
GMR	Gross Migration Rate
IOM	International Organization for Migration
Kazakh SSR	Kazakh Soviet Socialist Republic
OECD	Organization for Economic Co-operation and Development
R&D	Research and Development
RK	Republic of Kazakhstan
S&T	Science and Technology
The USSR	The United Soviet Socialist Republics
UNECE	United Nations Economic Commission for Europe
UNET	Unified National Examination Test
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USA	United States of America
WHO	World Health Organization

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Chapter 1

Introduction

"And what for I, with my brains and talent, was born in Russia?"
(Pushkin, Alexander 1829)

This work provides an overview of the literature on the brain drain but it also adds findings from some recent empirical work that attempts to address some of the main issues. This work will address to migration of highly skilled people of Kazakhstan in the period from 1999 to the present time. It will provide definitions of the problem, research questions and explanations related to the migration trends in the Republic of Kazakhstan. The phenomenon of brain drain in Kazakhstan is poorly understood and analyzed. Therefore, this work can be considered as one of the pioneers in this field of migration.

1.1 Problem definition

The democratization and liberalization of the social life and "open society" policy pursued by USSR from the late 80's promoted sharp growth of emigration from the country. The recent social and economic transformations in Kazakhstan led to the increasing outflow of scientists, lecturers, highly qualified professionals from intellectual spheres of employment either to other fields of work or to other countries. This has caused the degradation of scientific and intellectual resources, a weakening of the competitiveness of the country in areas of highly technology, the undermining of the educational basis of highly skilled specialists for scientific, academic sectors and culture. With the collapse of the USSR the intellectual emigration from Kazakhstan as one of the important elements of migratory process in general has taken the decisive role in forming the population development by components and become a serious issue of nowadays in Kazakhstan.

The main losses in the result of the brain drain in Kazakhstan are leadership, complementary human capital and research tradition, resources spent on emigrants' education.

What are new models for the behavior of scientists in accordance with the present state of Kazakhstan's science? There are many unanswered questions concerning the potential intellectual migration from Kazakhstan and the perspective of this movement.

1.2 Research goals, objectives and questions

The main aim of the study is to analyze and evaluate the main trends and development of brain drain process in Kazakhstan. The aims are:

- To study the loss of highly skilled people from Kazakhstan;
- To distinguish between educated people who are more or less inclined to emigrate according to professional areas of interest, level of qualification, and to collect information about working conditions and other reasons for leaving.

The **object** of the study is to analyze the brain drain in Kazakhstan while the research **subject** shall be defined as the demographic analysis of brain drain and its influencing factors in the Republic of Kazakhstan. Implementation of the goals and objectives involves the following **questions** into the research and aims to answer as follows:

- What are the determinants of the migration of the highly skilled workers and the effects on destination?
- Is it real to brain gain of oralmans[1] to replace brain drain of Kazakhstan?
- Is brain drain still a problem in the Kazakhstan's society?
- Are there effective measures to ensure that skilled resources in the future not leave the country?

This thesis assumes the following hypothesis relating the "brain drain" phenomena:

- Kazakhstan's economy is heavily dependent on external factors. Such as, the prices in the world of minerals and raw materials. Brain drain depends on the social welfare and prosperity of the country. Recently, social and economic situation was more complicated, and it has been certainly affecting to the brain drain process in particular.

1.3 Structure of the thesis

The work is structured as follows. Chapter 1 describes problem definition, research goals, questions and hypothesis. Chapter 2 includes an overview of relevant literature and information on data sources. General theoretical background, basic terminology, the determinants of the brain drain, early models of brain drain, methods and approaches, world trends on the brain drain, especially in OECD, CIS countries and Russia are presented in Chapter 3. Chapter 4 of this paper provides general characteristics of the

[1] Oralmans (English: ethnic Kazakh returnees) are a special group of immigrants. They are 'foreign citizens or stateless people of the Kazakh ethnicity, who permanently resided outside Kazakhstan on the date of gaining sovereignty by the Republic of Kazakhstan and arrived in Kazakhstan for the purpose of permanent residence' (Agency of Statistics of the Republic of Kazakhstan, 2001).

brain drain in Kazakhstan, its history and main analytical part of this study. In the Chapter 5 of the thesis the main findings are recapitulated and discussed.

Chapter 2

Literature and data sources

2.1 Overview of literature

The traditional brain drain literature has viewed the exodus of human capital as something of a curse for developing countries, and has considered policies to counter it or reduce its negative impact on the emigration countries, including the taxation of migrants' income abroad (Bhagwati and Hamada 1976, Bhagwati and Wilson, 1989). This literature has recognized that the brain drain does confer certain benefits, including increased trade, remittances, knowledge, FDI (Lucas 2005), as well as the skills acquired by return migrants in the destination country.

A benefit not considered in the traditional brain drain literature is the brain drain induced "brain gain", a central feature of the "new brain drain" literature. Since a brain drain implies that a share of skilled individuals will migrate and earn a higher wage abroad, the new brain drain literature posits that:

- The brain drain raises the expected return on education;
- This induces additional investment in education (a brain gain);
- This may result in a "beneficial brain drain" or net brain drain, i.e. in a brain gain that is larger that the brain drain;
- A net brain gain raises welfare and growth.

The welfare implications of brain drain in earlier generation static models crucially depended on the assumptions made about wage setting. Once distortions such as a gap between social and private marginal product and a public subsidy for education, were introduced, a welfare loss for those who do not emigrate could result. Bhagwati and Hamada (1974) worked in general equilibrium and introduced distortions in the wage setting and in the financing of education.

These early generation models treat the demand side for emigrants as exogenous and have a range of assumptions regarding education costs. At their heart, lies the specification of the sending country's labour market: under wage rigidity, emigration tends to lower sending country employment with the distribution over sectors being contingent on relative wage setting and *ex ante* employment levels.

What were the empirical foundations for such models? With regard to wage differentials, the few extant (and generally biased) estimates of wage differentials across countries signal substantial wage gaps for most categories of skilled workers. Indeed, other evidence confirms that skilled workers systematically earn less – adjusted for purchasing power – in developing than in developed countries. A recent study of new immigrants to the USA, for example, finds that the average immigrant realized major earnings gains over their job abroad. For men this increase was 68 percent and 62 percent for women ("Today's Issues", Center for Population Research, USA, 2001). New immigrants who came primarily with work reasons experienced by far the largest increases in earnings.

In the early 1960s literature covering a wide range of topics related to the migration of highly skilled workers from less developed countries to developed countries started to emerge, in particular, with a focus on the impact on welfare for the economies experiencing a loss of skilled people.

Johnson (1965) states that "in the absence of any very persuasive evidence to the contrary there is no significant probability of world loss from the international migration of educated people". He argues that the world as a whole is negatively affected by *brain drain* only if the net social loss to less developed countries is greater than the gain to the migrant. However, a net social loss only occurs if the loss of externalities to the less developed countries is greater than the gain of externalities.

Grubel and Scott (1966a, 1966b) come to the same conclusion arguing that no loss to less developed countries is associated with *brain drain*. On the contrary they suggest that the emigration of highly skilled workers increases the nation's capital-labour ratio and thus raises the long-run average income in the home country. The potentially largest benefit to the home country arises from the research of scientists and engineers in the foreign country because of the accessibility of their results, which become public as soon as they are published. However, in their research Grubel and Scott ignored the redistribution effects of welfare (Weisbrod, 1966).

Godfrey (1970) raises criticisms similar to those of Grubel and Scott, arguing that more emphasis should be put on the average income rather than on a theoretical distribution of the total between individuals. He introduces the concept of compensation schemes to neutralise the negative effects of the *brain drain*. Furthermore, he proposes various solutions to reduce the *brain drain*, e.g. limiting the number of students studying abroad or making education so specific that it would be completely unacceptable to foreign employers. In his proposals he followed the argumentation of Myint (1968), who argued that the less internationally acceptable a country's qualifications, the lower the incidence of *brain drain*. Bhagwati (1972) even proposed the implementation of a supplementaryincome tax on those who migrate to the benefit of the source economy.

Watanabe (1969) published a comprehensive study on the topic of *brain drain*, and possible countermeasures against it. He argues that emigration on any substantial scale of highly educated and skilled labourers will negatively affect the welfare of the source economy by retarding its development. However, he also acknowledges that the *brain drain* is cause and effect of slow development rates thus implying that one possible solution to reduce the *brain drain* is to accelerate economic development in Less Developed Countries.

Bhagwati and Rodriguez (1975) conducted a detailed literature review on the theoretical analysis of the welfare effects of *brain drain* classifying the literature into contributions that deal with comparative-static or dynamic formulations and those that assume a perfectly competitive model or one with endogenous market or policy-imposed distortions.

Kwok and Leland (1982, 1984) as well and Katz and Stark (1984) put the emphasis on the asymmetric distribution of information about the skills of migrants. The receiving country has worse information about the abilities of migrants and will therefore set wages at the average perceived level of education of migrants. For this reason only people with skills below the average have an incentive to migrate.

Webb (1985) addresses the question of how *brain drain* influences the distribution of educational opportunities in less developed countries. The objectives of the government play an important role in his model. The government is either concerned with the efficiency of its education system or its endowment of educated labour. Migration will have a positive impact on the education "cash abundant" families and a negative impact on that of "cash constrained" families. By implementing appropriate public policies the effect of migration might become positive for both classes.

Gallup (1997) presents a survey of theoretical models of migration decision-making, including the gravity model, the two-sector model, family decision-making models, information and networks.

The literature on the *brain drain* phenomenon, because of the strong political bias involved in the subject and the inaccuracy of data, is bound to remain strongly influenced by specific case studies, by the lack of empirical and documented evidence and by the inadequate – partly biased - collection and retention of data.

These early literatures on the brain drain lacked any significant empirical component. There was no attempt at disaggregation beyond skilled-unskilled categories. Sectoral differences were ignored and there was no attempt to take the analysis to the level of the firm. Finally, there was little attention to heterogeneity between sending countries. The literature also arguably over-emphasized the dichotomy between those who emigrate and those who stay. Modern communications technology has had radical implications for the ways in which work can be done across space. For example, the recent growth in software activity has been striking for its high network content, linking firms and individuals in developing and developed countries without necessarily inducing migration or inducing only temporary mobility. Return migration can also be a significant source of positive effects. For example, Dos Santos and Postel-Vinay (2003) show that it is rational for some migrants to return having enhanced their human capital and that this may be associated with narrowing the technological gap between developed and developing countries.

Finally, it is also mentioning that positive consequences of a brain drain for the sending country could arise from changes in the terms of trade as the sending economy's output falls along with the decrease in its endowments. For example, Winters et al (2002) find these to be quite significant in the model of migration. Davis and Weinstein (2002) point out that if a country has a Hicks-neutral technical advantage, there will be incentives for all factors to migrate towards it. If such migration left relative

factor abundance unchanged, incumbent factors from that country would lose as their own physical marginal productivity would remain unchanged while the prices of their output fell.

2.2 Overview of relevant Kazakhstan's literature

Despite the fact that in Kazakhstan are several works devoted to migration process of Kazakhstan, in general we can say that works on migration in the context of brain drain are remaining to be investigated. Therefore, we may consider this diploma thesis as the pilot attempt in the study of brain drain phenomena in Kazakhstan.

Study on migration in Kazakhstan consists of three stages.

- The first stage: the second half of the nineteenth century and 20 years of the twentieth century. In this period, were published books such as: "Migrations in Russia since the liberation of the peasants" of I. Yamzin (Kiev, 1912), "Pre-war international and intercontinental migration in Russia and the USSR" of V. Obolensky (Moscow, 1928) and others.
- In the second stage (1930-1950 years) study of migration as well as other areas of science stops. In this period came the view that during the socialist migration is planned and there is no need to study it. In this connection, in ballot census years 1939 and 1959 did not include questions on migration.
- The third stage begins with the 1960's, with this period in the study of migration opens a new era. Proceedings of devoted to different aspects of migration such as advanced demographers V.I. Medkov, A. Kvasha, V. Iontsev, G. Vitkovskaya, N. Rimashevskaya, and others.

T. Zaslavskaya, M. Maslov, V. Perevedentseva (2005) devoted their working methods of sociological research on the socio-demographic processes.

In the paper of F. Bazanova "Formation and development of the structure of the population of the Kazakh Soviet Socialist Republic (national perspective)" considered Migration and national policy of the Soviet Union, as well as migration processes in the Kazakh SSR for the 1920-1980 years.

Development of the population studied by M. Tatimov and Zh. Aliyev (1999) in his work so called "Derbestigimiz demografiyada" ("Our indepence is in demography"). In the book "Demographic Processes of modern Kazakhstan" M. Asylbekov and V. Kozin discusses several aspects of the socio - demographic development of the Kazakhstan in the late 70's to late 90's.

In 1997 published research work on the political and legal problem of migration. This is "Forming an independent demographic and migration policy of the Kazakhstan" of M. Tatimov and M. Akshalova, there is provided methods for effective migration policy of sovereign Kazakhstan.

In the work of N. Masanov (2002) "The situation of ethnic minority in sovereign Kazakhstan" on the basis of a sociological survey conducted among ethnic groups such as Germans, Koreans, Uighurs analyzed the right of ethnic minority and Public Policy.

"Etnopolitichiskie processy v Respublike Kazakhstan" ("Ethno political processes in the Republic of Kazakhstan") of N. Romanova (1998) the ethno sociological processes in Kazakhstan discussed in the

political aspect. It emphasizes that the public migratory behavior is a major factor in the stability of society.

Work of G. Mendikulova “Istoricheskie sud’by kazakhskoi diaspory: Proishozhdenie I razvitie” (“Historical fate of the Kazakh Diaspora during XVI-XX centuries and the modern state”) (1997) studies the distribution of the Kazakh Diaspora in various countries, labor migration of the Kazakh Diaspora in the second half of the twentieth century, the repatriation of Kazakhs in the 1990’s.

E. Sadovskaya (2001) in her book “Migration in Kazakhstan at the turn of the XXI century: trends and prospects” emphasizes the new forms of migration in Kazakhstan in 1990.

In the book of A. Nurmagambetov “Educational Policy of the Republic of Kazakhstan in the context of the transformation of higher education” (2004) is considered the danger of intellectual emigration to national security and ways to solve it.

2.3 Available data and their quality

The Agency of Statistics of the Kazakhstan is the authorized body forming and realizing the state policy in statistics, developing and carrying out programs on statistics in Kazakhstan (Agency of Statistics of the Republic of Kazakhstan, 2008b). The Agency of Statistics has in its submission 14 regional and 2 municipal departments of statistics (in Astana and Almaty cities) which are also responsible for realization of state policy in the field of state statistics.

Population statistics in Kazakhstan are based on Population Census which conducted by decennial period (first Census after independence was conducted in 1999, followed by the next one in 2009) as well as on the current registration of demographic events (vital statistics). The framework, concepts and classifications for the compilation of population, fertility and mortality statistics are basically consistent with the international standards recommended by the Conference of European Statisticians (1997 and 2006), UNECE, Eurostat, UNFPA, UNICEF and the Statistics Division of the United Nations Secretariat (UN, 2008).

Main sources of diploma work were based on:

- Constitution of the Republic of Kazakhstan;
- Laws of the Republic of Kazakhstan “On Migration”, “On Citizenship”, “On national security”, “On Education” and bilateral and multilateral agreements on migration processes signed between Russia, Uzbekistan, Mongolia, Kyrgyzstan, Tajikistan and other CIS countries;
- Specific workshops and reports on migration;
- Data from the Statistics Agency of Kazakhstan;
- Mass media - official and independent publishers, Internet sources. This source was seen as supporting material to confirm the official sources of information.

The available data will be used extensively to illustrate the impact of policy changes on the research and development activities and on the migration flows in Kazakhstan.

Population migration is the movement of people (migrants) across the boundaries of a territory (country, region, and district) with changing type of settlements, and persons who move are called

immigrants or emigrants. The movement within boundaries of the Republic of the Kazakhstan is internal (inter-regional and intra-regional) migration, and persons who are migrating are in/out migrants. There are two types of migrants: a long-term migrant and a short-term migrant. A long-term migrant is a person who changes his or her usual residents and moves to the territory of the Republic of Kazakhstan for at least 12 month. A short-term migrants is a person who changes his or her usual residents and moves to the territory of the Republic of Kazakhstan for at least 3 months but less than 12 months, except cases where the movement to the country is for the purposes of recreation, holiday, visits of friends and relatives, business, medical treatment or religious pilgrimage (Agency of Statistics of the Republic of Kazakhstan, 2001). These and other refinements of definitions of type of migrants are identified by the Law of the Republic of Kazakhstan 13 December 1997 No. 204-1 on Population Migration. It is considered that we cannot put foreign citizens and stateless persons to the group of immigrants. Students, military personnel, diplomatic official, international contracted employees, religious workers who worked in religious associations officially registered in the Republic of Kazakhstan, representatives of foreign mass media, radio and television accredited in the Republic of Kazakhstan, members of the crews of sea and river vessels, air, railway and motorway means of transport are not considered immigrants either.

Data on migration in the Agency of Statistics of the Republic of Kazakhstan is taken from the statistical record cards which include the arrival form (form 19) and departure form (form 20). These cards are in questionnaire form and are filled in for the whole family. Both cards have the following characteristics of the migrant: date and place of birth, sex, nationality, place of registration, place which a person left and when, from what year a person had been living in the place he or she left, purpose of travel, place of work and occupation in the previous type of settlements, education, family status (married persons should indicate whether or not they arrived with their spouses) and information about children under 16 years old arriving together with adults. The statistical record cards for people arriving/leaving are made out in one copy on their registration or deregistration for permanent residence or for a period of more than six months and the person filling out the document submit it to a specialist of the registration section of the migration police and local internal affairs departments. Once the persons responsible for the application of the rules of the passport system (migration police) have taken the documents needed for the completion of registration or deregistration, they check their authenticity and assume responsibility for the quality of completed papers. These forms are identical for international migration as well as for internal. “Statistical record cards” relating to arrivals or departures are not completed for:

(1) Persons changing their place of residence within the same town, urban settlement or village, or for larger cities within the boundaries of city districts;

(2) Persons obtaining a passport on reaching 16 years old;

(3) Persons changing their passports;

(4) Persons changing their first name, patronymic and surname.

Children under 16 years old changing their place of residence separately from their parents or guardians are registered or deregistered commonly on the basis of a birth certificate. Children under 16 years of age registered or deregistered together with their parents or guardians do not fill in separate

statistical record cards. The children's names are entered in the record card made out for the whole family' (Agency of Statistics of the Republic of Kazakhstan, 2001)

There is a problem that not every emigrant as well as immigrant, and in/out migrants, excluding oralmans fill these cards, and everybody can change their residence several times in year, but not everybody registers oneself. That is why migration statistics is not reliable. For example, "10.6 thousand emigrants according to the data of the Agency of Statistics of the Republic of Kazakhstan emigrated from Kazakhstan to Belarus in 2000-2006. During the same period Agency of Statistics of Belarus counted 12.9 thousand of immigrants from Kazakhstan" (Shahotko, 2009). It clearly shows the quality of migration data. Despite the fact that the Agency of Statistics of the Republic of Kazakhstan is constantly checking and comparing the data, such things takes place very often and the same problems have most of the post-soviet countries statistical agencies.

However, the most reliable data are the censuses of 1999 and 2009 as well as data on acceptances of new immigrants. Other data samples are too small in size to support any meaningful conclusions. Unfortunately, data on skilled professional leaving Kazakhstan present considerable discrepancies with data from receiving countries raising serious doubts about their quality.

The main issue of Kazakhstani official statistics is the availability of data. The Statistical Agency of the Republic of Kazakhstan needs to improve dissemination and accessibility of its detailed statistical information to allow comprehensive demographic research, but also for the mass media and the general public. It is necessary to guarantee to all users an equal access to detailed statistical information.

The data on migration is divided into three categories: all (total), external (international), and internal. The data on migration in the category "All (total) migration" reflects the whole migration process including internal and external (international). Migrants are considered by sex, age, education level, marital status, and ethnic group (Kazakh, Russian, Uzbeks, Ukrainians, Uigurs, Tatars, Germans, other ethnic groups). The number of emigrants, immigrants and net migrants are divided by the type of settlements (urban and rural areas).

Agency on Statistics of Kazakhstan provides data on migration by education and also according sphere of education of immigrants and emigrants. But, unfortunately, it does not share the intellectual migrants by age and sex. About the age of highly skilled migrants, we can only note that the data is from 15 years old and above.

Data are provided in the following spheres of education and for 16 regions:

- Architecture and construction
- Medical
- Pedagogical
- Technical
- Economical
- Law
- Agriculture

The data is taken by special request to the Agency.

Chapter 3

Theoretical background of brain drain

3.1 Basic terminology

This diploma work is based on the UN definition of migration. ***"Emigration"*** accounts for "any residing of a local person in another non-resident country for a period longer than one year". Part of the intellectual emigration is external migration of the scientists. In terms of the work the category ***"scientists"*** included persons with higher education, employed in all sorts of scientific institutions: higher educational establishments, institutes of academies of science, state-financed institutes and company financed institutes, profit and non-profit research institutions. It has been assumed that people professionally engaged in scientific activities are the main group susceptible to brain flow.

Not all emigration of scientists is ***"brain drain"***. Only cases in which emigration is connected with the continuation of scientific activities and research are considered as such. Many scientists have left their countries with the help of more liberal passport regulations in order to find better jobs, although not necessarily within the science field. This kind of movement in most cases can be characterized as a waste of scientific potential, or ***"brain waste"***.

By definition of German researcher Claudia Diehl ***"Brain drain***" refers to a one-way flow of highly skilled and educated people moving from their home country to another in search of better jobs, pay, or living conditions. It is differentiated from brain exchange, which implies a two-way flow of highly skilled individuals between a sending and receiving country, and brain circulation, which refers to the cycle of moving abroad to study or acquire skills in one country and then returning home to work.

Alternatively speaking, brain drain or human capital flight is an emigration of trained and talented individuals ("human capital") to other nations or jurisdictions, due to wage differentials, lack of opportunity, conflicts, health hazards where they are living, discrimination or other reasons. It parallels the term "capital flight" which refers to financial capital that is no longer invested in the country where its owner lived an earned it. Investment in higher education is lost when a trained individual leaves and does not return.

The active science restructuring, together with accelerating internal and external migration flows, led to a new categorization of these flows. New concepts were introduced, and assumptions were verified with regard to the internal movement of scientists in two main areas:

Internal brain drain which is the lasting abandoning of science for the purpose of moving to private business or performing activities in any other area where scientific experience is being used;

Internal brain waste The international exchange of scholars, or ***brain exchange***, has been studied separately, and is considered to include the variety of forms of short-term external migration (less than 1 year), work on joint scientific projects, part-time employment abroad, studies abroad, etc.

Net migration rate is the difference of immigrants and emigrants of an area in a period of time, divided (usually) per 1,000 inhabitants (considered on midterm population). A positive value represents more people entering the country than leaving it, while a negative value mean more people leaving than entering it.

Gross migration is the sum of immigration and outmigration for an area for a given period. This measure shows, in other words, the total amount of movement in and out of an area.

Gross migration rate refers to the number of gross migration at the destination state for every 1,000 persons at the destination in a current year.

Employment rate is the proportion of the total number of employed persons to the total number of persons in the labor force.

Unemployment rate is the proportion of the total number of unemployed persons to the total number of persons in the labor force.

Remittances are a transfer of money by a foreign worker to his or her home country. Migrants' remittances constitute an important channel through which the brain drain may generate positive indirect effects for source countries. It is well documented that workers' remittances often make a significant contribution to GNP and are a major source of income in many developing countries.

Labour resources are available source of wealth; a new or reserve supply that can be drawn upon when needed.

3.2 The brain drain phenomenon

The term "brain drain" was first popularized in the 1950's with reference to the immigration to the United States of first-rank scientists from countries such as the United Kingdom, Canada, and the former Soviet Union; it is now used in a more general sense to designate the international transfer of human capital (people with higher education) from developing to developed countries. During the 1970s, there was a great deal of passion around this issue; everybody took for granted that the emigration of highly skilled people was detrimental to the country of origin and, after all, this would seem to be a piece of acquired wisdom. A number of prestigious academic economists were part of this consensus, notably Jagdish Bhagwati and his followers, who delivered more or less the following message:

1) The brain drain is basically a negative externality imposed on those left behind;

2) It amounts to a zero sum game, with the rich countries getting richer and the poor countries getting poorer; and,

3) On the policy level, the international community should implement a mechanism whereby international transfers could compensate the sending countries; for example, through a “tax on brains” to be redistributed internationally.

During the last two decades, there has been a tremendous increase in the magnitude of the brain drain. However, as we briefly explain in this note, it may well be that some developing countries, if not the majority of them, have benefited from this brain drain. The main reason for this is that migration prospects increase the expected return to education and, hence, foster domestic enrollment in education.

From the developing country perspective, the migration of skilled individuals is viewed as a threat to economic development, and as a costly subsidy from the poor nations to the rich. Given the important consequences of losing scarce human resources for less developed countries, numerous survey studies on skilled migration and student non-return have been conducted for different parts of the developing world. A partial list includes studies on Asia (Niland, 1970), China (Kao and Lee, 1973; Zweig and Changgui, 1995), Taiwan (Chen and Sue, 1995), Latin America (Cortés, 1980), and on a group of five developing countries that includes Turkey (Hekmati, 1973).

Brain drain is traditionally viewed as the movement of highly skilled individuals, sometimes referred to as knowledge workers from their home countries to countries that offer them greater opportunities in their area of specialty as well as in terms of living conditions and lifestyle. However, another prevalent form of brain drain is the failure of students to return to their native countries after going abroad to study. In recent years, knowledge-based high-technology countries, such as the United States, have been eager to accept a growing number of foreign professionals and students in order to fill their shortage of skilled manpower and thus perpetuate their innovation-based economic growth.

International migration, the movement of people across international boundaries, has enormous economic, social, and cultural implications in both origin and destination countries. It is estimated that some 180 million people (3 percent of the world’s population) are living in countries in which they were not born (United Nations, 2002). Among these are millions of highly educated people who moved to developed countries from developing countries that already suffer from low levels of human capital and skilled workers.

To expand our knowledge on the effects of migration and identify migration policies, regulations, and institutional reforms that will lead to superior development outcomes, the World Bank launched the International Migration and Development Research Program, which is being conducted in the Development Economics Research Group. The Research Program is divided into a number of focus areas. The main ones include:

(a) The impact of migration and remittances on development indicators, including poverty and inequality, investment (in both human and physical capital), entrepreneurship, and entry into capital-intensive activities;

(b) The brain drain;

(c) Temporary migration, including under Mode IV of the General Agreement on Trade in Services (GATS); and

(d) The links between migration, trade, and foreign direct investment (FDI).

The work focuses on issues related to the migration of skilled workers, that is, the brain drain. Despite an extensive body of theoretical literature on the effects of the brain drain, little empirical analysis has been conducted on the topic. Also examine a number of issues associated with the brain drain that have not been emphasized in the literature so far, uncover a number of interesting and unexpected patterns, and provide answers to some of the debates. Brain drain has long been one of the most common concerns developing countries have about migration. This concern has been amplified in recent years by the rapid increase in skilled emigration, driven in large part by developed countries shifting to more skill-intensive immigration systems.

The intensity of the brain drain can be explained by many push factors and by geographical, historical and linguistic distances between countries. A large empirical literature has examined the determinants of international migration flows in aggregated models disregarding the education level of migrants. For instance, Hatton and Williamson, (2002) pointed to the following factors as determinants of migration:

- The difference in income across countries.
- The share of population between 15 and 39 years old in the origin and host countries.
- The stock of immigrants.
- The extent of poverty in the country of origin.

Unpleasant conditions “push” people out the one country and favorable conditions of another country “pull” them in. In fact, this concept was later on employed by many other authors, and many of those derived theories explaining the migration processes more or less thought a variety of push and pull factors. In this context Lee’s push-pull theory (Lee Everett S., 1966) serves a good ground for further discussion. He divided factors causing migrations into two groups of factors: Push and pull factors. Push factors are things that are bad about the country that one lives in and pull factors are things that attract one to another area. They are presented in next table as follows:

There is direct linkage between some factors which we drawn above in the table. For our point of view they are among one of the most crucial in determining the “push-pull” factors.

The analysis of the dynamics of migration flows is a complex phenomenon, the dynamics of which demand a systems analysis which goes beyond demographic, economic and spatial considerations to include the facts of individual behavior and factors in decision-making, and at the same time takes into account how these change with time and affect each other (Leloup X., 1996). Compared to fertility and mortality, migration is a more complex and difficult demographic process to record, model and forecast accurately (Zlotnik, 1987; Plane and Rogerson, 1994). For example, birth and death occur only once in a person’s lifetime, but migration can occur repeatedly.

The economy produces two outputs with skilled and unskilled labour. The two types of labour are exclusively allocated to their respective sectors. The real wage for skilled workers is determined by

unions and includes an element of international emulation whereby skilled wages are partly related to skilled wages abroad.

Tab. 1 – "Push-pull" factors of Lee's "A theory of migration"

Push Factors	Pull Factors
Not enough jobs	Job opportunities
Few opportunities	Better living conditions
Primitive conditions	Political and/or religious freedom
Desertification	Enjoyment
Famine or drougth	Education
Political fear or persecution	Better medical care
Poor medical care	Attractive climates
Loss of wealth	Security
Natural disasters	Family links
Death threats	Industry
Lack of political or religious freedom	Better chances of marrying
Pollution	
Poor housing	
Landlord/tenant issues	
Bullying	
Discrimination	
Poor chances of marrying	

Source: "A theory of migration" Lee E. S., 1966

Minimum unskilled wages are fixed by association with the skilled wage or "leapfrogging": a rise in the skilled wage leading to an increase in the unskilled wage. In addition, the supply side reflects the incentive for education to be acquired so long as the expected wage for educated labour exceeds the uneducated wage. A fixed educational cost is introduced. Unemployment enters the initial equilibrium. There is also an exogenous flow of educated emigrants. In this model the international integration of the skilled labour market can affect both sectors' wages through emulation and leapfrogging, as well as expected wages through the actual foreign wage and the probability of emigration. The latter will affect education decisions, and education in turn carries a fixed cost.

With respect to unemployment, emigration may act directly to lower skilled unemployment, but it also exerts two other effects:

- First, it can raise the expected wage by lowering unemployment (and hence may have a supply side effect) and this can be amplified if the emigration wage enters the expected wage. The net result depends on the elasticity of demand for skilled labour which determines whether the skilled labour wage bill increase or not. If the elasticity is lower than unity, an x% increase in skilled wages will increase the wage bill and thus be associated with a less than x% fall in employment. Thus the expected wage will have increased and the supply of skilled workers will tend to rise as a result. To the extent that the acquisition of skills through education is subsidized, this will similarly raise the cost to the sending country.

- Second, if the skilled wage increases because of emigration, this may also spill over into other sectors and hence have an impact on unemployment in those other sectors. Wage leapfrogging – letting unskilled wages follow skilled wages – would simply tend to extend unemployment to the unskilled and amplify the welfare reducing consequences of skilled labour migration. With respect to national income, a rise in the skilled wage tends to reduce national income because of the decline in the employment of skilled labour without any offsetting effect from the unskilled sector (in the case of no associated effect on unskilled wages), while the cost of education will also tend to increase. However, with the assumption of wage "leapfrogging", the implications for national income are not so clear cut. Further, to the extent that emigration raises the wage of the emigrant, this implies that emigrants were receiving less than their marginal product. This surplus – as measured over the group – would be lost to the sending country in the event of emigration. The size of the loss depends on the extent to which such workers are replaceable. Hamada and Bhagwati (1975) extended the model by introducing a number of refinements to labour markets in the sending countries.

For example, if emigration induced a ladder effect with remaining skilled workers now better matched to skilled, rather than unskilled, jobs thereby reducing unskilled employment – a variant of Harris-Todaro (Gary S. Fields, 2007) – then the effects of emigration could indeed be positive. By contrast, while emigration of skilled workers – such as doctors – might reduce labour market slack, it could also reduce the flow of doctors from urban to rural areas and limit any positive diffusion effect. To the extent that the external labour market is more efficient at screening workers, the result would be the loss of the most efficient to the sending country.

3.3 Methods and approaches to brain drain

The research methodology applied is strongly dependent on the availability of data and specific literature on the brain drain and by the objectives to be pursued. A strong interdisciplinary approach is required to capture the most important features of a phenomenon that has gained the attention of scientific literature only since the 1990s.

Based on the Docquier–Marfouk data set, Marfouk (2006) recently used bilateral emigration data from 153 countries to 30 receiving countries in 2000 to estimate the determinants of bilateral emigration stocks. Many bilateral data are equal to zero. To account this problem was used Tobit model. (Docquier and Sekkat, 2006) Some variables (e.g. consumption spending or number of immigrants) take only positive values. The methodology used to forecast their evolution should take into account of this characteristic. Otherwise, one may obtain forecasted values that are negative. The Tobit method addresses this problem.

Table 2 gives the elasticity of bilateral emigration rates to all explanatory variables, distinguishing low-skill, high-skill and all migrants. The main results are the following:

- High-skill workers are more affected by differences in terms of living standards. A ten percent increase in the income per capita gap between receiving and sending countries results in an

increase of high-skill emigration rate by 7.9%, to be compared with 4.5% for low-skill workers and with 6.5% for the average migrants.

- The effect of distance is negative for both skilled and unskilled workers, and the effect of distance squared is positive, i.e. the marginal effect of distance is decreasing.
- Past colonial links are important. The impact of this variable is more pronounced for unskilled workers.
- Skilled and unskilled emigration rate are inversely related to unemployment rate at destination. High-skilled migration is more affected by job opportunities at destination than low-skilled migration.
- The population in the receiving country is a proxy of the immigration capacity and of economic opportunity at destination. Related to the income effect, skilled workers are more sensitive to economic opportunities.
- Social welfare programs affect positively both skilled and unskilled migration.
- The size of young cohorts in the country of origin is an important factor that drives South-North migration.
- Importantly, more deaths in civil wars induce more emigration for both skilled and unskilled.
- Linguistic proximity is significant only for high-skill migrants. The explication is that the skills acquired prior to migration are more transferable to the destination countries sharing the same language.

Finally, the EU immigration policy discourages both high-skill and low-skill emigration. The elasticity is particularly negative for the skilled. In contrast, the four traditional immigration nations (Australia, Canada, New Zealand, and the United States) favor all types of immigration but mainly skilled immigration.

These regressions show that the determinants of migration vary across education group. A global regression without education distinction then hides a very strong heterogeneity. All these results have important policy implications. Host countries' policy affects, in general, only the immigrant destination choice but not the willingness to immigrate according to the skill level. The resulting change in the skill composition of immigration is likely to be smaller than expected.

Tab. 2 - Elasticity of the emigration rate (at the mean values)

	Low-skilled	High-skilled	Total
GNI, PPP adjusted, per capita "destination/origin" ratio	0.4490**	0.7876**	0.6476**
	-2.94	-5.29	-4.41
GNI, PPP adjusted (origin), 1000	0.9182**	1.1537**	1.1049**
	-4.49	-5.78	-5.61
GNI, PPP adjusted (origin), 1000 squared	-0.2571**	-0.3267**	-0.3090**
	-3.66	-4.77	-4.56
Geographic distance (origin-destination), 1000 kms	-1.4607**	-1.2108**	-1.4648**
	-8.12	-6.85	-8.43
Geographic distance (origin-destination), 1000 kms squ.	0.4487**	0.1818	0.3987**
	-4.42	-1.81	-4.08
Former colonial ties	0.0631**	0.0404**	0.0316**
	-13.75	-9.19	-7.2
Linguistic proximity	-0.0016	0.0838**	0.0458**
	-0.14	-7.79	-4.28
Population (destination), in log	3.6510**	5.4343**	4.5875**
	-10.49	-15.56	-13.42
Unemployment rate (destination), in percent	-0.2697**	-0.3287**	-0.2574**
	-4.5	-5.6	-4.49
Level of diversity (destination)	0.1956**	0.1900**	0.2087**
	-3.87	-3.85	-4.27
Public social expenditures, (destination), in percent of GDP	1.3086**	1.1997**	1.0912**
	-10.03	-9.33	-8.65
Immigration policy (EU15)	-0.1515**	-0.2157**	-0.1846**
	-3.99	-5.74	-5
Immigration policy (CAN, AUS, NEZ, USA)	0.1082**	0.1753**	0.1287**
	-6.8	-11.21	-8.4
Religious fractionalization (origin)	0.0712	0.1328**	0.1094*
	-1.42	-2.7	-2.25
Population 15-29 (origin), in percent of the total population	1.4877**	1.5974**	2.3277**
	-6.12	-6.68	-9.97
Civil wars (origin) - battle deaths	0.0167**	0.0149**	0.1324*
	-2.55	-2.32	-2.08

Note: Numbers are absolute values of the t-ratios: ** significant at 1%, *significant at 5%

Source: Docquier, Sekkat "The Brain Drain: What Do We Know?", 2006.

3.3.1 Controlling for the educational level

The first and obvious methodology issue that one should deal with is the distinguish migrants according to the education level. The first serious effort to put together an harmonized international dataset on migration rates by education level is due to Carrington and Detragiache (1998, 1999) from the International Monetary Fund, who used US 1990 Census data and other OECD statistics on international migration to construct estimates of emigration rates at three education levels (primary, secondary and tertiary schooling) for about 60 developing countries.

Skilled migration rates: Are obtained by comparing the emigration stocks to the total number of people born in the source country and belonging to the same educational category. Calculating the brain drain as a proportion of the total educated labor force is more appropriate to evaluate the pressure imposed on local labor markets than looking at the absolute numbers of skilled emigrants.

The emigration rate by skill levels from country i at time t is defined as the ratio of emigrants $EM^{s}_{i,t}$ to natives, i.e. residents $N^{s}_{i,t}$ and emigrants, which can be expressed as:

$$(EM^{s}_{i,t}) : m^{s}_{i,t} = \frac{EM^{s}_{i,t}}{N^{s}_{i,t} + EM^{s}_{i,t}}$$

Where, S stands for the skill level (e.g. high or low

i is a country

t time interval

Although Carrington and Detragiache's (1998) study clearly initiated new debates on skilled migration, their estimates suffer from a number of limitations. In particular:

i) they transposed the education structure of the US immigration to the immigration to the other OECD countries (transposition problem);

ii) immigration to EU countries was estimated based on statistics reporting the number of immigrants for the major emigration countries only, which led to underestimate immigration from small countries (under reporting problem);

iii) no distinction was made between immigrants arriving as children and immigrants arriving as young adults or older with source country education background, and,

iv) due to lack of data, South-South migration was not taken into account which may overestimate migration from South to North.

Generalizing their work, Docquier and Marfouk (2006) provide a comprehensive dataset on international skilled emigration. The construction of the database relies on two steps:

i) collection of Census and register information on the structure of immigration in all OECD countries (this solves the transposition and under reporting problems noted for Carrington Detragiache); summing up over source countries allows for evaluating the stock of immigrants from any given sending country to the OECD area by education level, and

ii) the educational structure of emigration is then compared to that of the population remaining at home, which allows for computing emigration rates by educational attainment in 1990 and 2000. A similar work can be found in Dumont and Lemaître (2005).

3.3.2 Controlling for the age of entry

Counting all foreign born individuals as immigrants independently of their age at arrival, both Carrington-Detragiache and Docquier-Marfouk data sets do not distinguish between "family" and "personal" migration. Some of the skilled foreign-born obviously migrated at very young age and had their education in the receiving country. As illustrated by Rosenzweig (2005) using US data, children migration represents an important fraction of migrants for a couple of countries. Should those who came at young age be considered as skilled migrants? Where should we put the frontier?

Beine, Docquier and Rapoport (2006) provide alternative measures of the brain drain by defining skilled immigrants as those arrived in the receiving country after age 12, 18 or 22. They use data on age of entry collected in a sample of OECD countries and then econometrically estimate the age-of entry structure in

the remaining host countries. The countries where such information is available represent 77 percent of total skilled immigration to the OECD area.

The same situation is in Kazakhstan. Children are leaving country with their parents and in this case they considered as unskilled migrants. Data on migration by level of education provides as an age of entry 15 years.

3.3.3 Economical measurements

The relationship between *brain drain* and unemployment is linked to the process of rural to urban migration within the development process. The classical mechanism to generate unemployment within the *brain drain* literature is the application of the assumption of rigid wages. Bhagwati (1976) argues that highly qualified people in developing countries stick their wage level above the equilibrium wage rate to that of industrialised countries because they have adapted Western norms and values and thereby induce unemployment. Unemployment of qualified persons may furthermore be due to mismatching when the pace of economic development lags behind the pace of human capital formation.

Bhagwati and Hamada (1974) investigated the consequences of the *brain drain* under rigid wages in a Harris-Todaro (1970) economy. Educated labour in developing countries sets its wage rate according to the corresponding wage rate in developed countries and unskilled labour pegs its wage rate to that of skilled labour. This institutionally induced market failure leads to unemployment because of the resulting disequilibrium. If unemployed skilled labour leaves the country, two effects on employment arise:

- The reduction of skilled unemployment induces an increase of the expected skilled wage rate and thus makes education more attractive for unskilled labour. A new disequilibrium situation might be induced if the increased supply of newly skilled labour overcompensates the loss of skilled labour; and
- As domestic wages are linked to foreign wages, nominal wages of skilled and unskilled labour tend to increase and induce a positive effect on unemployment.

The possibility exists that the fall of the per capita income and the rise of unskilled unemployment is also accompanied by an increase in skilled unemployment. Within this framework, if skilled labour crowds out unskilled labour in unskilled jobs, emigrated skilled labour that does not exceed the number of skilled labour in unskilled jobs induces an offset by unemployed unskilled labour and consequently leaves productivity unchanged. As a result, unskilled employment and per capita income may rise.

The *brain drain* might also have an impact on welfare through its influence on inequality. Gupta (1988 and 1991) argues that urban migration and overall unemployment might be increased through emigration. An increase in unemployment increases inequality measured by the Gini coefficient, if the unemployed people earn less than unskilled labour. If the degree of inequality becomes socially undesirable, the introduction of wage subsidies or social security payments leads to an increased tax rate. Because of lacking institutional structures in developing countries, a further incentive to migrate is therefore created for taxpayers, usually well educated labour.

While the overall effect of *brain drain* is ambiguous, a substantial emigration will most certainly lead to higher unemployment and to lower per capita income.There are several measurements which we will need to analyze labour force particpation of educated people. The labour force is the number of people employed and unemployed:

Labour force = Employed + Unemployed.

The labour force participation rate is the ratio between the number of people in the labour force and the total population.

*Labour force participation rate = Labour force/Total population*100%*

Employment rate is the proportion of the total number of employed persons to the total number of persons in the labor force.

*Employment rate = Employed/labour force*100%*

Unemployment rate is the proportion of the total number of unemployed persons to the total number of persons in the labor force.

*Unemployment rate = Unemployed/labour force*100%*

3.4. World trends in the brain drain, examples

3.4.1 General information on brain drain around the world

During the last decade, the number of legal immigrants in the OECD countries has increased by 17 million (or by 40 percent); from 42 million in 1990 to 59 million in 2000. This rise is mostly explained by the inflow of persons from the less developed countries. Between 1990 and 2000, the number of immigrants originating from developing countries grew by 96 percent comparing to only 6 percent migrating from high-income countries. As a result, the share of the immigrants from developing countries in OECD countries has increased from 46 percent in 1990 to about 65 percent in 2000 (Table 3).

Tab. 3 - Descriptive statistics by country groups (1990-2000)

Group of origin	Emigration structure in thousands[a]			High skilled by destination in percentage			Labor force strcuture in thousands[a]			Emigration in percentage	
	Total emigrants	Highly skilled emigrants	Share of highly skilled emigrants (%)	In selective countries (%)	In EU15 countries (%)	In the rest of OECD (%)	Total labor force	High skilled labor force	Share of highly skilled (%)	Total (%)	High skilled (%)
World[d]	59022	20403	35	73	21	6	3187233	360,614	11	2	5
By region											
Africa	4497	1388	31	51	46	3	298112	11896	4	2	10
Asia	15043	7041	47	80	14	6	1917998	119986	6	1	6
Europe	21095	6686	32	59	30	11	499479	89387	18	4	7
Latin America and Carribean	13881	3655	26	89	8	3	249408	29507	12	5	11
From the rest of the world[b]	4506	1633	36	63	23	14	222236	109838	49	2	2
By group of interest											
High income countries	19206	7547	39	68	24	8	666246	200607	30	3	4
Developing countries[c]	38083	12576	33	76	19	5	2520987	160008	6	2	7
Low income countries	6544	2948	45	77	21	1	898768	36332	4	1	8
Lower medium-income countries	17053	6089	36	77	17	6	1298233	76981	6	1	7
Upper medium-income countries	14486	3539	24	75	20	5	323987	46694	14	4	7
Least developed countries	2510	853	34	69	29	2	245974	5635	2	1	13

Notes: [a] - Migrants and labor force correspond to individuals aged 25 or older

[b] - The rest of the world correspond to North America, Oceania dependent territories and emigrants who did not reported their country of birth

[c] - Developing countries correspond to the sum of low-income, lower medium-income and upper medium income countries

[d] - The world in the sum of developing countries, high-income countries dependent territories and emigrants who did not reported their country of birth. Immigrants' and labor force correspond to individuals aged 25 or older.

Source: Author's calculation based on Docquier and Marfouk data

Tab. 3 (continuation)

Group of origin	Emigration structure in thousands[a]			High skilled by destination in percentage			Labor force strcuture in thousands[a]			Emigration in percentage	
	Total emigrants	Highly skilled emigrants	Share of highly skilled emigrants (%)	In selective countries (%)	In EU15 countries (%)	In the rest of OECD (%)	Total labor force	High skilled labor force	Share of highly skilled (%)	Total (%)	High skilled (%)
World[d]	41865	12467	30	76	17	7	2765661	2765661	9	2	45
By region											
Africa	2911	652	22	52	45	3	227338	5842	3	1	10
Asia	9504	3837	40	78	13	9	1484286	70981	5	1	5
Europe	18807	4804	26	68	21	11	469899	65354	14	4	7
Latin America and Carribean	6978	1856	27	89	7	4	191303	17105	9	4	10
From the rest of the world[b]	3665	1318	36	70	18	12	392835	17105	4	1	7
By group of interest											
High income countries	18165	5613	31	74	17	9	586069	139458	24	3	4
Developing countries[c]	19402	5804	3	79	17	4	1783362	69767	4	1	8
Low income countries	3454	1267	37	77	21	2	677539	21291	3	1	6
Lower medium-income countries	8740	2883	33	81	14	5	938974	34948	4	1	8
Upper medium-income countries	7208	1654	23	77	19	4	166848	13528	8	4	11
Least developed countries	1384	373	27	70	29	1	185,034	3,092	2	1	11

These trends contribute to the political success of "populist" anti-immigration parties and to general public hostility towards immigration in a number of Western European countries. The results of the Euro barometer survey conducted in 2000 revealed that around 30 per cent of the respondents in countries such

as Belgium and Germany are not willing to accept more immigrants. When asked if immigrants "are more involved in criminality", the proportion of positive responses ranged from 30 percent in Ireland to 81 percent in Greece (Marfouk, 2007).

In 2000 the British government and the Wolfson Foundation, a research charity, launched a five-year research award that raised little attention outside scientific circles. The £20 million scheme aims to attract the return of Britain's leading expatriate scientists and the migration of top young researchers to the United Kingdom. That same year under greater media coverage, the US Congress announced it was raising the annual cap on the number of temporary work visas granted to highly skilled professionals under its H1B visa program, from 115 thousand to 195 thousand per year until 2003.

These are just two examples that illustrate the growing demand and competition for talent in OECD countries. And they show a policy problem: how to attract and hold on to skilled labour. The British initiative also dispels a myth: that the problem only affects developing and transition economies. In fact, the British Royal Society first coined the expression "brain drain" to describe the outflow of scientists and technologists to the United States and Canada in the 1950s and early 1960s.

Internationally comparable data on the migration of the highly skilled is incomplete, but sources confirm an increase in migration flows during the 1990s, from Asia to the United States, Canada, Australia and the United Kingdom. The increase comes from strong demand in OECD countries for IT and other skills in science and technology as well as the selective immigration policies that favour skilled workers. Not all skilled migrants are in search of educational, economic or intellectual opportunities. Sometimes, they are forced to leave their homes as a result of war, or political, ethnic and religious persecution. Skilled migration between OECD countries is also on the rise but appears dominated by temporary flows of advanced students, researchers, managers and IT specialists, suggesting more a pattern of brain circulation than a draining of skills from one place to another. The globalization of firms has helped fuel temporary flows; in the mid-1990s intra-company transfers accounted for 5-10% of the total flows of skilled workers to the United States from Canada.

The United States is the main pole of attraction for foreign skilled workers; 40% of its foreign-born adult population has tertiary level education. Since the early 1990s, some 900 thousand highly skilled professionals, mainly IT workers, from India, China, Russia and a few OECD countries (including Canada, the UK and Germany) have migrated to the United States under the H1B temporary visa program. The United States also takes in 32% of all foreign students studying in the OECD countries. Indeed, higher education is an important channel for US firms recruiting highly skilled migrants; some 25% of H1B visa holders in 1999 were previously students enrolled at US universities.

But the United States is not the only magnet. Canada also attracts talent and, despite its modest loss of skilled migrants to the US, is in fact a net importer of human capital. Skilled migration to Germany and France has been lower in recent history, but these countries have now implemented policies to attract foreign students, researchers and IT workers. In 2000, Germany launched a sort of "green-card" scheme to recruit 20 thousand foreign IT specialists and by the end of the following year had recruited half that number, mainly from Eastern Europe. In addition, dynamic Asian economies like Singapore are trying to plug shortages in IT workers through immigration from neighboring Malaysia or even China.

Even if the current economic slump has reduced global demand for IT and other specialty workers, foreign talent remains in demand.

The costs and benefits of the brain drain and circulation of talent are hotly debated. International mobility of skilled workers can generate global benefits by improving knowledge flows and satisfying the demand for skills. The contribution of foreign skilled workers to economic growth and achievement in host countries, in particular to research, innovation and entrepreneurship, is increasingly recognized – witness the number of foreign-born US Nobel Prize winners or creators of global high tech companies, such as “Intel” or “eBay”, and other successful start-ups. It is important to distinguish between emigrants from OECD countries and those from developing countries. The risk of a brain drain damaging rich countries is arguably lower, but it does exist. Canada may well lose skilled workers to the United States and import skilled human capital from other countries. However, the quality of the two-way flow is a key, though it is difficult to calculate whether the loss of a top genetics researcher at a public lab can be compensated for by the arrival of even several hundred IT specialists. But as skilled migration between advanced countries is often temporary, there may be a double gain from the circulation of the highly skilled: first from the overseas experience acquired by their genetics researcher, and second from the constant inflow of skilled workers. In sending countries in the developing world, the challenge is greater. For these countries, capturing benefits mostly depends on attracting back skilled emigrants and providing opportunities for them to use their new technological competencies. Returnees also can bring valuable management experience, entrepreneurial skills and access to global networks. They may even bring venture capital. But this is looking on the bright side.

Mostly, the problems caused by the brain drain in poorer sending countries are great. Migrants from developing countries are generally more likely to stay in the host country than migrants from advanced countries. Survey evidence on the share of foreign PhD graduates in science and technology, which stay abroad shows that 79% of doctoral recipients from India and 88% of those from China were still working in the United States in 1995. In contrast, only 11% of Koreans and 15% of Japanese who earned *science and engineering (S&E)* doctorates from US universities in 1990-91 were working in the United States in 1995. In the longer term, however, return flows of people and capital may not only offset some potential negative effects of international migration but also constitute an economic development strategy in its own right. In Chinese Taipei, for example, half of all the companies emerging from that economy’s largest science park, Hsinchu, were started by returnees from the United States. And in China, the Ministry of Science and Technology estimates that returning overseas students started most Internet-based ventures.

The harsh reality is that only a handful of countries have been successful in luring their talented emigrants back home. The International Organization for Migration (IOM) estimates that some 300 000 professionals from the African continent live and work in Europe and North America. By some estimates, up to a third of R&D (*Research and Development*) professionals from the developing world are believed to reside in the OECD area. While there are often media reports of successful Indian entrepreneurs in the United States who establish branches or even firms in India only a small number actually return; in 2000,

it was estimated that some 1,500 highly qualified Indians returned from the United States, although more than 30 times that number depart each year.

The relative success of Chinese Taipei, Korea and Ireland in fostering return migration has been attributed to the opening of their economies and policies to foster domestic investments in innovation and R&D. Developing countries with some infrastructure in R&D, like India, are more likely to attract the return of migrants, as well as money and business contacts. “Scientific Diaspora” and “immigrant entrepreneur networks” can also help sending countries capture benefits and know-how from emigrants overseas. Grass roots initiatives in South Africa and Latin America have been developed to link researchers abroad to networks in their home countries. Indian professionals in the US have been the primary drivers of knowledge and capital flows to India. The Indian government has contributed to the emergence of these private networks through legislative and tax rules that encourage remittances and investment from Indians abroad. The Diaspora idea has been put to work by advanced countries too, like Switzerland, whose online network; Swiss-List.com was established to encourage networking among Swiss scientists in the US and to foster contacts with peers in Switzerland.

Governments can do quite a lot to address the causes of the brain drain. Science and technology policies are a key in this regard. Developing centers of excellence for scientific research and framing the conditions for innovation and high tech entrepreneurship can make a country attractive to highly skilled workers, both from within the country and from outside. The task is not easy and it takes time; India’s investment in human resources in science and technology and own R&D capabilities dates from the 1950s. China has recently launched a project to develop 100 universities into world-class institutions that not only provide higher education training, but also academic employment and research opportunities.

In the OECD, the UK government plans to increase the salaries of post-doctorates by 25% and increase funding for the hiring of university professors. In France, some 7 000 teaching-researcher posts have been created since 1997 to retain talent and encourage the return of post-doctorates working abroad. The European Commission is looking to improve the attractiveness of the European research area and has doubled the amount of funding devoted to human resources in the Sixth Research Framework Program to € 1.8 billion. The largest mobility flows of foreign *science & technology* (S&T) students and employees in the EU originate in the Member States, i.e. up to 50% of total numbers. Three country destinations dominate: Germany, France and the UK which, taken together, account for approximately 70% of all mobility streams in Europe. Germany alone, for example, attracts nearly 40% of all foreign S&T employees. In terms of the regions of origin of non-EU S&T students and employees entering the EU, other European and developing countries are the key source. Noticeably, Europe appears to hold much less of an attraction to North Americans.

In the EU, 6.7% of all third level students are foreigners. Approximately 2.4% come from other Member States, 1.7% from Asia and Oceania, 1.1% from Africa, 1% from other European Countries, and 0.5% from the Americas.

Differences between the countries are significant. The UK has the highest share of foreign students enrolled (15%), if Luxembourg with its small absolute values is excluded. Belgium comes next with 11%. The smallest share of foreign students is to be found in Italy (1.4%). Other EU students from

the largest group in most countries, yet the UK and Germany buck this trend with larger numbers from Asia and Oceania. Students of African origin are well represented in Belgium, France and the Netherlands. And students from other European countries are well represented in Sweden, Denmark and Finland. In Ireland, the majority of foreign students come from the US and Canada, while in Spain, the largest group comes from Latin America.

Docquier and Marfouk (2006) database provides an estimated total number of adult immigrants living in the OECD area aged 25 or more at 59 million for 2000 and 41.8 million for 1990. In 2000, individuals with tertiary education were 36% of the immigrant population in OECD countries, while those with primary education were 35%. The OECD emigration rates by education levels are 1.1%, 1.8% and 5.4% respectively for low-skill, medium-skill and high-skill workers. According to the United Nations (2002), between 1990 and 2000 the number of individuals living outside of their country of birth increased from 154 million to 175 million, reaching a level equivalent to 3% of the world population. On the world level in 2000, highly skilled immigrants represented 34.6 percent of the OECD immigration stock, while only 11.3 percent of the world labor force had tertiary education. Between 1990 and 2000, the percentage of skilled workers among immigrants increased by 4.8 percentage points (from 29.8 percent to 34.6 percent). In 2000, the number of migrants with tertiary education living in the OECD countries amounted to about 20.4 million, of which 2.4 million came from Islamic countries (11.9%).

The likely shortage of highly qualified S&T personnel in the R&D activities anticipated for the next ten to fifteen years represents, undoubtedly, one of the biggest threats to Europe's long term innovative strength, and productivity growth. Europe produces a large number of university graduates, doctorate recipients and postdoctoral students. But a significant share of them finds work in an occupation outside of European R&D. It may be one of Europe's biggest obstacles in its attempt to become the world's most competitive knowledge-based economy.

The drain of highly skilled Europeans to countries like the US, Canada and Australia is a part of Europe's social and political past and present, and more than likely future. International mobility is driven by political events such as the end of World War II when, apart from European exiles who chose to stay in the US, an estimated figure of more than 372,000 professionals, scientists and technicians emigrated to the US between 1946 and 1965. The 1970s and 1980s saw the flow of mature researchers from Europe to the US expand beyond reliance on countries like the UK, France, Germany and Italy to include less wealthy European nations. The change in the political landscape in Eastern Europe in the 1980s and 1990s brought about significant East-West migration. Social, cultural and political environments influence the career choices made by highly skilled European scientists and engineers, both in terms of their choice of occupation and of where they work. Today's migration patterns have an expanded rationale, influenced by R&D related circumstances, such as global scientific networking, higher qualifications, additional specializations and endowments increasingly designed to beat the competition in filling domestic R&D posts. At the same time, flows of highly skilled scientists and engineers are enhanced through improved social, political and technical framework conditions.

International mobility depends on conditions such as the commitment to R&D funding, the reputation of the host organization/employer, research facilities available, and the presence of other

research institutes, salary/job benefits, and the physical environment. The findings of the surveys carried out for the study, suggest weights for some of the known factors and bring out new messages: Women are underrepresented in international mobility and tend to participate less in an international career path than men, with regard both to the number of opportunities taken up and to the duration of the stay overseas. The most important reasons keeping EU-born scientists and engineers abroad relate to work quality. Broader scope in position and activities and better access to leading technologies were most often cited as reasons behind plans to work abroad. Among those surveyed who said they had plans to go abroad to work, three in five were going for broader scope in activities and more than half cited the access to leading edge technologies as a very important factor. Salary is an important consideration, but most often it is not identified as the key or deciding factor in the decision to go abroad. Better earnings and wages were cited as very important by 31% of EU-born working abroad as a factor in their decision to not return and by 26% of those working at home as a factor in their decision to go abroad. Paperwork barriers in Europe continue to be problematic for foreign researchers and their employers. Among the foreign researchers surveyed in Italy, 29% reported high difficulties with visa, work permits and other administrative paperwork. Networking and informal contacts sources are key sources of information for persons finding working abroad. “Informal marketing” of Europe may have far more impact on its ability to draw foreign researchers than previously considered. In terms of the impact of migration on labour markets in the sending countries, evidence has remained even more limited. (Arora et al. 2001) and Kumar (2000) have found that one of the major problems perceived by Indian ICT firms is a shortage of skilled labour. The late 1990s boom in the Indian software sector was clearly associated with increased demand for engineers and there is evidence of this forcing up skilled wages. But even here, the consequences may not have been lasting or necessarily that widespread as work reported in (Commander et al. 2004) indicates. There is more information concerning lost educational investment. In most developing countries at least some part of the cost of education is borne by the government, partly because the social return from education is higher than the private one. In recent times, there has been an increase in the provision of private educational services in many developing countries where the cost is largely, if not exclusively, borne privately. However, even when this is the case, any additional social returns to education, as well as public investment in primary and secondary education, are lost when an individual emigrates.

Estimating the exact cost of education is very difficult and the result depends on the approach that is taken in allocating fixed costs across outputs. There are some available cost estimates. For example, the total cost of a medical degree in India has been estimated to be eight times annual GDP per capita (Jayaram, 1995), and for an engineering degree four times annual GDP per capita (Salim, 1996). World Bank/UNESCO data show that the average government expenditure per student on tertiary education varies a lot, but mostly lies in the range of 1000-3000 (international) dollars. In both China and India the expenditure is around 2000 dollars per student. Yet simply assuming that the education costs in developing countries are largely publicly financed misses some important innovations in educational services supply and financing that have occurred in the 1990s. These may in turn have been positively influenced by the emigration of the skilled. For example, in India private institutions have begun training

specialists for the software industry. According to (Arora et al. 2001) while the supply of engineering graduates from the main public educational institutions is relatively inelastic in the short run, privately the trained supply of software professionals has increased substantially, dampening the wage effect of the demand side changes.

In China there are also a number of private institutions. It has been estimated that there has been a strong expansion of private education since the 1980's. According to the official figures in 1998 there were 1274 private tertiary institutions, the majority of which prepare students for national exams rather than confer degrees. However, an estimated 4 million students study in private tertiary institutions, not recognized by the Ministry of Education. (Dahlman and Aubert 2001). Of course, such innovations have had little or no impact in sectors where certification and regulation have been tighter, as, for example, with healthcare and teaching. Indeed, it is still broadly correct to assume that the bulk of doctors, nurses and teachers in developing countries receive substantial public subsidy to their training. Although the question of new methods of financing higher education has been raised strongly, in most developing countries students' own contributions to the costs of higher education are still small (Johnstone et al, 1998; Tilak 1996 and Jayaram 1995).

Nowadays the brain drain from developing countries to the developed is in an intense pace. But at the same time, some countries have adopted effective measures for the return of their brains.

3.4.2 CIS countries and Russia

The number of population of the Commonwealth countries is estimated at 281 million people (as of the end of 2008 – 280 million). Urban inhabitants make up approximately 67% of the number of CIS population. The most part of population of Azerbaijan (52%), Armenia (64%), Belarus (74%), Georgia (52.5%), Kazakhstan (53%), Russia (73%) and Ukraine (68%) live in cities, towns and settlements of town type (settlements approved by legislative acts as urban ones) (Sherbakova, 2009).

Rural population predominates in Kyrgyzstan (65%), Moldova (59%), Tajikistan (74%), Turkmenistan (53%) and Uzbekistan (64%).During the recent years the growth of the number of population is observed in Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan. At the same time the growth was more active in Tajikistan were the number of townspeople as of the beginning of 2009 in comparison with 2000 increased by 19%. The reduction of the total number of population, though with less intensity than in the previous years, as before was characteristic of such states as Belarus (excluding the number of urban population) Russia and Ukraine. Thus, in 2008 numerical losses of Belarus made up 0.2% of total number of population of the state (in 2007-0.3%), Russia-0.1% (0.15%) and Ukraine-0.5% (0.6%). It was both at the expense of decrease of natural decrease of population, mainly caused by increase of birth-rate (in 2008 birth rate level in Belarus increased by 3.7%, in Russia– by 7.1%, in Ukraine–by 7.8%) and at the expense of positive impact of migration growth (Sherbakova, 2009). At the same time 80-90% of persons arrived for residence to these countries earlier were inhabitants of CIS countries. In 2008 in total number of population of receiving countries such migrants made up from 0.03% in Ukraine to 0.2% in Russia – (Interstate Statistical Committee of the Commonwealth of independent States, 2008).

Overwhelming majority of participants in the process of migration is population in working ages (70-80%), what has definite influence on change structure both of receiving and opposite sides.

The population at the age from 15 to 65 years (potential labour resources) makes up approximately 69% of the number of inhabitants of the states of the Commonwealth (67% - in 2000). Growth of the number of persons of this age category what was observed in the majority of CIS states during the recent years is caused to a considerable extent by its replenishment by young people who were born during the years of high birth rate (1983–1987).

The population in working age makes up the base of the number of labour resources. Persons of old ages employed in economy make up 2–5% of labour resources. The share of juveniles employed in economy makes up 0.2% and less.

The share of the number of economically active population (employed and unemployed covering the supply of labour force for production of goods and services) in the composition of labour resources is in the limits of 70-80% in the majority of the Commonwealth countries, in Armenia, Moldova and Tajikistan – in the limits of 50-60%.

The level of economic activity relative to the number of all population of average for the Commonwealth makes up about 50%, at the same time in 2008 in Azerbaijan, Belarus, Kazakhstan, Russia, Ukraine the share of economically active population made up 48-54% of total number of population, Georgia – 44%, Kyrgyzstan – 45%, Armenia, Moldova, Tajikistan, Uzbekistan – less than 40%.

Employment rate of economically active population (the ratio of the number of employed in economy to economically active population) exceeds 90% in the majority of CIS states. In 2008 due to economic crisis the process of transition of employees to part-time works and forced grant holidays without pay (forced not full employment or latent unemployment) has risen substantially. There were 69 thousand persons registered as a part-time employees working in Azerbaijan, what is 1.8 times higher than in the previous year, in Russia – 699 thousand persons (3.4 times), in Ukraine-1206 thousand persons (2.4 times). The number of persons went for the unpaid vocation initiated by the administration alone in Russia hit 944 thousand persons, what 2.4 times than in 2007, in Ukraine–179.5 thousand persons (in 1.4 times).

The share of employees (employed personnel) in the structure of employed population varies in the limits of 50-90% by the Commonwealth countries.

In 2008 the share of self-employed (employers, persons working individually, unpaid family workers at family's enterprises, member of production cooperatives) was higher in Azerbaijan, Armenia and Tajikistan like in the previous years.

The share of the number of persons working individually among self-employed varies by countries mainly in the limits of 80–90%; the share of employers has more noticeable differences by countries (in particular, in Kazakhstan–5%, Russia–20%). The number of employed personnel is concentrated mainly at large and medium enterprises. The share of employees of large and medium enterprises in total number of employed population varies from 22% in Kyrgyzstan to 74% in Belarus.

The changes in branch structure of employment in 2000-2008 were accompanied by the outflow of employees from the main industries and increase of employment in the sphere of services (at transport, in trade, education, culture, public health, housing and communal services and so forth). The number of employed in the fields connected with market infrastructure increased especially rapidly (in particular, was an expansion in trading and intermediate activity as well as in tax, audit and notarial services).

In 2008 the number of economically not active population (persons in working age engaged in housekeeping, students, pupils of the senior classes, other not working and not seeking job citizens, by estimate made up about 40 million people or over 20% of labour resources as a whole for the Commonwealth. Approximately 10% of all number of economically not active population of working age falls on persons, who seek job but do not have opportunity to start the job immediately (according to international standards they do not refer to unemployed), and persons who despaired to find job. Such a category of “nonparticipants” of labour market is of great interest because they are considered to be “near the labour market” and can enter it again as soon as economic situation will be better.

During 2009 the level of unemployment changed under the impact of anti-crisis measures, seasonal fluctuations in employment and increasing opportunity to receive job in summer-autumn period.

With a view to decrease the tension on labor market and rendering social support the unemployed citizens are paid out unemployment benefits, paid social works are organized; professional training and retraining of unemployed are carried out for those who have no profession or in case of work by their specialty.

As of the end of July 2009 the bank of vacancies at employment offices of the Commonwealth countries rose up to 1,3 million places or by 22% more than that in the year beginning.

Activization of the policy on labour market depends in many respects upon living conditions of population. During the recent years in the majority of the Commonwealth countries the growth of money incomes of population was observed.

Wages and salaries take the greatest share in the composition of labour incomes.
According to the returns of household sample surveys in Azerbaijan in 2008 it made up 58% of labour incomes of households, Kyrgyzstan–60%, and Georgia–76%, Armenia, Belarus, Kazakhstan, Moldova, Russia and Ukraine 85 - 96%. At the same time during the recent years the incomes of self-employed persons became more noticeable in the budgets of households. According to the returns of household budget surveys in 2008 the incomes from self employment in Tajikistan made up 52% in total volume of labour incomes, in Azerbaijan and Kyrgyzstan – about 40%. In all Commonwealth countries the increase of social payment amounts (pensions, benefits and scholarships) influences considerably the growth of money incomes. Thus, the increase of pensions in 2008 resulted in 37% of the growth of money incomes in Armenia, in Azerbaijan, Belarus, Moldova, Russia and Ukraine 16-24%.

Earnings from sales of agricultural output produced in personal plots of households make noticeable contribution into the budget of households in Azerbaijan, Kyrgyzstan and Tajikistan (10-17%).

Besides, in Moldova other money incomes (mainly earnings received from the members of households working abroad) make up about 25% of all disposable money incomes of households, in Tajikistan – 35%.

The growth of money incomes was followed by annually increase of money expenditures. In 2008 only, in comparison with 2007 consumer money expenditures (for purchase of food products, non-food goods and services) of households increased in real terms (taking into account consumer price index) in Azerbaijan, Armenia and Moldova by 1-3%, Belarus, Georgia and Russia – by 7-10%, Kyrgyzstan and Ukraine – by 17%, Tajikistan – by 30%, in Kazakhstan. However, in contrast to the past years, when the share of expenditures for nutrition in consumer expenditures decreased gradually; in 2008 the majority of the Commonwealth countries has faced controversially tendency towards its increase, which was initiated firstly by high price growth rates for food products for the recent two years.

Like in the majority of the Commonwealth countries payment for housing and communal services and market services composes the main share of expenditures, in Kyrgyzstan and Tajikistan – transport expenditures.

The increase of the share of expenditures for educational services is caused by further expansion of paid education sphere in some countries (Belarus, Tajikistan and Ukraine). Thus, in particular, the share of students of higher education establishments, who study on payment basis (with full reimbursement of expenditures for education), increased in Belarus from 63% in 2007 to 65% in 2008, Russia–from 61% to 62%, Tajikistan–from 60% to 63%, Ukraine–from 65% to 80%; pupils of secondary specialized education establishments in Belarus–from 44% to 47%, Tajikistan–from 21% to 22%, Ukraine –from 48% to 57%.There was observed also the growth of money expenditures for medical services. In 2008 they made up by countries 3–13% of all expenditures of households for services. The amount of money expenditures for paid medical services depends to a considerable extent upon the level of incomes of household, and paid medical services remain practically inaccessible for population with low level of incomes. Marking growth of real money incomes of population is not sufficient yet to increase cardinally living standard of the most part of population of the Commonwealth countries, solution of many material and housing problems. The measures on environment protection, replacement of used and worn-out equipment, reduction of emission of harmful pollutants into the air are executed slowly.

It is often assumed that Eastern Europeans have been isolated from the global trend of individualization for a long period. There are some reasons for this assumption since collectivist ideology undoubtedly dominated cultural and political life in the region after the Second World War. However, reality was much more complex and complicated than this general assumption might suggest. In the course of the rapid industrialization and urbanization and together with the increase of the general well-being of the population, all forms of modern individualization found their way into the region. The enlargement of the pool of alternatives for personal realization coincided with the fast rise of the general educational level and the ensuing enhancement of personal capacities to make well-founded selections and take proper decisions. Among the major indicators for this development is the rise of the R&D potential all over Eastern Europe. In the former Soviet Union, the R&D potential was concentrated in the Russian Federation and in the Ukraine. In a parallel manner, the development of the scientific communities in Eastern Europe strengthened the potential for conflicts in Eastern Europe.

The political over-centralization and the strong state interventionism into science used to put narrow limits on the “window of opportunities” for individualization of scientists. This was mostly visible

in the restrictions imposed on the international cooperation of scientists from the former Soviet Union. Together with the ideological and institutional flaws in the socialist organization of production and distribution, state interventionism undermined the efforts to establish and maintain a meritocratic system of incentives and recognition of achievement of individuals in science. The desire for active and efficient international cooperation of Russian and Ukrainian scientists could not but clash with some processes in both countries after 1991. No doubt, the privatization of state property and the development of competitive politics were the result of accelerated individualization. The rapid establishment of millions of private firms is an impressive illustration of the scale of the process. The registered hundreds of political parties or thousands of non-governmental organizations in each of both countries would be impossible without the initiative of individuals seeking for new forms of personal realization. This development might be interpreted as the *triumph of individualization* understood as a global trend and as an evolutionary achievement. Previous limitations imposed by the state on mobility, self-expression and communication of individuals disappeared. New biographies were written hastily, new norms coined and new institutions established. Many cherished the hope that the key point of all changes had to be the institutional recognition and practical observation of the unrestricted development and expression of individuals.

Now one might strike a preliminary bottom line of this dimension of the post-socialist transformations. The effects of the global trend of individualization are most clearly visible in the changes of legislation. The background philosophy of the socialist Constitutions was clearly focused on the "*common good"* as conceived as state owned property, ideological and political unity of society and national cultural identity. While taking the common good as an important point of reference, the post-socialist Constitutions or constitutional amendments have a rather different focus. It is the substance and range of *individual human rights*. The strategic difference between the state socialist and the new Constitutions exemplify a profound shift from *collectivist institutional arrangements* towards *institutionalized individualism.* One might assume that the major problem of opening opportunities for unrestricted personal development and actualization has been thus resolved all over the region. A closer look at realities helps to understand that they are rather different than the generalized Constitutional provisions. Across Central and South-Eastern Europe and the NIS countries *individualization via privatization* brought about unemployment, poverty, ethnic clashes and alienation of individuals. The expected revival of communities did not come true. Neither was the universal respect to the rights and freedoms of individuals truly materialized in functioning institutions.

What are the causes and reasons for this unpredicted and in many respects undesirable development? Even the first glance cast at the post-socialist realities immediately recognizes the fact that the fast and far reaching individualization typically came about in the post-socialist societies *at the expense of the common good.* The most impressive example is the looting of state property, as it was practiced in Russia and in the Ukraine on the large scale. Undoubtedly, the state did not effectively manage the productive assets of the increasingly differentiating industrialized societies. That is why the introduction of market mechanisms and privatization of productive assets became unavoidable. The major problem, however, concerns the manner of transfer of state property into private hands. In Russia and the

Ukraine it came about after a rather modest or without any compensation to the societal community since the state institutions were weakened and were not able to control the process. Indeed, the high tide of crime is the most dramatic pathology of individualization, which made itself manifest in the course of the transformation.

The key factor determining the peculiarities of individualization all over Eastern Europe after 1989 is the institutional instability marking the transformation process. Thus, the most fundamental problem of "transitional" societies was and in some cases still is the *high intensity of objective risks* and the institutional incapability to manage them effectively. The resulting erosion of trust in public institutions is an important feature of this situation.

The typical individual reaction to these macro-social processes took the form of what is usually defined as *anomic behavior* having numerous causes and reasons. Some of them like the worldwide economic recession at the end of the eighties and the beginning of the nineties are as objective as natural events. Others are, however, due to basically avoidable human errors or to ill-intended cases of advice and decisions. The sudden liberalization of domestic prices and of international trade was guided in Russia and in the Ukraine by the hope that the "big bang" would immediately re-arrange economic relations. Thus, the liberalization of prices was expected to immediately unleash individual initiative and responsibility. Little thought was given to the practically non-existent market-oriented banking system and stock exchange, insurance and pension schemes, provisions for unemployment. On the other side, the restructuring of industry in terms of technological and market priorities and environmental considerations was permanently postponed.

The reforms were usually carried out in the context of intensive political confrontation and lacking consensus on strategic domestic and international issues. With few exceptions, there were striking discontinuities in the policies of the changing governments. Dysfunctional relations between state institutions became everyday normality. Corruption became the unavoidable outcome. The economic polarization grew fast in conditions of institutional instability and decline of the gross domestic product. Because of the rapid impoverishment of large groups and the weakening of state institutions, crime became omnipresent and a genuine threat to everybody.

The effects of this development might be recognized in the perception of problems pushing Russian scientists to search for professional development and realization abroad.

Tab. 4 - Reasons for emigration of researchers and university teachers at Moscow universities (2004)

Reason	Percentage
Low wages	76
Decline of prestige of intellectual labour	53
Lack of opportunities to realize the scientific potential	50
Threat of social outbursts	40
Anxiety about the future of the children	35
Economic instability, threat of unemployment	35
Vague prospects of the carrier	19

Source: http://www.cisstat.com/eng

Thus, the situation of intensive risks still causes perplexity about the real achievements of accelerated individualization in Russia and to a higher extent in the Ukraine. Given the effects of the institutional and the value-normative disarray, it is not surprising that there is a strong trend to search for individual solutions (emigration) to problems confronting the Russian and Ukrainian scientists. Certainly, there are 'push' and 'pull' factors determining intentions and decisions of scientists in the Western European or North American countries to emigrate as well. What is regarded as 'push' or 'pull' factor for emigration of Eastern European in general and Russian and Ukrainian scientists in particular is being multiplied by a strong 'stress factor' in the local conditions. The lack of transparency, efficiency and reliability of major social institutions determine and reproduce this 'stress factor'. So, the tremendous opening of the window reliability of major social institutions determines and reproduces this 'stress factor'. So, the tremendous opening of the window of opportunities for individualization by means of scientific achievement clashes with tremendous problems in the actualization of these opportunities on the spot in Russia and Ukraine.

Since the collapse of the Soviet Union the loss of highly qualified personnel from the Russian R&D establishments has been a hot issue in political debates. However, it has two rather different dimensions. By far the larger part of the losses is due to the internal migration of highly skilled personnel from the R&D establishments to other branches of Russian economy.

As compared to this loss, the emigration of scientists seems to be negligible. In fact, nobody has ever established this loss in exact numbers. Nevertheless, the issue is publicly regarded as very relevant. Following the stabilization of Russian economy and politics, strategies for handling the issue under the new conditions are publicly discussed and some of these strategies are being applied.

One may only wonder about the cognitive background of the above strategies. No representative studies on the accomplished emigration of Russian R&D personnel or on the trans-national migration potential of Russian scientists are internationally known. Most probably, such studies have not been carried out indeed. What is internationally known concerns small scale surveys on graduate students. In 2003 there was a survey at six faculties (Mathematical, Biological, Physical, Chemical, Computing & Cybernetics, and Economics) of the Moscow State University named after Lomonosov conducted (Ledeneva L, Nekipelova Y, 2003). According to the data 44 percent of the 465 respondents articulated a migration intention. Even more relevant is the conclusion, which a much larger part of the potential emigrants would like to develop carriers in R&D than in the group which definitely would like to stay in the country. After the collapse of the USSR brain drain cover all post-Soviet countries space.

The priority areas for all the newly independent states in the early 1990 were the West and Russia. In the first place visited by representatives of scientific elites do not belong to the titular nationalities-Russians, Russian speaking ethnicities.

In 1990 one of five immigrants from Russia had a higher education, including among retired in Israel-30% in the U.S.-more than 40%, Canada-60%. Among those leaving Germany and Israel, about 80% were people engaged in science and education. Similar processes are followed in other newly independent states. At 40.5% of immigrants who arrived in Israel from the former Soviet Union, the total duration of studies was 13 years and over. (Similar levels of education have only 24.2% of Israelis)

It is estimated that by the end of 1990 permanent core of the Russian scientific Diaspora to West was 20-30 thousand people, yet about 120 thousand people worked temporarily by contract.

The situation has now radically changed. Three critical factors played a role:

1. The development of outsourcing has made physical departure unnecessary.
2. Experience of travel dispelled optimism for a quick integration into receiving states.
3. Differentiation of socio-economic development of the CIS countries, "North-South" fragmentation of the former Soviet Union. North countries are recipients, migrant-receiving countries, while countries of the South are donors.

Russia and Kazakhstan belong to the north. All other countries will belong to South, excluding Ukraine and Belarus, which occupy an intermediate position. The most important consequences of these processes are:

1. Reducing emigration of all the CIS countries, including the scientific elite.
2. Reduction in immigration facilities, especially for students.
3. Change the public discourse on the brain drain to the west of the northern countries of the CIS - Russia and Kazakhstan, and partly - Ukraine.

Tab. 5 - Average wages (in dollars), the CIS countries

Country	2000	2005	2006	2007	2008
Armenia	42.1	113.7	149.7	217	285.7
Azerbaijan	49.5	130.7	166.8	251.5	334
Belarus	73.6	215.2	271.2	323	403.9
Georgia	36.5	112.8	155.9	220.3	…
Kazakhstan	101.1	256.3	323.5	428.2	505.4
Kyrgyzstan	25.7	63.7	81.4	106.4	147.1
Moldova	32.8	104.7	129.2	170.2	243.5
Russia	79	302.5	391.1	531.6	696.9
Tajikistan	8.5	26.8	35.2	47.4	67.5
Turkmenistan	…	…	…	…	…
Ukraine	42.3	157.3	206.2	267.5	342.9
Uzbekistan	…	…	…	…	…

Source: http://www.cisstat.com/eng

If in 1990 from Russia to foreign countries emigrated annually about 100 thousands of people in recent years it was less than 20 thousand people. Emigration set of students in Russia is clearly declining. At the end 1990 by some estimates more than half of Russian students studying abroad, were determined to emigrate.

The situation was similar in other CIS. However, projective set is always overstated. As shown by the large-scale survey of Molodikova I., the most of students from post Soviet countries who are enrolled in the master's program at Central European University (Budapest), returning to their homeland. Nowadays 76% of students already have returned from 1801 enrolled at CEU.

The highest proportion of emigrants to the West is the students from Uzbekistan (36%), Azerbaijan (35%), Belarus (31%), Ukraine (30%), Turkmenistan (29%), and Kyrgyzstan (29%). In this

case they did not always go to the West. Of those who did not return to Uzbekistan, 28% went to the West, and 9% - in other CIS states, mainly in Russia and Ukraine. To date, the motivation to migration decreased even in the least developed CIS countries such as Uzbekistan and Georgia.

Tab. 6 - The proportion of students CEU, not returning to their homeland and migrated to other countries in percentage in 2006

Country	Proportion (%)
Armenia	24
Azerbaijan	35
Belarus	31
Georgia	17
Kazakhstan	25
Kyrgyzstan	29
Moldova	24
Russia	26
Turkmenistan	29
Ukraine	30
Uzbekistan	36

Source: Molodikova, I. "Mobility of graduates of the CIS after studying in Western Universities// Migration in the mirror of the CIS countries (the youth perspective). M: 2006, p. 52"

In Russia, the motivation for emigration started to decline earlier. At the individual faculties emigration sentiments were higher: a chemical faculty going to leave 21% of students on Biological 12%. Substantially less gathered to emigrate among mathematicians and physicists.
The most tolerant of emigration of scientists are young, educated.

Tab. 7 - The proportion of students intending to go abroad, the percentage surveyed students

Place of survey, year	Sample	Going to leave, the percentage of respondents
Georgia (Tbilisi, Kutaisi), 2005	550	12
Russia (Moscow, MSU), 2002	118	14
Uzbekistan (Tashkent), 2005	465	11

Source: Mukomel, V. *Brain drain and brain circulation in CIS countries*, 2008

However, among young Russian scientists focus on the departure reserved. 15% of research assistants and 14% and graduate students were going to leave to work abroad. (The survey was conducted in 2005 among 1,200 scientists in 30 academic institutions in 11 cities of Russia).
It is essential that public opinion is changing the perception of emigration general and the emigration of scientific elite in particular.

The following Figure 1 displays the answers based on the Table 8 according to the total number of responses, where surprisingly respondents understand the motivation of the scientists seeking for better research or working conditions abroad.

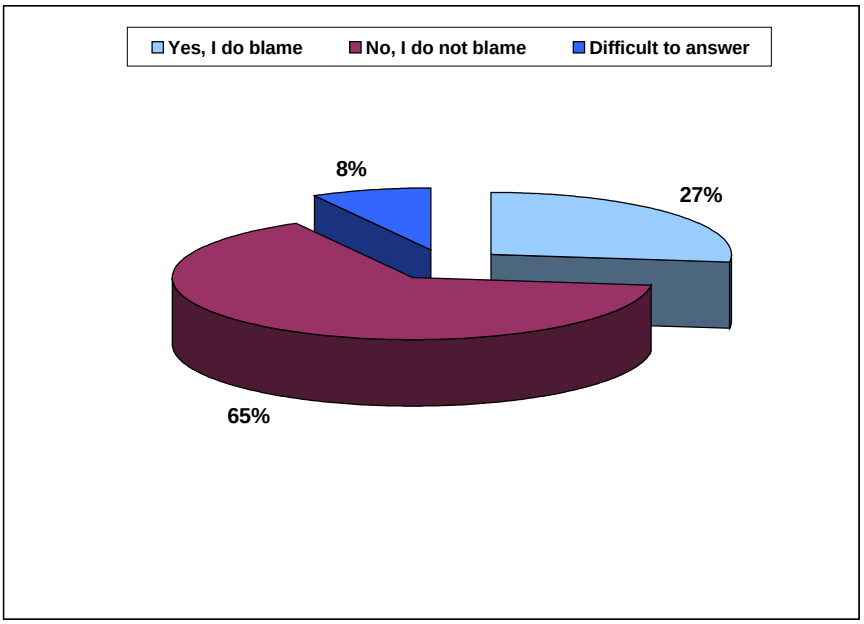
Tab. 8 - Responses to the question: "Do you blame or disapprove of scientists who go to work in foreign research centers?" Percentage of respondents

	Total	At the age 18-35	With high education	With income more than 4500 rubles	Moscow
Yes	27	22	20	18	18
No	65	72	77	73	78
Hard to answer	8	7	3	9	5

Source: Public Opinion Foundation. Nationally representative sample,
Survey conducted in June 30-July 1, 2007 in 100 settlements of 44 regions, of 1500 respondents.
Sampling error does not exceed 3.6%.

The outflow from Russia of people with higher education to the foreign countries decreases with each passing year. This migratory balance with other CIS countries is increasing. A similar process occurs in Kazakhstan. Kazakhstan in 2006 had a positive balance of migration from foreign countries.

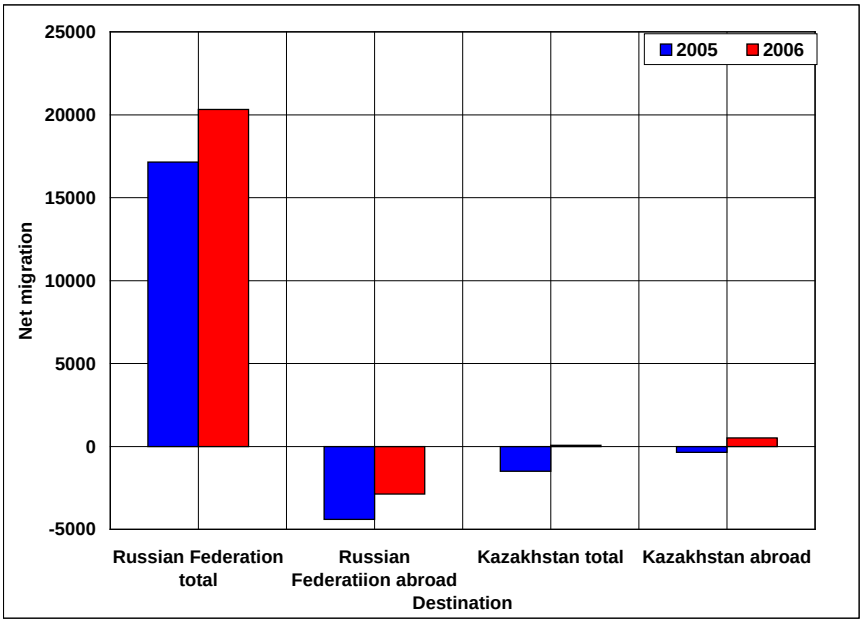
Fig. 1 - ***The response to the question: "Do you think the majority of Russians which go abroad for a long time, are going to remain abroad forever or going to return back?" percentage***



Source: Author's calculations based on Public Opinion Foundation, a survey June 30-July 1, 2007

The number of researchers is higher among labor migrants working in the West. According to some sources, among labor migrants from Uzbekistan in Western Europe, Israel and the United States were 90% higher and secondary special education, 8% had a degree (research by Antimonopoly Policy Improvement Center under the State Committee of Republic Uzbekistan on demonopolization, 2007).

Fig. 2 - Net migration in Russia and Kazakhstan according to number of persons with high level of education for the period 2005-2006.



Source: Author's calculations based on data from the article of Mukomel, V "Brain drain and brain circulation in CIS countries"

Russia has committed itself to training qualified personnel of the CIS countries. In Russia citizenship for educated people has simplified procedure. And the most numerous students in Russia are not from the South countries, but from Kazakhstan. In 2004 Russia trained 16,000 students from Kazakhstan, while in other countries several hundreds (in 1992 22,000 students from Kazakhstan). The number of universities in Kazakhstan over the past 10 years has increased almost twice (1,9 times) and number of students-in 3,6 times. Same tendency does occur in Russia where number of students in Russia also increased which is seen from the below table.

Tab. 9 - The number of universities and students in Kazakhstan and Russian Federation, 1996 and 2006

Year	1996	2006
Number of universities in Kazakhstan	163	297
Number of students in thou.	306	1137
Number of universities in Russian Federation	762	1090
Number of students in thou.	2791	7310

Source: Survey of the Institute of Sociology, Academy of Sciences and the Center for Ethnopolitical and Regional Studies.

Defragmentation of the post-Soviet area along the North-South line defines various patterns of the highly skilled labor movements that can be described as the brain drain and the brain circulation. Within limits of the North brain circulation predominates while the brain drain is specific for the North-South dimension. Decrease of differentiation among standards of living in a donor state and the recipient state is the decisive factor of transition from the brain drain to the brain circulation.

Chapter 4

Intellectual migration and its trends in Kazakhstan in 1999-2008

4.1 General migration patterns

Substantial deterioration of economy after collapse of the Soviet Union had a negative effect on demographic situation in Kazakhstan. The negative influence was reflected in falling of birth rate and rising of death rate. Even more disastrous effect was observed with migration of people. Becker et al. (2005) argued that between 1990 and 1999, on net, 11% of population left country. Kazakhstan had a negative balance in external migration up to 2004.

Tab. 10 - Migration Dynamics (per 1000 population), 1999-2008

Year	Immigration rate	Emigration rate	Net migration rate
1999	2.7	10.9	-8.2
2000	3.2	10.4	-7.3
2001	3.6	9.5	-5.9
2002	3.9	8.1	-4.2
2003	4.4	5.0	-0.6
2004	4.6	4.4	0.2
2005	5.0	3.5	1.5
2006	4.4	2.2	2.2
2007	3.5	2.8	0.7
2008	3.0	2.9	0.1

Source: Agency of Statistics of the Republic of Kazakhstan

Migration situation in the Republic of Kazakhstan in 2002-2005's undergone significant changes. Formed in 2004 the positive balance of external migration in 2005 increased more than 8 times and has reached 22,668 people. Despite the fact that in absolute terms, it is not yet great, positive momentum over the last 5-6 years can be traced very clearly. As a result, the population began to gradually increase. Formally declares made to redress the negative trends in the demographic sphere (including the migration situation) on the basis of success in the socio-economic development.

However, in our view, the external migration to and from Kazakhstan continue to operate trends prevailing in the second half of 1990:

1) Preservation of the negative balance of migration exchange with the main recipient countries of migrants from Kazakhstan: Russia and Germany. The volume of net emigration in the last noticeably decreased, but his balance is still not in favor of Kazakhstan. Net migration exchange with Russia has stabilized at around 23-27 thousand people in favor of Russia.

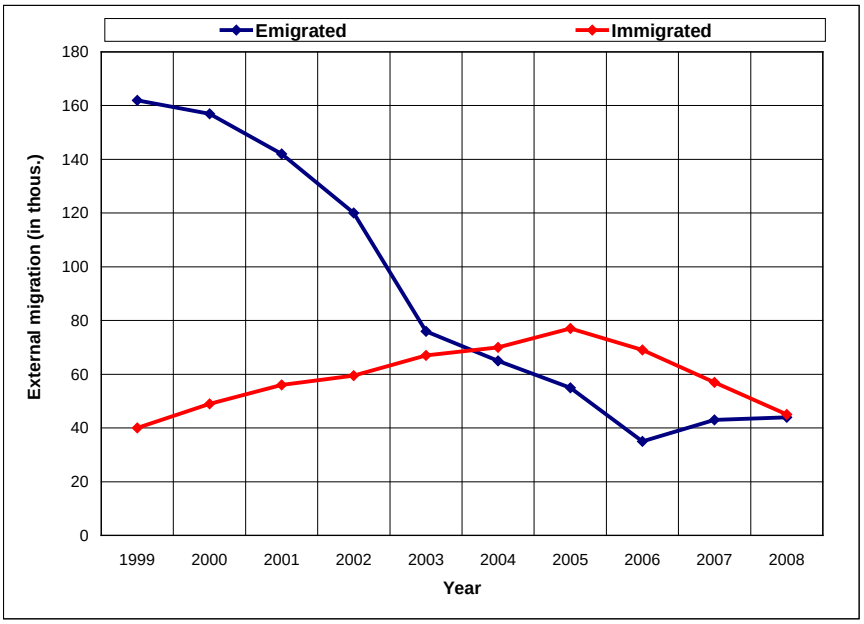
2) Since the second half of 1990 increasing both the volume and the positive balance of migration with Uzbekistan, and to date, its value is actually equal to the loss of migratory exchanges with Kazakhstan in Russia.

3) Create a positive balance of migration exchange with Kyrgyzstan, Tajikistan and Turkmenistan. And although its volume is small (from several hundred up to 2-3 thousand people per year), but he has consistently positive.

Thus, international migration to Kazakhstan in the second half of 1990 has a distinct character of the replacement. An influx of population from the Central Asian countries is replaced by an outflow of Kazakhstani citizens in Russia and CIS countries (mainly Germany). Without going into detail on the characteristics of the structure of incoming migrants, simply note that the process of substitution of population decline, but not its quality.

In addition, such migration is stimulated redistribution of population within the country and in the future - to change the settlement structure. The negative trend in migration that existed till the 2000's broke in 2004, when the net migration rate became positive (see table above). The net migration rate grew by 7.5 times in 2005 (against 2004) and by 46.6% in 2006 (against 2005). However, positive trend changed for the worse in 2007. Net migration rate fell by 68.2% in 2007 (relative to 2006) and subsequently aggravated decreasing by 85.7% in 2008 (relative to 2007).

Fig. 3 - External migration in Kazakhstan in 1999-2008, number of people



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

Emigration trend in period of 1999-2006 was reflected by general economic situation in Kazakhstan which was characterized by fast oil-fueled growth. Immigration in Kazakhstan, in its turn was stably increasing since 1999 (see above figure 3). This increase in inflow of people in Kazakhstan reflected generally good economic conditions presented in the country. Immigration rose from 41320 in 1999 to 74807 in 2004. However, the established positive trend reversed in 2005, whereby the total number immigrated started to fall by reaching 46404 people in 2008. So did a balance of migration. While becoming positive only in 2004, it gradually increased by eight times in 2005 and by 46% in 2006 (relative to previous year). In spite of significantly demonstrated growth, the balance of migration reflected fall. Comparing with 2006, the migration balance dropped by 67% in 2007. It declined even further by 90% in 2008 relative to 2007. What makes a sense is that the balance of migration equaled only to 1117 in 2008. Both external emigration and immigration declined in the first three quarters of 2009 against the corresponding period of 2008. External emigration fell by 11.35% (from 30550 to 27080), external immigration – by 20.2% (from 36 852 to 29 396). External emigration consists of emigration to CIS3 countries and emigration to other countries. By that division, external emigration to CIS countries decreased by 12.2%, external emigration to others countries (non-CIS countries) rose by 3.7% instead. (Rakurs Center for Economic Analysis, 2009)

Decreasing trends in immigration observed since 2005, affected the balance of migration. It's positive value declined by 63.2% (from 6302 to 2316) in the first three quarters of 2009 against the corresponding period of 2008.

4.1.1. Ethnic Structure of Migration

Considering the ethnic structure of migrants several issues can be addressed. Specifically, emigration of Russian ethnicity from Kazakhstan steadily decreased in 1999-2006 by more than 75% (from 91 489 in 1999 to 22 708 in 2006). However, in 2007 emigration of Russians returned to growth path, when the number of leaving the country increased approximately by 30% relative to 2006 level. The following table 11 is displaying the ethnic structure of the immigrants and emigrants.

Tab. 11 - Ethnic structure of immigrants/emigrants: 1999-2008

	Immigrants			Emigrants		
	Kazakhs	Russians	Others	Kazakhs	Russians	Others
1999	26,4	48,6	25,0	5,0	55,5	39,5
2000	37,3	39,1	23,6	4,5	58,6	36,9
2001	46,2	31,7	22,1	4,2	57,8	38,0
2002	53,8	26,0	20,2	4,6	58,4	37,0
2003	60,1	22,9	17,0	5,9	55,5	38,6
2004	69,0	18,2	12,8	5,2	59,7	35,1
2005	77,3	13,1	9,6	5,5	62,4	32,0
2006	73,0	14,0	13,0	6,8	67,4	25,8
2007	78,2	12,5	9,3	5,3	69,5	25,2
2008	75,6	13,5	10,9	5,0	69,8	25,1

Source: Agency on Statistics of the Republic of Kazakhstan

Tab. 12 - Ethnic structure of external migration: 1999-2008 (as a percentage of each Ethnicity's population)

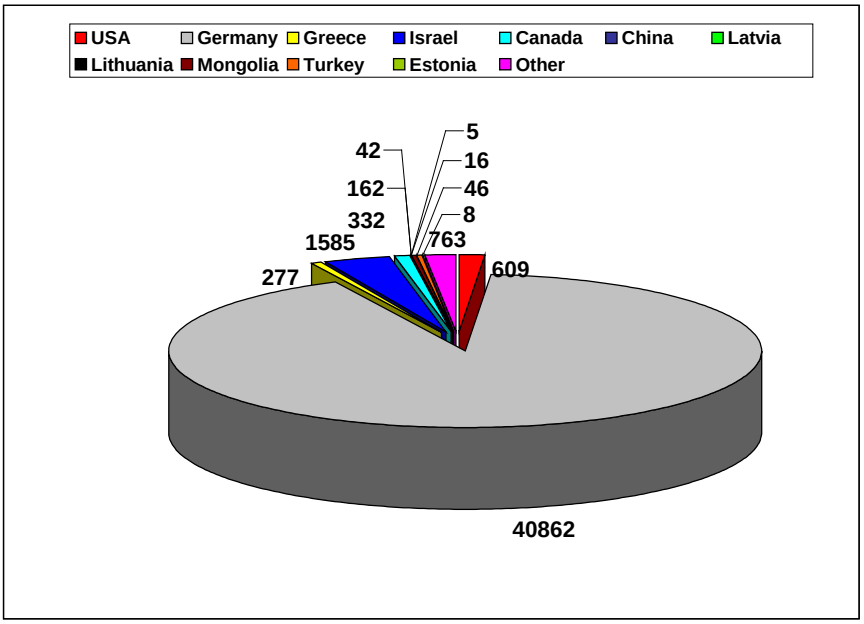
	Immigrants							
	Kazakhs	Russians	Ukrainians	Uzbeks	Uigurs	Tatars	Germans	Other ethnicities
1999	0,14	0,45	0,46	0,28	0,05	0,45	0,40	0,54
2000	0,22	0,42	0,41	0,58	0,07	0,46	0,36	0,58
2001	0,30	0,40	0,44	0,32	0,07	0,47	0,39	0,77
2002	0,38	0,36	0,38	0,32	0,07	0,43	0,38	0,84
2003	0,47	0,36	0,38	0,28	0,11	0,43	0,44	0,76
2004	0,55	0,30	0,30	0,20	0,10	0,35	0,38	0,60
2005	0,66	0,24	0,21	0,16	0,07	0,26	0,31	0,53
2006	0,55	0,23	0,19	0,27	0,04	0,27	0,27	0,69
2007	0,46	0,17	0,14	0,10	0,04	0,21	0,23	0,37
2008	0,38	0,16	0,15	0,10	0,05	0,19	0,24	0,37
	Emigrants							
	Kazakhs	Russians	Ukrainians	Uzbeks	Uigurs	Tatars	Germans	Other ethnicities
1999	0,10	2,04	2,79	0,26	0,05	1,59	9,24	1,57
2000	0,09	2,08	2,59	0,15	0,06	1,59	8,83	1,36
2001	0,07	1,91	2,29	0,13	0,05	1,38	9,83	1,16
2002	0,07	1,67	1,99	0,12	0,04	1,22	8,65	0,99
2003	0,05	0,99	1,19	0,08	0,02	0,69	6,25	0,68
2004	0,04	0,96	1,10	0,05	0,03	0,61	4,95	0,57
2005	0,03	0,81	0,95	0,04	0,02	0,52	3,32	0,43
2006	0,03	0,57	0,62	0,03	0,01	0,35	1,11	0,33
2007	0,02	0,75	0,78	0,02	0,02	0,44	1,35	0,40
2008	0,02	0,81	0,85	0,03	0,02	0,45	1,42	0,42

Source: Agency of Statistics of the Republic of Kazakhstan

In period of 1999-2006 population ethnic composition changed dramatically. Significant reduction of European ethnicities was observed. Specifically, fall in proportion of Russians, Ukrainians and Germans in total population of Kazakhstan occurred. Numerically, proportion of Russian ethnicity declined by 12.9%, Ukrainians – by 19.7% and Germans – by 38.6% during 1999-2006. Conversely, share of Kazakh ethnicity in total Kazakhstan population rose by 9.87% (from 53.3% in 1999 to 58.6% in 2006) in the same period. Uzbek and Uigurs ethnicities demonstrated growth too, whereby their respective portion increased by 13.9% and 7.5%. The basic flow of expatriates was leaving the country for permanent residence in Russia and Germany.

The first wave of emigration is in the vanguard of the early 1990's. Was the most mobile part of the population, mostly with a high level of education, working age, went to the CIS and abroad: Russia, Germany, Israel, USA, Canada and Australia. It is scientists, engineers, computer scientists, skilled workers and other professionals, to quickly integrate into the host society.
A sharp, significant excess of emigration over immigration reflected the deterioration of socio-economic (the economy's decline, the standard of living), the political situation, a threat to national security of any country. In 2003 still maintained a negative balance 9062 persons. For comparison: in 1994, migration decline or shortfall amounted to minus 406,679 persons. Thus, ten years of migration loss (net migration) decreased in 45 times (Rakurs Center for Economic Analysis, 2009).

Fig. 4 - Share of emigrants of Kazakhstan in non CIS countries, 1999



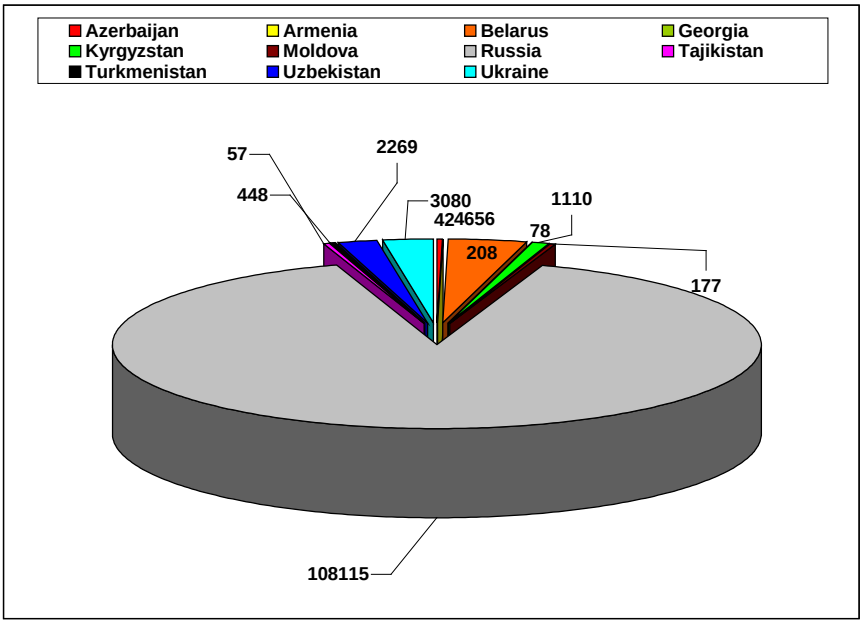
Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

Having studied the data on external migration as a percentage of each ethnic population size, essential alterations with emigration of Russians, Ukrainians and Germans were observed. Initial reduction in outflow of the above mentioned ethnic groups in 1999-2006 reversed in 2007. Extension of emigration of Russian, Ukrainian and German ethnic group occurred in 2007. Numerically, the emigration of Russians increased by 17.7% in 2007 (relative to 2006) and by 6.24% in 2008 (relative to 2007). Emigration of Ukrainian and German ethnic groups went up by 16.12% and 23.5% correspondingly in 2007 (against 2006) (Rakurs Center for Economic Analysis, 2009).

In 2005, after five years since the 1999 census, renewed edition of the Demographic Yearbook of Kazakhstan. 2004 marks a radical change. For the first time in the past decade has seen a positive balance of migration. In Kazakhstan arrived, took citizenship or permanent residency status gained 69,166 and 65,785 people dropped out. Surplus - 3,381 people. Also for the first time in the past five years, in July 2004, the population reached more expected in anticipation of the 1999 census, 15 million levels.

Along with Russia, Kazakhstan has become a receiving country in the recent years hosting seasonal labor migrants from Kyrgyzstan, Tajikistan, and Uzbekistan (Sadovskaya, 2006). Having lost 20% of its population due to mass emigration of Slavic people, Germans and Jews in the 1990s, Kazakhstan faces labor deficit. Skilled labor migrants come from Russia (to oil industry, transports, and construction) and countries from outside the CIS area.

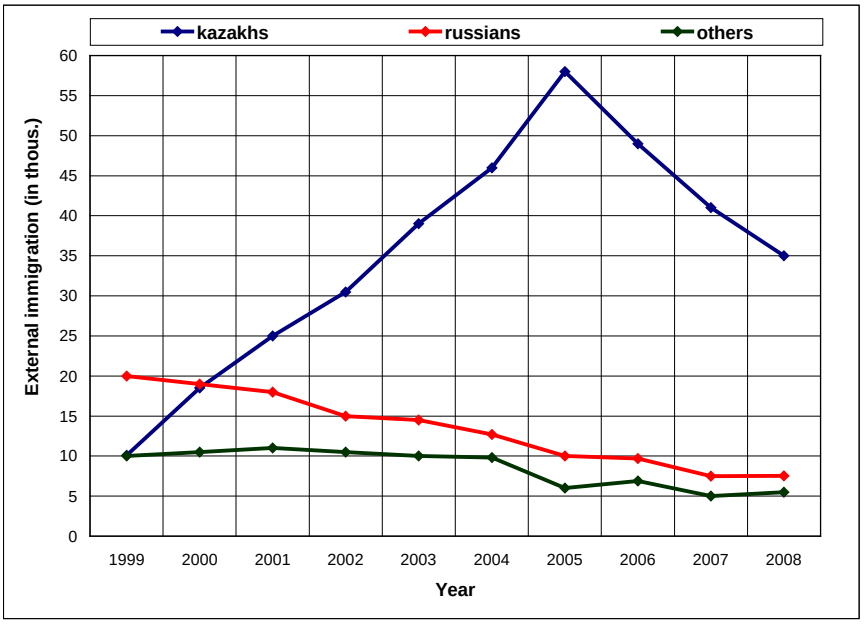
Fig. 5 - Share of emigrants of Kazakhstan in CIS countries, 1999



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

The process of Kazakh ethnic group immigration changed for the worse in 2006 and aggravated in subsequent years. Particularly, Kazakh immigrants taken as a share of Kazakh ethnicity living in Kazakhstan, decreased by 17.5% in 2006 (relative to 2005), by 16.2% in 2007 (relative to 2006) and by 17.8% in 2008 (relative to 2007). The world economic crisis can barely gave occasion for such significant reduction of Kazakh ethnic group, since the reduction occurred in 2006, in period of rapid economic development in Kazakhstan.

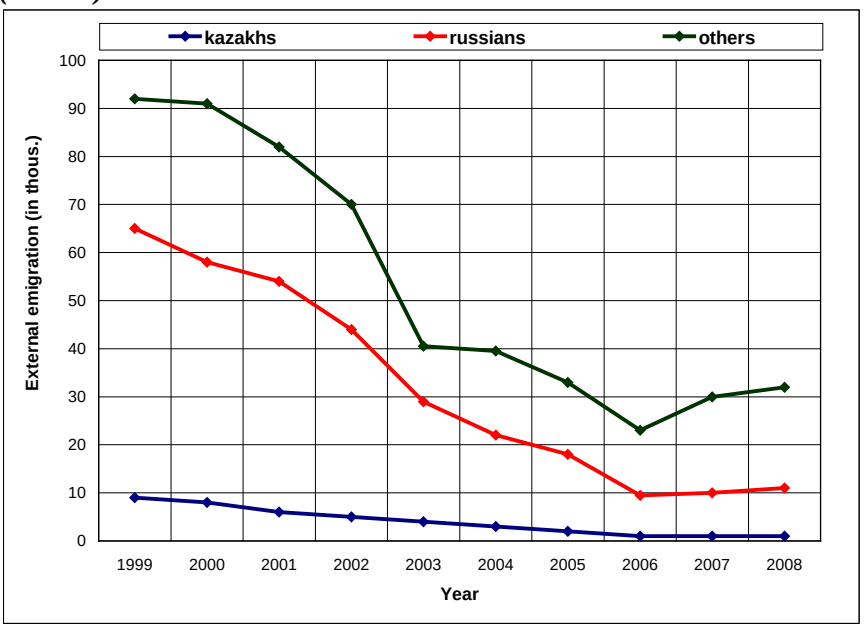
Fig. 6 - External immigration in 1999-2008 by ethnicities, number of people (in thou.)



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

Break in continuously increasing immigration of Kazakh ethnicities was disclosed. The number of Kazakhs migrated to Kazakhstan increased by almost 4.5 times in 2005 relative to 1999 (from 10909 in 1999 to 57850 in 2005).

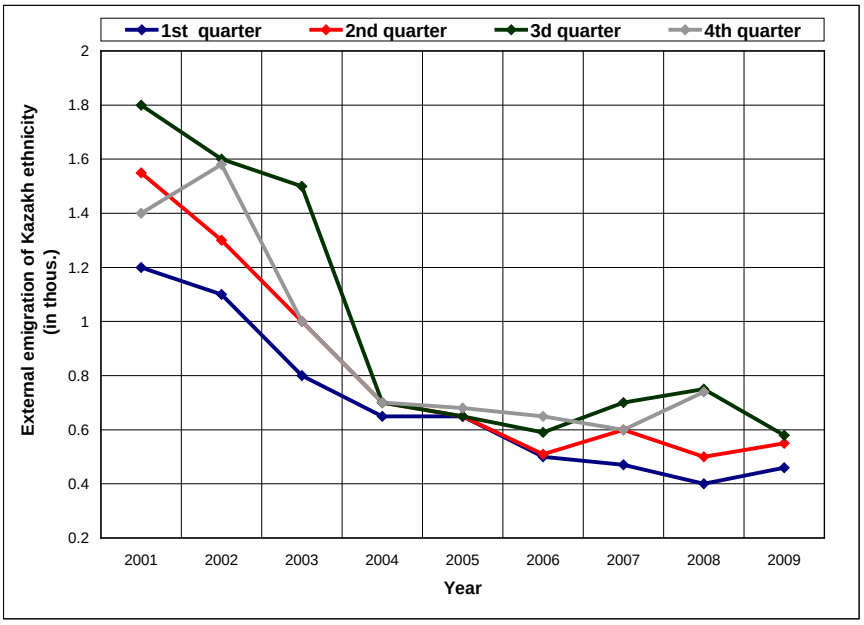
Fig. 7 - External emigration in 1999-2008 by ethnicities, number of people (in thou.)



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

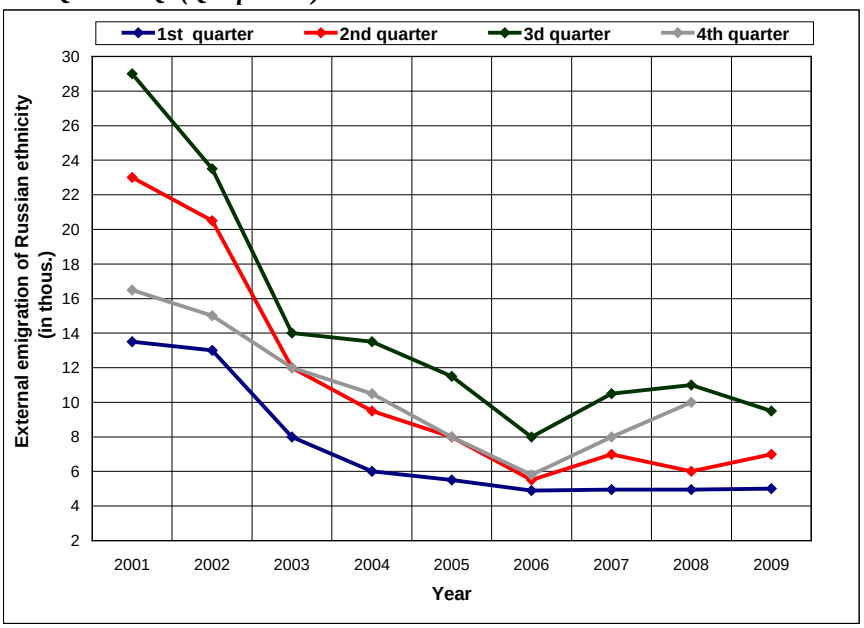
However, beginning from 2005, the return of Kazakh ethnic group to their motherland reflected downturn. In 2006 immigration of Kazakh ethnicity fell by 15.8% (relative to 2005), in 2007–by 14.3% (relative to 2006) and in 2008 – almost by 16% (relative to 2007).

Fig. 8 - External emigration of Kazakh ethnicity (number of people) in 2001Q1-2009Q3 (Q - quarter)



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

Fig. 9 - External emigration of Russian ethnicity (number of people) in 2001Q1-2009Q3(Q - quarter)

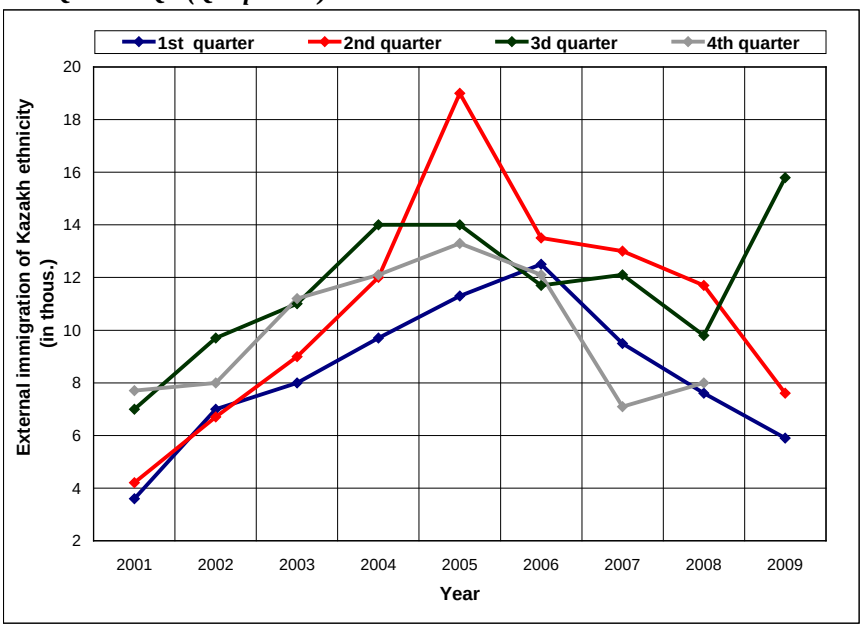


Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

On the Figure 8 we observe that external emigration of Kazakh ethnicity rose by 19.3% in the first quarter of 2009 (to corresponding period of 2008) and by 10.5% in the second quarter. However, the outflow fell by 17.1% in the third quarter of 2009. Usually, the third quarter in Kazakhstan is the peak period for emigration (Becker at al 2005). Russian ethnicity outflow demonstrated extension in the first and second quarters of 2009 as well. Particularly, it increased by 14.5% in the first quarter of 2009 (against corresponding period of 2008) and by 22.7% in the second. In the third quarter 2009 emigration of Russian ethnic group diminished by 17.7%. (Figure 9) The same emigration patterns were observed with emigration of other ethnicities (all other ethnic groups, which don't enter Kazakh or Russian ethnicity). Specifically, emigration of this group grew by almost 40% in the first quarter of 2009 (against the corresponding period of 2008) and by 16.5% in the second. It revealed reduction by 23.3% in the third quarter of 2009, as in situation with Kazakh and Russian ethnic groups.

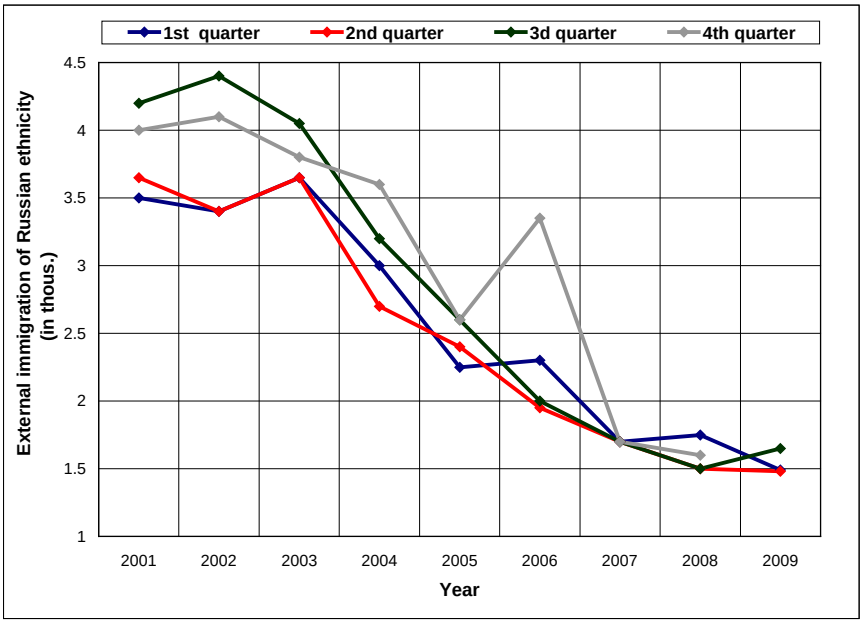
As shown on the Figure 10 immigration of Kazakh ethnic group continued reduction in the first and second quarter of 2009. Numerically, the inflow of Kazakhs declined by 23.2% in the fist quarter of 2009 (relative to the corresponding period of 2008) and by 35.9% in the second.

Fig. 10 - External immigration of Kazakh ethnicity (number of people) in 2001Q1-2009Q3 (Q - quarter)



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

Fig. 11 - External immigration of Russian ethnicity (number of people) in 2001Q1-2009Q3(Q - quarter)



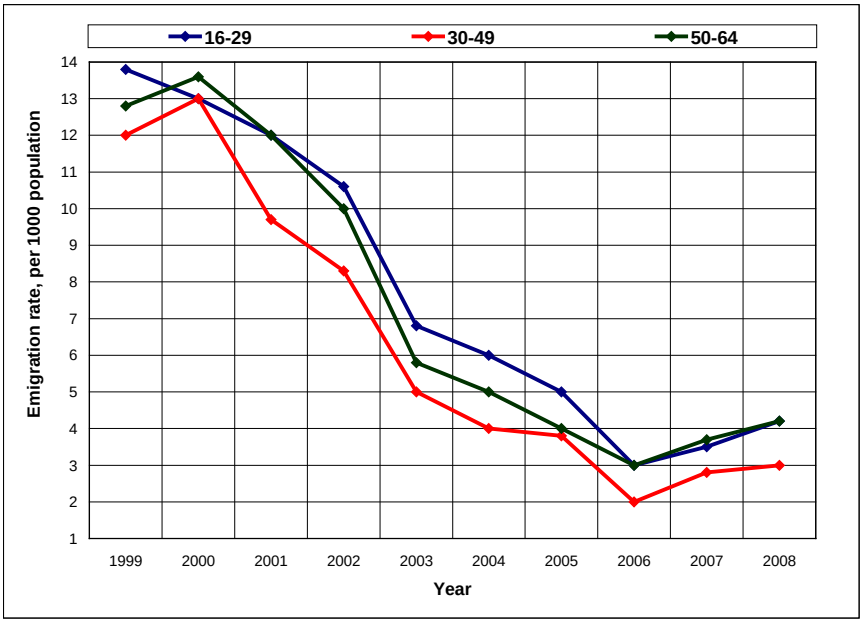
Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

However, immigration of Kazakh ethnic group rose by 60.2% in the third quarter of 2009 against the comparable period of 2008. Figure 11 shows that external immigration of Russian ethnic group fell by 19.2% in the first quarter of 2009 and by 0.67% in the second. Conversely, the inflow of Russian ethnicity demonstrated growth in subsequent period. It increased by 22.1% in the third quarter of 2009 against the corresponding period of 2008.

4.1.2. Age Structure of Migration

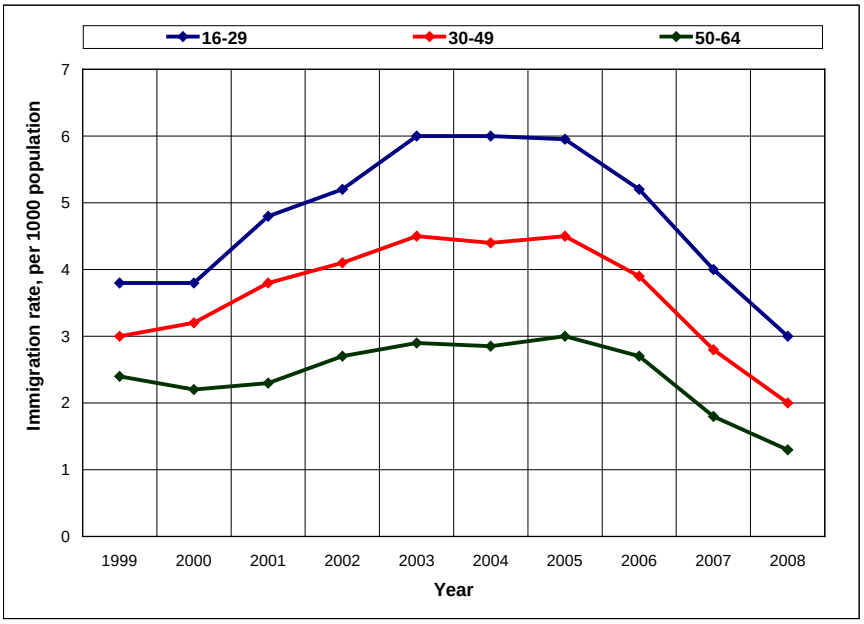
Turning to emigration by age, the same decreasing trends were observed in 1999-2006 as with ethnicities. Again, starting from 2007 completely different trends came in reality. Emigration of those aged 16-29, 30-49 and 50-64 correspondingly increased by 21.5%, 34.9% and 13.36% in 2007 (relative to 2006). The emigration of people aged 16-29 and 30-49 aggravated further in 2008. Correspondingly, emigration rates of 16-29 and 30-49 age groups grew by 21.8% and by 6.22% in 2008 (relative to 2007). Outflow of people aged 50-64 declined instead. The immigration rate of 50-64 age cohorts fell by 18.6% in 2008 against 2007.

Fig. 12 - Emigration rate in 1999-2008, by age groups, per 1000 population



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

Fig. 13 - Immigration rate in 1999-2008, by age groups, per 1000 population



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

Immigration rate by age reflected reverse trend in 2005 as with other immigration processes. Correspondingly, immigration rates of people aged 16-29, 30-49 and 50-64 dropped by 11.9%, 15.5% and 11.8% in 2006 (relative to 2005). The mentioned rates lessened further in 2007 and 2008, thus establishing continuous negative trend. Accordingly, the immigration rate of 16-29, 30-49 and 50-64 age groups fell by 23.5%, 27.8% and 33.1% in 2007 (against 2006) and by 24.6%, 27.5% and 29.4% in 2008 (against 2007).

4.2 Brain drain in Kazakhstan

4.2.1. Educational system in Kazakhstan

The system of education consists of:

- Preschool education
- General secondary education
- Out-of-school training and education
- Family education
- Secondary vocational training
- Secondary technical education
- Higher education
- Post-higher education
- Development of professional competence and in-service training.

The mandatory general education for young people, ages 7 through 16, is provided by various institutions. Before independence, the majority of students attended just over 8,000 primary and secondary schools.

However, in 2000, the national population decreased which resulted in a slight reduction in the number of schools and students.

There are three main stages in Kazakhstan’s primary education consist of:

- Primary school, grades 1 through 4
- Secondary school, grades 5 through 9
- High school, grades 10 and 11.

It is a common practice that all three stages function under one administration and are located in the same building.

Higher education

In 2004, high school graduates had to pass a new exam, “Edinoe Nacional'noe Testirovanie” (Unified National Examination Test) and receive the corresponding diploma, “Certificat o Rezul'tatah|” of UNET (replacing the Complex Testing Exam) to enter a university. Presently, there are universities, academies, and institutes, conservatoires, higher schools and higher colleges. The three main levels of higher education include:

- Basic higher education that provides the fundamentals of the chosen field of study and leads to the award of the Bachelor degree
- Specialized higher education after which students are awarded the Specialist's Diploma
- Scientific-pedagogical higher education which leads to the Master's Degree.

Full-time postgraduate studies (Aspirantura) that lead to the qualification of Candidate of Sciences (CSc.) (Kandidat Nauk) normally last for three years, and the submission of a thesis is required. In the new system, a PhD is conferred after two to three years' further study beyond the Master's Degree. The Doctor of Sciences (Doktor Nauk) is awarded after the Kandidat Nauk and after completion of a thesis based on original research.

Equal Opportunity

Equaling the educational opportunities for boys and girls was a major goal of the Soviet Union and remains as such in independent Kazakhstan. Before 1917, the education of girls was organized within families to teach girls their traditional roles as wives, mothers, and cooks. In 1920 and 1921, only 1900 Kazakh girls attended school. In 1976, this number rose to 424759 and in 1999, the number rose to more than one million. Today, all schools are coeducational.

Additionally, instruction is offered in 21 languages:

- Kazakh (3291 schools)
- Russian (2406)
- Russian and Kazakh (2138)
- Uzbek (77)
- Tajik (16)
- Ukrainian (16)
- German (16)

- Uighur (13)
- Other languages (86)

As for higher education, 177000 students are taught in Russian, and 77000 students in Kazakh. Since Russian scholars were the pioneers of science and engineering in Kazakhstan, the Russian language is used more in the poly-technical, technological, and scientific schools of higher learning. In some majors, teaching is also conducted in Uzbek, English, or German languages.

Private Education

During the Soviet years, Kazakhstan had no private educational institutions; they all belonged to, and were run by, the government. When Kazakhstan was granted independence however, the constitution allowed individuals, public organizations, and churches to open private educational institutions. The amount of non-state educational institutions in the early 1990s increased, but over time, student enrollment decreased.

The private initiative was on the rise and many new entrepreneurs wanted to open schools; however, the quality of teaching in state-owned schools remained better. The public and the parents who experienced enthusiasm about private education at the beginning of the 1990s became disappointed about the low quality of instruction. The entrepreneurs were more interested in the number of students and less in the quality of teaching. The parents started withdrawing their children from private schools and sent them back to public schools. The picture was different in non-state vocational secondary schools. In 1991, there were no non-state vocational secondary schools, as compared to 99 in 1999. The enrollment of students increased from zero in 1991 to 33000 in 1999.

As more young people desired to make money and capitalist incentives became stronger, attendance in vocational schools became significantly higher. This is also because of the desire of some parents for their children to be financially independent in the wake of growing poverty.

Improvements

The aim of the governing body, the Ministry of Education and Science, is to implement Kazakhstan’s state policy in the field of education and science, as well as general scientific and methodical guidance over all educational and scientific institutions.

To improve its education system, the government has begun to close poorly performing universities, including 36 higher education institutions that were not meeting national standards. In addition, Kazakhstan has committed to the Bologna Process, which aims to harmonize European education standards, and is planning to seek international accreditation of higher education institutions. Over 30 million tenge of budget funds has been allocated for five universities to work towards international accreditation each year.

The growth of non-state institutions of higher learning was on a constant rise in the country from zero in 1991 to 106 in 1999. Kazakhstan's Association of Educational Institutions was established in 1996 in order to accomplish the following:

- Develop the nongovernmental sector of education

- Improve the quality and range of services
- Democratize and ensure wholesome competition.

In 2000, the Association included 71 private universities and 45 colleges. It actively participated in developing the legal base for the institutions of different levels.

The educational policies, facilities, and efforts, such as those previously discussed, have created a substantial educated human capital in the twentieth century, leading Kazakhstan to become more industrialized than other former Soviet republics in Central Asia.

"Bolashak" Scholarship

Reforming the educational system by training highly qualified professionals is always the key to making a society more progressive and democratic. Some historical examples of success stories include:

- Post World War II Japan
- Singapore
- Hong Kong

Educational development has been a key component of the national development strategies of Southeast Asian nations. For example, Singapore has become known world-wide for the government-led transformation of its society between 1960 and 2000. A small city-state, Singapore is without question the best example of institutional reengineering through the application of a rational managerialist philosophy at the national level. As the Singaporeans themselves often observe, their economic prosperity has been achieved without any natural resources other than their location and their people. Thus, they attribute their progress largely to their successful efforts to take optimal advantage of the human capital in their society (Naisbitt, 1997; Rohwer, 1996; Stewart, 1997).

These nations have built economically and politically viable states through pursuing an active policy of learning from the most advanced educational systems in the world.

In 1991, Kazakhstan was faced with a myriad of difficulties inherited by the Soviet Union, including:

- Economic turmoil
- Social inefficiency
- A legacy of environmental disasters
- A huge stockpile of nuclear weapons.

At that point, Kazakhstan had a choice: empowerment through force and dictatorship, or prosperity through disarmament and democracy. Kazakhstan President Nursultan Nazarbayev chose the latter, and today Kazakhstan is emerging as a new player in the global economy, and a key component to regional and world stability.

In 1993, Kazakhstan was the first Central Asian country to launch a presidential scholarship program, Bolashak, meaning "The Future" in Kazakh. This program highlights the importance of educating and training Kazakhstan's most talented youth at the world's best universities. On November 9, 1993, President Nazarbayev decreed, "In Kazakhstan's transition toward a market economy and the expansion of international contacts, there is an acute need for cadres with advanced western education,

and so, it is now necessary to send the most qualified youth to study in leading educational institutions in foreign countries".

Consequently, Bolashak scholars are trained in the following fields:

- Business
- International relations
- Law
- Science
- Engineering

Upon completion of their programs, recipients return to Kazakhstan and engage in governmental work for a period of five years. The rigorous criteria for selecting Bolashak scholars assures that only the best and most promising students, regardless of ethnicity, are named Bolashak Scholars.

This program, fully funded by the Government of Kazakhstan and overseen by the Ministry of Education and Science, has been a top priority for President Nazarbayev. In keeping with the goal to develop and modernize society, this initiative is one of many bold educational reforms designed to foster democracy.

The desire to have students study the democratic system of government is one of the reasons that most are sent to the United States. "We are learning from the positive example of American democracy," President Nazarbayev stated, "and the government of Kazakhstan wants them to come back and implant into the Kazakh soil not only the updated professional knowledge obtained at the best US universities but also seeds of democracy and civic education." The government of Kazakhstan is confident that democracy can be sustained through:

- Updating education
- Strengthening skills
- Fostering the intellectual elite.

4.2.2 Analyses of the intellectual migration flows

According to the UN Development Program, as a result of external migration in the 1992-2004 years Kazakhstan has lost 2078 million people (Development of an Electoral Culture in the Population, 2006). More than two million Kazakhs moved to foreign countries in search of a better life. Soviet scientists, engineers, nuclear physicists have migrated to Germany, the USA and other countries where they were given the opportunity to conduct research and receive a decent wage. With the improved economic situation in the country of out-migration flows were gradually reduced, but still, many talented people of Kazakhstan, not finding themselves at home, continue to leave the country.

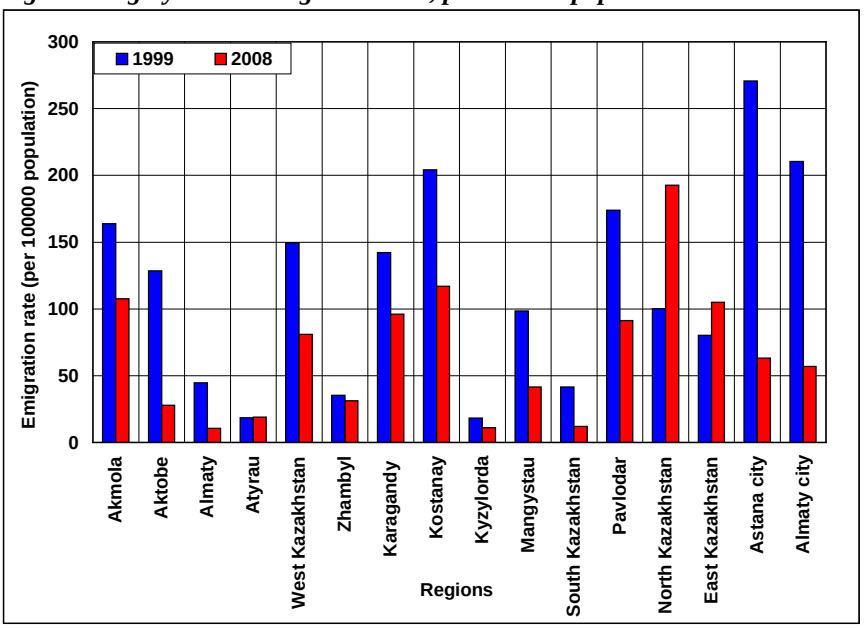
President Nursultan Nazarbayev in 2008 called for all scientists who are abroad, to return to Kazakhstan to support the development of domestic science, promising to pay decent wages and the opportunity to engage in research on the most modern equipment (Report "Education and Science in numbers", Ministry of Education of the Republic of Kazakhstan).

With experts in the sciences all clear - our physicists, chemists, biologists, mathematicians were always in demand in developed countries. Many of them are that the "Soviet" school went back in 90.

Others, who are younger, tend to receive education abroad, and there remain. The question today is different. Kazakhstan began to leave not only the precision, but also specialists far inaccurate occupations, including economists, international affairs, civil servants, politicians, businessmen and etc.

For migration movements of sovereign Kazakhstan is fifteen years, they already have their history, they can be divided into “stages”, to analyze the dynamics, direction, volume. What are the causes and consequences of migration in Kazakhstan, which promises a future scenario of the migration and wider - the demographic and social development? Without answers to these questions, it is impossible to build well thought-out and effective policies. From 1992 to 2002 due to emigration and falling birth rates the population of Kazakhstan was reduced by 10 percent and amounted to 14825 million inhabitants (Agency of Statistics of the Republic of Kazakhstan). In the migration flows dominated the Slavs and Germans, 63-65 percent of departures were of working age, and about 45 percent had a higher and special secondary education. And overall, the migration processes in Kazakhstan that time can not be called successful, since the number of emigrants from the country many times larger than the number entered into it. The following figure displays clear evidence of the changes occurred.

Fig. 14 - Highly skilled emigration rate, per 100000 population



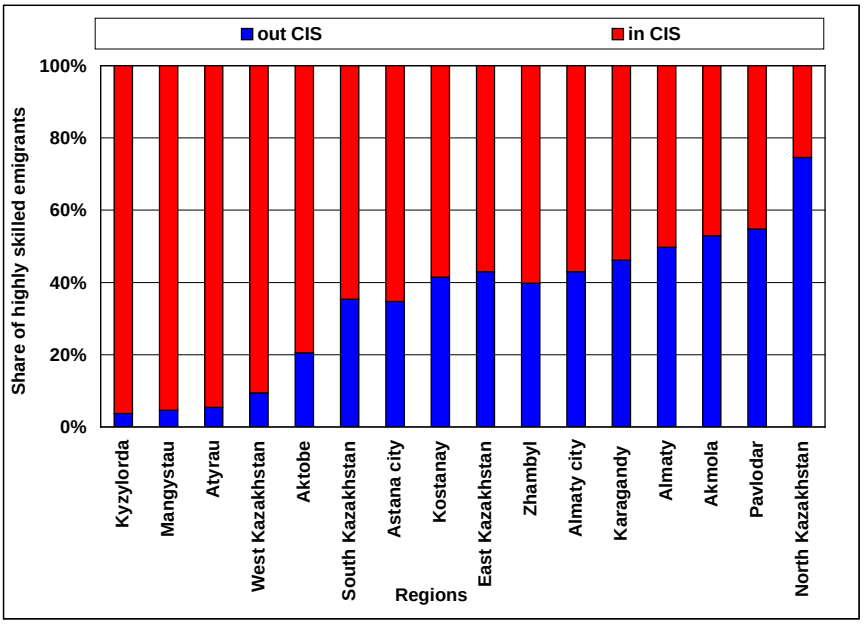
Source: Author’s calculations based on data from the Agency of Statistics of Kazakhstan

As we can see in this picture, in the late 90's, the proportion of the majority of emigrants with higher education refers to Astana. This is mostly people who did not believe in the future of this city. But as the figure shows over the years there intellectual emigration of highly skilled people reduced. In contrast, Atyrau region hasn’t this problem at all, because of the regional development and of course the grip of "good places" for skilled workers due to the presence of oil.

The likelihood of emigration was relatively low in the oil region of Atyrau, rural mining areas and conservative, rural South Kazakhstan. In contrast, the risk of emigration was highest in the northern, heavily European, regions of North Kazakhstan, Akmola region, Pavlodar, Kostanai, and Karaganda. Despite the fact that Almaty City was a relatively prosperous location, it also experienced substantial net

emigration, suggesting that the old capital may have served as a staging region for emigration from other areas. In contrast, the migration process the 2000's show positive trends. The intensity of emigration flows declined and negative migration balance stabilized. Compared with 1994, when a peak of emigration from Kazakhstan, in 2004, emigration has decreased in 7.3 times and amounted to 66.5 thousand people. In 2004, the first time in 36 years, recorded a positive balance of migration, which amounted to 2.7 thousand people. In 2005, the trend of increasing the surplus increases and reaches 22.1 thousand people. What are the consequences of emigration in 90's? In the 90's of last century the state decided the priority of economic problems and, unfortunately, failed to take appropriate measures to stop so-called "brain drain", which always has negative medium and long-term implications for national economies. In Kazakhstan, the impact of intellectual emigration has not yet analyzed. For example, Russian scientists to assess their economic impact of "brain drain", annual irrevocable exile 50,000 specialists with higher education that has occurred in Russia in the 90's, 25 billion dollars per year, which is comparable with the amount of outflow of the country's monetary capital. In the United States influx of specialists from Russia, Asia and other countries since the early 90's is 1 million people. This inflow is estimated at 500 billion dollars. Economic damage from the intellectual emigration from Kazakhstan can be estimated by a similar method. Departure of specialists with higher or incomplete higher education of Kazakhstan for the period from 1992 - 2005 years amounted to 200 - 250 thousand people, and the total damage from "brain drain" can be estimated at 100 - 125 billion dollars. In addition to the intellectual emigration from the country left hundreds of thousands of skilled workers with secondary education employed in the industrial and agricultural sector, almost one million Germans, mostly employed in agricultural work. In connection with the retirement of large numbers of skilled professionals and workers in the labor market of Kazakhstan is now an acute shortage of labor in industry, agriculture, education and other sectors.

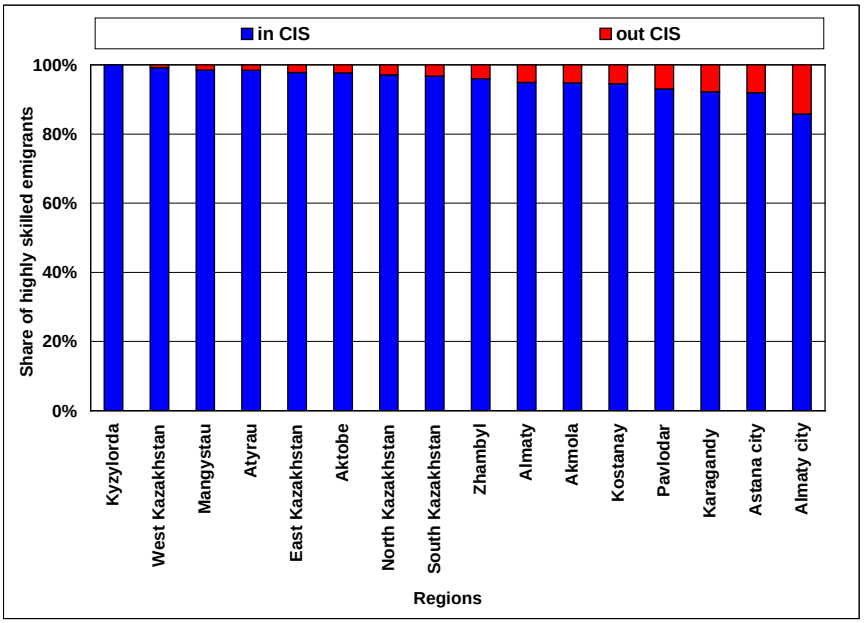
Fig. 15 – Share of highly skilled emigrants, in and out of CIS countries, 1999 (in percentage)



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

As the figure above shows, in 1999 among north regions dominated emigration abroad, especially to countries outside of the CIS. Astana city, Pavlodar, Akmola, North Kazakhstan and Kostanay regions are evidence of this. It should be noted that the Germans, Russian, Ukrainian, Ingush and other ethnic minorities, who went to their historic homeland were settled, primarily, in north of Kazakhstan. Among them were a very large number of highly educated people. It is possible to explain by this factor such a large emigration. Over the years, flow of highly qualified people from the north has decreased, due to reduction in the number of ethnic minorities who wanted to leave Kazakhstan and, of course, it is impossible not to mention economically favorable situation in the country.

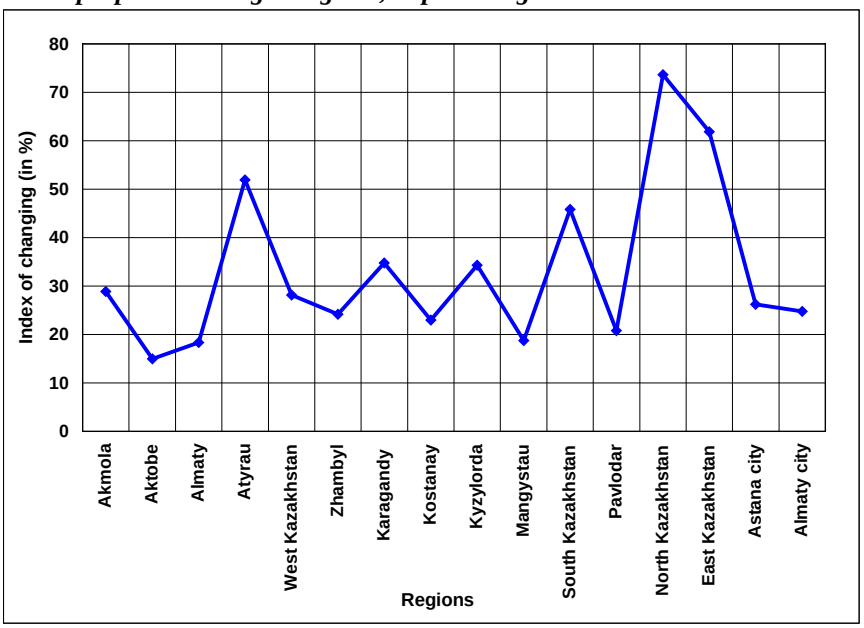
Fig. 16 –Share of highly skilled emigrants, in and out of CIS countries, 2008 (in percentage)



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

In case of Almaty city this is primarily explained by the economic crisis, moving of capital to Astana, and certainly the largest number of well-educated people who did not want to stay at this crucial juncture and who preferred to search future in other countries. And among them number of indigenous people are dominated. Nowadays, this situation in comparison with other regions continues its trend (but, of course, is no longer in such numbers).

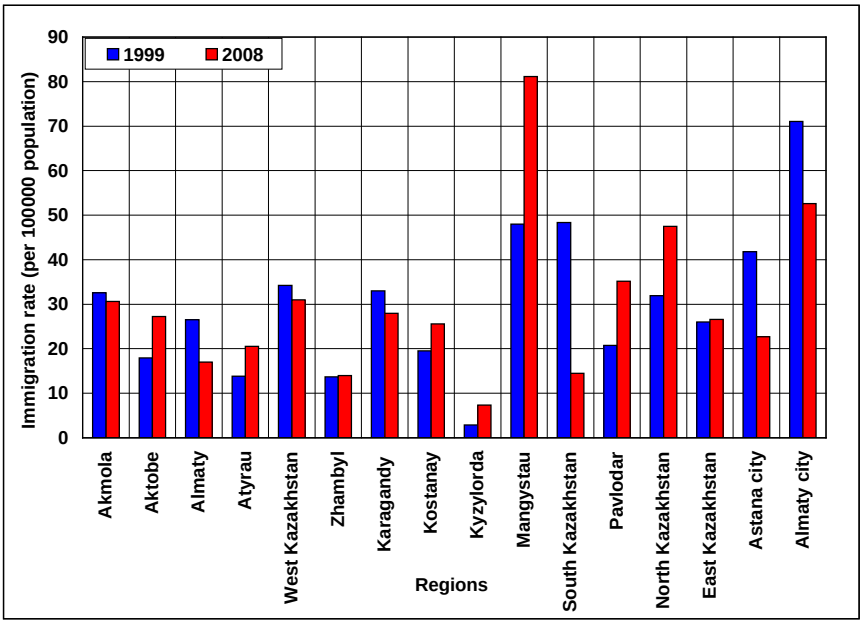
Fig. 17 - Index of changing between 1999 and 2008 of emigration of highly skilled people according to regions, in percentage



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

Compared with the north highly skilled people of south of Kazakhstan did not want to leave their country to such a distant countries. But their numbers prevailed among the emigrants who left to the CIS countries. The most favorable outcome in all the figures shows Atyrau region. People do not show intension to leave due to relatively good socio-economical situation e.g. high average salary per month, extensive social infrastructure etc.

Fig. 18 - Highly skilled immigration rate, per 100000 population



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

This flow of educated people to the city of Almaty is explained by the fact that Almaty has always been considered as a cultural capital and financial center of Kazakhstan. Also, on a par with Almaty is Mangystau region. First of all, immigration is due to the return of ethnic Kazakhs to their historic homeland, i.e. in Kazakhstan. Typically, these people prefer to live in Almaty city, in the south and west of Kazakhstan, mostly because of warm climate, strong traditions and less use of Russian language. Nowadays despite the favorable circumstances in the country 15% of Kazakhstani citizens want to immigrate to the other country for permanent residence if it's possible. 30% respondents would like to leave for temporary jobs abroad. The survey conducted by the specialists GALLUP research service in 10 countries of the CIS, as well as Turkmenistan and Georgia. There were interviewed 13 200 people, and in each country were interviewed over a thousand inhabitants. According to the survey, in Kyrgyzstan, a person wishing to leave his country for permanent residence is 3% higher than in Kazakhstan - 18%. Find temporary work abroad would 34% of respondents in Kyrgyzstan. People, who want to leave their country less in countries such as Tajikistan, Uzbekistan and Turkmenistan. Moving out among them want just 9%, 6%, and 5% of respondents, respectively. However, for temporary jobs abroad agree 28% of Tajiks, Uzbeks 24% and 19% of residents of Turkmenistan. The highest percentage willing to search a temporary work abroad showed Armenia-44%. 39% of the country expressed their desire to emigrate permanently. To leave Russia forever want 11% of respondents, and temporarily work abroad-22% of respondents. These results show that emigration mood is still present in Kazakhstan and in nearby countries.

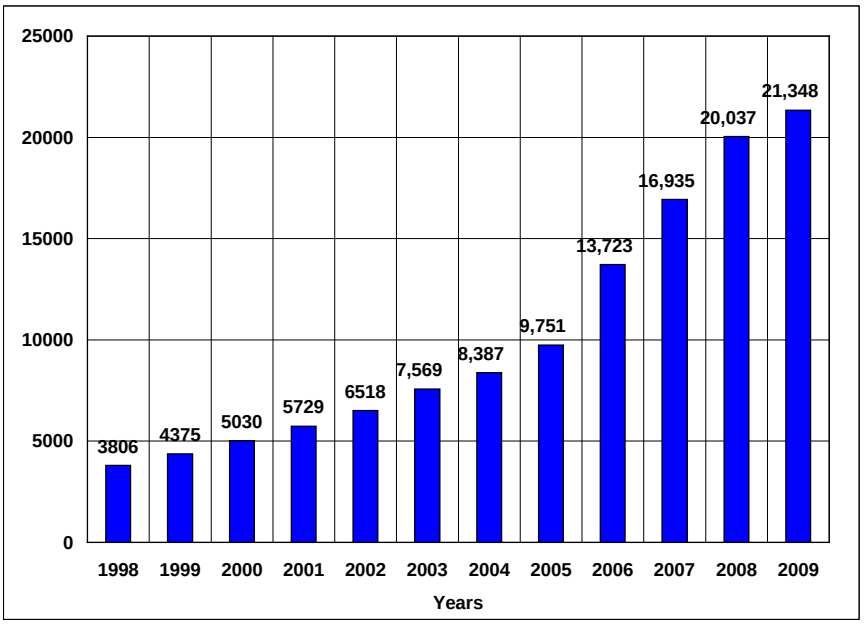
4.2.2.1. Economical aspects of brain drain

In terms of economic, demographic, security, sustainable development, social services, for any state are important not so much the scale of external migration (tens or hundreds of thousands of people leaving and arriving at a permanent place of residence), but the result, the main indicator - the migration balance, or the difference between emigration and immigration. As the absolute size and the negative balance of external migration are falling at the peak of the economic crisis - 1994 the largest decline occurred in 1994, 1995. When GDP was respectively only 66.9 and 61.4% of GDP in 1990, 1993 inflation in Kazakhstan amounted to 21.6%. In the first half of 1990's rise in prices was observed on an unprecedented scale, increasing annually in 1992-1994 at 13-31 times. The serious socio-economic conflicts of the first half of 1990 come along with the trend of politicization of ethnicity and national identity crisis of those years, the proportion of the population after the collapse of the Soviet Union were the main factors for massive external migration of that period.

Kazakhstan's economy has gone through stages of decline, stagnation, and high economic growth after independence from the Soviet Union in 1990. The period from 1990 to 1997 was the period of negative economic growth, or at best stagnation (in 1995-1997, economic growth was close to zero) as the economic arrangements in the former planned economy broke down while new ones took shape. It was only from 1998 that Kazakhstan entered the phase of strong and sustained growth. Over the period 1998–2004, the population living below the poverty line in Kazakhstan declined significantly from 39 percent in 1998, to about 20 percent in 2004.

As shown in the figure below average per capita income (used in consumption) in households is growing year by year. This is due to economic growth and prosperity. As compared with 1998 in 2009 average per capita income in households increased by nearly 7 times (Figure 19).

Fig. 19 - Average per capita income (used in consumption) in households, in KZT



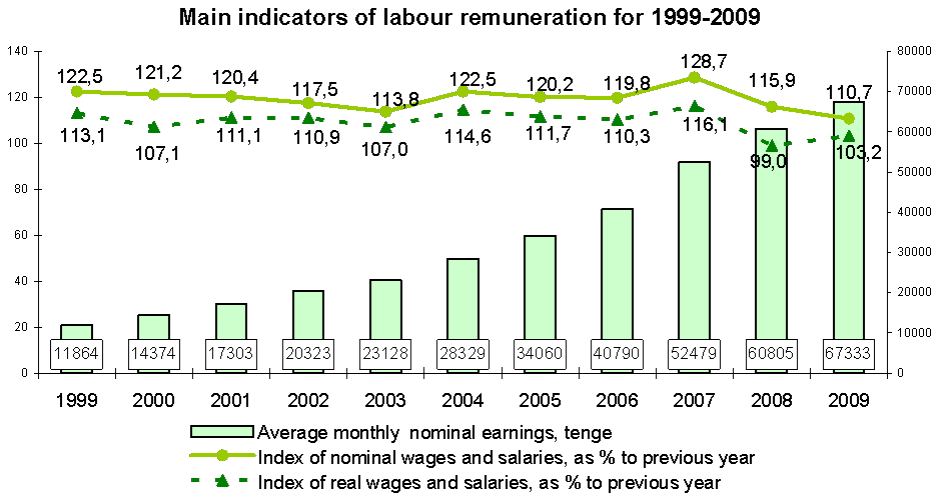
Note: (KZT=Kazakh tenge)

Source: Agency of statistics of Kazakhstan: www.stat.kz

The tenge (Kazakh: teñge) is the national currency of Republic of Kazakhstan. It was introduced on 15th of November 1993 to replace the Soviet ruble at a rate of 1 tenge = 500 rubles. The ISO-4217 code is KZT. For 2010, one Dollar has equaled to 147.360 tenge (average), one Euro to 191.03 tenge (The National Bank of Kazakhstan).

Also average monthly nominal earnings increases from 11864 tenge in 1999 to 67333 tenge in 2009 and all this factors straightly influences to general migration patterns.

Fig. 20 - Main indicators of labour remunaration for 1999-2009, in KZT

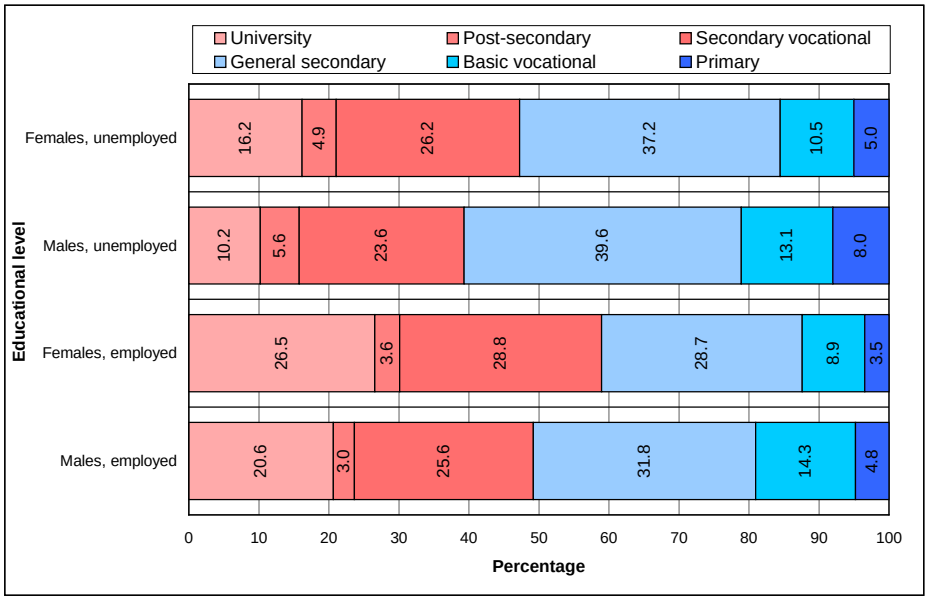


Note: (KZT=Kazakh tenge)

Source: The Agency of Statistics of the Republic of Kazakhstan

The educational attainment influences economic well-being of the country. More education tends to be reflected in greater socio-economic success of individuals and the country (Newburger and Curry 1999). The national statistical office of Kazakhstan provides with data about the educational level of economically active (i.e. employed and unemployed) and inactive population by the following types: primary and lower secondary, basic vocational, general vocational, vocational secondary post-secondary and university. The educational level of employed males and females is shown in the Figure 21.

Fig. 21 - Employed males and females by educational level in Kazakhstan in 2007 (in percentage)



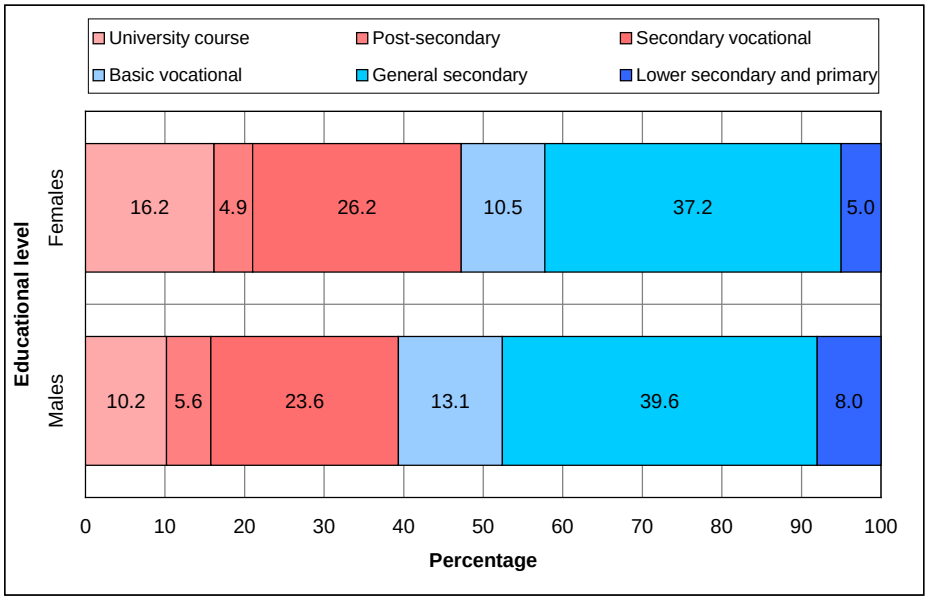
Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

The highest proportion of educational level of employed males and females was observed among those who had general secondary, vocational secondary and university degree in 2007. The university, post-secondary and vocational secondary education were the most prevalent among employed females than males whereas general secondary, basic vocational and lower secondary and primary education were prevalent the most among employed males than females. While females prefer to have university education, males prefer to help their parents, be with the job and get salary/wage.

Among the employed persons who had university education 95.5% of them were employed in the different spheres of the economy of Kazakhstan whereas employed persons who had post-secondary education only 88.8% of them were employed. This means the higher level of education is more likely to be employed. In 2007 among the employed persons there were 20.6% of males (aged 16-63) and 26.5% of females (aged 16-58) who had university degree and were employed in different spheres of economy. The other educational levels of employed males and females were contributed by following: the post-secondary education had only 3.0% of males and 3.6% females, vocational secondary–25.6% and 28.8%; basis vocational–14.3% and 8.9%, general secondary–31.8% and 28.7%; lower secondary and primary–4.8% and 3.5%, respectively.

The university and secondary vocational education were the most prevalence among unemployed females than males in 2007. The highest proportion of educational level is observed among unemployed in basic vocational education 39.6% for males and 37.2% for females in 2007, and in vocational secondary–23.6% and 26.6%, respectively. The lowest proportion of educational level among unemployed traced in post-secondary education 5.6% for males and 4.9% for females, lower secondary and primary–8.0% and 5.0%; general secondary–13.1% and 10.5%; and university–10.2% and 16.2%, respectively.

Fig. 22 - Unemployed males and females by educational level in Kazakhstan in 2007 (in percentage)



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

Another economical aspect of brain drain are remittances, which are usually sent to immediate family members who have stayed behind, are among the most direct benefits from migration; their benefits spread broadly into local economies. They also serve as foreign exchange earnings for the origin countries of migrants. However, remittances are unequally distributed. Of the total US$370 billion remitted in 2007, more than half went to countries in the medium human development category against less than one per cent to low human development countries. In 2007, US$223 million remittances were sent to Kazakhstan. Average remittances per person were US$14, compared with the average for Central and Eastern Europe and the CIS of US$114.

Tab. 13 – Remittance flows in the world

Place in the world	Total remittance inflows (in millions of USD)		Place in the world	Remittances per capita (in millions of USD)	
1	India	35262	1	Luxembourg	3355
7	Poland	10496	7	Bosnia and Herzegovina	640
93	Slovenia	284	108	Russian Federation	29
98	Kazakhstan	223	129	Kazakhstan	14

Source: Human development report 2009.

Tab. 14 - General remittance flows in Kazakhstan, 2000-2006

(US$ million)	2000	2001	2002	2003	2004	2005	2006
Inward remittance flows	**122**	**171**	**205**	**147**	**165**	**178**	**188***
of which							
Workers' remittances	64	81	107	38	53	56	73
Compensation of employees	4	4	4	4	4	6	11
Migrants' transfer	54	86	94	105	108	116	104
Outward remittance flows	**440**	**487**	**594**	**802**	**1,354**	**2,000**	**3,037**
of which							
Workers' remittances	74	143	286	421	806	1,158	2,000
Compensation of employees	47	60	79	230	414	735	962
Migrants' transfer	319	284	230	151	134	107	75

Note: *0.3% of GDP in 2006. This table reports officially recorded remittances. The true size of remittances, including unrecorded flows through formal and informal channels, is believed to be larger.

Source: Development Prospects Group.

Nowadays researchers, as Barbara Dietz, Alexander M. Danzer conducts project, so called “Migration and Remittances in Central Asia: The Case of Kazakhstan and Tajikistan”. This project designed for duration from October 2009 - March 2012 and was funded by the VW-Foundation group.

Compared with neighboring countries, Kazakhstan's share of remittances are very low. This is primarily due to

- Share of labor migrants in each country. As it known, labor migrants in Kazakhstan are much lower than in neighboring countries.
- Proved that highly educated immigrants send much less remittances, despite their high level of their salaries. They prefer to take with them relatives and move with their families.

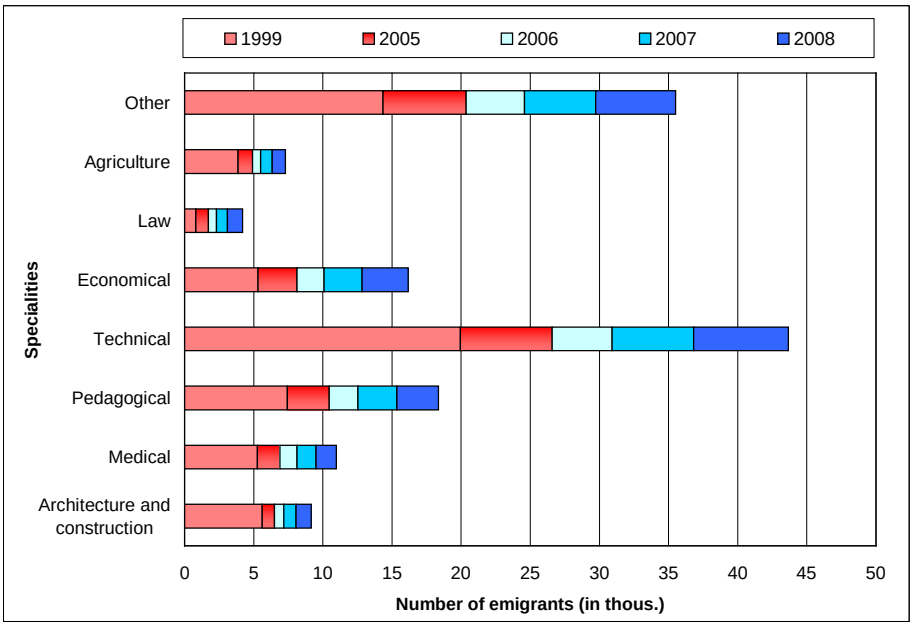
In general nowadays it is favorable climate for people with high education in Kazakhstan. Wages are rising, unemployment is falling. But nobody knows for how long, because Kazakhstan's economy is geared towards raw materials. And that means it is completely dependent on external factors.

4.2.2.2. Trends of the emigration according occupation

Intellectual migration in Kazakhstan is in the following spheres of education:

- Architecture and construction
- Medical
- Pedagogical
- Technical
- Economical
- Law
- Agriculture
- Other

Fig. 23 - Number of emigrants by occupation (in thou.)

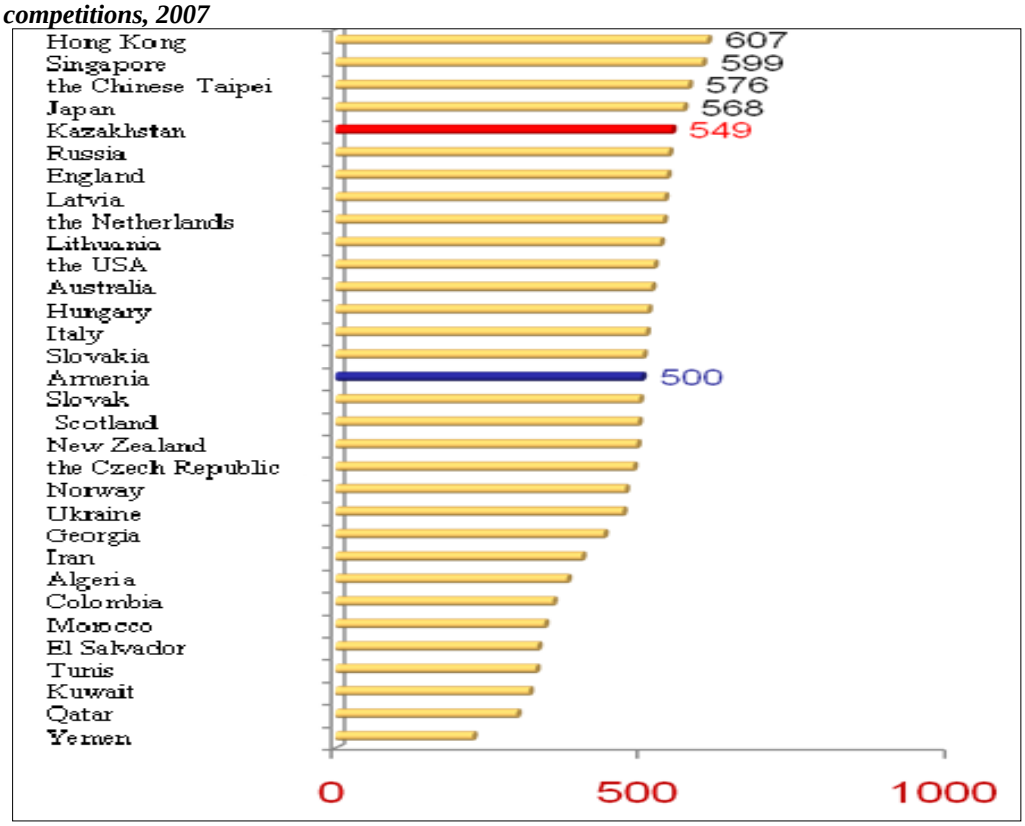


Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

This figure represents the number of emigrants by occupation in several years. Most desired highly skilled people are among technicians and engineers. In the global economy of the 21st Century engineers and technicians play a key role in overall economic development for countries and regions. In the well developed countries, the role of the engineer is well understood and utilized. In much of the developing world, however, the available pool of engineering talent is typically below critical mass – and economic development and even important basic societal needs that rely on engineering - such as clean water supply and sanitation – lack the technical talent to address them.

The Soviet school of mathematics and science has always been considered as one of the strongest in the world, and Kazakhstan, which inherited the school, continues to move ahead. As a result of global international competitions in these areas of Sciences Kazakhstan took 5th and 11th places, respectively.

Fig. 24 - Results of Kazakhstan in mathematics in the international comparative competitions, 2007



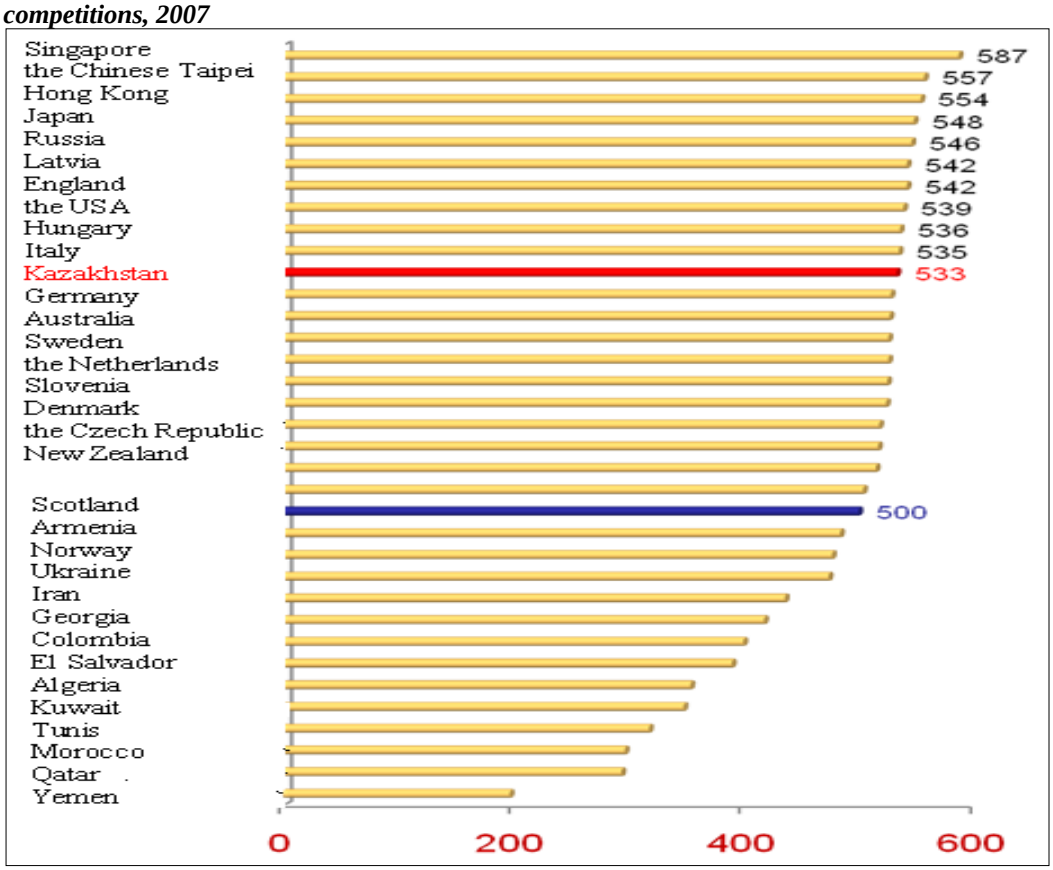
Source: Report "Education and Science in Numbers", Ministry of Education and Science of the Republic of Kazakhstan, 2010

Technical capacity building efforts, such as those being pursued by the World Federation of Engineering Organization and UNESCO, aim at developing a sufficient pool of well educated and certified engineering and technical graduates in developing countries to affect three desirable outcomes:

- Technical capability is needed for developing countries to engage effectively in the global economy; direct foreign investment, international trade, mobility of engineers, and the flow of work to countries with cost effective talent will result.
- Indigenous science and technology capacity is needed to insure that international aid funds are utilized effectively and efficiently – for initial project implementation, for long-term operation and maintenance, and for the development of capacity to do future projects. And a sufficient pool of engineers can enable a developing country to address the UN's Millennium Development Goals effectively, including poverty reduction, safe water and sanitation, etc.

- In order to stimulate job formation, a technical workforce pool is needed, made up of people who are specifically educated and prepared to engage in entrepreneurial startup efforts that meet local needs

Fig. 25 - Results of Kazakhstan in natural sciences in the international comparative competitions, 2007



Source: Source: Report "Education and Science in Numbers", Ministry of Education and Science of the Republic of Kazakhstan, 2010

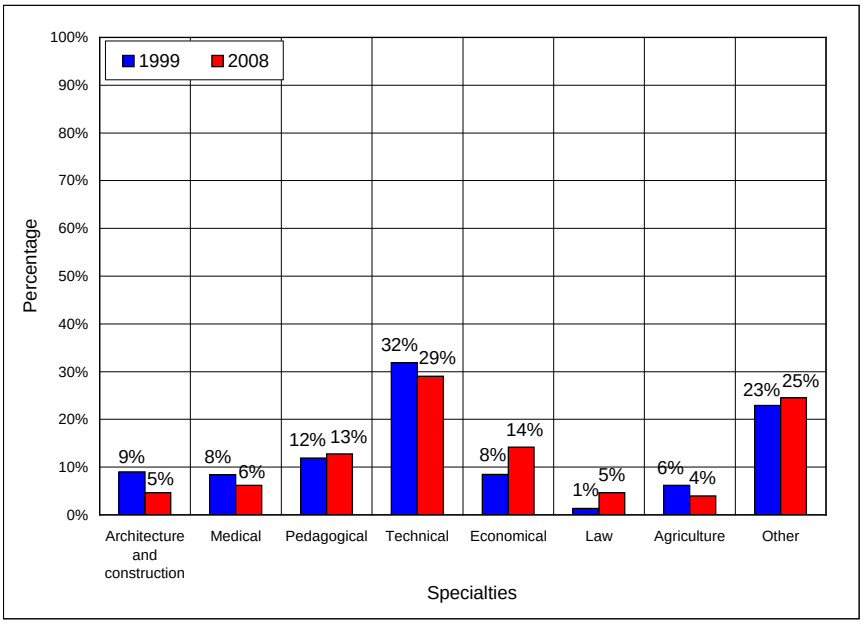
One of the issues of concern in capacity building efforts in developing countries that do upgrade and enhance both quality and quantity of engineering graduates is that a brain drain will occur, with many of the best engineers moving to lucrative positions in developed countries. The following discussion addresses those concerns, makes suggestions on how to control brain drain, and cites examples of successful national efforts which have overcome it.

In Kazakhstan significant numbers of technicians and engineers are graduated at the bachelor's level. In many cases they are of less than desirable quality, with a considerable amount of their time at a university spent in remediation of primary and secondary school shortfalls. Many of these graduates stay in the country doing routine work – but often the better graduates go on to post-graduate study in a well developed country. With a master's or doctoral degree from a recognized technical program in a developed country, these advanced level engineers and technicians will often choose to seek employment in a developed country rather than returning to their home nation, and this leads to the loss of a great

number of students and scholars. Most of them are highly regarded overseas and are being head-hunted because of their good skills especially in information technology.

Even when post-graduate education is done in the home country of an engineering graduate, he or she may immigrate to a developed country for employment – attracted by stimulating jobs and higher compensation. Such mobility is inevitable due to economic pressures, and to the lack of challenging and rewarding jobs in the native country. It likely cannot be stopped by ethical and patriotic arguments, by requirements that the graduate work in the home country, or by a tax to recoup the costs of the technical education in the native land. Such attempts would simply provide a driving force for students who want to study technologies to go abroad even earlier, making it even less likely that they will ever return to Kazakhstan.

Fig. 26- Share of highly skilled emigrants by occupation, in percentage



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

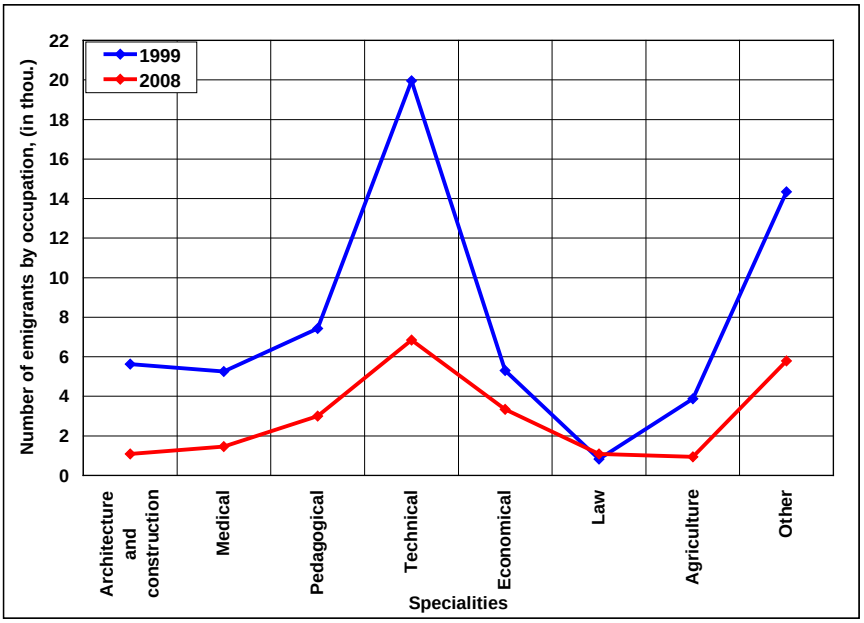
Sectoral discussion (% emigrants in key professional occupations in 1999)

1. *Technical and engineering (32%).* This is the biggest single category and reflects both the attractive possibilities for early retirement available in this sector as well as the buoyant demand for engineers and technicians in Kazakhstan.
2. *Pedagogical (12%).* The replacement rates in this sector are high, particularly in nursery, primary and the younger classes of secondary schools. However, at the top of the secondary and throughout the tertiary sector notable gaps in recruitment are visible. Again, the category is too undifferentiated and includes valuable academics with distinctive skills and international reputations and economists trained to a high professional level.
3. *Architecture and construction (9%).* One of the most favorable and well trained specialists. Replacement level is quite high, due to popularity of this profession among young generation.
4. *Economical (8%).* Very large numbers of economists left the country in 1999. But nowadays in Kazakhstan replacement rates of economists are high. Given that the entry to the profession

requires a reasonable proficiency in economists. None the less, some degree of targeted recruitment of immigrant accountants seems advisable. Some newly qualified personnel go abroad to enrich their experience, pay off their debts and start some savings in a hard currency. Such temporary emigration is acceptable and may even be positive, but the detailed inward and outward flows of economists are unknown and need further detailed study.

5. *Medical (8%).* There is now a wide-spread agreement that the PHC (primary health care) approach is the right way forward in health provision. As the Higher Education Commission put it: health personnel should be equipped with the 'knowledge, competence and attitude to respond comprehensively to the health care needs of the population'. Despite this consensus, the prestige, financial rewards and portability of high-tech, research and laboratory-intensive medicine are powerful incentives to emigration. Although officially forming only 13 percent of the brain drain, health personnel are certainly leaving in greater numbers than this percentage suggests. Information from medical schools suggests that about one-third of the graduating classes are emigrating, either temporarily or permanently.
6. *Agriculture (6%).* Low number of emigrants in agricultural field due to not very popularity of training in this field in Kazakhstan.
7. *Law (1%).* In this field of education rate of emigrants and immigrants quite low, it's primarily due to low quality of education. Unfortunately, diplomas of Kazakhstani lawyers are not the best and are not very well recognized in the other countries. That's why there seems to be no reason to be particularly concerned about the brain-drain in this sector.

Fig. 27 - Number of emigrants by occupation, (in thou.)



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

This figure shows the overall picture of the current situation of emigration by occupation. Emigration in all spheres of education over the years has decreased. But despite this, the number of technical immigrants remains at the forefront among the rest. First and foremost, a large enough pool of high

quality, accredited engineering graduates is needed in developing countries. It must be recognized that there will be some leakage of these graduates to jobs in developed countries, but many will choose to stay where family ties and native country culture provide a comfortable environment. But the basic need is the creation of good jobs in the home country. This is a chicken-and-egg issue. Increased demand for engineers and technicians will result only when there is a sufficient pool of well qualified graduates to attract direct foreign investment, multinational corporation operations, offshore outsourcing from developed countries, and entrepreneurial startups. Developing country planners and government officials must pursue effective economic development and job generation strategies in parallel with making the needed investments to enhance the quality and quantity of these graduates.

Technical education in developing countries should include significant coverage of entrepreneurship – how to start, operate, and grow a small business. Note that US companies such as Hewlett-Packard, Microsoft, and Yahoo all were started in garages by enterprising young people with a technical bent. Technical graduates should be equipped to take a path of creating jobs rather than seeking one if they wish to do so.

As economies grow in developing countries, one important source of top talent – in addition to new graduates – is the return of previous emigrants of any occupation from the diaspora. Several countries that are developing well have benefited from the return of former citizens who see new opportunities in their home countries, and bring back foreign experience and network contacts to the benefit of their home countries.

In addition to increasing the number and quality of graduates, and pursuing strategies to have good local jobs available, developing countries need mechanisms to apply research and development results from local universities and companies for economic gain. Such mechanism as incubators and small business development financing are need in the mix.

4.2.2.3. “Oralmans” by educational level

According to the recent World Bank study Migration and Remittances: Eastern Europe and Former Soviet Union**,** which was presented in Astana and Almaty on September 24-25, 2007 Kazakhstan is the ninth-largest migrant-receiving and the seventh-largest migrant-supplying country in the world. The country receives most migrants from its neighbors in Central Asia. Yet, since transition, Kazakhstan has also been a major source of migrants, often to Russia.

Excess amounts of immigration over emigration, as a rule, evidence of an immigration appeal of the country, usually due to economic and social factors - economic growth, living standards. The main direction of state migration policy in the country after gaining sovereignty is repatriation of ethnic Kazakhs. The vast majority of legal immigration is so called “oralmans” (eng: returnees). According to the Committee on Migration of the Ministry of Labour and Social Protection of Kazakhstan, between 1991 and 2004 Kazakhstan received about 600 thousand Kazakhs from near and far abroad. Under the immigrants, according to the practice until 2002, and partly under Kazakh law, implied Kazakhs repatriated oralmans. Confirmed under the laws of the Republic of Kazakhstan “On Immigration” (1992) and “Migrations of the population” (1997), since 1993 the annual immigration quota for immigrants

meant solely oralmans. Only in the last few years, the wording of legislation on immigration quota, specified – “On immigration quota Oralmans”. In 2004 was approved quota of 10000 families of oralmans that the estimation was the vast majority (80%) of all the 62.583 legal immigrants who arrived in 2004 in Kazakhstan (FIDH, International Federation for Human Rights, 2009).

But due to the fact that the repatriation was started without an appropriate legislative framework, the country is facing many challenges. Suffice it to say that for over 10 years, thousands of ethnic Kazakhs from Mongolia and Uzbekistan could not get Kazakhstan citizenship and passport. On 1 July last year more than 39 thousand immigrants did not receive. In addition, oralmans faced with challenges such as unemployment, social insecurity, the complexity of the adaptation and integration, corruption, and much more. The internal contradiction of the policy of repatriation is that it encourages the immigration of ethnic Kazakhs, while numerically limiting its quota.

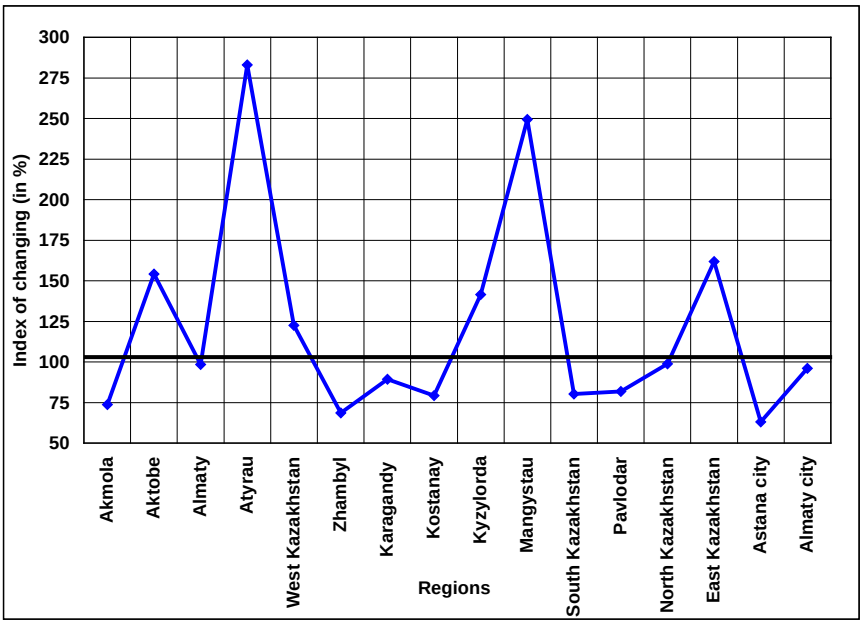
There are instances when immigrants have had problems with the inclusion of the quota due to the fact that they weren’t ethnic Kazakhs, although the head of their families belonged to this ethnic group. Unfortunately, existing benefits and preferences for oralmans are given different ethnic groups in an unequal position, which contradicts the Constitution of the Republic of Kazakhstan.

But now it is clear that the favorable economic situation in the country will encourage immigration to Kazakhstan. The annual dynamics of the arrival in the 2000’s has increased by almost 3-fold. It needs to be taken into account when reforming policies towards liberalization and the abolition of quotas. Nowadays need for the elimination of quotas and liberalization of the repatriation discussed among many experts and government officials. It would be better to make the analysis of migration policies and to hold parliamentary or public hearings about its effectiveness and appropriateness of the mechanism of allocation. Kazakhstan needs not only the return of ethnic Kazakhs to their homeland, but also to retain them in their current residence, said in the “III World Kurultay” (assembly of all Kazakhs of the world) in Astana in September 2005, President Nursultan Nazarbayev. Head of State noted that they could serve as a “golden bridge” between peoples of Kazakhstan and other countries and peoples.

Clearly there is regularity: 1991-1995 - Rapid growth and 1995-1999 - A gradual decline of both emigration and immigration. All these years emigration was significantly (in 1992-2002) higher than immigration an order of magnitude. At the same time most of the flow of immigration was the repatriation of Kazakhs - oralmans from near and far abroad.

The issues of the successful integration of oralmans into Kazakhstani society strongly depend on and are related to linguistic, psychological, and cultural adaptation. Oralmans arriving from countries outside of the CIS often face problems related to widespread use of Russian in public life. This is especially evident for northern regions of the country. Cultural and ethnic adaptation in southern and eastern regions, in mono-ethnic western, northern, and central regions is much easier because people have better preserved their national traditions, including language.

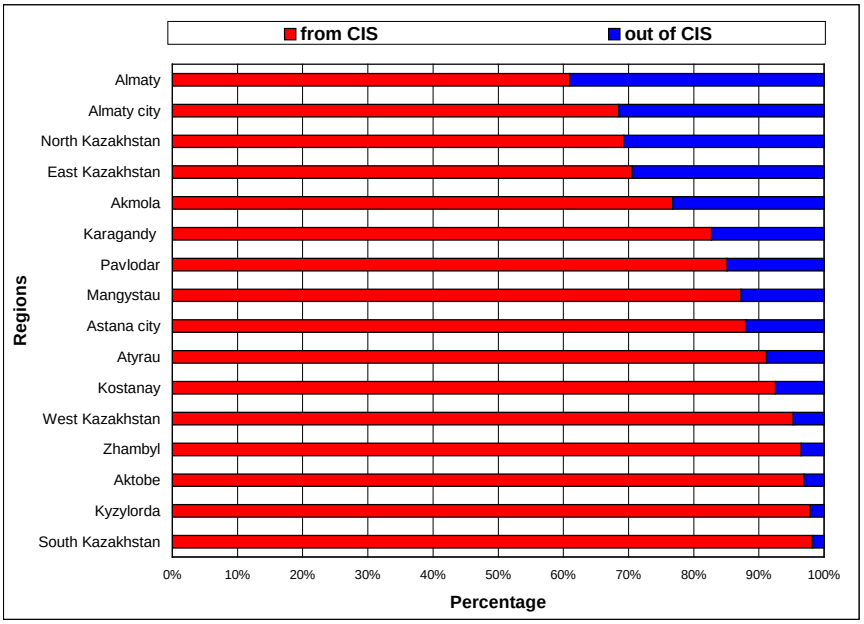
Fig. 28 - Index of changing between 1999 and 2008 of immigration of highly skilled people according to regions, in percentage



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

Oralmans are found in all regions in Kazakhstan. The region with the highest number of oralmans is South Kazakhstan with a total of 122131 individuals. This represents approximately 21 percent of all oralmans currently settled in Kazakhstan. Almaty city is the second largest with 61737 people or 17 percent of the oralmans population, followed by Almaty and Karagandy regions with 60770 and 49365 oralmans respectively. Among regions with fewer oralmans are North Kazakhstan and Kyzylorda, Atyrau regions and Astana city.

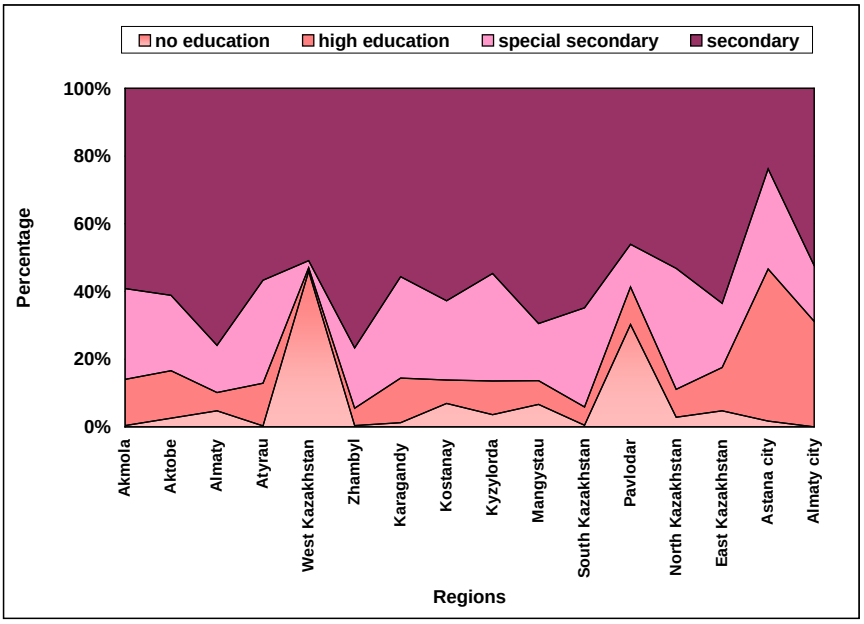
Fig. 29 - Percentage of highly skilled immigrants from and out of CIS countries, 2008



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

In addition, in recent years, most immigrants are citizens of CIS countries. They have, according to the Committee on Migration, education level is almost the same as that of the population, decreasing from the Kazakhstan, and new quality of immigrants an opportunity to address some of the problems of resettlement by themselves immigrants, but also speaks of the need to liberalize the policy of repatriation. According to table above, 97.9 and 96.9, 98.2 percents of oralmans of Kyzylorda and Aktobe, South Kazakhstan regions, respectively, came from the CIS countries. Most of them are from Uzbekistan, Turkmenistan, Tajikistan and Kyrgyzstan. Most of oralmans from out of CIS located in Almaty city, East Kazakhstan, North Kazakhstan and Almaty regions. They are from China and Mongolia. This difference of settlements explains proximity of countries to each region.

Fig. 30 - Share of working age oralmans by educational level (in percentage)



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

The figure shows clearly, that the percentage of who arrived in Kazakhstan with secondary education among working aged people is much higher than others. It is mostly children who only managed to finish their schools and they are all over Kazakhstan. The next largest category is oralmans with special secondary education. As the image shows, large number of them settled in such regions, as Karagandy (29.9%), South Kazakhstan (29.3%), Atyrau (30.4%), Kyzylorda (31.8%), North Kazakhstan (35.7%), Akmola (26.9%) and Astana cities (29.6%). Large number of educated returnees belongs to the cities Astana (44.9%) and Almaty (31.2%). First of all, this is due to the possibility of finding a job according to their professions. Immigrants who arrived with no education belong to Pavlodar (30.2%) and West Kazakhstan (45.9%) regions. It can be persons who already reached working age (from 16) but haven't finished their schools. We assume that we can not relate all of them entirely to the category of uneducated people.

Tab. 16 - Numbers of oralmans by level and sphere of education

№	Regions	PhD	Csci	Artists	Education field	Health field	State field	Agriculture field	Business field
1	**Akmola**	1	6	583	2132	1153	63	8107	151
2	**Aktobe**	1	5	7	1295	672	9	2389	358
3	**Almaty**	3	8	22	1445	383	28	50121	0
4	**Atyrau**	0	2	0	528	283	2	728	321
5	**West Kazakhstan**	0	0	28	179	58	2	22550	334
6	**Zhambyl**	1	6	47	723	301	43	2017	1376
7	**Karagandy**	0	0	80	592	660	56	1167	120
8	**Kostanay**	5	13	101	1116	485	4	2338	369
9	**Kyzylorda**	0	0	48	1045	530	146	1152	604
10	**Mangystau**	0	0	0	569	316	8	350	481
11	**South Kazakhstan**	2	17	274	1906	1405	373	3830	207
12	**Pavlodar**	2	4	114	871	411	11	3552	120
13	**North Kazakhstan**	0	2	55	2349	1118	254	2301	517
14	**East Kazakhstan**	33	62	176	5524	4531	122	6783	6850
15	**Astana city**	15	67	310	568	307	55	174	1079
16	**Almaty city**	10	19	31	314	209	49	93	611
	All	**73**	**211**	**1876**	**21156**	**12822**	**1225**	**107652**	**13498**

Source: Data from the Agency of Statistics of Kazakhstan

Kazakhstan takes no less than the number of educated people, than those who lose in the result of brain drain. But it is only at first glance. Oralmans, who were educated in another country, mostly find it difficult to find its application in Kazakhstan. Mainly it's because of differences in education systems. Language problems. Oralmans, who returned from Iran, Afghanistan, Tajikistan and China use the Arabic alphabet. Those who are from Turkey use Latin alphabet. Because of these problems, they can't find a job appropriate to their level of education, because as it's known knowledge of the language is the main instrument of any office work.

Therefore oralmans are mostly on the physical work. And despite the fact that they have education at least at some level to replace those who left, they can't or can't in the near future.

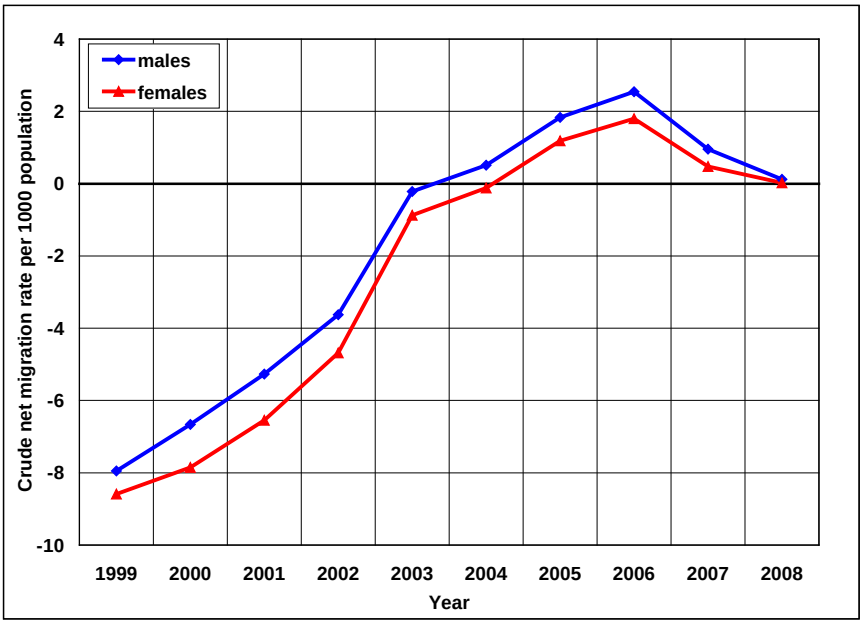
4.2.2.4. Net migration by educational level

Migration and immigration are both hot button political issues in Kazakhstan. But migration and immigration are occurring domestically and international to and from countries and within countries around the world is one of the many products of globalization. The net migration rate is one tool used in demography and population geography to examine migration in and out of an area. Similar to rates of birth, fertility, and death, migration rates help to measure internal (domestic) or international migration to and from a particular region or country.

Kazakhstan has returned to a balanced net migration following net out-migration in the early and mid-1990s that reduced the population from 17 to 15 million inhabitants. While many ethnic Russians and Germans have left Kazakhstan, over 300.000 Kazakhs returned since independence. At the same time, growing salaries and demands for workers have attracted labour migrants from neighboring countries in Central Asia. Due to a restricted legal employment framework, most labour migrants worked irregularly. In mid-2006, the government developed regularization for certain categories of labour

migrants. This initiative, however, has not brought legal status and protection to the majority of labour migrants in Kazakhstan.

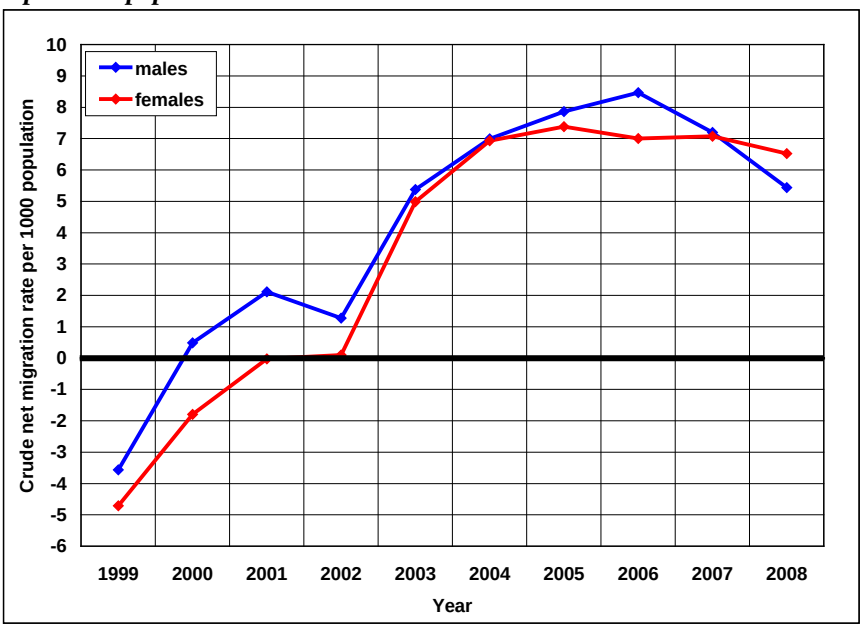
Fig. 31 - Crude net migration rate for the period 1999-2008, per 1000 population



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

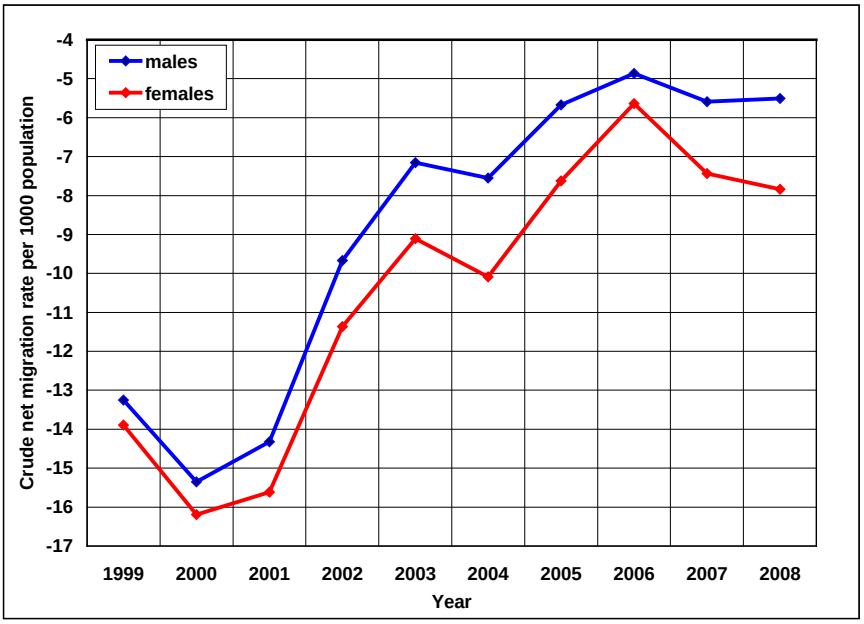
This entry includes the figure for the difference between the number of persons entering and leaving a country during 1999-2008 per 1000 persons (based on midyear population). The net migration rate indicates the contribution of migration to the overall level of population change. High levels of migration can cause problems such as increasing unemployment and potential ethnic strife (if people are coming in) or a reduction in the labor force, perhaps in certain key sectors (if people are leaving). As shown in the figure above crude net migration rate presented for men and women for the period from 1999 to 2008. During this decade, significant changes occur. If at the beginning of this period, i.e. in 1999, CNMR is -8.0 for men and -8.7 for women, we see that in the middle of this period, in 2003, it gradually comes to a positive result. As mentioned earlier, is a noticeable change due to the economic success of Kazakhstan in the early 2000's. In 2006, the CNMR peaks, and shows the result of men 2.5 and women 1.9. At the end of this period CNMR is zero for both men and women.

Fig. 32 - Crude net migration rate by urban area for the period 1999-2008, per 1000 population



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

Fig. 33 - Crude net migration rate by rural area for the period 1999-2008, per 1000 population



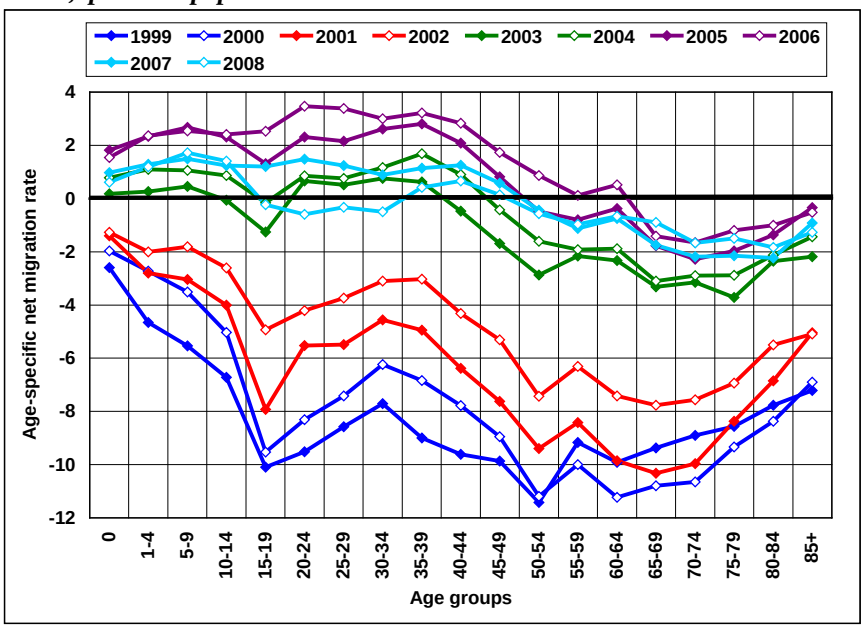
Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

Kazakhstan affords a unique picture of people's responses to economic pressure. With the collapse of the Soviet Union, vast emigration occurred; on net, 13.0% of the urban population emigrated between 1990 and 1999, while 8.7% of the rural population left (Charles M. Becker, 2003). Part of this reflected an opening of borders and fairly unrestricted repatriation of ethnic Germans to Germany and, on a much smaller scale, of ethnic Jews to Israel. Larger flows, but at lower rates, are found for ethnic Russians, Ukrainians, Belarusians, and Tartars back to European parts of the former USSR. These flows were

consistently greater from urban than rural areas, although substantial emigration from the countryside occurred. Although net rural–urban internal migration occurs, the increased rate of urban international emigration has led to de-urbanization in the aggregate. Kazakhstan's urban population share declined from 56.6% in 1990 to 55.8% in 1998/1999; its total urban population declined by 9.4% between 1990 and 1999. Figures 32 and 33 provide patterns of CNMR (Crude net migration rate) of rural and urban areas during the past decade.

As the Figure 33 shows during the period from 1999 to 2008 CNMR in rural areas was only negative for both sex. And nowadays this trend continues. The minimum value was in 2000 -15.0 and -16.0 for males and females, respectively. The maximum value is -5.0 and -5.8 for males and females, respectively. Compared with the results of rural areas situation in urban areas is much better. Because mankind preferred in all ages of history more the city than the villages. The minimum value were registered in 1999 -3.9 and -4.7 for men and women, the maximum values are in 2006, -8.3 and -7.0.

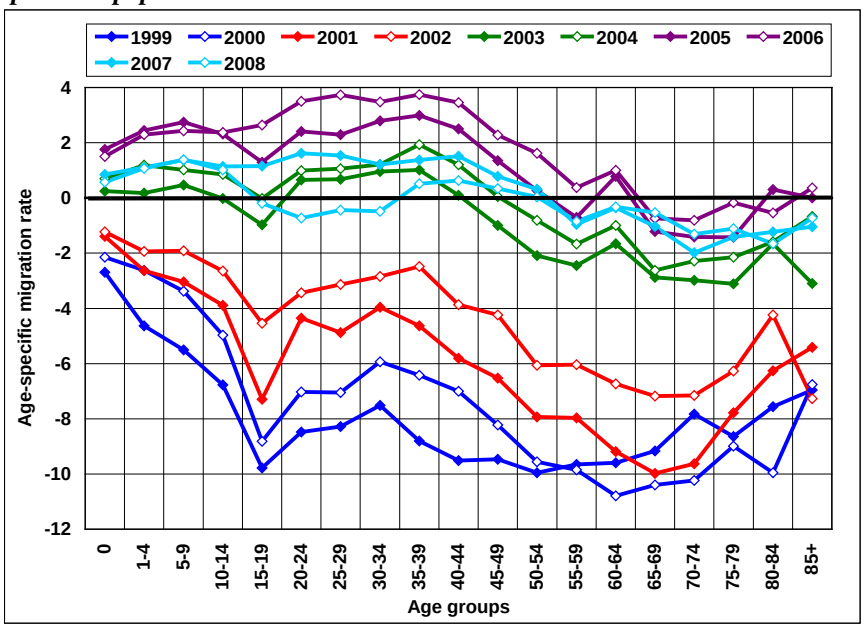
Fig. 34 - Age specific net migration rate for the period 1999-2008, both sexes, per 1000 population



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

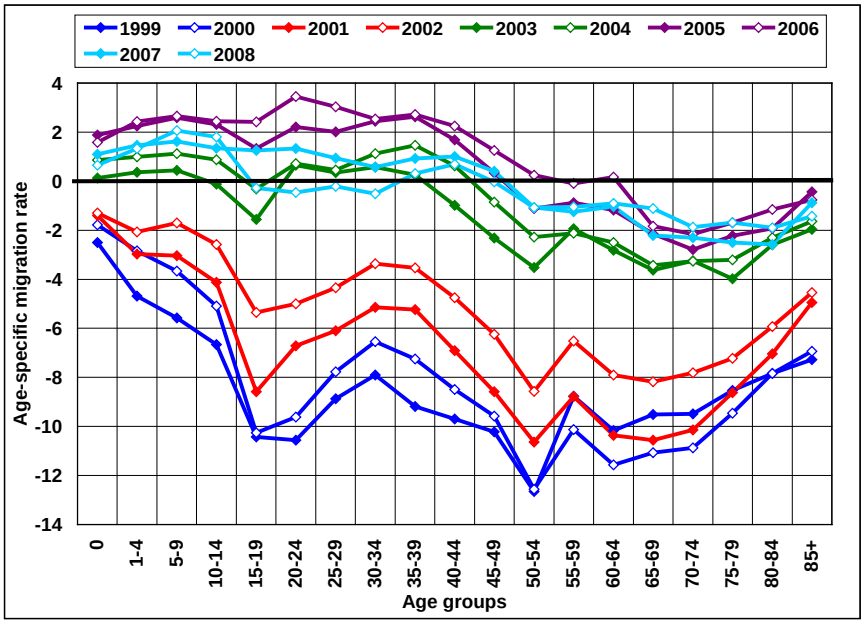
Age-specific net migration rate for the period from 1999 till 2008 is shown in the Figure 34. Although children are between 30 and 40% less likely to emigrate than adults, the migration rates across most age groups are remarkably similar. Migration is much higher among young (15-19) and adult (50-54) groups than among the other age groups. From 1999 to 2006 net migration rate were coming to positive results among all age groups, but as shown in the figure above in 2007 and 2008 migration again turned to adverse results.

Fig. 35 - Age specific net migration rate for the period 1999-2008, males, per 1000 population



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

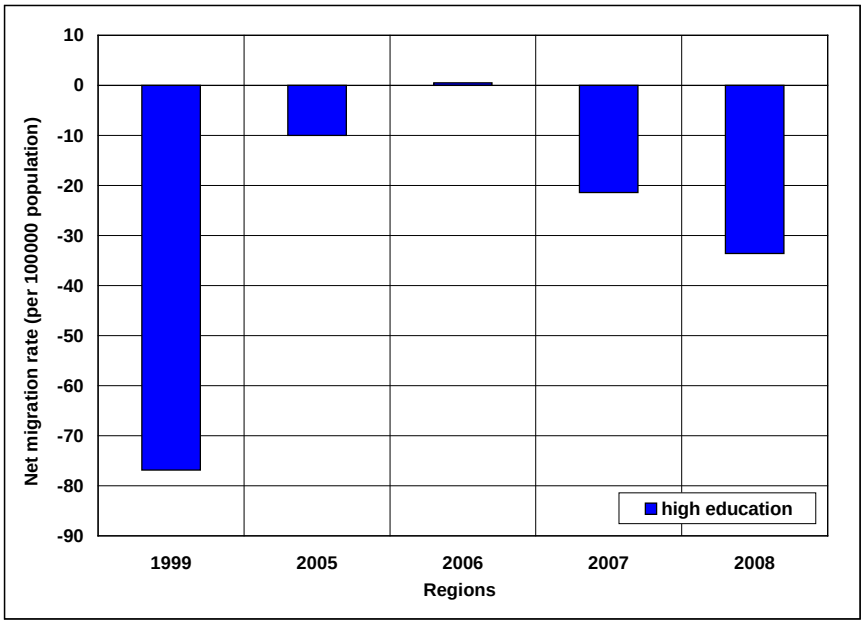
Fig. 36 - Age specific net migration rate for the period 1999-2008, females, per 1000 population



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

In the figures above presented age-specific net migration for the period 1999-2008, for males and females per 1000 population. In both figures shown that there is net migration rate for all age groups, except age groups from 45-49 till 85+ over the years is presenting positive values.

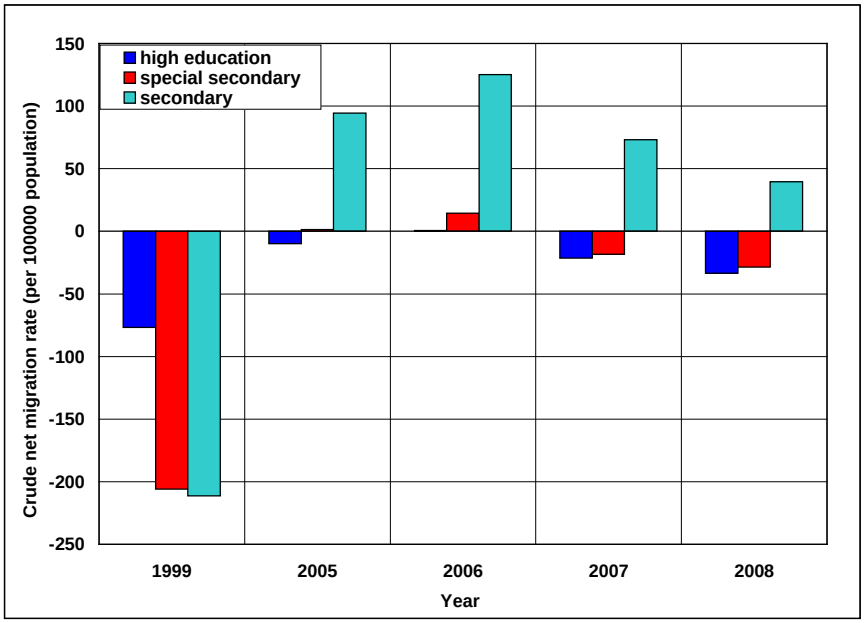
Fig. 37 - Crude net migration rate of educated people (per 100000 population)



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

The Figure 37 shows crude net migration of migrants with all level of education. As shown crude net migration rate of educated people in 1999, compared with today's time was very low, i.e., -77, 2006 was the most "successful" year and get positive value (1) and in 2007 and 2008 was again a tendency to decrease below zero (-21 and 33, respectively). More detailed picture (separated by each level) of CNMR of educated people is shown in the figure below.

Fig. 38 - Crude net migration rate by level of education (per 100000 population)



Source: Author's calculations based on data from the Agency of Statistics of Kazakhstan

For the period from 1999 to 2008 as shown in the figure above net migration migrants of Kazakhstan with high education never was in positive value. In 1999 Kazakhstan was losing people with all levels of education; this trend in 2005 has changed. Despite the fact that a large number of people immigrated with secondary education, people with higher education remained in the loss. Arrival of a large number of immigrants with secondary education level is due to the return of oralmans. As before, we wrote predominant people was with this level of education. In 2007 and 2008 in Kazakhstan the trend of immigration of educated people is reduced. While migrants with secondary level of education remain positive achievements, migrants with higher and special secondary education show negative results.

Chapter 5

Conclusions

The intellectual capital of the nation is all the accumulated scientific, professional, cultural information, knowledge and skills of professionals of all sectors and spheres of life, intellectual, moral and cultural development of each individual and positive mental and moral characteristic. Its socio-positive customs and habits, as well as socio-positive people's traditions, good professional skills, education, good manners, patriotism, civic engagement, discipline, courage, honesty, diligence, ability to organize itself in the socio-positive group. All this is an asset and the wealth of the nation.

Loss of mentioned about characteristics of intellectual capital definitely hurts wealth of the nation. In other words well-being of the country is not about how strong national currency is, it is not directly affected with general domestic product or its derivatives. True wealth of any nation is intellectual capital of its inhabitants. Out-flows of those “civilized” inhabitants will lead to nation’s disintegration, its stagnation and further dissolution. Such postulate might sound unrealistic and critics would say so, however history is the only referee displays controversially examples. The brightest example the Union of Soviet Socialistic Republics which is commonly adopted to think was dissolute due to political gravity and heavy economical crisis features. However, its first sign of dissolution was due to losing intellectual potential of its citizens. The first wave of those people came along with 1956, after the law №135/142 “About removing curfew regime and restrictions from the Special Settlements and their inhabitants” (State Statistical Committee of the USSR, 1990). When many Jews, Germans, Polish and others gained the right to freely move, most of them migrated abroad after a while using faked passports. But essence here is that most of them were well-educated physicians, engineers and economists who were living in Kazakhstan since they were deported there. Therefore as we may observe from the above mentioned facts “Brain-drain phenomena” has deep retrospective roots. Main waves of educated emigrants came after 60-70 and peaked in 80’s. However, within the boarder of the sovereign Kazakhstan the peak of emigration came in the middle of 90’s.

Generally speaking Kazakhstan was among those countries which lost “net educated people” the most (47188 emigrants with high education for the period 1999-2008) (The Agency of Statistics of the Republic of Kazakhstan). According to the Lee’s “Theory of a migration” factors that “pushed” those

educated people to seek for another homes are well understood. There are of course number of debates has been carried about shall we blame those people or not for leaving their country when it was the most difficult time and their professional skills were needed the most. However, all these disputes are remains disputes and never been accepted on official level. As we know already throughout the thesis that Brain drain has got some features which can be summarized below for better understanding this phenomena occurred in Kazakhstan:

- "Brain drain" is inevitable and natural process of historical development of mankind, inherent in all developing countries;
- "Brain drain" takes its organic, and a special place in the global process of comprehensive integration of the countries towards a new world order in the history of human civilization;
- "Brain drain" in tangible scale will occur until a relative alignment of the overall level of development and on the specific conditions of intellectual labor;
- "Brain drain" is perceived ambiguously countries, losing hearts and acquiring them, as well as international organizations, and their reaction is determined by the position they occupy in assessing the positive and negative effects of brain drain;
- The brain drain from poor countries with qualified personnel in the country, rich human resources, will continue in the future;
- Strategically different set in the choice of tactics to prevent "brain drain".

In this work we tried to analyze and give description to migration flows in Kazakhstan by level of education. As a conclusion of these analysis, we can say that Kazakhstan is in the result of the intellectual migration is losing than winning. The hypothesis that brain gain of oralmans can replace brain drain of Kazakhstan doesn't work, mainly because of almost more than half percentage of oralmans are coming to Kazakhstan with secondary level of education. How they can replace academicians, technicians and physicians? Despite the fact that among them there are people with scientific skills and high education, they can not replace those, who are emigrated due to too small number of them.

The trend of net migration of educated people shows negative value of highly skilled migrants. As is known, the economic situation of the country directly affects to the phenomenon of brain drain. Despite the fact that the economic situation in Kazakhstan, compared with 90's is much better than the brain drain in Kazakhstan society still exists. Certainly, it is no longer in such amount as in 90's.

The main purpose of this work among mentioned aims and goals is to give the idea of what is really situation with Brain drain phenomena in Kazakhstan, to what extent it affected to the "wealth of the nation"? And the most important as we think is to present future prospects of this phenomenon. What will be tomorrow with all these well-educated girls and boys? Will they intend to leave the country even though country invested thousands and thousand of Euros per each? Shall another feeling into those people to be implemented? This behavior shall be grown and not to be omitted. We have to look upon what is done on the national level due to maintain the brain drain issue and what are planned for the near future.

In 2008 was announced national program so called "Intelligent Nation – 2020". Main phases:

- Preparatory - 2008-2009.

- Reformation - 2010-2011.
- Implementation - 2012-2013.
- Monitoring - 2014-2017.
- Extension - 2018 – future time.

Basic steps for building the infrastructure for enhance the intellectual capital of the nation by 2020.

- Under the established working group to adopt an integrated program “Intelligent Nation 2020” is necessary to develop a concept to enhance the intellectual capital of the nation, consolidating all sectors of society (teachers, economists, demographers, psychologists, health workers, lawyers, statisticians, and so on) to collect all negative factors influencing the formation of intellectual nation.
- Adopted a comprehensive program to improve the situation of citizens of Kazakhstan are in rural areas, a measure aimed primarily at reducing discrimination in obtaining information, medical assistance, legal advice, and so on.
- Create a data bank of intellectual capital of Kazakhstan. Harmonize legislation on protection of intellectual property rights in Kazakhstan, including on digital content.
- State support for the dissemination of national folklore in world space.

With economical stabilization many of those, who emigrated abroad found “pull in” factors back. A competitive market of education is emerging in Kazakhstan today. A stable demand for services of scientists coming back has been created. Development of private business forming increased demand for specialists with adequate salaries reverses the flow. The stage of re-emigrants’ critical mass creation in Kazakhstan is passed off or will be passed off in the nearest future.

Nowadays Kazakhstan has the question of determining the next steps in the implementation of migration policy. A few years ago the same question faced by the countries of Latin America, Asia and Eastern Europe. Countries in Eastern Europe were able to find solutions to problems that meet all the requirements of state security. In today’s time, their experience is very significant and shall not be omitted. There are some solution as we think might be useful:

- Create (drawing on the experience of Korea, Taiwan, India and other countries) and put in place a mechanism to facilitate adaptation of returnees from overseas professionals: physical facilities and academic preferences, the formation of a specific budgetary and extra budgetary funds to support the most promising research directions and the most talented people science;
- To improve the legislative and legal frameworks in the field of emigration of highly qualified staff - to protect them and the public interest, as well as individual rights. We must use the experience of Central and Eastern Europe, which had several CIS countries faced with massive “brain drain”. These countries have used different measures: activities aimed at developing scientific cooperation with foreign countries, the development of national programs, determining priorities for funding science. It is also important the cooperation of scientific institutions with the economic agents that operate in various sectors of national economy.
- Offering higher wages for ‘insiders’ according to their qualifications is essential, instead of over estimating and hiring expatriates, which are more costly.

- Education plays a powerful role especially in the growing problems of international migration. Therefore, offering these individuals the necessarily education qualifications in Kazakhstan, and expanding a better educational infrastructure may definitely prevent emigrants who are seeking a higher education abroad.

Intellectual nation is a nation that is able to be competitive, morally, culturally, intellectually, complete security of information, and having the capacity to freely disseminate their scientific, cultural, educational information. The thesis tried to give an overall and descriptive analysis of the past and occurred trends forming the hypothesis that well-being of the country directly correlates with its intellectual wealth. We feel that was done right to present past trends. However, there are still a lot of questions remains and number of measures to be applied today, which will form in what Kazakhstan we will be living tomorrow.

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APPENDIX 1

Fig. 1 - The statistical record cards attached to the arrival/departure form in Kazakhstan

THE STATISTICAL RECORD CARDS ATTACHED TO THE ARRIVAL/DEPARTURE FORM

Name, surname of the person, filling in the card_____

Citizenship_____

	Place of arrival (place arriving from)	Place of departure (place leaving to);
Country	Kazakhstan	
Region/city		
District/city		
City, district as administrative area		
Township/village		

It is recorded for whole family including a person responsible for filling in

Total number of arrivals _____, including children till 16 age old_____

Name	Sex	Month of birth	Year of birth	Nationality	Code					
					A	B	C	D	E	F

Sections A to F for persons arriving;

Sections A to E for persons leaving;

A - Social category (employees hired or contracted, employers, workers on own account, unemployed persons, etc.);

B - Purpose of travel (for permanent residence, for a contract of employment, in connection with study, etc.);

C - Level of education (higher, incomplete higher, specialized secondary, general secondary, incomplete secondary);

D - Specialty by education (architecture or building, medical, teaching, technical, economic, legal, farming, etc.);

E - Marital status (never married, married, widowed, divorced);

F - Status of persons arriving (refugee, repatriating refugee, immigrant).

Date of removal from register "___"_____ 20___

A person responsible for filling in _____

/signature/

information is checked and institutionalized by _____

Source: http://www.unece.org/stats/documents/2001/05/migration/2.add.10.e.pdf

Fig. 2 - The statistical record cards attached to the arrival/departure form in Kazakhstan (other side)

(The reverse side of statistical record card)

RULES OF FILL IN OF THE STATISTICAL RECORD CARD

In "Name", "Citizenship", "Place of the departure", " Place of the arrival" is signed by the person who is responsible for fill in for all members of the family. Other questions are for all arrivals. In graphs A B C D E F fill in following codes:

A - Social category:

1. Wage earner (employees hired or contracted)
2. Employers
3. Workers on own account
4. Unemployed persons
5. Others (pensioners, students, pupils, housewives, etc.)

B - Purpose of travel

6. For permanent residence
7. For a contract of employment
8. In connection with study

Other

C - Level of education

9. Higher
10. Incomplete higher
11. Specialized secondary
12. General secondary
13. Incomplete secondary

D - Specialty by education

14. Architecture or building
15. Medical
16. Teaching
17. Technical
18. Economic
19. Legal
20. Farming,
21. Other

E - Marital status

22. Never married
23. Married
24. Widowed
25. Divorced

F - Status of persons arriving

Refugee
Repatriating refugee
Immigrant

Source: http://www.unece.org/stats/documents/2001/05/migration/2.add.10.e.pdf

Fig. 3 - The statistical record cards attached to the arrival/departure form in Kazakhstan (in Russian original)

ТАЛОН СТАТИСТИЧЕСКОГО УЧЕТА К ЛИСТКУ ПРИБЫТИЯ

Ф.И.О. лица, заполнившего талон_____
Гражданство_____

	Место прибытия	Откуда прибыл
Страна	Республика Казахстан	
Область/город		
Район/город		
Город, рай. под./адм. округ		
Поселок/село/аул		

Заполняется на всю семью, включая ответственного за заполнение

Количество прибывших, всего _____, в т.ч. детей до 16 лет_____

Имя	Пол	Месяц рож-дения	Год рож-дения	Нацио-наль-ность	Код графы					
					А	Б	В	Г	Д	Е

А - Общественная категория
Б - Цель прибытия
В - Уровень образования
Г - Специальность по образованию
Д - Состояние в браке
Е - Статус (только для прибывших из-за пределов республики)

Дата регистрации "__"_____ 20___года
Ответственный за заполнение_____
/подпись/

Сведения проверил и регистрацию оформил_____
/подпись/

Source: http://www.unece.org/stats/documents/2001/05/migration/2.add.10.e.pdf

Fig. 4 - The statistical record cards attached to the arrival/departure form in Kazakhstan (in Russian original, other side)

(оборотная сторона статистического талона)

ПРАВИЛА ЗАПОЛНЕНИЯ СТАТИСТИЧЕСКОГО ТАЛОНА ПРИБЫТИЯ

В позициях "Ф.И.О.", "Гражданство", "Место прибытия", "Откуда прибыл" проставляются данные лица, ответственного за заполнение всех членов семьи. Остальные вопросы относятся ко всем прибывшим (включая ответственного за заполнение). В графах А, Б, В, Г, Д, Е проставляются соответствующие коды:

А) Общественная категория:

Наемные работники (работающие по трудовому договору/соглашению)	1
Работодатели (работники, которые нанимают наемных работников)	2
Лица, работающие за свой счет (индивидуальный труд)	3
Безработные	4
Другие (пенсионеры, студенты, учащиеся, домохозяйки, пр.)	5

Б) Цель прибытия (причины перемены места жительства):

На постоянное место жительства	1
По трудовому соглашению	2
В связи с учебой	3
Другие	4

В) Уровень образования:

Высшее	1
Незаконченное высшее	2
Среднее специальное	3
Среднее общее	4
Неполное среднее	5

Г) Специальность по образованию:

Архитектурно-строительное	1
Медицинское	2
Педагогическое	3
Технологическое	4
Экономическое	5
Юридическое	6
Сельскохозяйственное	7
Другое	8

Д) Состояние в браке:

Никогда не состоял (а) в браке	1
Состоит в браке	2
Вдова/вдовец	3
Разведен (а)	4

Е) Статус прибывших:
(заполняют только прибывшим из-за пределов республики)

Беженец	1
Беженец-репатриант	2
Иммигрант	3

Source: http://www.unece.org/stats/documents/2001/05/migration/2.add.10.e.pdf