Leonid Fridman
Professor, Head of the Department on Central Asia and Caucasus.
Institute of Asian and African Studies of the Moscow State University.

Central Asia: Ten Years After
(Structural changes in the economy of the Central Asian countries)

In the 90-ies of the last century all the countries of the Central Asian region have come through the period of deep structural changes, both internal and external, suffered economic, political and sometimes military shocks (civil war in Tajikistan). As a result their economic potential on the one hand has dwindled sharply, on the other hand displayed a marked tendency towards economic development (See Table 1).

The duration of the economic crisis in the transitional period in the Central Asian Republics (CAR) was different in each country: It lasted from 5 years in Kazakhstan, Kyrgyzstan and Uzbekistan, and up to 6 years in Turkmenistan and 8 years in Tajikistan, where the maximum level of merchandise and services production was reached as early as 1988. The depth of the crisis also varied: in Tajikistan the volume of GDP has reduced in the worst year of the crisis almost by three times, whenever in Uzbekistan – only by 17-18%. In Kazakhstan, Kyrgyzstan and Turkmenistan the production has dropped in the worst year of the crisis nearly by 40-50%.

Yet during the last 4 – 6 years all the CAR countries have showed some economic recovery, with different growth rates by countries and years. Estimations show that by early 2001 the volume of GDP in Kazakhstan, Kyrgyzstan and Turkmenistan has reached about 70% – 75% of the pre – crisis maximum, whenever in Tajikistan it hardly exceeded 40% of the relevant level. At the same time in Uzbekistan, according to the official statistics, the period of the recovery has nearly been completed, for in this country the GDP has already reached 99% of the relevant 1991 level and 95% - 97% of the 1990 level.

Both in the years of the crisis and during the period of the recovery we have witnessed not only changes in the volume of production of goods and services, but along with them various shifts in the economic and social structures in the economy of CAR. It's these contradictory, to a large extent unfavorable changes, that we are trying to analyze in this report, which is predominantly based on the data of the employment dynamics in the main branches of the economy. The analysis of these

changes makes it possible not to stick only to the fundamental changes and distortions in the price indicators alone, which took place in the CAR as a result of many years of inflation and liberalization of prices. In these circumstances, it is the data indicating the changes in the number and ratio of those employed in the main sectors and industries producing goods and services, to identify more accurately the deep changes, that took place in the economy of the CAR during the post – Soviet period.

Among these shifts it is necessary to point out, first, a very important fact, which is an "agrarization" of the economy, or rather employment in the agricultural sector as well as in fish production and forestry, and it was especially pronounced in Kyrgyzstan and Tajikistan. The agricultural sector of Kyrgyzstan employed in 1991 nearly 36%, and in 1999 – already 52,5%, and in Tajikistan – relevantly 45% and 65% of the overall employment; in Turkmenistan the increase of this indicator was less significant – from 42 to 48%.

The tendency of the agrarization of the economy (to be more exact – the field of the employment) in the 90-ies of the last century is an exceptional phenomenon not only on a regional scale, but on the world scale as well. Neither in the developed countries, nor in the developing ones (at least in those with no hostilities) we were unable to identify a single case of increasing the proportion of those employed in the agrosphere. Even in the countries experiencing economic stagnation or decreasing GDP per capita of the population, the ratio of those employed in the agriculture either continued to decline or remained at the former level. And only in some East European countries as well as in two European republics of the former USSR the statistics marked the tendency similar to the above mentioned in the countries of CAR. The countries in question were Bulgaria and Romania where the ratio of those employed in agriculture in 1998 was relevantly by 2% and 10% higher (24% and 26,3%, 30% and 40%) than in 1980, as well as in Moldova (43% and 46%) and Latvia (16% and 19%)[1].

We do not intend to undertake an analysis of the reason and factors which brought about the process of agrarization in the countries in question. The only factor they all share is the depth and the length of the economic crisis accompanying their transition to the market economy. But it's hardly possible to explain the process of the agrarization in the employment in Romania, Latvia and Moldova solely by this factor: in Russia as well as in Lithuania there was the same or even more considerable

decline of GDP. Yet, according to the available statistics, there was not any notable increase in the ratio of those employed in the agriculture.

And now back to the present situation in Kyrgyzstan, Tajikistan and Turkmenistan – we are going to analyze the dynamics of the employment indicator in the agrosphere of these countries in a broader historical context.

First, specific indicators of the employment in agriculture for 1991 are by 4-5% higher than those in the last all-union population census made in 1989. According to this census the relevant indicator for Kyrgyzstan was 32%, Tajikistan – 41%, Turkmenistan – 37%. Certainly, in the last years of the USSR part of the population of these republics could come back to land, yet, this process could not have been so overwhelming. Still, there is a chance that the information, provided by the census could be "improved" for the political and ideological purposes, and the real scale of the agriculture employment was somewhat underestimated and industrial employment, on the contrary, overestimated, to prove the successful industrialization in the republics of Central Asia. In any case, this problem needs further investigation.

Second. If we compare the indicators for 1999 to the relevant indicators of the previous population census, we shall find, that the ratio of those employed in agriculture in Kyrgyzstan in 1999-2000 (52,5-52,9%) is almost equal to the relevant indicators for 1959 (!) (53,5%). The data for 1999 - 2000 in Tajikistan (65% and 67.5%) were even higher than the figures in the 1959 census (62.9%). Finally, the same indicator in Turkmenistan also almost does not differ either from the figure for 1959 (49%). As it is well known, in normal market economies, including the developing countries of Asia, Africa and Latin America, the ratio of employed in agriculture is, as a rule, in reverse proportion to the general level of economic development of a relevant country. If this law were applied to CAR, this would have meant that these countries were pushed back by 30 – 40 years not only in the employment structure, but in the general level of development due to transitional systemic crisis. However, such a conclusion seems to be definitely exaggerated. It does not take into consideration the specificity of the quickly changing conditions in these countries. First, all the states of the Central Asian region have passed the lowest points of the economic decline and resumed an economic growth on a new market economy basis. Second, in spite of serious losses, it was possible to preserve the key elements of a relatively developed infrastructure of the economy. Third, their human potential, though noticeably weakened, still can contribute to an accelerated

economic growth under favorable conditions. But anyway, the data mentioned above manifest negative trends and deep regressive changes in the socio – economic structure of these countries…

On the contrary, according to the current statistics, the share of the employed in agriculture in Kazakhstan and Uzbekistan decreased somewhat: from 24% to 22% and from 42% to 36%. However, these figures should be carefully checked, since they contradict to other statistical data for the same period. For example, according to the general population census, in Kazakhstan not 21.9% but 26.4% were employed in agriculture and forestry in 1999[2].

The data of the general population censes usually are more exact in the structure and dynamics of employment. The results of the population census of 1999 manifest an increase in the share of employed in agriculture by the end of the 90-ies, as compared to the figures of the previous censuses in 1989 (22.4%) and in 1979 (24.9%) differing very little from the corresponding figure in 1970 (27.0%)[3]. In other words, the employment ratio of the agriculture in Kazakhstan, according to the data of the general population census, came back to the level of the first half of the 70-ies.

This trend becomes even more evident, if we take into consideration, that intensive movements of the titular population from villages to cities were taking place in Kazakhstan during the 90-ies. Thus, two contradictory trends were acting at the same time: on the one side, given the crises in agriculture, many rural people moved to cities looking for work and means of existence, on the other side, an agrarization of the rural regions was continued. In some regions, where the employment in industry and construction was falling particularly intensively, a part of the new city dwellers returned to villages for agricultural activities, at least for several months a year.

The data on employment received from the population census of 1999 in Kazakhstan contradict that much to the figures of the current statistics, that they also raise a lot of questions (these figures are shown in the Table 2, line “Kazakhstan(2)” As it is known, the population of Kazakhstan dropped by more than 2 million people, or approximately by 8-10%, according to various estimations, as a result of emigration from the country. In terms of current statistics, the general employment decreased at the same time by 28% and even by 46% according to the census of 1999. However, this may also mean, that the scope of the temporary labor migration from the republic was not properly accounted for the past, the real constant population figures were exaggerated, and, on the contrary, the scale of hidden unemployment as

well as that of temporary and even "imaginary" employment was understated. Taking all these facts into consideration, it is necessary to state, that the question about the real changes in the agricultural employment in Kazakhstan between 1989 and 2000 still remains unanswered.

As to the current employment statistics in Uzbekistan, they manifest a strong agrarian overpopulation in the country, short – term and unregistered employment in rural regions. Otherwise, it is not possible to clarify the fact, that according to the general population census of 1989, 35.2% were employed in agriculture that year while in the next year the figure grew 39.3% and in 1991 to 41.9% (according to the data of the current statistics). Further up to 1994 the agricultural employment kept growing, accounting for 42.2% of the general employment. During the next four years the value of this indicator fluctuated insignificantly, remaining within 39 – 40%. And only in 1999 agricultural employment fell by 250 thousand people to 36% of the general employment. But such a strong slop down trend of this indicator looks highly improbable, since it clearly contradicts to the changes of another indicator: dynamics of the mainly ***non–agrarian*** population.

The data of current employment statistics which manifest the general fall in the agricultural employment in Uzbekistan by the end of 90-ies, clearly contradict to the dynamics of the ratio of the urban population. We mean the process of a ***relative desurbanization*** in this, as well as in some other countries of Central Asia: when in 1989 (and in 1979) 41% of the total population lived in the cities of Uzbekistan, in 1999 only 37% (36% in 1970)[4].

Surely, administrative limitations played a certain role here, i.e. refusals to provide "residence permit" to village dwellers who wished to move to cities so to say on legal terms. It is possible to find numerous marginal population in the cities of Uzbekistan living "between" city and village and falling out of the formal statistics. Nevertheless, it is difficult to imagine a noticeable decrease in the agricultural employment with a simultaneous, even not very significant fall in the share of the urban population, as it is indicated by the formal statistics. The real magnitude of ***the relative desurbanization*** in Uzbekistan may be a little lower than in official statistics, but this process is clarely going on in other Central Asian states and it has a longer history.

As the materials of the population censes, not only in Uzbekistan but also in Tajikistan, Kyrgyzstan and Turmenistan indicate, that during 70-80-ies, i.e. still in the

Soviet period, either stagnation or even a decrease in the share of the urban population was taking place. Its share, for example, in Tajikistan reached the peak in 1979 (34.6%), while ten years later it dropped to 32.6%. The census of 1999 indicates 28% (32.6% in 1959), which definitely reflects the results of the lengthy civil war and a deep social and economic crisis, followed by massive movements of the population in various directions.

The share of the urban population in Turkmenistan reached its peak as early as in 1970 (47.9%) and to 1989 it fell to 45.4%. By the end of the 90-ies it decreased further to 43.6%, i.e. even below the level of the 1959 census (46%). Such negative urbanization dynamics evidently correspond to the growing level of the agrarian employment and consequently, of the whole economy of Turkmenistan. The share of the urban population in Kyrgyzstan did not exceed 38% in 1979 and 1989, while it fell to 35% according to the 1999 census (33.7% in 1959).

Thus, the processes of stagnation and even a decrease in the level of urbanization that started developing during the last decade of the Soviet history of the Central Asian countries, accelerated strongly under the conditions of a deep systemic crisis of the 90-ies. ***A relative desurbanization*** of the population and a ***relative agrarization of the employment*** manifested mainly regressive changes in the socio – economic structures of these countries and corresponded to the values of the interrelated and reverse-proportional indicators of agrarian employment and urbanization during the 60-ies, i.e. 30-40 years ago.

In Kazakhstan, in contrast to the Central Asian Republics, a permanent growth in the urban population ratio was registered (50.3% in 1970, 53.5% in 1979, 57.2% in 1989). Its share according to the 1999 census reached 56%6 that meant the stagnation of this indicator during the 90-ies. However, in fact, much more contradictory processes working often in opposite directions were taking place. The emigration from Kazakhstan accounted for more than 2 million people. It consisted mainly of city dwellers, though the country definitely lost a part of the agrarian population as well. At the same time, while most emigrants from Kazakhstan probably originated from the Russian, "European" urban population, the process of ***urbanization of the Kazakh population*** was going on permanently: 30.9% of the total Kazakh population in 1979, 38.4% in 1989 and 43.3% in 1999 were living in cities[5].

More important is the fact, that a ***noticeable fall in the general urban population*** was registered in Kazakhstan in 1989 – 1999: by 755 – 900 thousand (

depending on the city criteria)[6]. The population dynamics in the 39 biggest cities manifest an increase in 1989 – 1999 in 6 cities, first of all in the two capitals: Astana and Almaty, but only by 137 thousand. Meanwhile the population in 29 cities dropped by 508 thousand. Mining and industrial cities in the North and Central Kazakhstan suffered mostly. A decrease in population in local centers and worker's settlements also looks probable.

Thus, first, the size of the general urban population in Kazakhstan has fallen. This became the most important specific indicator of an ***absolute desurbanization*** of the country. Second, a decrease in the agrarian population was going on at the same time. Because of that, the level of the relative urbanization of the whole population did not change. Third, under the conditions of the prevailing emigration of the "European" population and a noticeable movement of the Kazakh village dwellers to cities, the indicator of the relative urbanization of the titular population grew essentially. This was not that much the result of the growing "city attractiveness" but "pushing out" the village dwellers due to a deep agrarian crisis.

The process of a relative ***desindustrialization*** of the economy and employment was the major factor responsible for ***agrarization and desurbanization*** of the population between 1991–1999. The materials of the current statistics prove this. In Kazakhstan the share of the employed in industry fell from 20.2% to 14.8% at that time, in construction from 10.3% to 3.5%. The relative indicators in Kyrgyzstan dropped from 18.0% to 9.0% and from 8.1% to 2.7%, in Tajikistan from 13% to 7.6% and from 7.5% to 2.5%, in Uzbekistan from 14.7% to 12.7% and from 8.2% to 7.2%. A growth in the relative employment from 10.4% to 12.5% was registered in Turkmenistan together with a sharp decrease in the employment in construction (see Table 2).

Drawing the conclusion on the evident trend towards a ***relative desindustrialization*** that is manifested by the falling share of industrial employment in all CAR, except Turkmenistan, it is necessary to point out, that simultaniosly intensity and scale of the ***investment process*** fell dramatically in all Central Asian countries. This was displayed in a strong fall in the employment in ***construction*** in Kazakhstan, Kyrgyzstan, Tajikistan and Turkmenistan (by 34% - 73%) while the relevant decline in Uzbekistan was relatively low and did not exceed 6%.

The fall in the number of the people employed in the construction on such a scale meant intensifying ***underinvestment*** or even ***desinvestment*** in the major

branches of the economy in Kazakhstan, Kyrgyzstan and Tajikistan, while the investment process in Uzbekistan continued in general, though its intensity somewhat dropped.

Surely, the value, dynamics, branch and territorial distribution, as well as the general efficiency of investments quite often or even almost never corresponded to the real requirements of the economy in one or another country in the conditions of the administrative – command system and was dictated not only by economical but also by political, ideological and military aims determined by the state and party leadership.

…objectives, determined by the leaders of the party and the state. Therefore, a certain contraction of the investment process, especially during transition to market economy, seems to be well grounded. However, the actual scale of this contraction, in our opinion, turned out to be far larger than it was necessary, in many aspects making for the extreme depth and duration of the economic crisis, negative dynamics of GDP, industrial and agricultural production in the first half of the 90s.

Hitherto we've examined the dynamics of weights of the economy's different sectors in the total employed population; nevertheless the analysis of change in the absolute number of the employed in these sectors is a matter of interest as well. Corresponding figures, received through current statistical observations are contained in table 3.

Unbiased estimation of changes in the number and sector-wise distribution of the employed population becomes possible only taking into consideration the dynamics of the total resident population of the Central Asian countries. According to the official and sometimes contradictory data, from 1991 to 1999 the resident population of Kazakhstan reduced, as a result of emigration, by at least 8-10%, and may be even by 11-12% (according to certain independent researchers' estimates), while in other Central Asian countries it increased, in spite of the emigration of a part of the European population.

The direct comparison of data on the dynamics of the total and the employed population shows that the latter was reducing in Kazakhstan at least twice as fast; in Tajikistan it *reduced* by at least 12%, while the total population *grew* by 13-14%. In Kyrgyzstan, Turkmenistan and Uzbekistan the employed population grew slower than the total resident population. It is especially significant, given the fact that the age groups, which entered the labor market in the 90s, had been forming under the

conditions of a higher population growth rate. In other words, the growth rate of capable population in 90s was somewhat higher than the corresponding indicator, relating to the total population.

Thus, the gap in the dynamics of total, capable and employed population indicates the forming of large groups of the unemployed, underemployed and occasionally employed people. Certainly, in the Soviet period of the Central Asia's history, despite the officially proclaimed absence of unemployment, it still existed in different – most often latent – forms, but sometimes in open forms as well. The deep economic crisis inevitably resulted in mass open unemployment and underemployment. In some Central Asian countries it was admitted and in others – concealed by the official statistics. One can get a picture of the real spread of unemployment and underemployment from the example of Kazakhstan, where statistics more or less complies to the international standards and where the results of the 1999 census were published. According to the current official statistics 251 thousand unemployed were registered in 1999, while according to the ILO's standards their number was 950 thousand people, or 11,3% of the country's total labor force. If we divide the number of the unemployed by the number of the employed, the corresponding percentage indicator would be 15,6%. This figure characterizes the acuteness of the problems on the country's labor market.

The most surprising is the fact that in 1999, when the general population census was conducted, only 4179 thousand, and not 6105 thousand, employed were registered in the country's economy. The discrepancy of the two figures on general employment, mounting to more than 1,8 million people, it too significant and therefore can't be explained by occasional inaccuracies. In both cases calculating all the employed in large-scale and small-scale industries, the employees as well as the employers and the self-employed was proclaimed. Two hypotheses to explain this discrepancy can be offered. Firstly, the country's total resident population could have been overestimated during all these years, i.e. the real emigration and especially labor migration from Kazakhstan was underestimated. Secondly, though the both surveys' statistical approaches to calculating employment were formally identical, in the case of the census mainly full-time employees were calculated. Thus a great number of partially employed persons and casual workers were not counted. Perhaps, both hypotheses are correct. Our conversations with economists and reading Kazakhstan's

press indicate the possibility that the previously published data on the total population and the employed population could have been overstated.

The situation in Kazakhstan is in many aspects unique, but it is clear that the discrepancies in the dynamics of the total and the employed population in other Central Asian countries indicate the appearance and expansion of mass unemployment, underemployment and "alleged" employment there. At that, in Turkmenistan and Uzbekistan rural overpopulation is especially high, while in Kyrgyzstan and Tajikistan all the forms of open and latent unemployment coexist in rural and urban areas. Official statistics doesn't allow giving the correct estimates of its absolute and relative magnitude, but we can presume, that in Tajikistan the dimension of unemployment and underemployment's spread, due to obvious reasons, is especially large. In Kyrgyzstan, according to our estimates, it is somewhat smaller than in Kazakhstan. In Turkmenistan and Uzbekistan the open unemployment is less widespread, while underemployment, casual and even alleged employment cover a large part of the labor force, perhaps 5 to 10% of the economically active population or even more.

Studying the dynamics of the number of the employed in separate fields of the economy's so-called real sector, i.e. first of all agriculture and industry, allows recognizing a number of important, distinct, yet contradictory tendencies. For example, according to the current statistical data (see table 3), in 1991-1999 in Kyrgyzstan, Tajikistan and Turkmenistan the total number of the employed in agriculture *increased* by 27% (Tajikistan), 37% (Turkmenistan) and even 49% (Kyrgyzstan). At the same time, the physical volume of agricultural production in 1999 constituted, compared to the 1991 level, 65% in Tajikistan, 70-75% (our estimate) in Turkmenistan and 98% in Kyrgyzstan (see table 4). In other words, agricultural production per employed person in these countries decreased substantially. Besides, the year 1991 was not very favorable for the Central Asian countries' agriculture, and the volume of farming production in Kazakhstan and Kyrgyzstan dropped by 8-10% and in Tajikistan – by 4% compared to the previous year. So, the actual drop in the agricultural workers' productivity was even more significant in these countries. At the same time, in Uzbekistan, according to the official data, the agricultural labor productivity even increased slightly in 1999, however in 1998, according to the same data, it decreased insignificantly. We would like to remind, that the number of the employed in this sector in 1999 was, probably,

substantially understated. Therefore we can presume, that the agricultural labor efficiency in Uzbekistan either remained unchanged or (most probably) decreased not as significantly as in other countries of the Central Asia.

The situation in the Kazakhstan's agriculture is of special interest. Here, according to current statistical observations, the number of the employed decreased to the same extent as the volumes of production. Nevertheless, it was Kazakhstan, where the agricultural output in 1991 decreased, due to unfavorable weather conditions, by 10% compared to 1990. And secondly, according to current statistical data the number of the employed in agriculture constituted 71% from the level of 1991, while the corresponding figure in the census was 60%. It is quiet possible that the actual figure is somewhere between 60 and 71%. In this case it would mean that decrease in the agricultural labor efficiency in Kazakhstan, if it actually occurred, was smaller than in Kyrgyzstan and Tajikistan.

In contrast to agriculture, the employment in industry in all the Central Asian countries except for Turkmenistan was decreasing in 1991-1999 (tables 2,3), however, the pattern of this process was different in every country of the region. If we stick to the current statistical data, it turns out that industrial employment declined most significantly in Tajikistan and Kyrgyzstan and least significantly – in Uzbekistan. But, basing on the Kazakhstan's national census data, we would see that the industrial employment in the country decreased in 1991-1999 not by 42%, but by 56%. Apparently, the actual figure is not 42 or 56, but approximately 50%. In other words, the decrease of industrial employment in Kazakhstan was of about the same scale as in Kyrgyzstan and post-war Tajikistan. This can be explained by the fact, that the scope of industrialization in the Soviet period of the country's history was particularly impressive; many mining industries were developed here, whose produce was intended for the whole USSR and mainly for its military industries. Many Kazakhstan's manufacturing industries also served the heavy industry and the military-industrial complex of the whole USSR. Decrease in military spendings and the break-up of economic ties after the disintegration of the Soviet Union made the deep crisis of these important components of Kazakhstan's industrial system inevitable.

At the same time, the total number of industrial employees in Turkmenistan, on the contrary, increased almost by a half. This is explained by the country's course on slow, gradual evolution of the economic system; and in the industrial sector – on

the development of the industry's traditional branches (natural gas, petroleum) as well as building of factories meant for deeper processing of local raw materials and growth of textile and certain other industries.

Comparison of the data on the dynamics of employment and volumes of industrial production (table 4) suggests that in Kyrgyzstan and Tajikistan, and, probably, in Turkmenistan as well, the labor productivity dropped; in Kazakhstan it possibly remained at the same level and in Uzbekistan, according to the official statistics, even grew slightly. However, taking into account the imperfections, characteristic to the statistical accounting of employment and production in the Central Asian countries, and the fast changes of economic situation in some of them (for example, in Turkmenistan in 1999-2001), these conclusions may be adjusted in future, as soon as new, more accurate statistical data appears.

Summarizing the results of the analysis of the general situation in the Central Asian countries' industrial sector (including construction), we should note that total employment in this sector slightly increased (or, perhaps, remained at the same level) only in Turkmenistan, while in other countries of the region it dropped significantly. Partially, it was due to the inevitable process of adaptation to the new conditions, to the new market economy and integration into the global economy. The fact is doubtless, that the old economic structure, with all its deformations, needed radical reorganization. However, this reorganization should have included *modernization* of the system's basic elements, including not only the real sector, but also social infrastructure, science and other essential components of a modern economy.

Meanwhile the dynamics of employment in such important sectors as education, public health and especially science shows, that in Kazakhstan, Kyrgyzstan, and Tajikistan the total number of workers decreased in 1991-1999 even more than the total number of the employed in the national economy. At the same time in Turkmenistan and Uzbekistan the number of people employed in education and public health continued to grow. Of course, in Turkmenistan and Uzbekistan, where many patterns of the old socio-economic system were preserved, the old policy implying extensive development of traditional industries – and therefore extension of employment, as an imminent aspect of such development – continued. However, in other Central Asian countries, that chose the way of radical, rapid and to a certain extent shocking changes, the decrease in the number of the employed in the sectors of education and public health did not lead to the improvement of their functioning, i.e.

for example decrease in the rate of morbidity and infant mortality, increase in literacy rate and in the quality of education in schools and higher educational institutions.

The results in this sphere turned out to be extremely contradictory: more and more significant stratification, differentiation of schools, hospitals, colleges and other institutions of social infrastructure went on. At that, some of them commercialized, became accessible only for the more well-off sections of the population and usually (but not always) provided better medical care, higher quality of theoretical education and vocational training. Other schools, hospitals and colleges on the contrary found themselves in difficult financial situation, continuously lacked funds, lost the most qualified specialists – all of this leaded to adverse effects. It is probably impossible to measure the dynamics of the effectiveness of the education system, public health and other elements of social infrastructure, like it is done with agriculture or industry. Even the set of common indicators, used in such cases (literacy rate, the number of pupils on each of the stages of education per thousand of citizens or their percentage in a corresponding age group, specific morbidity and mortality in different age groups and so on), is unable to correctly reflect not only the quantitative, but in the first place qualitative characteristics of the functioning of such complex social systems. Moreover, some of those indicators (number of schoolchildren, students, teachers, physicians) reflect rather "expenses" than the effects, while others (for example, morbidity or mortality rate) depend not only (and not largely) upon the quality of medical service but on the ecologic situation, dynamics of personal incomes and other factors, that are hard to single out. That's why we have to repeat, that the change in the number of the employed in the basic segments of the social sphere leaded to extremely contradictory results, which cannot be estimated unambiguously.

Science is gaining more and more importance in the modern world, both in agrarian-industrial countries and in the countries with the rapidly growing informational and innovational sector (of course, the importance of science differs depending on countries' level of development). During the Soviet period of the Central Asian countries' history a certain scientific potential was built up here. Its creation was called forth not only by the economy's actual needs, but by the political and ideological factors as well. Furthermore, the sphere of science and scientific services, as it was reflected in the Soviet statistics, included not only the people who were really engaged in scientific activities, but also those who were connected with science only marginally; this was done in order to prove the advantages of the

socialist system. As a result, the data of the Soviet statistics, concerning the number of the employed in the sphere of science, were always overstated and therefore could not be compared to the corresponding indicators of the international statistics. [7] That's why we have to adduce two groups of figures: table 2 contains the figures concerning the dynamics of the number of the employed from the traditional section "Science and science services", which was preserved in the statistics of the Central Asian countries since the Soviet era. But we also use the data (cited below) on the number of persons, actually engaged in scientific research and development. The analysis of the first group of statistics shows, that the number of the employed in this sphere dropped twofold in Uzbekistan and three- five-fold in other countries of the region. Such large-scale decreases in the number of the employed were not registered in any other sector of the economy. And though this can be partially explained by the excessive "swelling" of the scientific (more exactly, quasi-scientific) sphere in Soviet times, it is unlikely, that this process just compensated the deformations, brought to life by the command economy, its political and ideological priorities. To characterize the current situation in the scientific community more correctly it is necessary to analyze the second group of data, concerning those who actually performed research. According to the official information, the number of people engaged in scientific research and development decreased in Uzbekistan from 41 to 15 thousand, in Tajikistan in 1991-1997 decreased from 4,4 to 1,3 thousand and then increased again to 2,7 thousand; in Kyrgyzstan – decreased in 1991-1999 from 5,7 to 2,5 thousand and in Kazakhstan – from 27,6 to 10,8 thousand people[8]. Unfortunately, concerning Turkmenistan only the figures of the total number of the employed in the sphere of science and science services are available; their number decreased during the same years from 14 to 5,2 thousand people.

Thus, the magnitude of the decrease in the number of actual researchers turned out to be smaller than for the wider category of the people allegedly engaged in the scientific process. Nevertheless, such impressive contraction of the research and development sector, usually justified by the lack of funds, by the necessity to reduce the number of employees in overstaffed laboratories and research institutes and by other considerations of the same kind, not just painfully affected the lives of thousands of people, but also led to very contradictory results.

Many former researchers, who had been holding the poorly paid positions of junior research assistants for many years, were forced to find new jobs. Some of them

became businessmen; employees, managers or directors of banks, trading or industrial companies. The fact that such specialists staffed the institutions of the forming market economy certainly contributed to their efficiency. At the same time, many former researchers were practically thrown into the sphere of retail trade, engaged into "shuttle" business and sometimes even became unemployed, lost their qualification, suffered acute psychological crises, joined the marginal sections of the population.

Finally, those who continue research and development are also subject to certain stratification. Some of them get all they can from the new opportunities, find new sources of financing, in addition to the scarce governmental funds, expand contacts with the colleagues abroad, thus increasing the effectiveness of their own research. Others, on the contrary, failed to adapt to the new environment, formed by the lack of governmental funding, their working efficiency decreased, often resulting in further cuts of science spendings. Thus, the changes going on in this sphere can also be characterized as contradictory, since it is very hard to find the resultant of such discrepant processes and coming to an "unequivocal" conclusion seems impossible (at least at the current stage of our research).

As far as we know, the only source of statistical data on the dynamics of the research activities' results is the costs of scientific and technical works, expressed in percentage to the GDP of each of the Central Asian countries. On the whole, this indicator decreased in all of the countries; however, the magnitude of this decrease varied substantially: in Tajikistan this indicator decreased from 0,44 to 0,06%, in Kazakhstan – from 0,56 to 0,19%, in Uzbekistan – from 1,16 to 0,36% and in Kyrgyzstan – from 0,33 to 0,14% of the GDP.[9] Data for Turkmenistan for the recent years is not available.

In order to get the figures, characterizing the changes of absolute values of scientific and technical works' costs, we have to multiply the figure for 1999 by the GDP index of this year in its comparison with 1991. For example, in Kazakhstan in 1999 the costs scientific and technical works mounted to 0,19% of GDP, the 1999 GDP itself was 0,7 of its 1991 value, thus the comparable figure for the scientific and technical works' costs is 0,19%x0,7=0,13%. In other words, the total costs of scientific and technical works, performed by researchers in Kazakhstan decreased from 1991 to 1999 4,3 times, while the total number of researchers in the country decreased 2,5 – 2,6 times. One may conclude after comparing these figures that working efficiency of researchers in Kazakhstan (and other Central Asian republics,

where these figures' ratio is similar) decreased by at least 40%. However, such a conclusion can't be called well grounded, because the "scientific and technical works' costs" indicator characterizes mainly the spendings on scientific research. Moreover, the approaches to calculating this indicator may be more or less arbitrary. What concerns certain "partial" indicators of scientific works' efficiency (for example, the number of applications for patents or granted patents, number of scientific articles in leading journals, or the citation index), such data is unavailable for the whole 1991-1999 period, and separate figures for the recent years don't allow to get the idea of these indicators' dynamics.

Let's summarize our analysis of the processes that reflected in the sphere of employment the most important macroeconomic and macrosocial transitional shifts on the way of the Central Asian countries from quasi-socialist system towards market economy. Agrarization, de-industrialization, de-urbanization, sharp relative and absolute contraction of investment processes, contraction (relative or even absolute) of the education and public health spheres, loss of a significant part of the scientific potential – all these, and those connected with them, tendencies under ordinary, "common" circumstances indicate intensification of regressive trends in the life of countries, societies, and large social groups. And if these changes would have been the *only* changes, going on in the Central Asian countries in the 90s, we could have limited ourselves to such a conclusion.

However, two circumstances make such a conclusion insufficient and even incorrect. Firstly, almost all of these tendencies, at least partially, were necessary to repair the deep structural warps and deformations that reached their peak by the end of the existence of the USSR's non-market, even anti-market economy. Moreover, the forming of new market structures in the countries of the Central Asia was complicated by the disintegration of old economic ties, appearance and aggravation of the limitations, formed by the contraction of both demand and supply of goods and services in the context of new, small or medium (in the terms of their economic and human potential). But these statements and explanations do not change the fact, that, for example, the decrease of the proportion and even total number of urban population, drop in industrial employment, contraction of scientific activities, educational sphere, expansion of primitive economic patterns in agriculture or goods producing network – from the viewpoint of the global historical development and

under present conditions – evidence the intensification (perhaps temporary) of regressive and not progressive tendencies and patterns.

But, secondly, (and it is more important) in the 90s in all the countries of the Central Asia the (more or less intensive) process of formation and development of new market structures and institutions was underway. Usually the term "*reforming*" is used when analyzing the transformation of the economic and socio-politic structure of the Central Asian countries. However, from the global historical viewpoint, the process is *revolutionary* (and for certain people, perhaps, counter-revolutionary) in nature, as it signifies the transition from one system, which implied total governmentalization of property as well as of social and political life, to another, characterized by the prevalence of private property and democratic mechanisms in social sphere and administration. Of course, in the Central Asian countries this process haven't finished, and in some cases it is just passing through its primary stages; in certain countries backward movements in politics or economy may be observed, so we may speak only about the main direction, the principal vector of development.

But no matter how slow, contradictory and painful this process was, still in every country reforming of socio-economic structures and creation of market institutions took place. In this connection it is enough to mention the prices' liberalization, which, due to its thoroughness, inevitably leads to the narrowing and then disappearance of goods' deficit; the privatization of small, medium and some large enterprises in commerce, services, agriculture, construction, industry and economy's other sectors; appearance of stock, commodity, currency exchanges, stock companies and other forms of private businesses, functioning with the use of hired or just family labor; formation of the two-level banking system, under which more or less branched system of commercial banks coexists with the governmental central bank; issuing national, partially convertible currencies; gradual liberalization of currency exchange regulations and creation of the conditions, promoting foreign investments; creation of national export and import regulation systems; finally, creating preconditions for the formation of normally functioning goods, labor, capital and services markets.

The enumeration of all these reforms evidences the unprecedented difficulty of the tasks, which the Central Asian countries were facing after they started their independent development. Moreover, those tasks were to be completed in relatively

short period and given that three successive generations lived, studied and worked in the context of anti-market economic system. This is one of the differences between the countries of the Central Asia and the East European countries, where only 1 – 2 generations lived under similar conditions (and what is more, in Eastern Europe private property was partially preserved in some sectors of the economy). It is relatively easy to quickly replace old machines and mechanisms by the new ones, but it is much harder to change people, their skills, knowledge, attitudes, etc. This process requires more time and is connected with many difficulties, psychological crises, material and spiritual losses. All of this inevitably affects the results of the Central Asian countries' economic dynamics.

We do not intend to thoroughly analyze the economic reforms; they can be subject of a separate study. Since we examine mainly macroeconomic and macrosocial changes and shifts, it is necessary to adduce the general results of the property structure reforms, which is the main basis and primary precondition of all the systemic changes in the Central Asian region.

According to the available calculations and estimates, by the end of the 90s the enterprises of the private and mixed sectors accounted for 75% (in 2000 – 77%) of the employed and 55% of GDP production in Kazakhstan; in Kyrgyzstan – 73 and 70% correspondingly; in Tajikistan – 61-62 and 30-35%; in Turkmenistan – 59 and 25-30% and in Uzbekistan – 69 and 45%.[10] Thus, in all the Central Asian countries the private and mixed sectors accumulate the larger part of the employed labor force, while the share of these sectors in GDP is more than a half in Kazakhstan and Kyrgyzstan and less tan a half in other republics. These facts evidence significant advancement of the Central Asian countries towards the market economy, which now involves the majority of their capable population.

In the light of the aforesaid and taking into account what has been said concerning the reforms, conducted in the countries of the Central Asia, we can give a more grounded and precise estimation of the changes and shifts that were taking place in the region in the 90s. Inevitable problems and difficulties of the transitional period, partial agrarization, de-industrialization and de-urbanization, relative or even absolute reduction of educational, medical and scientific potential as well as other similar tendencies indicated, on one hand, the growing *traditionalization* and sometimes even *primitivization*, *archaization* and temporary *chaotization* of the economy and social structure. But, on the other hand, those tendencies contradictorily combined with the

appearance and development of the structures and institutions of the new, modern, market and (in future) democratic nature, typical for *modernizing* countries, societies, small and large social groups as well as for individuals. These elements of modernization have been continuously growing, the corresponding process intensified as the Central Asian countries were gradually integrating into the system of international economic ties, the content and dynamics of which is determined by the developed countries. As a result, economy and everyday life of the Central Asian countries' urban and rural population is marked by an extremely *contradictory* interaction, coexistence, but also "struggle" of diametrically opposite tendencies: traditional (primitive) and modern, chaotic and systemizing, regressive and progressive in their nature.

In the 90s agrarization, de-industrialization, de-urbanization and de-scientization led not to modernization, but rather to traditionalization, primitivization and even archaization of the Central Asian countries' economy and social structure, but in future the transition to accelerated economic growth, basing on the patterns of catch-up development, will inevitably call for providing comprehensive support to the educational and public health systems, preserving and developing the actual scientific potential, carrying out rational industrialization conducive to the rise of the economy's efficiency, as well as intensification of agriculture.

Dynamics of the GNP in the Central Asian Republics and in some other countries in 1991-2000 гг.
(in per cent to the previous year)

Table 1

Страны	Average annual growth (decrease) rate 1990-2000	1992	1993	1994	1995	1996	1997	1998	1999	2000
Kazakhstan	-4,6	-5,3	-9,2	-12,6	-8,2	+0,5	+1,7	-1,9	+2,7	+9,6
Kyrgyzstan	-4,1	-13,9	-15,5	-20,1	-5,4	+7,1	+9,9	+2,1	+3,7	+5,0
Tajikistan	?*	-29,0	-11,0	-18,9	-12,5	-4,4**	+1,7	+5,3	+3,7	+8,3
Turkmenistan	-4,8	-5,3	-10,2	-19,0	-8,2	-7,7	-11,3	+5,0	+16,0	+18
Uzbekistan	-0,5	-11,0	-2,3	-4,2	-0,9	+1,6	+2,4	+4,4	+4,4	+4,0
Russia	-4,8	-14,0	-9,0	-13,0	-4,0	-3,0	+1,0	-5,0	+3,5	+8,0
China	+10,3									
Iran	+3,6									
Turkey	+3,7									
USA	+3,4									

Sources: IMF *Finance and Development*, Washington DC, September 2000, p.42
World Bank *World Development Report 2001/2002*, pp.294-295; 2001/2002, pp.232-233, 236-237;
CIS Statistical Bulletin, January 2001, No.2, pp11, 122.
Notes:
* There is an evident misprint in the text of *World Development Report* 2001/2002:(-1,7), p.237.
The same indicator for 1990-1999 equaled (-9,9).
** The figure for Tajikistan in 1996 is 17,7% (*Statistical Bulletin of the CIS*, 2001, No.2, p.122.)
The data for Russia (1992-1998) are rounded off.

Table 2

Employment in the CIS countries in various branches of the economy (in thousands, in per cent)

Country	Total		of which:																	
			Agriculture		Industry		Construction		Transport and communications		Trade		Education		Healthcare		Science		Public services	
	1991	1999	1991	1999	1991	1999	1991	1999	1991	1999	1991	1999	1991	1999	1991	1999	1991	1999	1991	1999
in thousands																				
Kazakhstan* 1	7716	6105	1876	1335	1561	904	796	211	637	576	576	1398	813	513	453	320	121	29	222	186
2		4172		1116		695		142		362		450		483		275		-		324
Kyrgyzstan	1731	1764	622	926	311	158	140	48	93	65	108	178	212	156	107	92	27	5,4	37	66
Tajikistan	1970	1726	881	1118	257	131	148	43	93	40	108	70	222	179	106	75	26	5	41	25
Turkmenistan	1527	1837	646	888	159	230	163	108	90	91	86	116	177	190	84	89	14	5,2	34	29
Uzbekistan	8255	8885	3458	3220	1213	1124	680	640	399	370	464	735	950	1023	488	538	100	50	103	122
Russia	73848	63963	9970	8740	22400	14300	8490	5080	5750	4920	5626	9320	7273	7063	4305	4500	2769	1209	1722	2858
%																				
Kazakhstan 1	100	100	24,3	21,9	20,2	14,8	10,3	3,5	8,3	9,4	7,5	22,9	10,5	8,4	5,9	5,2	1,6	0,5	2,9	3,0
2	-	100	-	26,4	-	16,6	-	3,4	-	8,7	-	10,8	-	11,6	-	6,6	-	-	-	7,7
Kyrgyzstan	100	100	35,9	52,5	18,0	9,0	8,1	2,7	5,4	3,7	6,2	10,1	12,2	8,8	6,2	5,2	1,6	0,3	2,1	3,7
Tajikistan	100	100	44,7	64,8	13,0	7,6	7,5	2,5	4,7	2,3	5,5	4,1	11,3	10,4	5,4	4,3	1,3	0,3	2,1	1,4
Turkmenistan	100	100	42,3	48,3	10,4	12,5	10,7	5,9	5,9	5,0	5,6	6,3	11,6	10,3	5,5	4,8	0,9	0,3	2,2	1,6
Uzbekistan**	100	100	41,9	36,2	14,7	12,7	8,2	7,2	4,8	4,2	5,6	8,3	11,5	11,5	5,9	6,1	1,2	0,6	1,2	1,4
Russia	100	100	13,5	13,7	30,3	22,4	11,5	7,9	7,8	7,7	7,6	14,6	9,8	11,0	5,8	7,0	3,7	1,9	2,3	4,5

Notes:

* The data for Kazakhstan in the line 1 are taken from the current statistics, in line 2 from the general population census 1999.

** According to the data for 1997 in Uzbekistan.in agriculture were employed 40,7%, in industry 12,8%, in construction 8,7%, in transport and communications 4,1%, in trade 8,2%, in education 12,3%, in healthcare 5,8%, in science 0,5%, in public services 1,3%.

Calculated on the basis of:

Interstate Statistical Committee of the Commonwealth of Independent States, Commonwealth of Independent States in 1999. Statistical Yearbook (farther CIS99), Moscow, 2000, pp. 269, 316, 414-415, 464-465, 509, 540-541.

Employment in the Republic of Kazakhstan, vol.2, Almaty, 2000, pp. 80-83, 84-87.

Table 3

Changes in employment in the branches of the economy in the CIS countries (in per cent in 1999 to 1991)

Country	Total	Of which:								
		Agriculture	Industry	Construction	Transport and communications	Trade	Education	Healthcare	Science	Public services
Kazakhstan (1)	-21	-29	-42	-73	-10	+143	-37	-29	-76	-16
Kazakhstan (2)	-46	-40,5	-55,5	-82	-43	-22	-41	-39	-	+46
Kirgizstan	+2	+49	-49	-66	-30	+65	-26	-14	-80	+78
Tajikistan	-12	+27	-49	-71	-57	-35	-19	-29	-81	-39
Turkmenistan	+25	+37	+45	-34	+1	+35	+7	+6	-63	-15
Uzbekistan (1)	+8	-7	-7	-6	-7	+58	+8	+10	-50	+18
Uzbekistan (2)	+7	+0,3	-6	-15	-9	+55	+5	+3	-50	+8
Russia	-13	-12	-36	-40	-14	+66	-3	+5	-56	+66

Notes: Kazakhstan (1) according to the current employment statistics
Kazakhstan (2) according to the population census of 1999
Sources: calculated on the same basis as Table 2.

Table 4

Index numbers of employment, output and productivity of labor in CAR in 1991-1999

(1991= 100)

Country	Agriculture			Industry		
	Employment	Output	Productivity of labor	Employment	Output	Productivity of labor
Kazakhstan	71 (60)[1]	70	99 (117)[1]	58 (45)[1]	50	85 (111)[1]
Kyrgyzstan	149	98	66	51	48	94
Tajikistan	127	65	51	51	38	75
Uzbekistan	93 (100)[2]	99 (93,4)[2]	106 (93,4)[2]	93	115	124

Notes: 1). In brackets are the indexes, calculated on the basis of population census of Kazakhstan 1999. See*: Employment in the Republic of Kazakhstan,* vol. 2, Almaty 2000, p. 80-81

2). In brackets are the indexes for 1998.

Sources: Index numbers of the industrial and agriculture production, as well as those of employment are calculated on the basis of: CIS'99, pp. 27, 269, 316, 464-465, 540-541; 509.

References

[1] See: World Development Indicators 2001, World Bank, Washington DC, 2001.
[2] See: Employment in the Republic of Kazakhstan. Volume 2. Employment in the Republic of Kazakhstan by types of economic activities. The results of the population census of 1999 in the Republic of Kazakhstan. Almaty, 2000,p.28)
[3] Here and later see the data on the structure of the branch employment for 1959-1989 in the population censes in the publication L. A. Fridman, O. V. Karazhas. Structural Changes in the Economy of Central Asia and Transcaucasian Republics (on the basis of the population censuses in 1926 – 1989). Bulletin of the MSU. Series 13, Oriental Studies 1994, №2, p.6).
[4] Here and further see the data on urban population ratios in CAR in CAR'99, pp.268, 315, 463, 508, 539; World Development Report 2000/2001, World Bank 2001, pp.276-277; World Development Indicators 2001, pp.28-30.
[5] See: Republic of Kazakhstan. Statistical Yearbook of Kazakhstan 2000, Almaty, 2000,p.445.
[6] See: Kazakhstan's Institute of Strategical Research at the President of Kazakhstan. Analytical Review. 1.01.01. Almaty 2000, pp.30; Republic of Kazakhstan. Statistical Yearbook 2000. Almaty 2000, pp. 429, 446; L.A. Fridman, O.V. Korazhas, ob. cit., p.6.
[7] For more details see L.A. Fridman "Science in a transitional society. Russia in the world context." Russian School of Economics, Moscow, 1998
[8] See "CIS'99", pp. 310, 360, 503, 575
[9] See "CIS'99", pp. 310, 360, 503, 575
[10] See "CIS'99"; CIS, Statistical Bulletin 2001, №2; IMF, Occasional Paper, 183, Economic Reforms in Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan, Washington, 1999, p.2; Finance and Development, September, 2000, p.41).