Higher Education in Central Asia; the challenges of modernization – an overview

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List of tables, diagrams, graphs

Introduction

The purpose of this introductory essay is to explore the current challenges facing higher education in Central Asia using the recent surveys of Kazakhstan, the Kyrgyz Republic, Tajikistan and Uzbekistan from the World Bank project ___ .

If there is a common purpose that links the four government's approach it is that tertiary education should contribute to the consolidation and modernization of their societies. These four nations or areas had a reasonably successful education system – using quantitative indicators such as literacy, primary and secondary coverage and research - under the Soviet Union and a part of this legacy remains. Yet that legacy is irrevocably part of history leaving the political elite with the task of creating a new educational system for a new country. Suffice it to say that such a task is likely to involve challenges that go beyond education to questions of national identity and globalization with responses – however inconsistent or fragmented – driven by different doses of principle and pragmatism. The four countries have not followed the same model, but there is enough similarity between the problems that they face coupled with their geographical proximity, to compare their different responses.

These responses will differ and in a sense be conditioned by the human and physical resources at the nation's disposal. Uzbekistan is the most populous country with 27m followed by Kazakhstan with 15m and Tajikistan and the Kyrgyz Republic with 7 m and 5m respectively. However the value of Kazakhstan's gross domestic product is greater than the other three countries combined principally because of petroleum and gas. In addition, the geography of the four countries varies substantially together with the economic distribution of goods and services within each country. While in all countries the rural population tends to be poorer, it is the size of that population and its opportunities for attending schools that define the educational challenges and which are then transferred as policy options into the higher education system.

The first section of this introduction surveys these issues with a brief examination of the transition process, which is both ongoing and one of the principal determinants of the emerging higher education system in the four countries. The section points out the need for greater policy clarity about why higher education matters at this stage of the transition and how difficult, without a consistent policy structure, it will be to build national higher educational systems. The section also discusses the value of a comparative

approach involving three generic issues – the national education system, management and resources, and the multiple dimensions of successful market integration, particularly as 'competitiveness'. These issues form the substance of the following three sections (II-IV) and are based on a reading of the national reports. These pioneering and valuable reports, it should be added, are English abstracts of documents written in other languages and so it is possible that the present authors have unintentionally misunderstood aspects of this sector and for which apologies are due. The introduction points to the need for greater policy clarity about why higher education matters at this stage of the transition and how difficult, without a consistent policy structure, it will be to build national higher educational systems.

I. Approaches to Higher Education

The collapse of the Soviet Union had a strong impact on the education of each of the four countries, noticeably higher education which was more fully integrated across the Union than primary and secondary education. For the education system as a whole independence has invoked both prosaic questions about infrastructure and human resource availability and difficult issues such as its contribution to the economy, its role in building a national identity – closely related to instructional languages - and overall social and economic values.

If higher education was not at the forefront of policy making immediately after independence, the transition process itself (and attitudes for and against) have had an impact on national approaches and particularly toward the privatization of higher education. Further as relatively poor landlocked economies trade has always been their path to growth; this implies openness to both technology and investment, which in turn encourages globalization and new skills and knowledge for successful producing and trading operations. Thus as economies become more global, higher education and the knowledge economy will have greater policy importance for the four countries.

Despite their common origin, each higher education system in Central Asia today is evolving its own national education context or environment and which consist of three dimensions. *First*, higher education is part of a national education system and responds to the demands of secondary education. *Second*, education is closely related to and influenced by the labor market. In a market economy graduates sell their skills to employers in contrast to command economies where ministries often sponsor undergraduates and then place them in a predetermined department. Now the labor market is in flux. Not only are employers, particularly private and foreign employers, demanding different skills – for example management rather than engineering - but the production structure has changed dramatically. The number of large (employment generating) manufacturing firms has fallen and existing producers face competition from technologically sophisticated imports based on consumer choice rather than producer decisions. These changes have been understood and absorbed by leading universities and undergraduates, illustrated by the increasing demand for law, the social and information sciences at the expense of education and engineering. *Third*, national competitiveness requires an economy that can produce and sustain a broad range of skills particularly associated with science and technology. During the Union, it was the

national academies and not universities that undertook most scientific research and technologies associated with large manufacturing complexes. Many countries, particularly in Eastern Europe, have attempted to integrate Academies into higher education as a way of reducing costs and bringing research closer to the market and so increasing their competitiveness for globalization.

These three dimensions – the national education system, labor market demands and international competitiveness – are the determinants of higher education in each of the Central Asian Republics (CARs.) They have been influenced by the political and administrative inheritance (briefly discussed in the next section), transition policies and performance.

a. The new reality – change and continuity

While the process of creating a new education system may not be unique – many developing countries were faced with this task after the departure of their colonial masters – it was both unexpected and for some of the cadres, unwelcome. The Soviet Union left an unsustainable legacy for independent countries which had now to set their own policies, a combination of continuity and change.

(i) The immediate impact

The collapse of the Soviet Union brought economic, social and political challenges that the autonomous republics – now separate countries – were ill prepared to meet. While there has been strong political continuity, in different forms, the economy was no longer part of a broader production system, governments no longer received transfers for social programs (health, education, housing) nor subsidies for training, education and research. [see Box 1]. The four countries had to forge a new nationality, with new institutions and policies.

The weight of the four Central Asian Republics inheritance cannot be overestimated, nor can the challenges of an international and global economy. Indeed it is this deep mismatch – between an authoritarian command economy, (that was in theory coordinated from Moscow), and the demands of globalization that have made the transition so difficult. While there was agreement about moving to market economies, only lip service was offered to creating democracy and there was little or no overt discussion about the nature of the social contract that was to replace the Soviet welfare system.

Box1 The Collapse of the Soviet Union

The mid term effects of the disintegration of the Soviet Union

While there was immediate general euphoria about the demise of the Soviet Union, scholars and analysts are taking a more cautious view about the economic effects of its collapse particularly on those countries which formed part of the Union rather than Eastern Europe or the South East Europe (i.e. former Yugoslavia). The Central Asian Republics (CARs) were particularly hard hit because they not only faced systemic political and economic change but, equally important, the disintegration of the 'spatial dimension' , the economic area in which Soviet production was conceived.

These have been helpfully listed by Johannes F. Linn*, now at Brookings, but previously a Vice President of the World Bank, as

The collapse of the integrated payments system and formal and informal inter-enterprise links;

The end of budgetary and investment subsidies from Moscow

Price support or subsidies, such as energy, eliminated.

Formal customs and trade barriers introduced

Transport prices raised and transport services re-oriented, particularly the regularity of air and rail services;

Integrated power grids, including water systems, collapsed

Migration of Russians from the new republics to Russia (see accompanying Chart, 1.B.1)

Collapse of Union security framework without replacement.

Although the most direct effect was on Central Asian enterprises and their output which depended on key inputs from other parts of the Soviet Union, the impacts were much broader and had a grave impact on systems which was integrated across the Soviet Union, like scientific research. University staff not only had to find a new relationship with colleagues, but administrators were faced with finding hard currency for the simplest products – paper, ink – that could not be produced at home. If this was difficult for HEIs, how much more difficult for primary and secondary schools which had little potential for raising income.

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*See his "Economic (Dis)Integration Matters: the Soviet Collapse Revisited", The Brookings Institution, October 2004. Some of these points are also made in the Central Asia Human Development Report and which he directed, (UNDP, 2005)

And as this none of the four countries has a homogeneous population or single dominant language, this unsettled social contract has become a current educational issues at all levels.

(ii) The transition indices – an exploration

Any major economic shift, like the transition from a command to market economy, can be analyzed as policy and/or process. Policy can be described as being about public intentions and public instruments (to achieve the given policy) while process consists of the actions and consequences of transition. Both are important to understand in terms of higher education which involves first, institutional renewal and changes to the legal framework; and second, the demands of new or changing economy caused by the structural consequences of the transition. This short discussion of the transition examines the nature of the transition as an indirect elements for understanding the challenges and opportunities of higher education. The following section looks briefly at growth performance.

The transition reforms have taken place against a background of turbulent political change (including a civil war in Tajikistan), human resource seepage and reduced government resources. Net migration rates show an overall decline for the Central Asian Republics and the rapid growth of net Russian migration, reaching a peak of almost a million in 1994 (see **1.1**)[1]. Kazakhstan was the most seriously effected by the withdrawal of foreign, particularly Russian labor, and its energetic exploration of human resource alternatives, particularly connected with the hydrocarbon sector where Russians played an important role, stems from this period. By 2004, it was the only country of the four CARs with positive net migration flow.

The second major feature that conditioned the first phase of the independence period was sharply reduced public resources – as a result of transfers being terminated and the breakdown in tax collection mechanisms[2]. The reduction of public expenditures to GDP is shown in **1.2**. The most sudden was experienced by Tajikistan, itself the product of a political crisis, while both Kyrgyzstan and Uzbekistan attempted to maintain

[1] Russian migration came from many sources as Russians began to doubt their future in the CIS and the 'near abroad'.

[2] The Central Asian Republics received grants & transfers from the Union budget of between 15-20 percent of their GDP as well as internal trade deficits, (although under administrated prices). In addition, according to the IMF, in 1992 the Central Bank of Russia was funding 91 percent of Tajikistan's GDP; Uzbekistan (69.9 per cent); Kazakhstan, (25.5 percent) and Kyrgyzstan (22.9 percent). See Aslund, A. How Russia became a market economy, Brookings, Washington, (1995), p. 108 f and T.4-5, p.123 respectively.

expenditures between 30 to 40 per cent of GDP. Kazakhstan's policy objective was to reduce government expenditures, although admittedly in a growing economy, as part of the reforms. These two dimensions had a direct effect on the four government's policy scope and therefore what was feasible for higher education. Migration and reduced public resources required governments to reinvent and re-orientate their central government and administration in the context of the transition reforms.

The encompassing objective of the transition reforms are to promote markets, through price liberalization, the abolition of quotas and privatization and reduce administrative regulations, including unnecessary government ownership. The European Bank for Reconstruction and Development (EBRD), in agreement with and acting for other international donors, measures fourteen economic market dimensions[3], to build a transition index for Former Soviet Union (FSU) countries which now covers 29 economies from 1989[4]. To repeat, the core of the transition reforms is to establish markets and adapt public institutions to the market process. It follows that public institutions should be either arms length from government (e.g. infrastructure) or with legally established distinct competences (e.g. central bank).

Experience with and gains achieved by transitional reform provide a valuable background for assessing public reform capacity including higher education reform. First, it shows the degree of commitment to change and second, how CIS government's are dealing with independent public law and management.

When measured as a simple index for 2006, the Russian Federation is the leading CIS reformer but is ranked at 12 of the 29 countries measured. If the four CAS countries are considered only, as a simple index, (see chart **1.3**) the transition has been led by Kazakhstan, followed by the Kyrgyz Republic, Uzbekistan and Tajikistan[5]. However it should be recalled that Kazakhstan's reforms are superseded by 14 countries, beginning with Hungary which has a transition index number of 54.7. The other CARs are well below Kazakhstan – the Kyrgyz Republic (23), Uzbekistan (26) and Tajikistan (27).

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[3] These are; price liberalization, trade liberalization, small scale privatization, large scale privatization, corporate governance and enterprise reform, competition policy, banking reform and interest rate liberalization,, securities markets and other non bank financial institutions together with utilities reform (telecommunications, railways, electric power, roads, water and waste water). See various issues of the EBRD annual Transition Report.

[4] These are measured by agreed indicators or assessed by expert opinion, using a scale from 1 (no reform) to 4 or more (market economy standards) when this is not possible.

[5] The index is the sum of the 14 sub indices by country and year divided by 14. Hence the maximum score for any given year was 56 (4 x14).

The component reforms are not equally complicated or administratively difficult, so it makes sense to distinguish between earlier reforms and later deeper institutional reforms[6], shown in G.**1.4**. as first phase (1) and second phase (2) transition reforms[7]. The table shows that over five year intervals, reform appears to be progressive and cumulative, however slight, with the exception of first phase Uzbekistan reforms. The table confirms that a much smaller percentage of the second phase or 'deeper' reforms have been completed. Moreover if the four Central Asian Republics' individual reforms are compared to the Russian Federation their major economic influence, as in **1.5**, then only Kazakhstan (trade and Forex, banking reform and some utilities) and the Kyrgyz Republic (trade and Forex, large scale privatizations) have superseded the Federation. In all other cases, they are behind or equal to Russia.

It is broadly agreed that the transitional reforms described here need a commitment to the practice and instrumentality of legal processes as well as political leadership[8]. Three legal areas - business environment and competition (4 items), Infrastructure (1) and the financial sector (1) – are evaluated by the EBRD legal department for all transition countries with the exception of Tajikistan. These countries show some advance, particularly securities market law, but there are concerns about secured transactions and the quality of concessions laws. The EBRD Corporate Governance Assessment exercise places Kazakhstan as showing high compliance to OECD Principles of Corporate Governance; the Kyrgyz Republic and Uzbekistan with medium compliance and Tajikistan with very low compliance[9] (see 1.6).

In summary transitional changes are altering the institutional structure of different countries. While it can be expected that national approaches to corporate laws etc, will be transmitted from corporate to educational policies, it must be admitted that some legal progress is slow. A stable legal structure available for all universities, especially private, is could help in their creation and independence.

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[6] Falcetti E., Lysenso T. & Sanfrey P, "Reform and Growth in Transition; re-examining the evidence" , EBRD Working Paper, 90, March 2005

[7] The chart examines the three agreed 3 initial reforms - price liberalization, trade and foreign exchange liberalization, small scale privatization – and six second phase reforms – large scale privatization, governance and enterprise reform, competition policy, banking reform, non banking institutions and infrastructure reform, by the percent achieved given the total of 12 and 24 maximum scores respectively.

[8] See Nussbaumer M., "Assessing Legal Systems; a catalyst for reform", Beyond Transition, Vol.16,2, (2005) p. 21-23

[9] The EBRD comments in the article above about the huge amount of legal work in all the countries that needs to be accomplished.

(iii) Recent growth performance

Economic growth facilitates change – it is far easier to accomplish a transition if the economy offers the promise of wealth. The four CARs have been through at least two growth phases – recession and growth - since 1991, the date when the last of the Central Asian Republics declared independence from the Soviet Union[10]. The accompanying graphs provide the background.

The first **(1.7)** looks at real GDP growth by using an index by setting 1989 output at 100 and then traces the annual value from that point to 2005. The worth of the five country's output, including the Russian Federation which is used as a comparative benchmark in these and selected tables, fell dramatically and even today only two countries, Kazakhstan and Uzbekistan, have recovered sufficiently to reach and surpass their 1989 real GDP value recently. While there are questions about data and its interpretation there is little doubt that these countries were impoverished during the 1990s and the return to growth has increased the possibilities of strengthening the transition and reform[11].

The second graph, (**1.8**) shows GNI per capita at international PPP prices, for Kazakhstan, the Kyrgyz Republic, and Uzbekistan from 1986/87, Russia from 1990, and Tajikistan from only 2000 when their series commences. Only two countries, the Russian Federation and Kazakhstan, have surpassed their Soviet levels but with considerable volatility during this period.

In summary, first, countries experienced different growth paths and second, within each national path there have been considerable volatility. The phases of growth are more fully explored for growth, labor and educational indicators in **I.9.**

(iv) The CIS – current structure

The four CAR countries, which are the subject of this report, are often compared to other FSU economies. These, it is worth recalling, consist of the EU-8, - those which have entered the European Union - the eight or so countries that make up South East

[10] Turkmenistan, which is not a participant in this study, declared independence following a referendum, October 27, 1991.

[11] The important question as to whether this was caused by the transition reforms or growth facilitated the reforms is a topic that is not yet settled for all the economies. For further discussion, see below in section IV.

Europe, (SEE)[12] – two of which have recently become members of the EU (Bulgaria, Romania), and the Commonwealth of Independent States (CIS) which are formed of the previous constituent republics of the Soviet Union with the exception of the three Baltic countries. The 12 CIS countries are conventionally divided into four (developing country) middle income countries, (that includes Kazakhstan)[13] and eight low income CIS countries which include the Kyrgyz Republic, Tajikistan and Uzbekistan[14]. Even within CIS countries, let alone the wider sample, countries began their independence with very different resources, initial conditions and institutional structures which effect long term opportunities and so higher education. Where possible, this introduction will only use examples from CIS countries even though the data for poverty and jobs is set among the FSU countries which can help with useful comparisons.

The most striking aspect of **1.10** is the wealth disparity among the CIS countries. Kazakhstan like Russia is an oil exporter and it is predicted that by 2010 it will be one of the ten largest in the world, with oil revenues of $99bn over the next 45 years[15]. The other CARs are among the poorest in the CIS in terms of per capita income, with Uzbekistan's twice that of Tajikistan ($1,260) and the Kyrgyz Republic ($1,870). Kazakhstan's GDP and exports are worth more than the other three counties together; this considerable difference is likely to alter the possibilities of higher education reform. A further distinction between middle and low income CIS countries is percentage of exports to GDP, (particularly if Turkmenistan is excluded) and the absence of high technology exports as a component of manufacturing exports. While there are advanced technology enclaves (particularly for mining and hydrocarbons) these seem not to be spilling over into the national or regional economy.

The promise of technology is one of the reasons for the government's interest in higher education and the expectation that it can bring prosperity to the CARs. Policy

[12] EU-8: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic and Slovenia; the South East Europe countries – Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the former Yugoslav Republic (FYR) of Macedonia, Romania, Serbia ad Montenegro, including Kosovo.

[13] The other middle income CIS countries are Belarus, the Russian Federation and the Ukraine.

[14] The remain five countries are Armenia, Azerbaijan, Georgia, Moldova and Turkmenistan.

[15] See Najman B., Pomfret R., Raballand G & Sourdin P., "How are oil revenues distributed in an oil economy? The case of Kazakhstan", School of Economics Working Paper 2005-18, University of Adelaide, Adelaide, (2005).

makers hope that a re-orientation of university education to make it more practical will bring long term benefits.

b. The functions and purpose of higher education

Each of the four countries has written laws with preambles and concept papers about the importance and value of education to their new state. Behind these documents are general ideas or visions which should be taken into account when discussing higher education policy. For without an overall vision it is difficult to undertake convincing policy, garner support and even more difficult to judge its success or failure. If no vision – understood as a comprehensive purpose – can be developed, then it is quite likely that one cause is disagreement within the ruling elite. Better in such cases, particularly with new nations, to settle for a low consensus than inspiring but divisive words. However even in the post modern world, higher education can be expected to play a formative role in new nations, either independently or as part of the complete educational cycle. Three possibilities follow;

(i) culture - the role of language

Education and higher education in particular can be used to spearhead a cultural renaissance or renew or create a national history and literature. The probabilities of such an approach increase when a state changes its national language or has an historic tongue made the official language. The Soviet Union preserved the idea of 'nation' and national cultures in 'ideologically narrow and historically incomplete ways'[16] . The great literacy campaigns of the 1920s and 1930s used local languages and primary education gave the appearance of fostering 'national self determination'. Further each republic had its national *nomenclatura* and indigenous cadres, which quickly became a rallying point for ethnic or regional opposition to the reforming Soviet state[17] .

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[16] M.S Johnson, "The Legacy of Russian and Soviet Education" in Heyneman S.P & De Young, A. J., The Challenge of Education in Central Asia, Information Age Publishing, Greenwich, 2004, p.32.

[17] Writing before the breakup of the Soviet Union, Geoffrey Hoskins called attention to "..the whole dynamic of glasnost and democratization (which) has propelled ethnic factors to the centre of the Soviet political stage. That which totalitarianism repressed has surged powerfully to the fore, uniting people of disparate social backgrounds and career paths. An explosive realignment of loyalties and political structures has resulted". The Awakening of the Soviet Union, Harvard, (1990) p.76-77.

National language policy is one of the most divisive issues for post FSU states, particularly where there are substantial Russian minorities[18]. All the four countries changed their official languages but only Kazakhstan and the Kyrgyz Republic retained Russian as an equivalent legal language[19]. Uzbekistan followed an aggressive language policy with Russian becoming a minority language.

There is academic work that examines ethnic and language divisions or fractionalization and the quality of institutions and policy making. In these countries there is considerable tension between setting national objectives, the ethnic mix and inclusiveness[20]. This is part of a broader development debate which correlates the strength of social institutions with social cohesion, and an explicit social contract between citizens of different ethnicities. The authors conclude that,

> " ..building social cohesion – through the construction and maintenance of high quality institutions pursuing the common good, and through the lowering of economic (and other divisions) – has been and remains a vital task for countries wrestling with development. *Ethnic divisions make it difficult – although not impossible…-to develop the social cohesion to build good institutions"* [21] (emphasis added).

This approach has direct relevance for the CARs and their education systems and the contribution of higher education to development outcomes.

A new language (and alphabet in those countries abandoning the Cyrillic) raises fundamental questions for education. *First*, to what degree should it represent the identify of the new nation and how exclusive should this be. If it is the essential prerequisite for nationality, it will continue and expand political, economic and social divisions (which may, of course, be the point). If on the other hand there is no legal pressure or the pressure is not applied, the new language policy could become little

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[18] There were 25m ethnic Russians living in the former Soviet, principally in the Ukraine, Kazakhstan and Belarus see Aslund, A. How Russia became a market economy, Brookings, Washington, 1995, p.104.

[19] Kazakh was declared the state language in 1993 and Russian an official language in 1996. Kyrgyz was declared the only language in 1989 and Russian, the language of higher education and diplomacy, recognized in 2000.

[20] See Alesina A., Devleeschauer A., Easterly W., Kurlat S. and Wacziarg R., "Fractionalization" Journal of Economic Growth, 8, 155-194 (2003) and Scott Radnitz "The Tyranny of Small Differences: the relationship between ethnic diversity & democracy in the former Soviet State" Democratitatizya, 575-606, (2003). The appropriate charts are to be found as **1.11** and **1.12** respectively.

[21] Easterly W., Ritzan J. & Woolcock M. "Social Cohesion, Institutions and Growth", Working paper, Center for Global Development, Washington, August, 2006.

more than folklore. *Second*, there are serious practical issues about the supply and organization of national language school materials, textbooks, and language teachers which have yet to be resolved. *Third*, while it would be impossible to continue with the Russian language as the principal official language, it continues to be, as this project shows, the *lingua franca* of the region[22]. Further, the social consequences of language teaching may well differ between urban and rural areas and between the elite and the ordinary citizen without school options or choices[23]. One possible social consequence is the opportunity and quality of tertiary entrants and the response of HEIs to the new demands.

Tertiary institutions face complex teaching and ethnic choices. The principal language of instruction, for Kazakhstan and the Kyrgyz Republic is Russian, 58 and 67.9 per cent respectively,(see table **1.13**) even though the reports identifies ethnic Russians as making up 21.5 and 11.8 per cent of the student body (**1.14**) Tajikistan and Uzbekistan teach 29.6 percent and 14.1 per cent of their students in Russian and the only other languages identified, apart from the national languages, is Uzbekistani.

The debate over language teaching and instruction is as yet unsettled and is likely to remain so for a long time to come. However, from the evidence presented in the reports, the nationalist mission is an important but not the central purpose of today's universities. As private universities become more common, this may change, when religious foundations are allowed.

(ii) instrumentalism

Apart from research institutes and academies, tertiary institutions are in the process of developing a separate identity from the government. As might be expected, they tend to follow the government's overall strategic goals which are written as administrative rules and sets of obligations and responsibilities. While

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[22] See UNDP, Central Asian Human Development Report, Bringing Down the Barriers; regional co-operation for human development and human security, for an eloquent discussion about its present and future value p.153.

[23] See Korth B. "Education and Linguistic Division in Kyrgyzstan", in Heyneman S.P & De Young, A. J., The Challenge of Education in Central Asia, Information Age Publishing, Greenwich, 2004, who writes " The societal division into Russian and Kyrgyz speakers is not only reflected but also partly formed through the clearly divided language tracks. What makes this situation problematic is that these differences in theory aiming at contributing to linguistic diversity in fact lead to inequality. Russian educated students have greater chances in professional life, while Kyrgyz educated students are linguistically and academically less prepared than Russian educated students", Chapter 7, p. 97-111

admirably pragmatic, they are the e reverse of revolutionary or visionary even though cast in that rhetorical style. A representative example is that of a senior Kazakhstan educational official who writes of the two basic fundamental aims of higher education(2003);

> " The first aim is that (the) higher education system should be considered as a basic mechanism translating historically cultural, social, scientific, educational values of folk, society and the State; the second aim is preparing specialists for the State system of management and national economy[24]"

Higher education, by this view, is best achieved by following stringent rules and procedures for the administration and organization of higher education, teaching content and all educational standards.

This appears to be the dominant approach to higher education by the four CARs. The language may hint at pluralism but seeks conformity. Even private universities, if they truly exist, are expected to follow most of these directives if they wish to receive government support.

(iii) competitiveness – a criteria for change?

Neither the cultural mission nor instrumentalism can build effective comparisons and it could be argued help bring tertiary education into the global century. Thus, for practical reasons, this essay will use the idea of competitiveness which can be understood as a particular configuration of modernization. The advantages are that the idea is relatively neutral, consistent with globalization and part of the overall discourse involving the governments of the four Central Asian Republics (CARs) and higher education. The assumption here is that the government's overwhelming objective is to improve national competitiveness and the more explicit the policy, the more the government will involve itself in higher education and provide support under relatively stringent conditions. Higher education and its institutions is as much about business as learning, about income generation as much as grants and about management as much as intellectual leadership.

An authoritative definition of competitiveness describes it as "a *set* of institutions, policies and factors, that determine the level of productivity of a country" and it is

[24] R.Bekish, Director of the Institute of the Laboratory of the Institute of Higher Education at the Kazakh Academy of Education, quoted by Medeuov Z.K. "The Reform of Kazakhstan's Education System", Heyneman S.P & DeYoung, A. J., The Challenge of Education in Central Asia, Information Age Publishing, Greenwich, 2004, p. 360.

the "level of productivity...that sets the sustainable level of prosperity that can be earned by economy"[25].

Box 2 The Global Competitiveness index

The Global Competitiveness Index
The authors, Xavier Sala-i-Martin and Elsa V. Atardi, define productivity as a complex process which depends on the foundations or pillars of competitiveness. These are, 1. Institutions 2. Physical Infrastructure 3. Macro Stability 4. Security 5. Human Capital 6. Goods market efficiency 7. Labor market efficiency 8. Financial market efficiency 9. Technological readiness 10. Openness and Market Size 11. Business sophistication 12. Innovation Further productivity follows a series of successive improvements or stages. The first basic phase, built on 1-5, is the "*factor driven stage*" where firms compete on price; the second is described as the "*efficiency driven stage*" reflecting that "efficient production processes determine the productivity of firms in this phase", (5b-10) and finally the *innovation driven stage* where firms produce and market non standard products in special ways (11-12). The authors given different weights to different pillars depending on the stages but recognize that ever factor matters in terms of competitiveness. Rather without prior phases it is difficult to proceed satisfactorily to later phases and thus policies.
Xavier Sala-i-Martin and Elsa V. Atardi, " The Global Competitiveness Index", Chapter 13, p.51-80, WEF, Competitiveness Report, 2004.

Thus improving productivity growth is the goal of most economies and competitiveness is the method by which this is achieved. This broad definition of competitiveness – as a set – indicates that many human and physical factors

[25] See, Sala-i-Martin, Xavier & Atardi Elsa V. "The Global Competitiveness Index", WEF Competitiveness Report, 2004, Chapter 13, They continue " ... productivity also determines the rates of return obtained by investments in an economy. Given that rates of return are the fundamental determinants of aggregate growth rates of the economy, a more competitive economy is one that is likely to grow at larger rates over the medium to long run". p.51.

contribute to productivity growth. The Word Economic Forum (WEF)'s Global Competitiveness Index identifies 12 dimensions [see Box 2]; each pillar consists of subjective and objective sub-indices which are then formed into scores per country. Unfortunately it was not possible to construct a similar index for this introduction.

Education forms part of the Human Capital dimension, itself divided into two sections bridging the first five or basic dimensions which are key to factor driven economies to the following stage known as efficiency enhancers (6-10). It is a feature of this index that its authors claim that one stage cannot easily be jumped to reach another, later, stage. Whatever the validity of this claim, competitiveness has given education and higher education in particular a new role as key facilitator in the distribution of knowledge and skilled practices.

It is not yet clear that all governments accept competitiveness as their higher education policy goal – there is always going to be competition from those who (understandably) advocate a cultural mission or rely on instrumentalism. Equally a move to competitiveness requires not only more effective teaching and research, but greater tolerance and pluralism particularly between the ministry and HEIs together with a greater sense of experimentation.

c. <u>The key instrument – the market institution</u>

The transition economies are moving to market systems, recognizing that these relations are often unclear and describe markets that range from price competition to 'crony capitalism'. Many of the new markets are quite imperfect but they are clearly not part of the command economy. In the case of the social services (health, education, pensions) there is the need for a new term to describe the disintegration and reconstitutions of delivery mechanisms – 'institutional pluralism'.

The term is intended to take into account the many organizational forms generated by the transition process. Many were only created recently and respond to both political commands and market exchanges. They fall between the command and market institutions without necessarily being easily labeled as one or the other. They may, for example, be nominally constituted as private companies or arms length public agencies but are used by governments to offer favors or block alternative initiatives. Further 'institutional pluralism' is intended to describe not only relations between nominally independent organizations but also relations within

organizations such as, for example, universities. The differential responses from different departments, personnel or teachers to the market is a good example of a plural institution which does not react with a single response.

The existence of institutional pluralism can help explain the stop-go nature of the transition because there is no overwhelming/encompassing commitment to the market as there was, for example, in Poland and for a short time in Russia. The Central Asian countries have been far less committed to immediate market solutions than those of Eastern Europe[26] as was discussed with regard to the transition index. Hence new institutions – perforce created for new countries – were not necessarily committed to full marketization. Many preferred to take their cues from the government as the government perhaps intended. Institutional pluralism is the background to the current policy issues in the CARs.

To make higher education a dynamic force for these economies and societies, two steps are necessary. First, the higher education 'system' must increase the number of enrolled tertiary students and move from an 'elite' to a 'mass' system. Given the current conditions in the four countries, the full potential of this expansion will only be satisfactorily achieved by founding autonomous independent colleges or universities. This has not been followed in the CARs where the growth of the systems has been principally achieved by charging students to attend public or state HEIs. The system may achieve the numbers – an instrumentalist response – but this quasi-privatization has confusing implications.

The second step for a dynamic and successful tertiary sector is, as implied, the creation of fully autonomous educational institutions. At the present moment in all four countries, there are a range of quasi- autonomous arrangements that continues some aspect of bureaucratic centralization, limiting the potential possibilities of public and private education. The set of relations appears to be very similar that described by János Kornai in that,

> "..the bureaucracy behaves ambivalently toward the private sector in the reform phase. Sometimes it reassures and assists it and sometimes it undermines its confidence and hinders its operation. The ambivalence may take the form of the support for the private sector in one branch of

[26] See for example the discussion in Pomfret R. "Economic Diversification of the New Independent Central Asian Countries" , (2001).

> the bureaucracy coupled with the obstruction of it in another, or of an alternation of periods favorable and unfavorable to the private sector"[27].

The range of these relations between the government and the tertiary education sector is the principal subject of section III.

There is another step or half step that has become increasingly important for the growth and learning of tertiary education institutions - internationalization and the presence of foreign universities in the four countries. These not only represent historic (Russian) or cultural (Turkey) ties but together with US or European universities examples of modern universities (curricula, approaches,) which are possibly helpful as examples to national institutions. They also provide global links – one of their major selling points – which could act as a competitive stimulus to local institutions.

The final section of this introduction (IV) briefly discusses the impact of tertiary education on society and the economy and their future requirements. The first subsection looks at the changing labor market, the structure of employment and the demand for new skills. The second subsection reviews the current status of research and development (R&D) and its relationship both to future growth and university teaching. The third subsection returns to competitiveness as the justification for additional educational investments and reiterates the importance of flexible, independent tertiary institutions to respond to new educational and training requirements.

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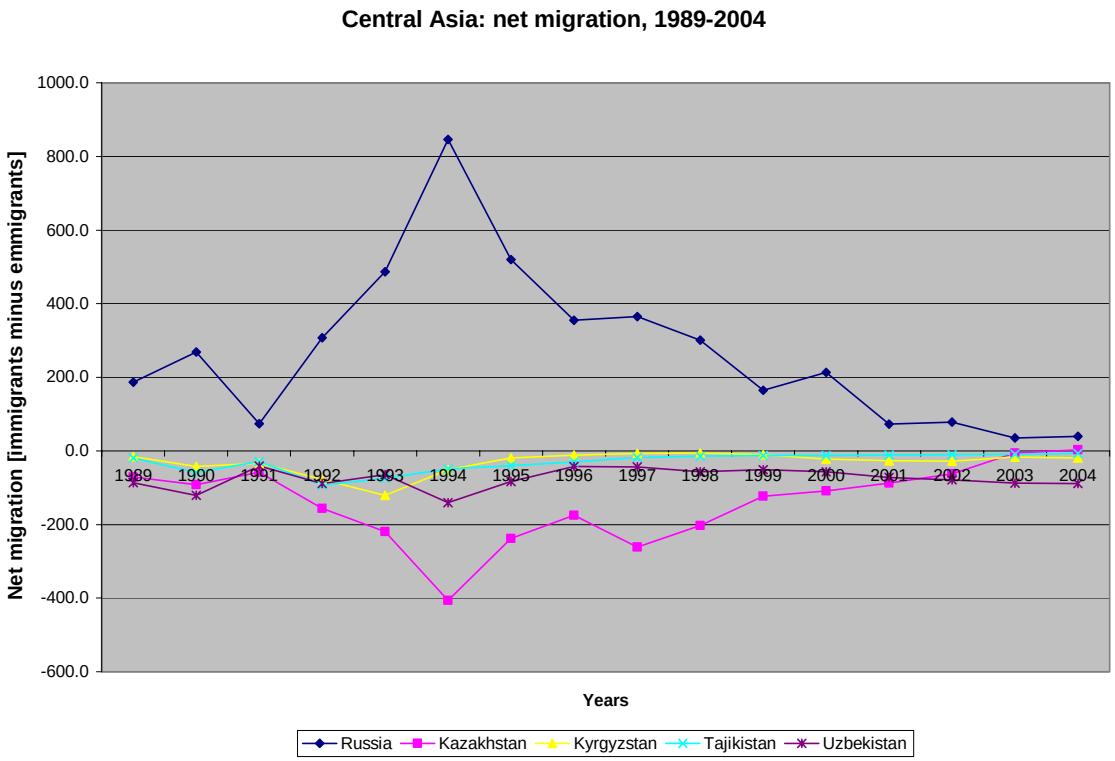
[27] János Kornai, The Socialist System: the Political Economy of Communism, Princeton, (1992) p. 450 f.

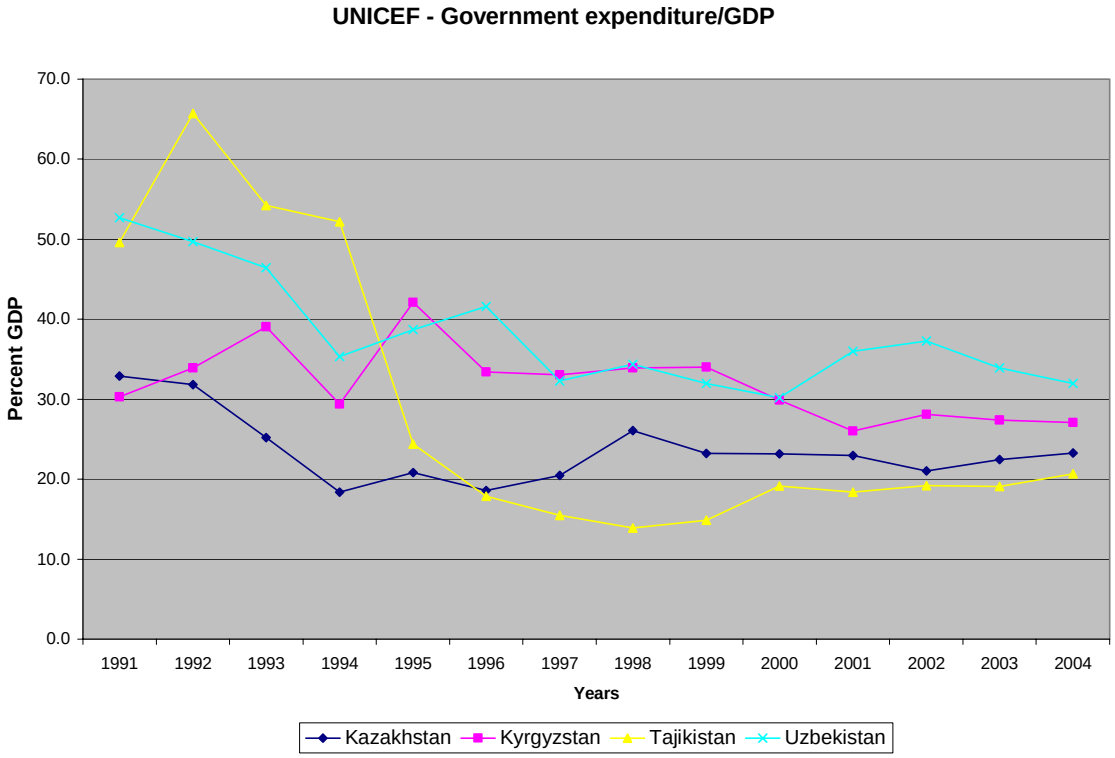
Support Tables 1

1.1 Central Asia – net migration



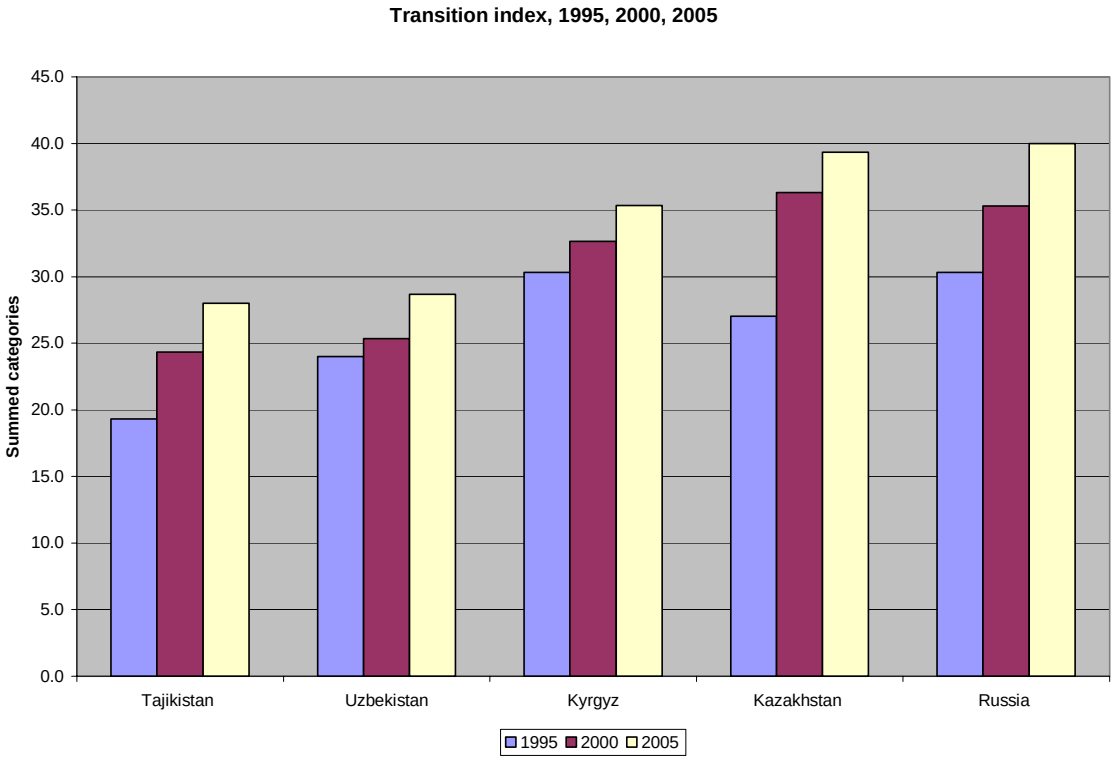
Source: UNICEF – Trans Monee data base,

1.2 Government Expenditure to GDP



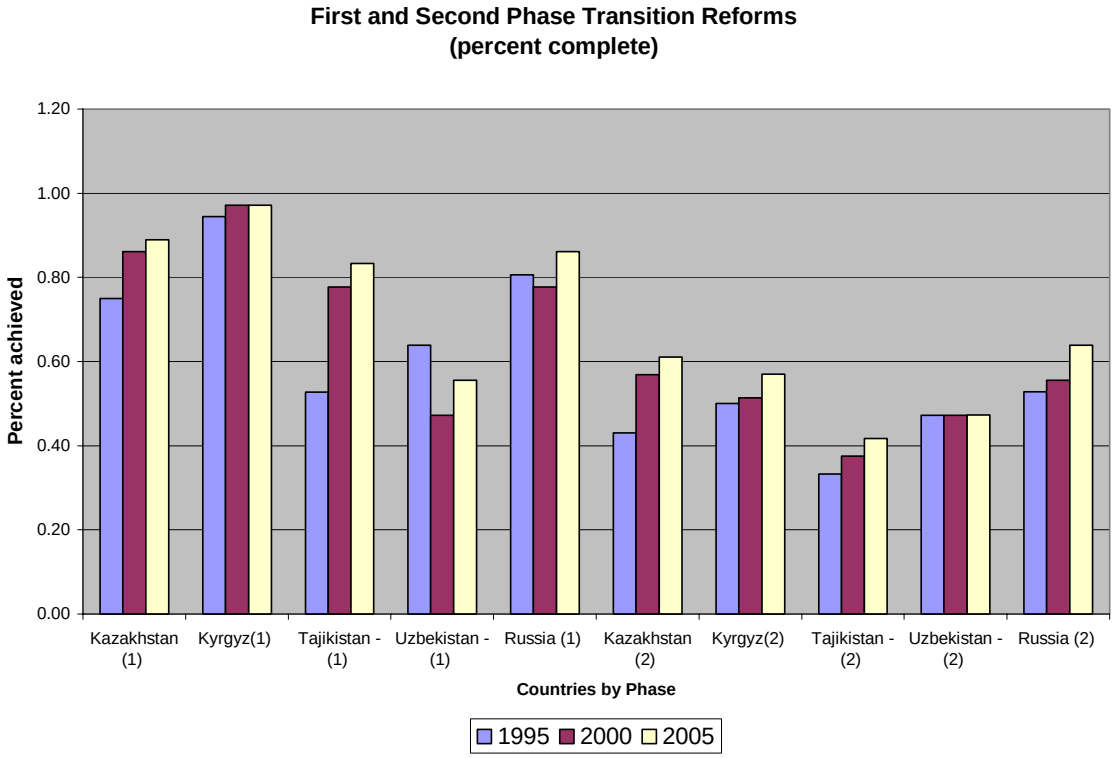
Source: UNICEF – Trans Monee data base

1.3 Transition indices

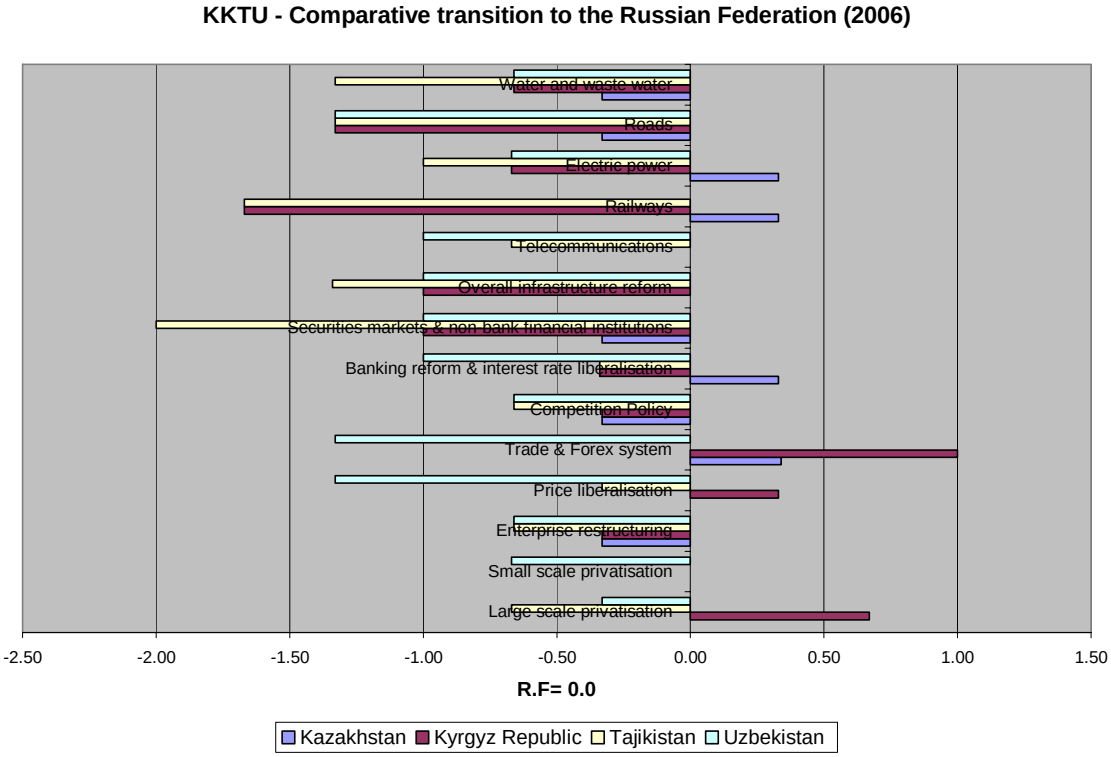


Source: European Bank of Reconstruction and Development

1.4 First and Second phase reforms



1.5 Comparison with Russia



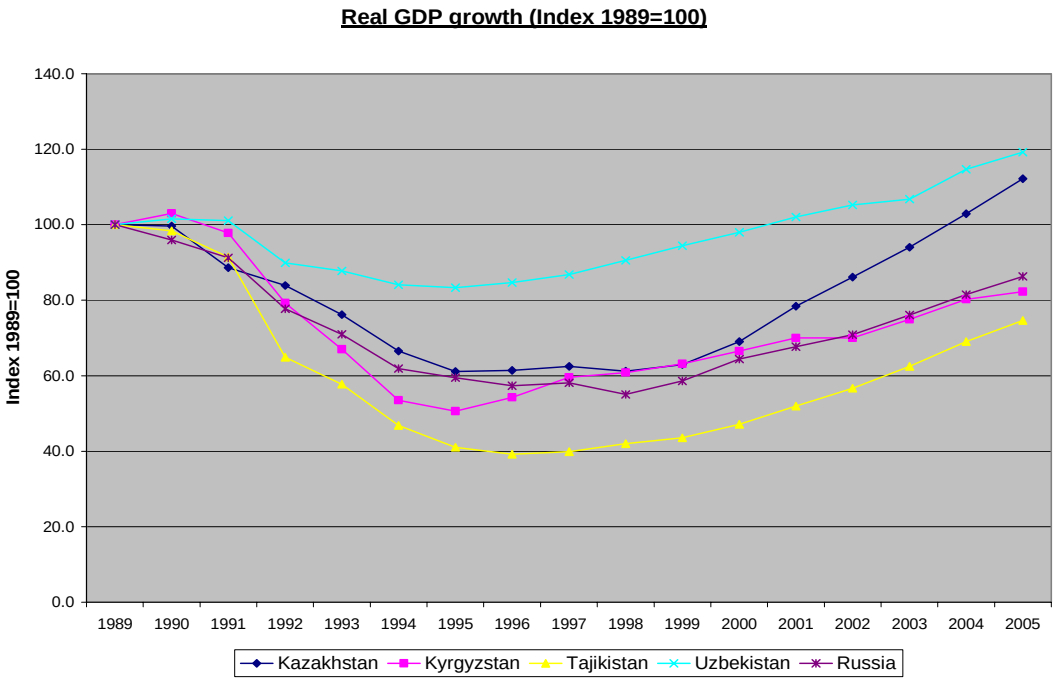
Source: EBRD Transition indices (own calculations)

1.6 Legal quality in Central Asian Republics

	Business environment and competition				Infrastructure	Financial Sector
	Competition office	Quality of insolvency law	Secured transactions law	Quality of corporate governance law	Quality of concession laws	Quality of securities market laws
Kazakhstan	yes	medium	inefficient	high	na	high
Kyrgyz Republic	yes	medium	some defects	medium	low	medium
Tajikistan						
Uzbekistan	yes	low	malfunctioning	medium	low	high
Russia	yes	medium	malfunctioning	high	medium	medium

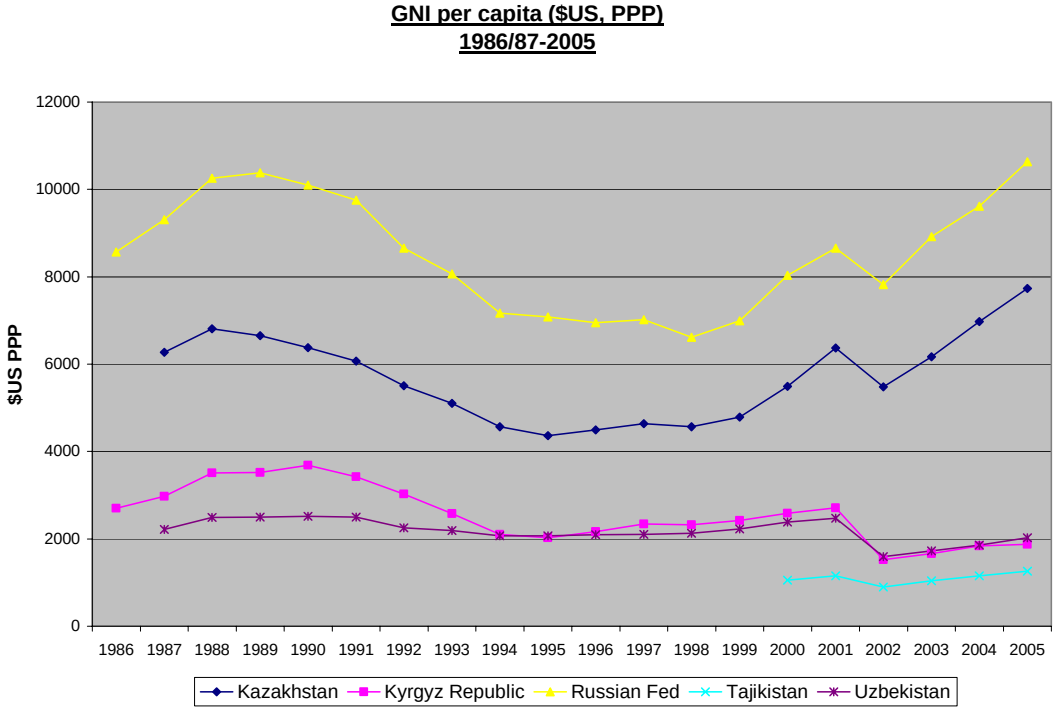
Source: Structural indicators (SIB) , EBRD: Assessment of legal quality(commercial)

1.7 Real GDP Growth (1989-2005)



Source: World Bank/UNICEF

1.8 GNI per capita (PPP)



1.9 Central Asian Republics: Growth and change

	Kazakhstan	Kyrgyz Rep	Tajikistan	Uzbekistan
GDP growth index 1989=100	Reaches 100+ in 2004, then rapid growth	Lowest point in 1995, then slow but steady growth: 2005=82.2	Lowest point 1996(39.2), then slow uneven growth .2005=74.6	Lowest in 19965(83.4) & in 2001 reach 102. In 2005=119.3
GDP Growth rates	Positive in 2000, then above 7.7	Inconsistent with rates rarely above 5	Higher rates at end of period, around 6	Highest in early volatile period but low since then and 2 negative
GNI per capita (PPP) – current international	Fell to $4,570 (1998) from $6,810 (1988) and now $7,730 (2005)	Fell from $3690 (1990) to $2020 (1995) grew until 2001, whence it fell to $1,520 (2002) & now $1,870 (2005)	Series only begins in 2000 ($1,060), fell to $900 (2002) and now $1,260, (2005).	From high of $2,520 (1990) and before did not fall below $2000 until 2002 ($1590) and has grown subsequently to $2020 (2005)
Official Unemployment	Highest 13.5 in 1995 & 7 years of double digit; now 8.1 (2005**)**	Highest in 2003 (9.9) – rarely above 6; now, 2004, (8.5)	Highest 3.2 in 1998. 2.1 (2005)	Always under 1 digit
Sectoral change - value added	From relative agricultural to service (55.9) economy (2005)	Decline in manufacturing and increase in services (45.0)	Declines in industry and agriculture/growth in services (49.8)	Relative decline in all sectors but services (43.2)
Sectoral change – employment	Added employed in agriculture. Fall in industry	Added employment in agric and shift to services	Added employment only in agriculture	Added employment in services
Government Expenditure	Fell to 18.6 (1994) and unevenly risen to 23% (2004)	Lowest point is 27% (2004). Gradual reduction in government expenditure from 42% (1994)	Over 50% until 1994, then declined to 13.9 (1998) and now at around 20% (2004)	Lowest point was 30 % (2000) since when fluctuated around 35 percent.
Education Enrollments – coverage by age				
Primary (Basic) (7-15)	Lowest 93.8 (1993) now over 100%	Lowest 85.6 (1995) and currently 95.2%	Lowest 85.5% (1993) & now 95.4%.	Lowest 87.3%
Upper Secondary (15-18)	Fell from 1989 by 24% to 52% (2000) & now 68.8 (2004).	Fell by 29% to 36% (2000) and now 45.3%	Fell by 35% to 24.7% (1998) and currently 28.8% (2004)	Fell by around 22% to 47.7% (1996) and now 74.8% (2004)
Tertiary (19-24)	From 18.1% (1989) to 16.2% (1996) and growth to 44.7% (2004)	Decline by 2,5% to 10.7% (1993) and now 36.2% (2004)	Imperceptible decline by .1% to 11.4% (2000) and now 14.4 %(2004)	From 15% (12989) to low of 6%(1998) and now 8.5%(2004)

Sources: Asian Development Bank, UNICEF, World Bank series as noted in other tables.

1.10 CIS – current data (2005)

	Per capita (US$)		Pop	Net Migration) [2000-2005]	Value GDP	Exports	X /GDP	X/ Mfg	Of which Hi tech
	Atlas	PPP	(m)	(000s	US$ m	US$ m	(%)	(%)	(%)
The Russian Federation	4,460	10,640	143	400	764,762	245,255	32.1	21	9
Kazakhstan	2,930	7,730	15	-600	56,088	27,849	49.7	16	2
Belarus	2,760	7,890	10	-10	29,566	15,992	54.1	60	3
Ukraine	1,520	6,720	47	-700	81,664	34,287	42.0	67	5
Armenia	1,470	5,060	3	-100	4,903	950	19.4	62	1
Georgia	1,350	3,270	4	-248	6,395	867	13.6	37	38
Azerbaijan	1,240	4,890	8	100	12,561	4,346	34.6	11	2
Moldova	880	2,150	4	-40	2,906	1,091	37.5	36	4
Uzbekistan	510	2,020	27	-300	13,667	4,706	34.4	na	na
Kyrgyzstan	440	1,870	5	-75	2,441	672	27.5	43	2
Tajikistan	330	1,260	7	-345	2,326	909	39.1	na	na
Turkmenistan	n.a	n.a.	5	-10	6,774	4,935	72.9	na	na

Source: World Development Indicators, 2005.

1.11 Fractionalization Indices

	Date	Ethnic	Language	Religion
Obs.		180	185	198
Average		0.435	0.385	0.439
Kazakhstan	1999	0.6171	0.6621	0.5898
Kyrgyzstan	2001	0.6752	0.5949	0.4470
Tajikistan	2001	0.5107	0.5473	0.3386
Uzbekistan	1995	0.4125	0.412	0.2133
Russia	1997	0.2452	0.2485	0.4398

Source: Alesina et al. Journal of Economic Growth, 8, 155-194, (2003)

1.12 Ethnic and Cultural Fractionalization

	EF	CF	2DIFF	FH	Polity IV
Kazakhstan	0.664359	0.616434	9.2	3	6
Kyrgyzstan	0.679358	0.619684	34	4	7
Tajikistan	0.513434	0.489964	39.9	3	9
Uzbekistan	0.454775	0.439031	63	1	1

Source: Radnitz, S. "The Tyranny of Small Differences: the relationship between ethnic diversity & democracy in the former Soviet State" and where EF = Ethnic fractionalization; CF = cultural fractionalization; 2Diff is the difference between the two larges ethnic groups.

1.13 Higher Education: language of instruction (recent dates)

	HEI - language of instruction (percent)						
Location	Russian	Kazakh	Kyrgyzstan	Tajik	Uzbek	Subtotal	Total
Kazakhstan	58.0	39.5			0.5	98.0	747,104
Kyrgyzstan	67.9	0.1	30.0		1.3	99.2	199,124
Tajikistan	29.6			68.0	2.2	99.8	107,570
Uzbekistan	14.1	0.5		0.2	81.4	96.2	278,674

Source: national reports

1.14 Higher Education: ethnicity

	Ethnicity						
	Russian	Kazakh	Kyrgyzstan	Tajik	Uzbek	Subtotal	Total
Kazakhstan	21.5		69.6		1.4	92.5	747,104
Kyrgyzstan	11.8	3.0	69.6	0.8	9.5	94.6	199,124

Source: national reports

II. The Higher Education System

The patterns of higher education growth, shown by the tour countries, can be examined from two simple perspectives. First, Kazakhstan and the Kyrgyz Republics are expanding their university enrollments to become 'mass' systems, while, Uzbekistan and Tajikistan with slower growth appear to be willing to remain elite systems. These latter countries continue to support technical-vocational education – reminiscent of centralized planning strategies – as a key building block for skills. Second, the decision to expand the higher education system depends on links to secondary education. After all, tertiary education is a component part of the education system – its size and scope depends on a satisfactory flow of secondary students who compete for first year enrollment at universities or institutes. The secondary system in turn depends on a successful primary system that is able to transfer students from primary to secondary levels. Thus the growth of higher education depends on educational policy in general as well as the changes to primary and secondary education that will have a direct, if long term, effect on tertiary education.

This section compares quantitative aspects of the four countries and the implications for policy and the education system in general.

a. Elite and Mass education

The categories elite, mass and universal education, are a simple but powerful way by which to compare higher education systems[28]. While the initial categorization refers to size, (i.e. number of enrolled students), the increase in the number of students has profound implications for the purpose, organization, teaching and institutions that make up higher education. As the total number of students grows, so the system becomes less exclusive and more inclusive; attitudes change from regarding higher education as a privilege, then as a right and finally to an obligation, a required step to adulthood and employment.

The value of these ideal types is their internal coherence, in the sense that as numbers increase so they have a knock-on effect, not always recognized, on other

[28] Introduced and developed by Martin Trow who explores them as "ideal types". See his "Reflections on the Transition from Elite to Mass to Universal Access", ed. Forest J.J.F. & Altbach P.G. International Handbook of Higher Education, Vol. 1, p.243-280, Dordrecht, (2006).

key dimensions. For example, the increases in student numbers have an obvious impact on costs and so funding but also an indirect impact on the curriculum. If, as is often the case, the government supports higher education as part of the public budget, say with a per capita grant, and the number of students double, then the government's choice ranges between raising the grant or maintaining the existing amount, that is doubling or halving the 'unit of resource'. If the full amount is not covered, either the student (or family) must contribute, or the university reduces its fees and if the student has to raise income by part time work, then the higher education system (through all or some institutions) might wish to accommodate these changes by altering its teaching mode (for example, using modules or credits, restructuring the balance between class, library and on-line time, rescheduling classes to make them more flexible etc.). As the proportion of partly employed full time students increases so these arrangements will become more common and the undergraduate courses (which make up the bulk of students offerings) show greater flexibility. The principal point is that expansion brings a whole range of changes from student and social attitudes to the organization of learning and the way that the constituent institutions (universities, colleges etc) are run. Further, as the total number of graduates or diploma holders increases, so a credential becomes a useful and then necessary ticket for the job market.

These categories, it should be emphasized, are not intended to be accurate descriptions of concrete stages but rather to guide analysis and help policy making. These are not watertight categories, but for transition countries raise interesting issues.

The first issue is what is meant by an elite and their relationship to higher education. The Soviet elite who ran the Union were the leading cadres in the Communist Party. They were educated as much through the party as through the education system because the principal test was loyalty as much as knowledge. Competitive examinations, such as they were, took place within the party – they were not open to all citizens – and were tests of ideology and doctrine. The Party, not universities, formed the political elite. Nor, given the tripartite research structure, (see below p. 83) did universities form the scientific elite which was principally undertaken in specialized institutions or academies. Soviet universities were advanced training centers. They shared the technocratic vision of education and concentrated on different levels of technical training, often closely associated with different ministries or state enterprises. For some university departments there was such a close relationship between enterprise recruitment and graduates that there was little or no chance to develop an understanding of labor markets. While it is well understood that one of the

challenges for the CAR universities is to reform themselves as research and teaching universities, it is not yet clear if they are likely to be the incubator for the new national elites. National elites are not simply well educated students with a degree who can expect to command a wage premium – rather, and particularly with new countries, they embody the mission of the new country.

The second issue that requires special attention is the role of international universities working within the four CARs. Here the national universities are directly challenged by institutions that have a strong research tradition (i.e. Moscow University), strong cultural links (the Turkish universities) or offer an immediate globalization passport in new disciplines such as management, often in English, to a select group of students. They are select – an elite - because they have to pay and speak another language. Their presence is a witness to the interest of the governing elite in encouraging links with Europe or the United States, just as the closure of different institutions (such as the Open Society Institute in Uzbekistan) is a sign that for some governments globalization is selective. The presence of the branch of an international HEI or a regional university, such as the American University of Central Asia located in Kyrgyzstan are likely to influence tertiary education policy as examples and perhaps competition.

b. Size and structure

The region has seen a rapid growth in the number of students attending higher education since the end of the Soviet period, particularly in Kazakhstan and Kyrgyz. Using Martin Trow's benchmark, that between 15 and 50 per cent of the 19-24 age group, then these two countries now have mass higher education systems. A system with less than 15 percent coverage for the same age group is described as elite while above 50 percent the system is called universal. The coverage rates for the four countries are; Kazakhstan, 44.7 percent, the Kyrgyz Republic (36.2) and Tajikistan and Uzbekistan with coverage rates of 14.4 and 8.3 percent respectively[29].

Perhaps the most remarkable aspect of this coverage is the speed with which it has occurred, as can be seen from **2.1** which shows that the four countries began with a range of no more than seven coverage points, (11.5 to 18.1 percent) between enrolment rates in 1989 and that has now widened to 36 points. Moreover both

[29] Among the CIS countries Kazakhstan joins Russia, (46.7), Belarus (45.4)and the Ukraine (44.8) with high mass coverage to be followed by Kyrgyz Republic, Georgia (39.6), Moldova (27.7) and Armenia (23.3). The elite systems, that is less than 15 percent coverage, are led by Tajikistan, then Azerbaijan (13.2), Uzbekistan and finally Turkmenistan, (2.5 percent).

Kazakhstan and the Kyrgyz Republic did not begin their rush to growth until 2000, the point at which they attained 20 percent coverage. In contrast, Uzbekistan's coverage fell from 1989 to 6 percent in 2000. Tajikistan's coverage has been relatively consistent and ranged between 11.4 and 14.4 percent for the fifteen year period.

c. Why growth?

Why these disparate patterns of growth between countries and periods? How much, to follow the categories used in the introduction, is due to continuity and how much to policy?

The first explanation concerns the linkage between the secondary and tertiary systems. If there has been a breakdown in primary and secondary education, then the number of applications for tertiary education will fall or fail to expand. A number of reports raise concerns about the general state of education in the Central Asian Republics. First, the UNDP considers the education systems are "in distress" with primary and secondary enrollments, completion rates and budgets in decline[30]. Second, contrary to the official data, which shows almost one hundred per cent secondary coverage, a UNESCO survey for Tajikistan shows almost 20 percent of primary age school children were out of school [31]. Third, in their broad survey of Eastern Europe and the countries of the Former Soviet Union, the World Bank cautions against the regressive impact of these changes and expenditure priorities;

> "…the low income CIS group need to stem the decline in primary enrolments and the quality of education, in particular by ending the situation in which staff are underpaid and complementary expenditures (on textbooks, heating and repairs) are underfinanced, while at the same time, employment and in some cases, facilities remain well above standards common in much richer countries" [32].

The most direct way to look at how the school system has influenced tertiary enrolments in each country is to compare them with secondary enrolments for the 15-18 age group. The most obvious case would be if secondary enrolments decline followed by tertiary enrolments, so that it can be assumed that the weak performance of the former is influencing the latter (see graphs **2..2 a-d**). The most obvious case of poor

[30] Central Asia Human Development Report, (2005) p. 149 f. These, of course vary by country, but it noticeable that even in the wealthiest of the four countries, Kazakhstan, over eighty per cent of pre-schools are reported as having been closed.
[31] See T.2 Asian Development Bank, Special chapter, Key indicators for Developing Asian and Pacific Countries (2006) on the measurement of health and educational impacts, p. 9. The same table reports that 1.3 per cent of Kazakhstan's appropriate age group were out of school.
[32] Growth, Poverty and Inequality, Washington, (2005) p. 37.

secondary performance is Tajikistan, which has fallen from coverage rates of 60 percent (1989) to around 25 percent (1998) and by 2004 had yet to regain levels of 30 percent coverage. So even if Tajikistan was in a position to expand its tertiary enrolment it would have difficulty in doing so. Uzbekistan presents an almost opposite case with high and growing secondary enrolment coverage currently (2004) above the level found in 1989. Secondary enrolments in Kazakhstan never seem to have fallen below fifty percent and this has not limited the rapid expansion of university coverage – they are now growing as rapidly as university enrolments, while Kyrgyzstan's tertiary education also grew on basis of broad secondary coverage, despite falling at one point to 40 percent but now growing again. In summary secondary education performance has limited tertiary expansion in Tajikistan, while in Uzbekistan it would appear to be a conscious policy decision to make secondary rather than tertiary education a priority. This is partially confirmed by table 2.3 which shows Uzbekistan's vocational-technical secondary education increasing as a proportion of general secondary education and general studies, in contrast to Kyrgyzstan which has shown rapid tertiary expansion although recent years it has remained at around 32 percent coverage because of changes in school requirements.

The link between secondary coverage and tertiary expansion shows the importance of continuity but not how the system expanded. There are two possibilities – an increase in the number of institutions and/or an increase in the students per institution. Table **2.4** demonstrates that increased coverage has only taken place in those countries where private tertiary institutions have been established as they have dramatically in Kazakhstan and solidly in the Kyrgyz Republic. Given that Kyrgyzstan is a relatively poor country, the decision to encourage private institutions coupled with their decision to invest indicates a more friendly institutional environment than in Tajikistan and Uzbekistan for private providers.

However the role of private institutions is not straightforward. A distinction must be drawn between private institutions and fee paying students because they are quite different types of 'privatization'. First, while the number of paying students has increased, not all such students attend private institutions – that is to say paying students might or might not be classified as private students depending on presentation and statistical definitions. This distinction is best appreciated for 1998-1999 for Kyrgyzstan in table **2.4**, where the number of students attending private institutions is 8,726 or 6,7 percent, doubling to 17,500 or 7.6 per cent in 2005-2006. The report comments that these students are 'marginal' to the system. However 72.5 percent of the 120 thousand students

attending state HEIs are 'contract' or paying students. That is they do not attend private but public institutions but in a quasi private capacity. The *quasi privatization* of tertiary institutions is one of the most pressing policy issues facing the CARs and will be discussed in more detail in section III. Second, it is not clear in other systems if private students should include all paying students or only those attending private institutions. The different reports have different descriptions and it is difficult, without greater knowledge, to know how far 'commercial' (Kazakhstan), 'contract' (Kyrgyzstan), 'contract based' (Tajikistan) are similar and whether there are such students in Uzbekistan, but which have not been mentioned because of different definitions. What is clear is that in all cases where there is relevant data - *the expansion of the system has been due to paying rather than state supported students*. Further it also seems that in Kazakhstan private institutions have driven expansion at least as much the number of paying students in contrast to the three other CARs.

d. Flexible systems

The size of the system is also an unresolved question for it depends on how the time status of students is to be treated. The reports provide information about full and part time students as well, in some cases, of correspondence students. In all cases, when considered as a percentage, the number of full time students shows a slow decline. (See table **2.5**) The exception is Uzbekistan where their proportion has grown from 53.8 per cent of the total number of enrolled tertiary students to 73.0 per cent. It will recalled that this country appears to have a relatively restrictive HEI access policy. However when the actual number of full time students is examined, as table **2.6** shows, there is an increase in full time students, such that in 2004/2005 there were 380 thousand FT students in Kazakhstan, 188 thousand in Uzbekistan, Kyrgyzstan (117.7 thousand) and Tajikistan (74 thousand) all higher than 1998/99. Thus not only have all students increased but contrary what might appear by examining percentages, so have the absolute number of full time students in the four CARs. If higher education systems were measured by FT students only, then Uzbekistan would be the second largest system following Kazakhstan.

What about the part time students? While some may be taking a staggered version of the FT degree courses, the majority of part time students were involved in 'distance' education (Kyrgyzstan), and correspondence courses in Tajikistan and Uzbekistan[33]. Although there have been doubts about the educational value of such courses, it is noticeable how quickly they have grown, doubling in Uzbekistan, nearly doubling in the Kyrgyz Republic and increasing by 87 per cent in Tajikistan since 1998/99. The benefits of

[33] The information for Kazakhstan states only they are studying in a 'part time form'.

correspondence/distance education is that it can reach geographically widespread locations and encourage students, who may not have thought of additional qualifications after dropping out or with a secondary diploma, to upgrade their skills. The costs are in organization, curriculum and language as many of these courses were originally in Russian. It now appears that Uzbekistan has cancelled correspondence courses, (2004), principally on cost grounds just as it ended evening classes in the 1990s.

The irony of these decisions is that as systems move to mass and later universal higher education, they require a range of flexible delivery methods which would include evening classes, correspondence (and modern media) to achieve life time learning. In this case it might be that quasi privatization could lead to greater rigidity, limiting students to contact hours only.

e. From systems to institutions

As higher education systems expand (moving from elite to mass) and hopefully modernize, their component parts - universities, academics, professional groups, students – have a propensity to become more autonomous and carry greater weight to the point that they share policy for the system rather than the system (government) setting policy for them. Thus higher education policy evolves into a conglomeration or muddle of policies (as it is in most European countries) dealing with excellence, research, relevance, access, gender, and equity etc.,etc., through various prisms and where policy is as much about process (e.g. is it fair?) as about overall national goals. Further, if the 'components' are the direct participants as teachers, researchers, students etc. there is a vitally important second, indirect group that represent a broad range of higher education interests - enterprises, employers, business associations, taxpayers, etc. with opinions about the direction, price and quality of higher education. University expansion strengthens this second circle as graduates become more and more common in the workforce.

Perhaps the most important component of the higher education system is the individual university or college. Indeed it is one, although not the only one, of the meeting places of the direct and indirect higher education interest groups, when appointed to boards of management or trustees. Why are most universities and colleges relatively weak forces within higher education? The reason is how universities or colleges are funded because they are dependent on the four governments' principal funding instrument – public awards or scholarships to a specific but reduced proportion of students – and which is both limited in its value (financial caps) and reduced in its

educational scope (only fund certain subjects) . However the fees are indispensable for both public and private universities and make up a substantial proportion (60 to 70 per cent) of their cash flow with the result that expansion is not only a social goal but a financial goal too. More students equals more tuition which means greater income.

If under this financing regime – principally one relatively inflexible instrument - the Central Asian Republics' higher education components are restricted to four players, namely the state, the government, institutions (i.e. university) and students it should come as little surprise that universities have the least leverage. The state sees higher education as a public not private good; the government would like to achieve high quality with low costs reflected in its average scholarships; the universities/colleges want higher student grants and students (and their families) want low costs. The result is not difficult to foresee – universities attracting as many students as possible, with tuition fees fluctuating around the government scholarship rate – underpaid staff and poor or deteriorating equipment. While there are exceptions, current funding cannot provide for full time professors as teachers or researchers. As the Reports amply demonstrate, professors have to teach in one, two, three or more institutions to earn a professional salary.

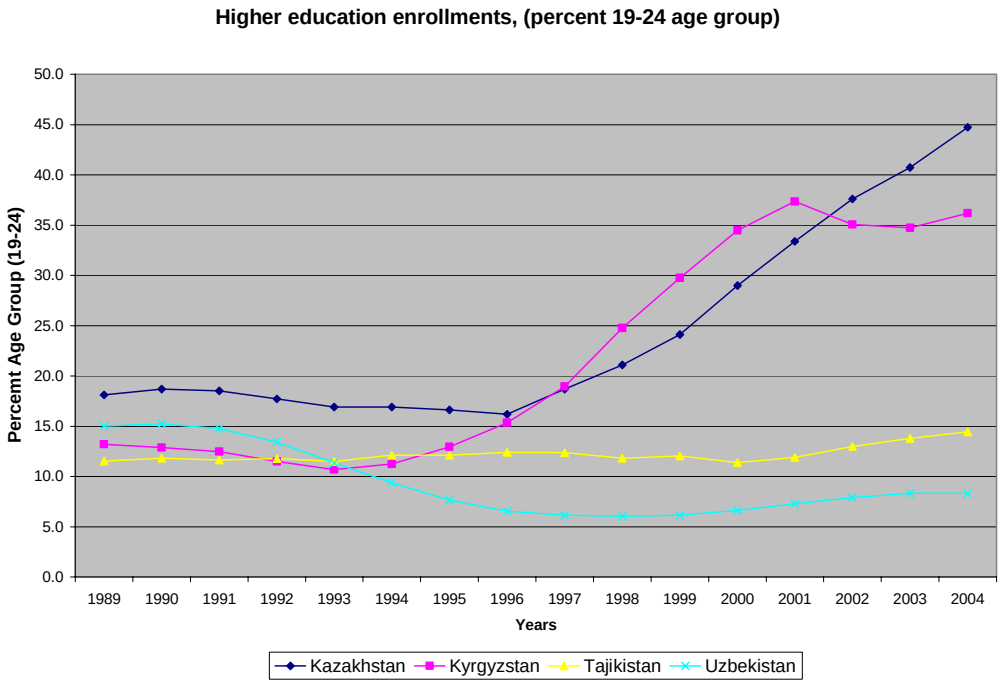
So, while it might appear that the system is becoming more privatized, it is happening by way of administrative rather than market privatization. This reduces both the risk and initiative associated with market privatization. While administrative privatization may, according to the Kazakhstan government, bring competition and reduced costs, cash flows for most universities are not sufficient to build a long term research and teaching faculty. This needs state funds, as institutional investments and providing teaching support. Mass education could soon become dual education with national universities funded through student fees (enough, perhaps, for a profit but rarely for long term investments) and private universities with very high but realistic fees presumably offering high cost high quality (and returns) education but with students from high family income households. While meritocracy encourages a hierarchy of institutions it would be a contradiction, as well as a loss, to deepen divisions with a dual higher education rather like parallel lines, with limited mobility between both parts. Without strong state support, in low per capita income countries, this is always a strong possibility.

National public universities, under current funding arrangements, are absorbing most of the costs of higher education. There is a need for a greater range of educational alternatives at the tertiary level as well as stronger from government. But perhaps the most useful step would be to move past administrative to market privatization and allow

greater HEI experimentation. Such experimentation might include, as the Reports note, performance related financing (Kazakhstan); per capita funding mechanisms; special tax allowances (Tajikistan); improved financial incentives for the institution and staff together with budget/management autonomy.

Support tables 2

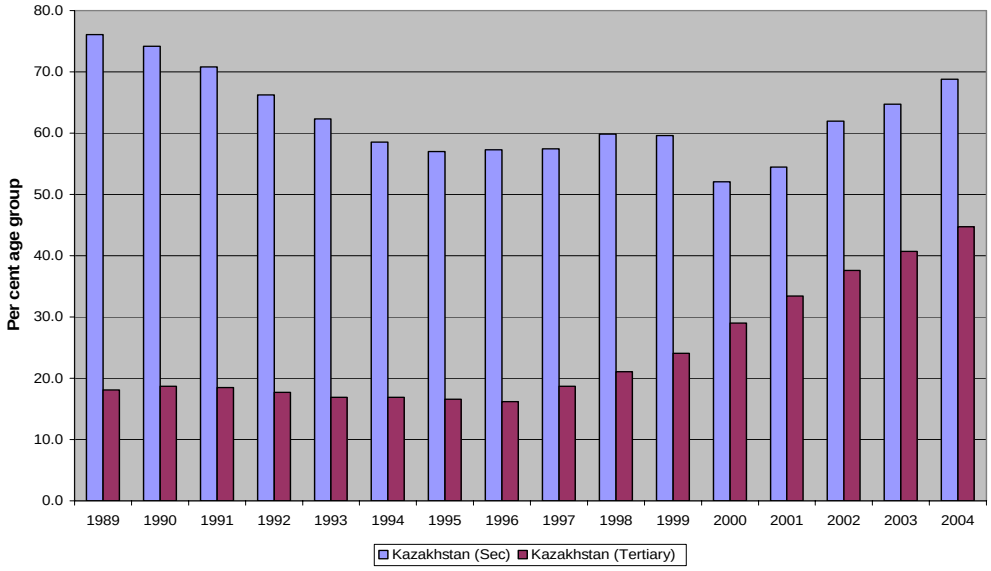
2.1 Higher Education Enrolment Growth compared



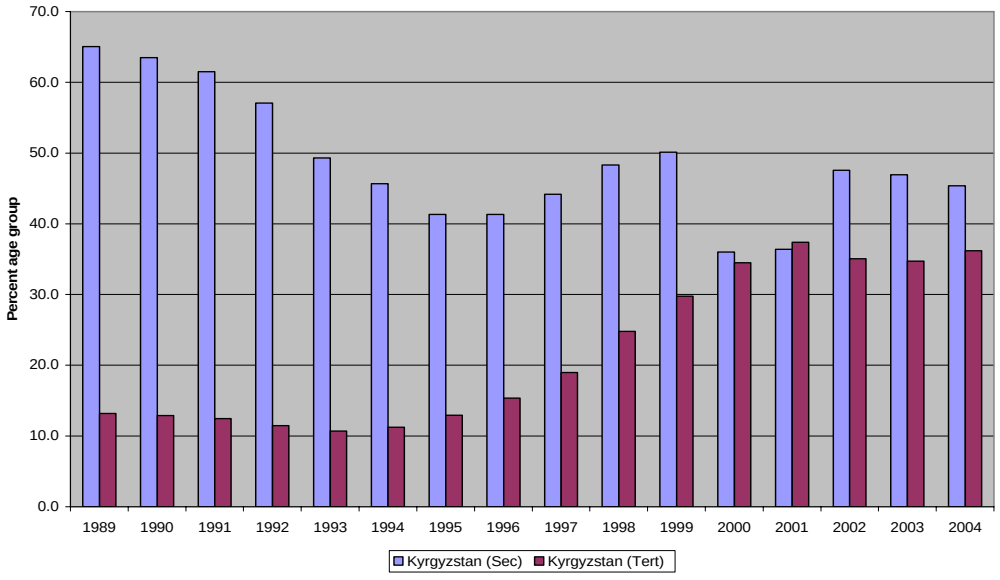
Source: UNICEF data base

2.2 (a-d) Secondary & Tertiary Enrolment

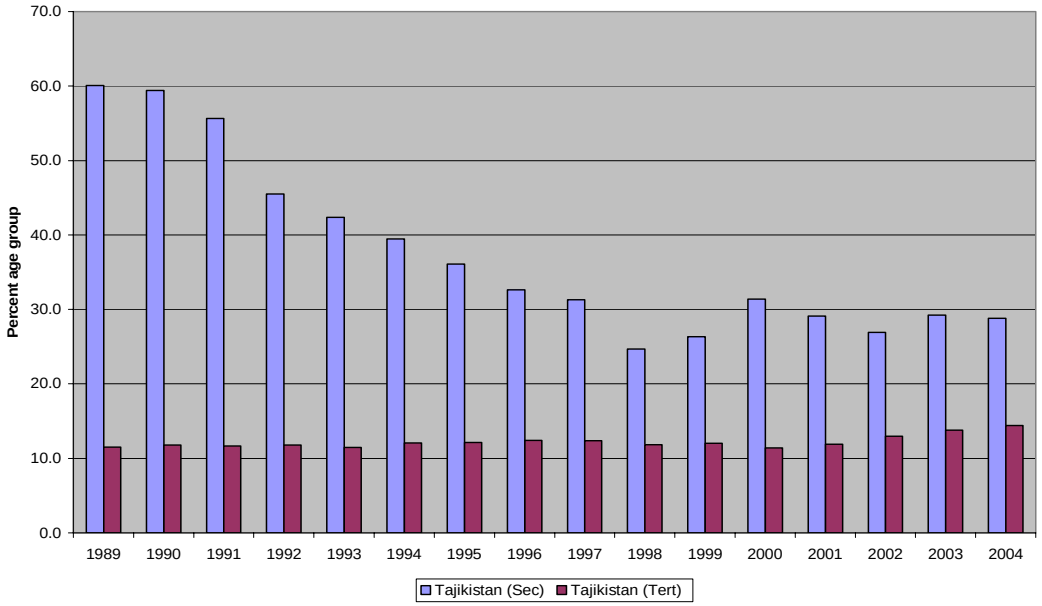
KAZAKHSTAN: Secondary and Tertiary Enrolment Rates 1989-2004



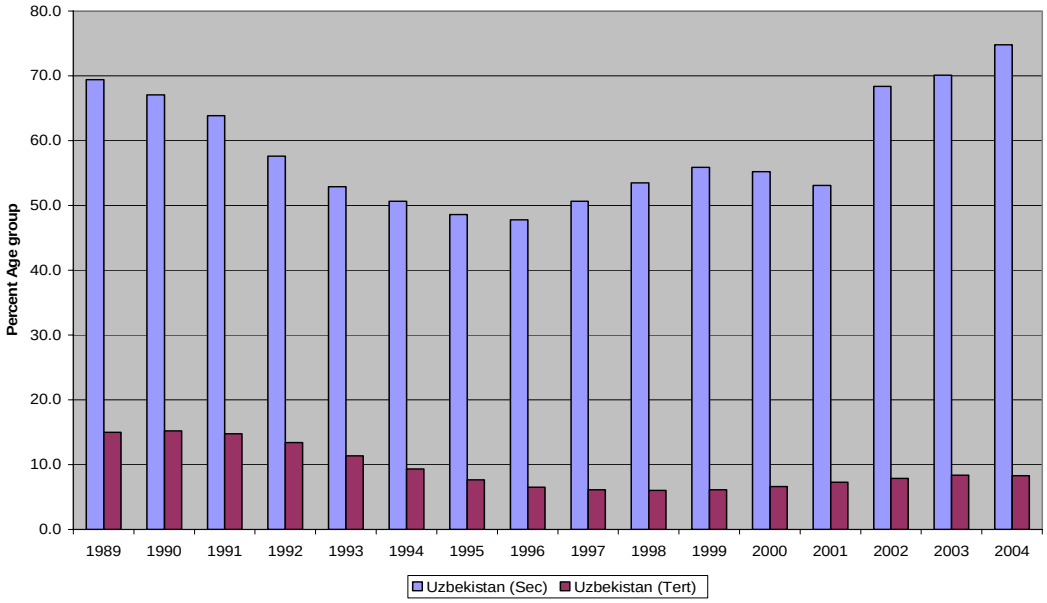
KYRGYSTAN: Secondary and Tertiary Enrollment rates, 1989-2004



TAJIKISTAN: Secondary & Tertiary Enrolment rates, 1989-2004

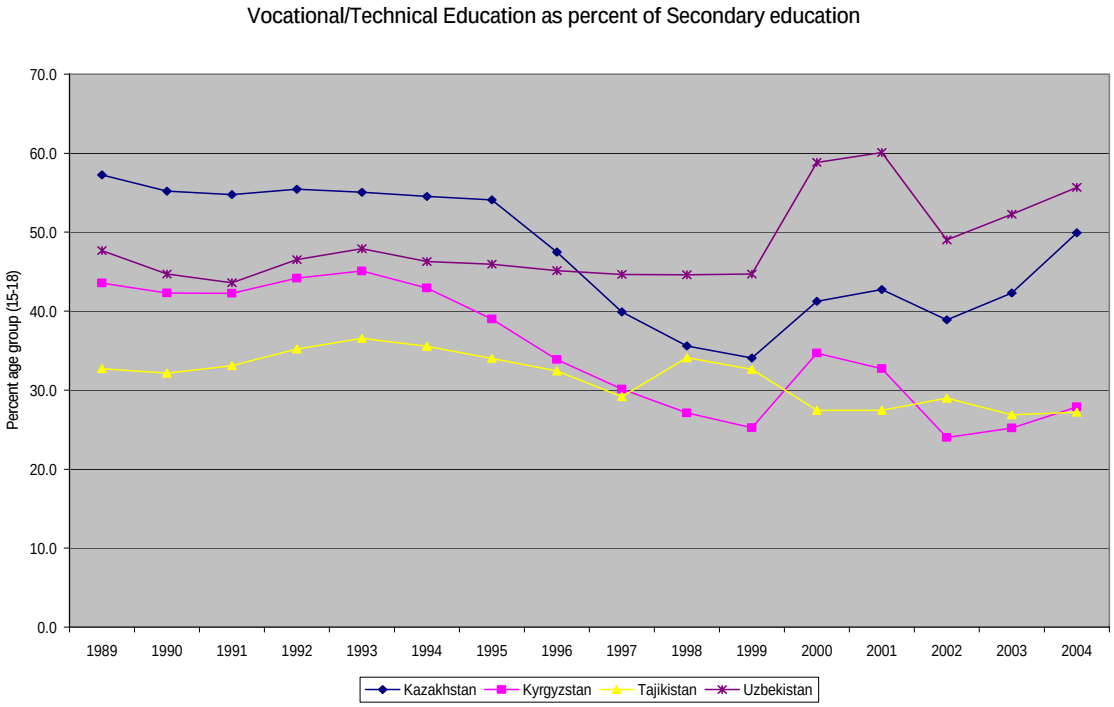


UZBEKISTAN: Secondary & Tertiary Enrolment Rates



Source: All tables, UNICEF data base

2.3 Vocational – technical education as percent Secondary.



Source: UNICEF data base

2.4 Higher education; number of tertiary institutions

	1998/99	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005	2005/200
Kazakhstan								
Total			170	185	177	180	181	181
Public			24	59	50	46	51	51
Private			146	126	127	134	130	130
Kyrgyz Republic								
Total	41	39	45	48	46	47	49	49
private	13	13	15	16	15	16	16	17
Tajikistan								
Total	29	30	31	33	38	38		
Uzbekistan								
Total	60	61	61	61	61	61	62	62

Sources: Reports

2.5 Higher Education Enrolment by status

	1998/99	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006
Kazakhstan (2.23) (thousands)								
Total			440.7	514.7	597.5	658.1	747.1	775.8
Government contract			125.6	118.2	115	116.8	119.6	123.3
Commercial students			315.1	396.5	482.5	541.3	627.5	652.4
Percent commercial			71.5	77.0	80.8	82.3	84.0	84.1
Kyrgyz Republic								
Total	129,712	159,209	188,820	207,420	199,124	203,002	218,300	231,100
Private	8,726	13,213	14,341	15,513	14,245	15,082	15,806	17,500
Percent	6.7	8.3	7.6	7.5	7.2	7.4	7.2	7.6
State (App.11)	120,986	145,996	174,479	191,907	184,879	187,920	202,494	213,600
- Budget (%)	27.5							
- Contract	72.5							
Tajikistan (thousands)								
Total	75.5	79.2	77.7	84.2	96.6	107.6	118.4	132.4
Contract based				36.6	42.2	52.5	63.2	73.7
Percent				43.5	43.7	48.8	53.4	55.7
Uzbekistan								
Total	158,690	168,500	183,750	208,210	229,171	253,184	263,858	285,134

Source: Reports

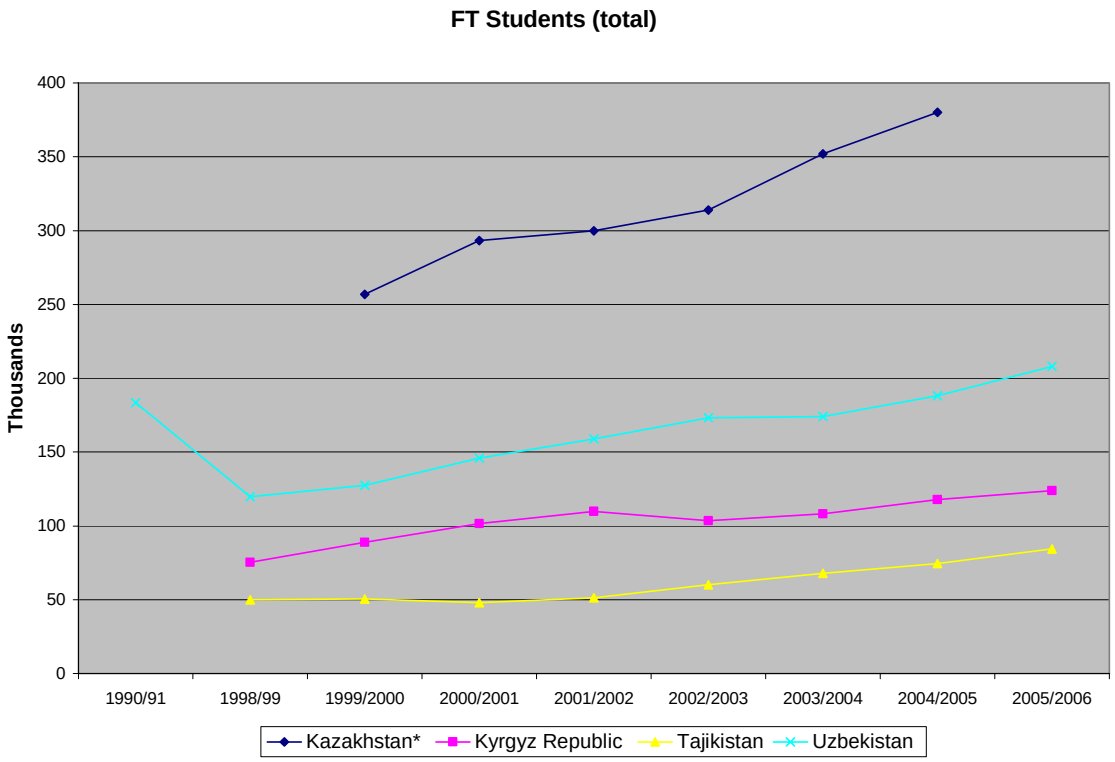
2.6 Full time students (percent total students)

	1990 /1991	1998/ 1999	1999/ 2000	2000/ 2001	2001/ 2002	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006
Kazakhstan*				58.3	57.0	50.2	47.7	47.1	49.0
Kyrgyz Republic		58.0	55.9	53.7	53.0	52.0	53.3	53.9	53.6
Tajikistan		66.1	63.9	61.6	60.9	62.2	63.2	62.9	63.7
Uzbekistan	53.8	75.4	75.7	79.4	76.3	75.6	68.8	71.3	73.0

* includes day and evening form

Source: Reports

2.7 Full time students – growth of absolute numbers



Source: Reports

2.8. First year students –total and proportion of all enrolled students

First Year (Admission and percent total students)									
	1990-1991	**1998/1999**	**1999/2000**	**2000/2001**	**2001/2002**	**2002/2003**	**2003/2004**	**2004/2005**	**2005/2006**
Kazakhstan*									
Admission				135.5	155.7	174.1	183.1	221.7	207
Percent admission				30.7	30.3	29.1	27.8	29.7	26.7
Kyrgyz Republic									
Entrants				50.9	50.9	36.1	35.6		
Percent admission				27.0	24.5	18.1	17.5		
Tajikistan									
Entrance Students	13.3	16.1	17.1	16.3	20.1	24.2	28.1	27.9	
Percent admission		21.3	21.6	21.0	23.9	25.1	26.1	23.6	
Uzbekistan									
Enrollment	61.4	37.2	44.8	50.7	49.3	55.8	78.1	75.8	77.1
Percent admission	18.1	23.4	26.6	27.6	23.7	24.4	30.8	28.7	27.0

Source: Reports

III. Higher education; Policy, continuity and priorities

As in other fields, the four Central Asian nations have had to create a new policy framework while continuing educational services using its current (regional) structure, but with reduced resources. The first period after independence - up to the end of the 1990s – was one of cautious conservatism – an attempt to maintain the principal elements of the inherited structure and adapt it, where possible to new national principles. The Russian financial crisis (1998) and the subsequent recession showed that the post independence policies were neither fiscally or pedagogically sustainable. There were not sufficient public funds to support an expanding system and centrally managed place allocation was failing to identify labor market trends.

The new policies are intended, in theory, to bring higher education closer to the market. But this reorganization was less a wholesale embrace of market principles as a pragmatic compromise about resources. Further, in most CARs the reorganization has ushered in an unstable phase in relations between national and institutional interests compounded by policy priorities which require greater rather than less state budgetary support.

CAR higher education policies involved some or all of the following strategies;

- Greater use of private (or 'non public') income and resources in the form of fees, contributions, including the creation of private institutions.

- Consolidation of present existing resources through the integration of different levels (for example last years of high school and vocational education) and the promise of international integration by the adoption of the Bologna process;

- Greater, but more selective, administrative controls to meet industrial enterprise goals and target specific professional support (teachers, doctors) which show national or regional shortages

The three strategies reflect the economic wealth and prospects of the four countries – hence it is no surprise that the richest country, Kazakhstan, supports broad privatization because its consumers have the wealth to choose private universities, including those that charge high fees. The other countries, even

though they may encourage supplementary income for public institutions (under contract or private service agreement) have maintained a greater control over higher education funding.

However the four governments have attempted to resolve the pressure on higher education and funding, there is broad recognition that the principal issues facing tertiary education are,

- Educational quality (and teaching quality in particular);
- Educational relevance in terms of national goals (particularly the labor market) and international competitiveness (new skills)
- Access for poorer students (including those educated in rural and public schools).

These cases show that the principal issue is less the size of the sector but the quality of education received.

a. Government, system, institutions.

One of the most important policy goals is to find a settled relationship between state and private interests which benefit the long term development of higher education. A settled relationship is built on consensus about resources, the rights of private agents, and how the state and private agents are coordinated. In the CARs, higher education issues have rarely presented themselves as a stark choice between authoritarian or liberal policies; the stumbling block is attempting to convert principles into practice and where there are many possibilities of misunderstanding[34].

[34] See the discussion in Reeves M " Cultivating the Citizen of a New Type; The politics and practice of educational reform at the American University in Kyrgyzstan" in ed. Heyneman S.P & DeYoung A.J. The Challenge of Education in Central Asia, Greenwich, 2004.Chapter 21, who argues that the contrast between market and command is 'overdrawn' and is understood in quite different ways by participants who have, in any case, to negotiate their meaning from quite different backgrounds, (for example, contact hours).

When examining policy making and particularly priority setting, it is useful to distinguish between *first*, the residual power and actions of the government; *second*, the higher education system and *third*, the components of which the system is constituted, higher education institutions. The three levels – ministry, the higher education system and the HEIs – differ, for example, in the commitment to privatization, often thought of as a fundamental building block for markets. But as CARs tertiary education shows, it depends on how the privatization is undertaken "for in certain circumstances it can close off market options". Above, (2.5) , data showed the increase in private students albeit as a result of two different processes. Even though both nominally add to the total of private students, a government or Ministry that sells private places at public universities should be distinguished as *administrative privatization* in contrast to *market privatization* where, unlike the former, it is the institution not the government that decides on the size and conditions of the offer.

The tripartite division of government, system and institutions is helpful in describing comparative policy options which are, *first*, establishing a legal framework, particularly the power and responsibilities of the leading state body, normally but not always the Ministry of Education, charged with managing the educational process and where some of the principal policy issues – the role of private agents, access, and equity – are nominally settled; *second,* how the educational system is to be financed, particularly the contribution of state funds and alternatives; *third*, the social and policy implications of these policies with reference to educational opportunities and access; and, *fourth*, the increasingly important issues of educational standards, transparency and improving quality.

In the four countries, the relationship between the system, its components and the Ministry or government is complex and cannot be represented along simple lines. Rather it would seem that the four CARs are working out a new set of relationships for higher education policy which requires better data and further analysis to be fully understood.

b. The policy framework

The most important legal and policy issue for higher education is the relationship between the state and private agents.

(i) Background

The initial post independence period, to recall, was dominated by economic dislocation and adjustment, a ruble crisis and hyperinflation. In addition there was internal unrest which led in the case of Tajikistan to civil war. Government actions have been conditioned by this environment and reflected in the different phases of higher education policy making. (see T. **1.9**) above. In general, governments attempted policy continuity with changes driven by the search for funds as much as educational objectives. Each country has followed a different path, depending on its national wealth, political environment and educational resources.

The CARs policy framework has been strongly influenced by Russian thinking and practice, commencing with the Law on Education (1992). In Russia, the state is the guarantor of educational standards and performance and there are similarities in the respective legal frameworks, administrative organization, finance and standards[35] and 'modernization' which is likely to be followed with great attention in the CARs[36].

(ii) Legal framework

The legal framework of higher education is set out in a series of laws and administrative rulings that tend to fall into in two types, which in turn reflect the different phases of the system's evolution. First, the generic laws which establish the importance and value of education for the republics and second, resolutions, revised laws and administrative rulings which are specific to higher education. In

[35] " The role of the state is also emphasized as the government serves as the guarantor of the quality of educational programs and services delivered by educational institutions regardless of their legal status" See Smolentseva A., "Russia" International Handbook of Higher Education, Dordrecht, (2006) p. 954 f.

[36] The "path to modernization, involving experiments with state unified examinations (EGE), 12 year secondary schools, profile high schools, multilevel higher professional education, the development of information technology in education and other initiatives to improve the quality of educational practices and to integrate Russia into the global educational arena", Smolentseva A., op.cit., p. 953.

almost all cases the initial laws set out the rights and principles while the later set, as might be expected, deal with administrative practice (as decrees or resolutions) as the result of experience. A list of the key laws, as noted in the reports, is to be found in Appendix Table I.

A number of the countries describe policy making retrospectively in phases. For example, **Kazakhstan** sees the period 1991-94 as creating a regulatory basis, to be followed by a further process of modernization (1995-98); management decentralization and "expanding the economic freedoms of educational institutions" (1999-2000) up to the current period, which concentrates on quality and improved teaching, commencing in 2000. For **Tajikistan** (which suffered from a civil war) the first phase of higher education policy only began in 1996 ending in 2000, which concentrated on resource consolidation, improved teacher training in new fields and adaptation of education to a changing labor market. The second stage commencing in 2000 emphasized management, standards and improved administrative flexibility demonstrated by decentralization, partnerships and co-operative agreements with foreign and domestic private schools. Tajikistan's third phase, contained in the National Education Development Strategy (2006-2015), is an ambitious program which if accomplished would bring the country's higher education closer to the domestic market and more integrated into regional and global education. **Uzbekistan** is now in the third phase of its higher education planning. The first (1997-2001) codified current teaching, research and training as a basis for further reform. The second phase (2001-2005) called for a "comprehensive implementation of the national program" while the third phase, 2005 on, calls for the improved training with particular reference to the country's economic goals and conditions

The national programs, with their grand designs, are accompanied by regulations which represent, to the outside observer, a surprising degree of control over items such as curricula, subject profiles, recommendations on teaching approaches and identifying courses by skill outcomes. In addition not all governments permit much discretion about managing the budget and particularly the off-budget or private funds[37]. In Uzbekistan there are few

[37] In Uzbekistan, for example, extra budgetary resources and principles of contracts/use of funds were set out by the cabinet of ministers, (1999) which allowed greater and stronger discretional educational management, and the possibility of generating

incentives – when extra budgetary funding grows, then official budget funding appears to decline, while in Tajikistan there appears to be little or no control about the use of funds.

As systems expand and private support plays a potentially bigger role, so next generation of university leaders will push for greater autonomy.

c. Tertiary Education: budgets and expenditures

The reduction in public funds, discussed in section I, largely determined post independence public service commitments. This was compounded by the Russian financial shock (1998), when governments had added to their debt and, prior to the commodity boom, expressed an unwillingness to add to further long term obligations. There was an attempt to balance budgets, reduce unnecessary costs and look for substitute resources.

The most obvious alternative financial resource to the public purse for personal welfare is the individual or family pocket. Yet there was reluctance across the four countries as to how far and in which way to privatize social services such as education and to what level. This reluctance was both ideological and practical. Further, as the fiscal base of governments declined, so different departments and branches of state including the armed forces jostled for influence. The result has often been less than transparent allocation decisions. This tension between public objectives and inadequate resources is an important policy component throughout education systems.

This section continues by looking at the current resource constraints that face the different Central Asian Republics, the emerging policy structure and responses with particular attention to the role of private activities and initiatives; the issues of access and equity and concerns about the quality of national higher education systems.

(i) Public education budgets and expenditure

The four CARs educational expenditure fell immediately after independence, stabilized at the end of the decade with the exception of Kazakhstan, and since then has begun to grow as a percentage of GDP,

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development funds, which are to be excluded from taxes. However it is apparently difficult to generate extra budgetary funds.

illustrated by diagram **3.1** showing that the Kyrgyz Republic reached around 3.6 per cent and Tajikistan less than 3 per cent.

Information about educational expenditures is often confusing and inconsistent because it has to rely on different sources. A number of recent IMF reports contains information about public expenditure, social expenditure and education as percentages of GDP[38] (see **3.2**). The table confirms the decade long decline of public expenditure and that from 2004 there has been encouraging increase, particularly in social expenditure and the education component[39]. From 2004, the IMF estimates that the Kyrgyz Republic's social expenditure will increase by 1.7 percent and educational expenditure by 0.6 percent to be 5.2 percent of GDP in 2008; in Tajikistan social expenditure will increase from 7.1 percent to 9.6 percent and education by 1.4 percentage points to 2006; and social expenditure in Uzbekistan from 10.9 percent (2004) to 11.5 percent (2007) with education account for 6.6 percent of GDP. It is worth noting that educational expenditures are expected to account for 41 and 57 percent respectively of social expenditures in Tajikistan (2006) and Uzbekistan (2007). In contrast, the same table shows educational expenditures are projected to make up about a third of social expenditure in the Kyrgyz Republic (2008) and this lower ratio is partly the result and cause of a more energetic search for private funds for education.

Some preliminary estimates of higher education's portion of the national public education budget, garnered from the Reports, is set out as **3.3**. but it is not clear how comparable this data really is. However if tertiary level educational expenditures are measured as a proportion of all educational expenditures, then the Kyrgyz Republic spends 20.5 percent, followed by Kazakhstan, (7.89 percent), Uzbekistan (6.4 percent) and Tajikistan (5.27 percent) of the total education budget(2004)[40]. The tertiary proportion of educational expenditures only appears

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[38] IMF, Country Reports 06/244, Republic of Kazakhstan, 2006 Article IV Consultation; 06/235 the Kyrgyz Republic: Second review under the three year Poverty Reduction and Growth Facility – Staff report; 06/62 Republic of Tajikistan; sixth review under the Poverty Reduction and Growth Facility – Staff report; 05/160 Republic of Uzbekistan; interim poverty strategy reduction paper, (20005)

[39] For continuity, the ADB data base is used to provide public expenditure information, 1990-2004. The IMF information for the Kyrgyz Republic and Tajikistan shows public expenditure as higher in 2004 than the ADB and about the same for Uzbekistan.

[40] The discussion assumes that Total Public Higher Education Expenditures (TPHEE) and Total Higher Educational Expenditure (THEE) are more or less the same and PEE and TEE are equivalent, which of course they are not.

to be increasing for the Kyrgyz Republic; in the other three countries, the proportion is declining. These proportions are consistent with the enrolment data discussed in the previous section – that tertiary education has a high public priority in the Kyrgyz Republic in contrast to the much lower one accorded to it in Tajikistan and Uzbekistan. With a rapidly expanding economy, Kazakhstan is likely to maintain its current real level of higher education expenditure and continue to target excellence and quality.

(ii) State Funding

In almost all countries there has been a shift in tertiary education's support from governments to individuals and households[41]. While some governments provide block grants for research or capital costs (such as repairing laboratories) fees are now one of the most important sources of HEI income[42]. Fees can be set in two ways; first, by the government according to a formula and second, by the institutions in terms of costs or their own institution based formula. The relative proportions depends on the degree of privatization and the powers or rights of each institution in comparison to the government.

All four countries award scholarships on the basis of competitive entrance examinations. The scholarship generally provides full tuition support or partial support with government credit facilities when available (Kazakhstan). The total number of scholarships is limited and the subject areas available for support tend to be earmarked by the government. Further its overall value, as noted, is less than the previous scheme. Hence government support to universities is indirect and through the attending student. Some countries, like Uzbekistan, continue the practice of state enterprise sponsorship of students but this has not yet found its contemporary form. Private oil companies have close ties with Kazakhstan universities and institutes but there appears to be no legal formula which allows tax deductions for philanthropic contributions.

[41] The World Bank includes education as a component of its aggregate consumption surveys which shows the average family in Tajikistan spends 4.1 percent on education, followed by Kazakhstan (2.0%), Kyrgyz (1.6) and Uzbekistan (0.3) compared to Colombia at 6.3 percent. The highest CIS country was Armenia 5.1 and lowest Macedonia/Uzbekistan, Growth, Poverty and Inequality (p.224).

[42] This principle was accepted in Kazakhstan in 1999.

Students who accept government support may find their selection of universities or subjects or both limited and could be required to undertake social work (Uzbekistan) in exchange.

Once the total number of government supported students is established then either the Ministry of Education or the universities themselves can set out the number of paying students they wish to attract. For example, the number of publicly supported students is limited to around 5,705 in Kyrgyzstan Publicly supported students are 'on budget' while fee paying students are on 'contract'. In theory when attending the same university, they should receive the same education but the reports note, on a number of occasions that this is not always so and that private students at public universities are better treated[43]. Thus at its most extreme there could be a dual system within the public university which can only be divisive and detrimental to morale.

Perhaps the key long term policy issue in the CARs, is the rate at which governments wish to genuinely 'privatize' tertiary education. Each country will make its own decision, but if the decision was made to move to a non governmental tertiary education system (private or independent public corporation etc) the government could strongly mould the timing and form of the outcome. This process depends on two policy issues which need to be settled; first, that all HEIs are equal and that the government is not using other administrative controls to support other Ministry determined priorities. In Kazakhstan, for example, the government is in the process of divesting itself of some public universities (by making them joint stock companies) while nine have been reserved as state universities[44]. In Kyrgyzstan grants are provided on a competitive basis. Second, that tax laws provide incentives so that when philanthropists or companies provide gifts or make grants, then they and the institution are not penalized. In the Kyrgyz Republic, the growing costs of higher education have led to calls to privatize public universities in order to build up strength and quality; encourage development of private colleges which implies a reexamination of the tax system.

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[43] by 2005 around 76 per cent of state HEI support came from private and the remainder was 'budgetary financing'. One implication is that state students receive poorer teaching than budget students or are unable to attract experienced teachers. (" not only creates injustices but promotes educational quality deterioration").(see Report).

[44] This divestiture was taken because state could no longer support HEI (after Russia crisis) and required a change in the law; 12 universities were made companies – a kind of quasi public form of HEI, and 9 have been reserved as state universities.

In summary there appears to be no disagreement about private funds supporting students – almost all public universities in the four countries have a large proportion of fee paying or contract students, larger than government sponsored students. The difference between the countries is in the degree of autonomy of private institution from the government. One indicator is whether private institutions can set their own rules or have to seek approval and follow national educational goals. In the case of Tajikistan it would appear that the rules are self defeating (i.e. institutions must have a license to teach but cannot receive one unless they have a track record) and in Uzbekistan, where there are no private domestic institutions. Private institutions appear to have greater scope in Kazakhstan, which has adopted an accreditation/licensing policy and which has resulted in private institutions either being suspended or loosing their right to educate.

(iii) University income and expenditures

The principal source of most CAR public university income is derived from tuition fees charged to students. The price and costs vary between country , between private and state HEIs and within institutions depending on profession or program being followed.

Value of fees.

I*n* the **Kyrgyz Republic** fees range from US$60 (education) to $US 150/200 for professional programs while elite schools could ask for as much as $600 per year. The American University of Central Asia costs around $2000 per year. The Kyrgyz government provided scholarship support for an average US$ 90 (p.a.) until 2002 for the 5,705 state supported students, and which was then raised to US$120 and which only covers minimum living costs. Private university costs are estimated to average around $375 but can be much higher and amount to $1,500 with the justification that they support new disciplines. Fee levels are set by the Anti Monopoly Commission and cover only costs, not additional expenses. The report comments that the " establishment of tuition fee levels on non-commercial basis leads to inadequate financing of the HE college capital expenditures". In **Tajikistan** per student costs are estimated to be US$44 for secondary and $48 at tertiary levels. Fees are between US$50 (education) to $1,000 (for example law at TNU) with small differences in university costs by

subject but with apparently high expenditures. The average fees in **Uzbekistan** are reported to be around US$900 per annum, but to be accepted by the university there are often substantial prepping costs and what the report calls "unofficial payments". The relatively high cost of fees (recall that per capita income was US#330 by the Atlas method, see T.1.10, above) accounts for the growing gap between acceptances and attendance. In **Kazakhstan**, the Ministry calculates student support as the average minimum cost for student education without allowing for the different professions. However the average student scholarships is estimated to be $53 and for medical scholarships, the highest award, around US$188. These per student grants, which act as vouchers, are allocated on the UNT results to HEIs that meet standards and have received accreditation.

Importance of fees:

In **Kazakhstan** it is reported that, on average, 79.1 percent of university incomes comes from educational services (principally as fees), originating with the state , grants, households or the sale of educational services. In the **Kyrgyz Republic**, counting private colleges and public universities, an estimated 76 per cent was private and the remainder was 'budgetary financing'. Private college students account for 8.7 per cent of all students of which around two thirds are Uzbek, regarded as a useful income source[45]. Moreover because of the large number of universities in the Kyrgyz Republic , the amount per college is very limited and only pays for salaries and deductions for the social Fund, and possibly small amounts for heating and electricity.

Private administered fees:

As the total number of state supported students are known (and at the price they will bring), the only differential income from this source is the number who attend a given university for a supported specialty. However specialties as programs or degree courses have to be approved by the Ministry of Education so it is unlikely that their income will make a substantial difference to any particular university. Hence funds from contract or private students become crucial for current university finances and planning the new courses that attract new fee

[45] However, there are tax anomalies between private and state universities for the amount that can be discounted prior to tax. Lack of tax incentives reduces investment in education.

paying private students. Indeed in some cases they are managed as a separate group and with apparently separate privileges. In Tajikistan – from paid contract groups which must be used for university activities including salaries. There seems to be no record and/or little transparency about private investments and their use. In the Kyrgyz Republic one implication is that state students receive poorer teaching than budget students as able to attract experienced teachers so that it " not only creates injustices but promotes educational quality deterioration" . In **Uzbekistan** universities are encouraged to pursue cost recovery operations, as the institutions do have tax privileges in certain fields, although their use of funds is restrictive and future activities based on the number of grant based students, student quota, fixed assets.

Current costs

The most important current or capital cost for any HEI is that for teaching staff and researchers. In the Central Asian Republics, when compared to universities in Europe for example, these budget items are proportionally low. Academic wages are estimated to be around 40 per cent in **Kazakhstan** and 58.2 per cent in the **Kyrgyz Republic** of institutional budgets. The Kazakhstan authorities appear to use this salary data to classify HEIs into four different groups. The **Kyrgyz Republic** spends around 58 per cent for salaries and around 5.4 per cent for utilities. The public HEIs or colleges have two separate budgets and can only retain funds for special activities but these appear to be subject to permissions from different ministries (credit administrators.) In **Tajikistan,** salary costs fell from 70 to 48 per cent and more money was spent on much needed repairs and maintenance.

Educational quality

There is a growing recognition by stakeholders that university education requires improvement and upgrading. The frequent complaints about the deterioration of public universities physical plant and lack of infrastructure that extends in **Tajikistan** to a lack of equipment and books so making independent study very difficult. In **Uzbekistan** the government continues to pay for general and scientific infrastructure and research in particular. In some cases universities and HEIs have never owned property and even today its use is highly circumscribed.

While there has been an attempt to upgrade aspects of public universities including fashionable proposals for performance related funding, the key features of a successful educational infrastructure are far simpler and well known. First to support committed teachers and researchers (which means they are retained and paid satisfactorily so they do not always walk away to the private sector); and second, to utilize the educational promise and potential of modern communication technologies. These, in the words of the Tajikistan Report, .."goes hardly and at poor level". Much depends on the diffusion of mobile technology and its multiple uses. Given the backward stage of Central Asia's communications, they have tremendous promise for education and society in general. **(see 4.9)**

In addition there will be a continuing (and sometimes uncomfortable) interest in maintaining internationally acceptable standards. Thus **Tajikistan** is introducing a standard exit examination in 2007 and discussion about making the HEI evaluations more in dependent by the inclusion of external advisers rather than relying on domestic expertise at present. In **Kazakhstan** authorities cancelled the operating licenses of 59 higher educational institutions : also note the evaluation & licensing Committee revoked the licenses of 33 HEIs in 159 specialties and suspended 32.

d. Policy Choices

The underlying policy choice which cuts across all higher education issues in the Central Asian Republics concerns the degree of present and future, administrative and market, privatization.

(I) Access and equality

All four countries proclaim their citizen's right to education either as part of the Constitution or contained in other laws. However this guarantee does not mean that the education will be publicly supported at the tertiary level. As the university system expands from elite to mass, so do the opportunities for attending higher education institutions, providing that the student can find the fees. With rising costs, fees – the foundation for university funding - and supplementary (living and other) expenses are also increasing. A major challenge is ensure both equality opportunities and access.

State support in all countries includes and is often limited to the following categories. State support includes both the payment of tutorial fees etc. and waving fees or costs but rarely includes living expenses.

- Those who have passed the national or university entrance examination or both.
- Priority students – those studying education and who intend to become teachers (Kazakhstan, Kyrgyz Republic) or those with Presidential scholarships; in Tajikistan, the recipients are classified into excellent, good and special.
- Priority groups such as those who speak a particular language (Kazakh) or rural areas (Tajikistan) or athletes. In Uzbekistan, for example, apart from the military, (who receive extra points) there are a number of other special groups not least sports people who are enrolled on "non competitive" basis, without tests and professional (creative) examinations
- Kazakhstan offers state support for 30 percent from rural areas, 2% to Kazakh nationalities, etc;
- Traditional privileged groups such as the members of or sons/daughters of the armed forces, retirees etc. (NB may not pay fees, thus distinct)
- Quotas – i.e. informal restrictions on certain language or other groups.

Access and national examinations - state supported students have to pass an examination to attend public HEIs. The four tertiary education systems employ different processes for university access and/or scholarships and awards. **Kazakhstan** uses the Uniform National Test (UNT) (Russian and Kazakh) which is taken in parallel with the Comprehensive Tests (CT) for other languages with the top students obtaining scholarships. These are awarded by competition in special disciplines and language divisions and grants awarded according to established rules. There are Presidential scholarships for post graduates and promising last year students. The **Kyrgyz Republic** uses the General National Examination for both entrants and grants, with additional examinations for special departments which have Ministry priority. Students hoping to attend private universities/colleges may need additional examinations at the discretion of the private college. 70 per cent leave school and go directly to HEI. **Tajikistan** appears to have no uniform national examination and the HEI continues to have discretion about type of examination or supplementary tests they might wish to add. The government has recently introduced a new examination with reference to the national script. In **Uzbekistan**, the government either through the Cabinet of ministers or Ministry sets quotas based on number of students (per discipline or institution) and then on the number of awards. These are competitive and distributed on merit while others can attend as private (contractual students). In addition there are complimentary examinations by profession and HEI with a similar process for post graduates. The process begins with a published list of places (general admission quota) and so planned grant and contract based admissions. The national report comments that there is a lack of competition with ancillary financial services for loans and that the lack of competition – because of higher prices – reduces the number who can afford to go to university. As it is, it seems that poorer students have 50 per cent of interest rate costs paid by state.

The main features of access in the CARs is that the state emphasizes merit rather than need awards. If the student is not awarded a government place (funds or special loans) then he or she can apply to public or private universities, knowing that a private place is likely to be more expensive. Even if they do receive a government award, it is unlikely that, for example in **Kazakhstan,** it covers housing and urban costs. Unless the student comes from the wealthy family, then he or she must arrange a loan and this is increasingly understood to be a specialized market. Until recently, loans were facilitated by the government,

but has now been transferred to a bank and joint stock company with its own independent funds. This appears to be the beginning of an incipient market relationship, unlike Uzbekistan where there is recognition that students require greater financial support and educational services, but which are largely in the hands of state bodies.

Increasing costs and the pattern of privatization are forming an higher education market. The market is incomplete for it does not provide institutional responses to equity and fair access. There are growing concerns about the educational disadvantages faced by disadvantaged families(see below, table 4.6) (who cannot afford the pre university preparation) and those living in rural locations, which have noticeably less well equipped and consistently taught schools in a possibly changing language [see above section I (b)]. In Kazakhstan, access is increasingly restricted by income structure. At the same time, part time and correspondence instruction - the traditional alternatives to full time tertiary education – appears to have been reduced in Kazakhstan and Uzbekistan for cost/market reasons [see II.(d)].

Thus the two most important challenges are to build facilitating institutions which ensure greater fairness in terms of access to higher education and funds at a reasonable rate. Such institutions do not evolve, but require, particularly during an extended period of transition, active policies and leadership across the educational spectrum.

(ii) Educational and Institutional Quality

There is a widespread belief that Central Asia's tertiary education has lost quality or is poor and deteriorating and not simply because reduced state funding. Independence and the market has brought a new set of priorities in terms of skills, jobs and knowledge to which higher education is finding it difficult to respond. The need to have closer links to the market sometimes supersedes equally important relationships that cannot be put into this framework but need a more comprehensive understanding of the value of knowledge, such as the links between science and universities and which the Uzbekistan authorities describe as 'all broken'. Some of these points will be discussed in the following section.

All the CAR governments have responded to concerns about educational quality by setting up agencies to review both programs and institutions. **Kazakhstan** currently uses a government body, the Committee for Supervision and Accreditation in Education and Science within Ministry of Education and Science, and which by 2010 will become the more independent NSEQE, National System of Educational Quality Evaluation. In addition there is the Republic's Commission for the Licensing of Educational Activities (licensing), Accreditation Commission (accreditation). **Kyrgyz** established the Central Educational Quality Control Department in the Ministry in 2003 as well as promoting evaluation offices within the HEI themselves with an agreed set of indictors. The government has set itself an ambitious set of activities from setting standards to computer applications. The Education Institutions Certification Department was established by the Ministry of Education in **Tajikistan** to conduct external evaluations from the perspective of national policy, specialist training and efficient financing. The government has now returned to the three stage process of licensing, (1-5 yrs), certification, - with several criteria – and State Accreditation which when approved allows the HEI to issue 'state-standard documents to its graduates'. In **Uzbekistan** there appears to be a very broad group of line and sector ministries involved in evaluations.

Their criteria reflects a range of different approaches. The most elaborate monitoring is planned by **Kazakhstan.** At present the Interim State Control (ISC)

midterm evaluation allows for a broad set of evaluation criteria which include region, types of ownership and specialties as well as standard items like percentage of full time staff etc. New criteria are likely to expand the rules of accreditation to include financial stability, international co-operation and employment of graduates. The Commission will no longer allow diplomas if the institution is not accredited nor the final state approved degree. A certain proportion of process is self assessment but there is some skepticism as to how this is carried out. In **Kyrgyz** the report calls attention to 'a lack of effective monitoring' which is coupled with the ' deterioration of quality of educational services' because of poor legislation, equipment, failure of staff upgrading, student motivation, selection, and poor secondary schools, etc In **Tajikistan** evaluation includes 'mental, physical and moral development'. There appears to be an emphasis on internal quality control, which varies by institution. There was a period of two years, (2000-2002, when the (i) licensing, (ii) certification and (iii) accreditation process was abandoned and quickly renewed because the consequences were so chaotic). Now in Tajikistan the higher education system uses a standard final examination called the State Tertiary Educational Standard, and this is partly to compensate for the effect of low wages which the Report admits leads to bribery and "the corruption existing in the educational system is one of the causes of the low level of knowledge abilities and skills of students". **Uzbekistan** evaluates staff quality and resources together with "relevance of educational programs to contemporary requirements of the labor market, (and) providing employment to TEI graduates" The report claims that each TEI has a marketing/labor department and that demand for graduates is part of the evaluation process as is preparations for the (expected)transition to two tiered process (Bologna) and self study.

Perhaps the most critical issues facing higher education concern the salary, preparation and rewards to the professional teaching and research staff. In **Kazakhstan,** staff in national universities are paid less that teachers in private universities (US$250-1000). The government has established a teacher student ratio of 1:8 but it is now much higher in part because of outflow of staff to the private sector. Even though the percentage of full time staff is a criterion for accreditation, it is difficult to attract young staff who leave for private sector or private universities. In the **Kyrgyz Republic** , while there is a public competition for position, it is quite common to charge additional costs to private groups (i.e. 'non

budgetary'). In common with other countries, qualification upgrading is seen as urgent. In **Tajikistan** 72 per cent of staff have not received a retraining course in 10 years, if then. Staff are selected by competition but the state does not have the funds to appoint them all. Even so, it is difficult to keep staff , as "many of staff with academic degrees move to other jobs with good salaries when the opportunity occurs" At university they earn up to US$15/20 (per month), but can obtain as much as US$60 with bonuses for contract based teaching. The authorities in **Uzbekistan** are concerned about the decreased demand for professionals and lack of student and young professionals' motivation. Appointment is by competition and then approved by cabinet. One of the criteria for full time appointment is that of scientific research which is currently considered to be 'very low' and building stronger links between science and industry. Research as well as teaching be made more attractive by providing facilities for simple tasks, including, it appears, writing paper) ,etc The report authors see repairing the link between science and industry as an important test of Uzbekistan's higher education policies.

Appendix 1

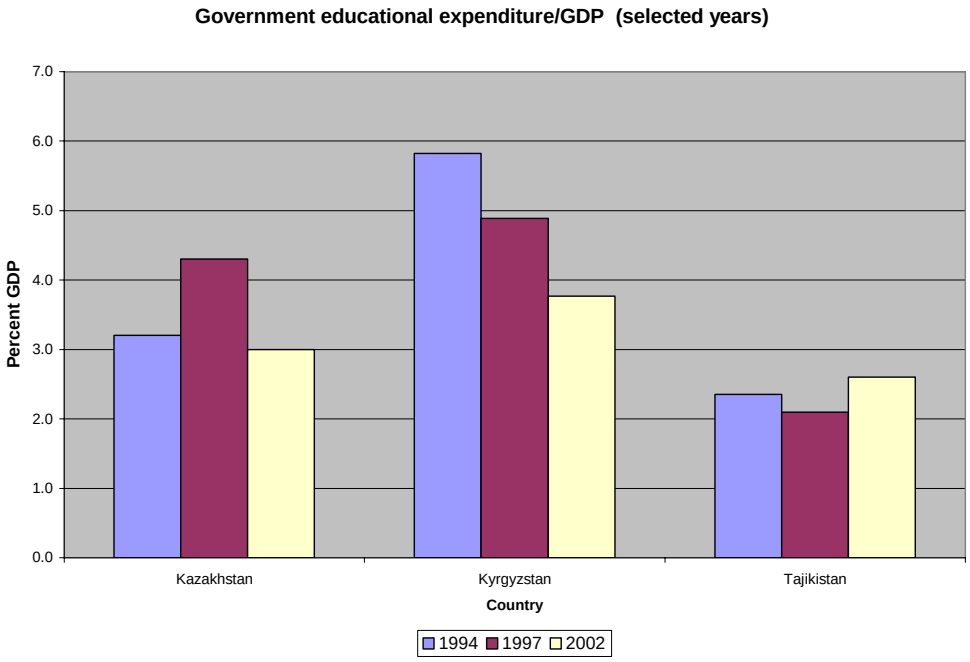
Itemized laws

Kazakhstan		
Article 30	Constitution of the Republic of Kazakhstan	
January 18, 1992	On Education	
1993	On Higher Education	
	On Licensing	
1999	On Education	
March 2005, No 195	Standard Rules of Activities carried out by Educational Institutions that conduct Higher Vocational Educational Programs	Standard rules (p.9, footnote)
Kyrgyz		
1992	Law on Education [1] KR Law on education, as amended in 2003	Privatization with amendment
1995	Cadres of the XXI	
1996	Bilim	
KR President's Decree #244 of August 27, 2000	Kyrgyz Republican Educational Doctrine	
Resolution #259 of the Government of the Kyrgyz Republic of April 29, 2002	Concept of Education development in KR up to 2010	
	[1] Resolution of the Kyrgyz Government #395 of August 25, 1993.	Multilayer structure of higher education, until 2000
	Order of the KR MoE #752/1 of December 29, 2000	New index of professions and skills for HEI
	Resolution of the Government of the Kyrgyz Republic #142 of 03.14. 2002.	New continuous educational norms
	Resolution of the Government of the Kyrgyz Republic #53 of 02.03.2004	Excludes incomplete education
	Objectives and functions of the MoE have been approved by the Resolution of the Kyrgyz Government #10 of January 11, 2006 [1] Regulations on the Ministry of Education, Science and Youth Policy approved by the Resolution of the Kyrgyz Government #10 of January 11, 2006.	

Tajikistan		
	The Constitution of the Republic of Tajikistan adopted in 1994, with amendments and alterations introduced in 2003;	
	The Law of the Republic of Tajikistan "On education" adopted in 1993, new edition adopted in 2004;	
	The State Standard of Tertiary Vocational Education of RT, dated February 23rd, 1996, No. 96;	
	The Standard Provisions on Tertiary Vocational Education Institution of RT dated February 21st, 1996, No. 71	
	The Classifier of the areas and specialties of tertiary vocational education dated 23 February 23rd, 1996, No. 96	
	On certification, accreditation and licensing of educational institutions of RT, dated January 17th, 1997, No. 50	
	The Law of the Republic of Tajikistan "On tertiary vocational education and postgraduate vocational education", 2003;	
	The Law of the Republic of Tajikistan "On education", new edition of 2004	
	The State Educational Standards, second edition, 2002-2003	
	The National Education Concept, 2002	
	The Resolution of the Government "On the order of certification, accreditation and licensing of educational institutions of the Republic of Tajikistan", 2003;	
	List of adopted laws and regulations on the tertiary education reform	
	The Resolution of the Government of RT "On approval of the Standard Provisions on Tertiary Vocational Education Institution of RT", 2005.	
	The Program of National Education System in the area of human rights in RT, 2001	
	The National Program of Teaching Staff Training for the period from 2005 to 2010, 2004	
	The National Program of Improvement of Teaching and Studying of Russian and English Languages for the period from 2004 to 2014, 2003	
	The Implementation Plan of the Education System Reform for the period from 2004 to 2009, 2004;	
	The Program of Economic Development of RT for the period till 2015, 2004	
	The National Strategy for Development of Education in the Republic of Tajikistan for the period from 2006 to 2015, 2005;	

Support tables 3

3.1 Government expenditure on education.



3.2. Current and projected educational expenditure, 1990-2008 (select countries)

	1990	1995	2001	2003	2004	2005		2006		2007	2008
Percent GDP					Act.	Prog.	Act	Prog.	Rev. Prog.	Proj	Proj
Kazakhstan											
Public Expenditure	35.6	25.7	22.3	22.2	21.9		26.1				
Kyrgyzstan											
Public Expenditure	37.2	27.8	17.7	20.6	20.4		20.5				
					27.2	27.5	28.3	26.6	27.1	26.7	26.7
Social Expenditure					14.0	15.1	14.6	15.5	15.0	15.4	15.7
Education					4.6	4.5	4.9	4.7	5.0	5.1	5.2
Tajikistan											
Public Expenditure		17.4	14.8	16.2	17.7		19.6				
					20.3	23.2	22.6	23.1			
Social Expenditure					7.1	8.8	9.1	9.6			
Education					2.6	3.5	3.4	4.0			
Uzbekistan											
Public Expenditure		32.6	25.5	24.8	23.5						
					22.6	22.9		20.9		20.3	
Social Expenditure					10.9	11.5		11.5		11.5	
Education					6.3	6.6		6.6		6.6	

Notes: Act = actual, Prog=programmed and Proj=projected; public expenditure refers to total public expenditure unless other defined in the reports.
Source: IMF Reports, listed in references.

3.3 Higher education estimates (per cent)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Kazakhstan											
TPHEE/PEE						9.97	9.07	9.9	8.53	7.89	
PEE/TPE						14.1	14	14.5	13.9	14	
PEE/GDP						3.3	3.2	3.2	3.2	3.4	
Kyrgyz (%)											
TPHEE/TEE	8.2	13.6	15.7	19.2	16.1	14.7	17.2	21.4	19.8	20.5	20.1
THEE/GDP	0.54	0.71	0.82	0.99	0.71	0.49	0.72	0.96	0.85	0.94	0.98
Tajikistan											
THEE/PEE						5.82	4.83	5.15	5.16	5.27	5.49
PEE/TPE						15.9	16.6	16.6	15.4	16	19.4
Uzbekistan											
TPHEE/PEE						6.9	6.6	6.7	6.6	6.4	6.45

Source: Reports,

Notes: PEE Public Expenditure on Education
TEE Total educational expenditures
TPE Total Public expenditure
TPHEE Total public higher education expenditures
THEE Total higher education expenditures

IV. Higher education and competitiveness

Higher education is not only valued for producing learned men and women (an elite or meritocracy) but because it teaches broad skills which are valuable, perhaps essential, for the functioning of the contemporary state and modern society. An example is modern electronics, software and its application to communications. To make knowledge useful requires not only good teaching, practical facilities and promising students but mechanisms that transfer such knowledge into practice. The links between higher education and its applications are part of a socially specific process which involves institutions and methods for assigning people, knowledge etc. If under the Soviet system the methods depended on a plan backed by the command economy, the current system is moving to a greater use of the market, the feedback between supply and demand. However the four economies are in the middle of evolving new rules of the game – so that the link between higher education and social and economic demands are in flux because the institutional rules of the game are not yet settled. This section explores how higher education in the CARs is attempting to forge a new set of institutional links with employment (labor market), science and technology (knowledge market) and economic growth. For without a strong institutional base – laws, norms and procedures – the transfer of education to a modernizing society will be difficult and frustrating.

It was suggested In section I that 'competitiveness' was (and is) a common benchmark for the CARs and where higher education plays a key role. The four national economies depend on world commodity prices and trends for their exports, so that reducing costs and improving quality and services are important for opening, maintaining and expanding markets. As transition economies, the CARs face increasing competition for their products and services. International competition then depends on marketing, efficiency and productivity, all linked to applied knowledge and learning and so to higher education. Thus the pattern of the CARs higher education is not only formed by social and resource transitions (the move to mass systems and the introduction of private or quasi-private institutions) but by creating new market based institutions which can, over time, sustain these changes.

This section looks briefly at three areas where higher education has a potential impact - employment and the labor market, research and development and international competitiveness - and where in turn the demands of each, influence higher education. The adjustments between the higher education system and these key areas

are increasingly market rather than command or bureaucratic relations. Unlike higher education institutions under the command economy, present day universities, however reluctantly, must take account of employment trends and the demand for different subjects or diplomas or become an anachronism. Understanding the labor market – however difficult - is particularly important for HEIs as they move closer to becoming market organizations. Further, the expansion of enrolment and the increase in the number of graduates present new policy challenges and which require new, qualitative instruments. The second area is the new role of research and development and its place in current tertiary education and government policy. Finally the section examines the CARs international trade position and their potential for future growth. All three dimensions can have a close relationship to tertiary education leading to growth based on productivity and competition.

a. Employment and labor market

The CIS labor markets have been characterized by a lack of dynamism, relatively high underemployment, strong sectoral shifts, and growing segmentation by educational level.

(i) Employment and unemployment

One immediate effect of the "disintegration shock" was the rapid increase in the official unemployment rates for Kazakhstan and the Kyrgyz Republic compared to Tajikistan and Uzbekistan (See **4.1**). In Kazakhstan unemployment reached over 12 per cent of the labor force and remained there until the resumption of stronger growth in 2002. The Kyrgyz Republic unemployment rate grew by fits and starts although after 1998 there was a constant upward tendency. Uzbekistan demonstrates its singularity in this and the following table, which shows the total number employed (**4.2**) increasing slowly but constantly from around 7 to 10 m officially employed. In contrast Kazakhstan, a larger economy, shows greater fluctuations and although it should be recalled that as many as an estimated 3m ethnic Russians and Germans left in the years immediately after independence. Uzbekistan's employment and unemployment stability is surprising. Both Tajikistan and the Kyrgyz Republic maintained their magnitudes of employed.

The employment and unemployment data not only shows the broad differences in social policy pursued by the four governments, but unsatisfactory relationship between transition and employment. According to the World Bank's major employment overview, the principle challenge facing the East European and former Soviet Union economies is that of job creation which depends on the generation of new firms and the destruction of the old, an illustration of 'creative destruction'[46]. If employment shows stability, then it is likely that this process is muted or not taking place. However the distinction between employment and unemployment offers too little and perhaps misleading information, because the labor market is far more segmented and the internal dynamics more complex.

The segments can be categorized in a number of ways. First, the expanding number of those employed in the informal sector (without official contract or employer paid social security) which show at best an incipient market structure and at worst, a mismatch between regulated supply and demand. Admittedly heroic calculations estimate that 50 percent of workforce in Kazakhstan and 35 percent in the Kyrgyz Republic and Uzbekistan respectively[47] are employed in the informal sector. A recent report puts Uzbekistan's informal sector at around 29 percent(2003) and which it expects, through government policy, to reduce to 25 percent in 2010[48]. A second category is 'hidden unemployment' which the same source estimates as being about 5 percent of those in industry and around 3 percent in transport, communications and construction[49]. The third category is the growing number of the self employed associated in the CIS countries with subsistence agriculture[50]. In summary, the CIS's

> "... low open unemployment and high employment rates hide significant problems; delayed enterprise restructuring with persistent overstaffing and especially in low income CIS countries, the dominance of low productivity jobs in the informal sector to earn subsistence income" [51].

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[46] The World Bank, Enhancing Job Opportunities; Eastern Europe and the Former Soviet Union, Washington (2005)

[47] See Enhancing Job Opportunities Fig. 2.6 p.94. The figures refer to the informal sector as a percentage of employment 1998/1999.

[48] IMF/ Republic of Uzbekistan, Interim Poverty Reduction Strategy Paper, Washington, (2005), p. 55.

[49] "Each quarter the number of employees sent on involuntary leave by employers because of production reasons amounts to around 60, 000 people or 1.2 percent of those employed' p.14.

[50] See Enhancing Job Opportunities p. 95

[51] Enhancing Job Opportunities, p. 12

Box 3 Jobs and Education

Jobs, growth and business constraints

Job creation depends on enterprise creation (including the restructuring of older firms) according to the World Bank's recent report on Eastern Europe and the Former Soviet Union. Private employment has grown because of successful privatizations, firm productivity resulting in competitive output and products, and the formation of new enterprises. New investments depend on a successful investment climate which the WB lists as the result of,

- *Macro economic policy setting*
- *The cost of doing business*
- *Wage flexibility*
- *Employment protection legislation*
- *Social benefits*

and where the CIS countries and particularly the low income CIS countries (which includes the Kyrgyz Republic, Tajikistan, and Uzbekistan) have particular disadvantages. Commenting on the role of business obstacles by region, the report calls attention to the administrative obstacles (licenses, taxes, inefficient regulations) that predominate in the middle income CIS countries (which includes Kazakhstan) compared to the "..the low income CIS countries, (where) the constraints are more basic ranging from unreliable infrastructure to underdeveloped institutions of a market economy", (p.30). So without an improved investment climate, it will be difficult to expand job opportunities other than in particular segments related to the urban service sector. While the start up cost index (p.178) appears relatively low for the CIS countries, the real lesson appears to be that job creation has to go beyond the labor market and include issues of regulation, credit and corruption (Fig. 5.12, p.182). The presence or absence of a skilled work does not appear to be a serious disadvantage or substantial advantage at this stage.

Enhancing Job Opportunities; Eastern Europe and the Former Soviet Union, Washington, (2005)

Any expansion of the number of new jobs will depend as much on a renewed 'business friendly environment' – that is the slow process of building a small and medium sized sector – as the creation of new industries. The dynamic sectors may not creating jobs or adding significantly to employment. The experience with Kazakhstan's oil industry partly confirms this view; the sector only employs 50,000 people including those working in the refining sector. The authors of a recent study note that "oil production only expands construction activities and only on a temporary basis"[52] although, of course, it generates sufficient income, which if invested appropriately, can generate new job opportunities. They also point out that possibly as much as 43.5 per cent of households are part of the informal sector[53].

While unemployment rates tend to be lower for graduates, this does not always appear to be the case. In Kazakhstan, the report states that "unemployment has been increasing among graduates of higher educational institutions since 2002" for which the authors provide two not entirely consistent reasons (a) poor quality of graduates and (b) their high cost such that "the low level of skills is more attractive for employers". Kyrgyzstan shows high unemployment if secondary and higher education levels are combined but when disaggregated graduate unemployment makes up a very small proportion (around 9.8 per cent compared to 80.4 per cent for completed secondary education) reconfirming the value of tertiary education in the marketplace. The Tajikistan unemployment rate is around 8.4 per cent but graduate unemployment rates are only 4.3 a reduction from 7.6 per cent.

Higher education could be an important catalyst for business providing other institutional features are in place.

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[52] Najman B., Pomfret R., Raballand G., and Sourdin P. "How are oil revenues distributed in an Oil Economy? The Case of Kazakhstan", School of Economics Working Paper 2005-18, University of Adelaide, (2005), p.10. They note that ".. in 2002 the unemployment rate in all producing regions were situated above the national average" .

[53] Informal employment is identified on the basis of household income/expenditure when it is assumed that if expenditure is twice income, that cannot be explained by either higher wages or social transfers, then it must come from another (informal) source. op.cit. p. 15.

(ii) Employment Shifts

The four countries – no longer the recipients of federal transfers or planned demand –have seen substantial adjustment to their value added and employment profiles since 1990 (see **4.3**) This data shows increases in the service sectors in all economies consistent with increasing urbanization and the post Soviet acknowledgement of its economic value. Kazakhstan's agricultural value added dropped dramatically from 34 (1990) to 6.5 (2005) percent and although that for Tajikistan declined from 32.9 (1990) to 24.2 (2005) per cent, it together with the Kyrgyz Republic and Uzbekistan remain important agricultural producers. The manufacturing sectors' proportion of total value added declined in all countries between 2000 to 2005, with the exception of Uzbekistan; this sector has been particularly volatile in Tajikistan but in Kazakhstan has continued to grow, albeit slowly.

Sectoral employment shifts show different and unexpected patterns (see **4.4**). *First*, while there are no consistent patterns in the employment changes, industrial employment declined in all economies (1990-2005) although the Kyrgyz Republic and to a lesser extent Uzbekistan, showed a small employment increase (2000-2005), the other two economies a slowdown in job reductions. While it might be expected that the service sector predominated, as in developing countries, it declined in the wealthiest (Kazakhstan) and poorest (Tajikistan) economies. When the service sector is divided into market (trade, finance, communications, transport) services and non market (education, health, government) services, the former has generated more employment, and also shows itself to be more flexible than non market services in terms of expansion and decline and so, of course, as contributing to competitiveness. *Third*, labor shifted to the agricultural sector (which includes forestry) sector in all economies with the exception of Uzbekistan, surprisingly given its land reform and agricultural promotion policies. The expansion of labor in the primary sector is the result of self employment, confirmation of the inability of the economy to generate formal jobs. The Kyrgyz Republic illustrates the dramatic decline in manufacturing jobs and the shift to agricultural employment. The World Bank notes this could be a temporary phenomena, but might "represent a more profound and long lasting reversion toward employment patterns more typical of countries with relatively

Box 4 Income, jobs and poverty

Measuring Poverty in Eastern Europe and the former Soviet Union

Understanding poverty and income dynamics has been helped by the World Bank's sponsorship of household surveys in almost all the countries that make up Eastern Europe and the former Soviet Union. Surveys are reported for Kazakhstan, (2001,2002, 2003), the Kyrgyz Republic (2000, 2001, 2002, 2003) Tajikistan, (1999, 2003) and Uzbekistan, (2000, 2002, 2003) in the Bank's recent publication Growth, Poverty and Equality: Eastern Europe and the Former Soviet Union, (2005).

In this report, the absolute poverty or deprivation level is set at $2.15 per day, rather than that used for developing countries of $1 per day, because of the cost of 'basic needs' in a cold climate, and the increasing requirements, particularly health, associated with an aging population. Income comparisons are based on year 2000 purchasing power parity rates. A second measure is set at $4. 30 per day to identify those 'vulnerable' to increased poverty because of unemployment and low savings.

The number of deprived (that is living on $2.15 or less) varies among the CIS countries and even more so among the Central Asian Republics with Kazakhstan (21 per cent) and Uzbekistan (47%) under 50 per cent and the Kyrgyz Republic and Tajikistan with over 70 per cent of their populations classified as deprived. When adding the proportion of vulnerable population, the results are of considerable concern for only 4 per cent of the Kyrgyz Republic and Tajikistan are *non vulnerable*, followed by Uzbekistan's and Kazakhstan' s non vulnerable populations at 14% and 34% respectively.

The report, which examines a broad range of countries, shows that poverty has decreased in the CIS countries as a result of high growth, but the authors are not confident that the momentum can be sustained if economies fail to generate employment opportunities.

While there are variations across and within countries, the incidence of poverty tends to increase for,

- Young people,
- Rural dwellers
- The unemployed
- Those with low education levels
- And certain aspects of ethnicity

These are present in the four CARs and are discussed in the body of this introduction.

Source: Growth, Poverty and Inequality - Eastern Europe and the Former Soviet Union, Washington, 2005.

low per capita income" [54]. In general it seems to be acting as a 'safety net' for countries which either do not possess them or where unavailable to a specific segment of the population[55].

These shifts represent a shakeout of staff and production units while illustrating how quickly the economies have had to adapt to external and domestic markets. The rapidity of change can have serious consequences for laborers and skilled professionals and which has led to demands for practical training and retraining. The employment shakeout will remain an educational and particularly higher education challenge for the long term. As the scope for reallocation narrows – labor and investment move from less profitable sector (s) to newer and more profitable sectors, so growth will depend on intangibles like productivity, greater efficiency, as well as science and technology. Further the skill content of jobs has changed although most of the changes have effected men rather than women. These are inputs which depend on human capital – that is education – as much as industrial or economic re-organization.

(iii) Education and employment

The four CARs are showing increasing wage disparities and these are likely to be the result of (a) job segmentation and (b) increasing advantages that commanded by certain types and levels of education. Both changes are having an impact of equality and poverty. First, the evidence shows increasing wage inequalities are linked to both the transition itself and the speed of market reforms. This process is closely related to,

> " ...technological progress and structural shifts such as that from the manufacturing sector to the service sector raise the relative demand for and thus wages of, white collar skilled workers".[56]

And according to the same report, in the CIS countries

> "..the gap between workers at the bottom of the wage distribution and those at the top have become dramatic"[57].

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[54] World Bank, Enhancing Job Opportunities, p. 13.
[55] Raiser M. Schaffer M and Schuchhardt J, "Benchmarking structural change in transition", EBRD Working Paper, 79, (February 2003), p. 36.
[56] Enhancing Job Opportunties, p.89.
[57] As above n.56, p.92.

Recent revisions to per capita Gini co-efficients show that inequality has not been as extreme as first feared. When using consumption rather than income, Gini inequalities reached their peak 1997/98 for the Kyrgyz Republic and Uzbekistan – the only two more or less continuous series – but in all four cases are today (2003) lower than when at their most unequal (See **T. 4.5**). However given current trends it is more than likely that inequalities will grow, not least because as new graduates enter the workforce, the educational premium for those with new skills will increase[58].

Second, "unemployment rates in transition economies are particularly high for less educated workers"[59]and this leads to the cycle of greater poverty and marginality. In a market economy it is to be expected that the better educated are better protected from poverty and/or vulnerability. This is an useful test of education's current value to populations without effective safety nets.

With sectoral adjustments together with recession, inflation, currency muddles and transition policies, it is not surprising that poverty -measured by national or international lines - increased in all the CARs. Initial calculations that compare 1990 and 2003, showed the proportion of people living on or under $2.00 per day had increased in all countries with the exception of Kazakhstan (see **4.6**). During these thirteen years, poverty increased by twenty (Kyrgyz Republic), thirty (Tajikistan) and as much as fifty per cent (Uzbekistan). By 2003 Tajikistan and Uzbekistan were registering poverty increases at on or under $1 per day, a level of poverty absent in 1990.

In the mid-1990s the World Bank sponsored a series of household surveys which has led to a substantial revision of poverty levels. Kazakhstan continues to be the country with the lowest degree of deprivation, followed by Uzbekistan, Tajikistan and the Kyrgyz Republic although it should be noted that deprivation fell in all countries, even if by only a few percentage points. Unfortunately for the vulnerable population (less than US$4.15 per day) their initial position has

[58] Mitra P. & Yemstov R. "Increasing inequality in Transition Economies; is there more to come?, Research Working Paper, 4007, World Bank, Washington (2006). Their answer is yes, without strong policy measures, and identify the drivers of inequality as being more than the education premium to include the following processes; (i) wage decompression and the growth of the private sector; (ii) restructuring and unemployment; (iii) fiscal adjustments; (iv) price liberalization, inflation and arrears; (v) asset transfer and the growth of property income and (vi) technological change, increased mobility and globalization. (See page 11).

[59] Enhancing Job Opportunities, p. 12

changed little in the four CARs. Vulnerability fell by five percent in Kazakhstan over three years; Uzbekistan by 3 percent in four years; the Kyrgyz Republic by 1 percent over four years and Tajikistan by four percent over five years.

The relationship between deprivation and education is explored in the two tables, **4.7a** and **4.7 b**. The first, (**T.4.7a**) shows the poverty rate by educational level (5), while the second, (**T.4.7b**) shows the distribution of deprived people by educational level. In all four countries poverty rates were less for those with tertiary education than other educational levels. For example, in Kazakhstan (2003) 7 percent of those with tertiary education lived on less than $2.15 per day, while 19 percent of those with no education or unfinished primary had to do so. The figures for the other countries are, Kyrgyz Republic 41 and 92 percent; Tajikistan 50 and 75 percent and Uzbekistan, 24 and 48 percent, (tertiary/unfinished primary). Moreover, *ceteris paribus*, it would be expected that poverty rates among those with tertiary education declined more rapidly than other educational levels[60]. This is the case for Tajikistan, (-29), and the Kyrgyz Republic (-15) but not for Kazakhstan (-6) and Uzbekistan (-6) where other sectors show greater poverty (deprivation) reduction.

The second table (4.7b) shows the educational structure of those living on or under the $US 2.15 poverty line (the deprived). As expected, those with tertiary education have not increased as a proportion of the total poor. However there are interesting variations when contrasting the earlier with the later profiles. For, if education is a great protection against poverty because of the skills engendered, then over time, the more educated should make up a smaller proportion and the less educated a greater proportion of the poor/deprived. The data shows a trend but no overwhelming pattern, with for example secondary/special education not tertiary education being reduced by 4 points (2000 to 2003) in the Kyrgyz Republic and 8 points in Tajikistan (between 1999 and 2003). The least educated make a smaller proportion of the poor in all countries with the exception of Kazakhstan.

In summary, while deprivation at this stage of the transition is slowly being reduced, the vulnerable population continues to be greater than expected even in economies such as Kazakhstan (2003). Whereas the number of deprived with tertiary education is smaller than other educational strata and has declined with

[60] The exercise uses the greatest number of years for which there is information by country, which are unfortunately inconsistent.

growth, the total number of deprived with higher education (T.4. 7a) remains above 20 percent in Uzbekistan and above 40 percent (2003) for the Kyrgyz Republic and Tajikistan. Either for market or policy reasons, higher education does not yet appear to command an income premium high enough to move its holders out of deprivation, that is earning more than US$2.15 per day. This seems to indicate that the role of education is changing as part of the transition and sectoral adjustment and has greater potential in Kazakhstan.

(iv) Graduate education and the market

Whatever the obstacles in terms of entering a university and completing a degree, there is a widespread belief that a university credential or degree offers greater security and employment appeal than technical vocational diplomas. Indeed, in common with many countries, young people are rejecting technical diplomas and industry training for professional degrees (medicine, law) and business and the social sciences. These subjects are demand driven and HEIs often have to scramble to meet market demand.

The total number of university graduates entering the labor market as graduates has been growing in all countries. Information found in the Reports show that between 2000/2001 and 2004/2005 the total number of graduates increased by ninety percent (Kazakhstan), seventy per cent (Uzbekistan and the Kyrgyz Republic) with Tajikistan as almost static. The table 4.8 shows the increase in graduates as a percentage of the total enrolled study body and as an estimated proportion of the labor market. For the former, graduates to enrolled students, values range from 12 to 22 across countries and the proportion student enrolment increases suggesting increased pressure and efficiency. The attempt to calculate the flow of graduates per year to the total flow of the labor force shows enormous variations. Labor force change was defined as the difference between annual total employment. As this varies substantially so graduate supply out of the total varies greatly. Labor market variations could continue to volatile at increase at a time when the graduate segment is expanding quickly leading to labor market instability.

The Uzbekistan report records, perhaps with some frustration, that “the labor market is largely spontaneous and unbalanced” and does not allow for appropriate planning. Yet planning certainties must now be replaced by flexible

market institutions able to bridge a gap between graduate supply and enterprise demands. HEIs much learn to liaise better with firms, employers and past students to build up a picture of current market conditions.

The Reports illustrate the changing attitudes of parents and students to HEIs. Their views and expectations will influence how the market functions and so the new institutions which form the bridge between HEIs and consumers. Some of the emerging characteristics of the new higher education market are likely to be,

- *Pragmatic knowledge*; growing demands for more pragmatic and job related knowledge which are altering the degree structure of universities. In Kazakhstan, there is increasing popularity of the humanities and social sciences, economics and the law in contrast to engineering and the sciences. In Tajikistan there is a growing demand for studies connected to tourism, the power industry and agriculture; in Uzbekistan the popular subjects are law, healthcare and economics. An interest in these subject areas is often a result of economic crisis with the decreased demand for conventional university subjects taken within a five year professional structure. Tajikistan, for example, shows a decline in the areas of transport and communications where graduate employment was buffeted by overall employment declines and it is thought that the market will only recover when economic growth is restored. Around 65 per cent are in demand, but "insignificant" compared to 1991. While parallel to the market structure, the new pragmatism can be strongly influenced by a government's willingness to provide scholarships or state subsidies for particular subject areas such as education.

- *Flexibility*; the ability of HEIs to identify and respond to new demands such as Information technology (IT) and management skills. This characteristic requires greater adaptability from universities and better information about the labor market. An example is provided from information sciences where the current professional structure of higher education may not be flexible enough to meet urgent and current needs. In Kazakhstan, after the huge migration of professionals to Russia and other countries, companies were willing to employ diploma students and today skilled second or third year students are being recruited by companies who need IT and management professionals. The report authors see this as "the devaluation of higher education as such" but it is equally an illustration of the lack of effective interaction between rather rigid institutions and firms, as they also point out. The Kyrgyz report states that

the "rigid state supervising function over HE colleges....impede the prompt response in delivery of educational services by HE colleges to the labor markets' changing demands". A number of industry or sector wide planning boards have been proposed in Uzbekistan to estimate demand, needs etc. with the possibility of contractual agreements with the firms and agencies involved.

- *Outreach.* Current HEI outreach practice often clashes with the new pragmatism as it has yet to switch from the government to the student (or his or her family) as consumer. Outreach is too often confused with placements and then placements which are government rather than HEI defined. In Kyrgyz, the HEIs no longer place graduate in firms or enterprises except for teaching. The lack of teachers is becoming an acute problem and it is for this reason that the state supports a "Young Teachers' Deposit program" and the influence of this program on other socially necessary professions. Tajikistan attempted a graduate assignment plan but it seems to have been a failure because 65 percent of the graduates did not turn up. Uzbekistan has job placement program for publicly supported graduates for three year period.

- *Information and co-operation*; the key to higher education's greater public relevance is better communication between HEIs and Ministries, and HEIs and employers. The latter complain they have not been consulted about changing classifications, nomenclatures and the shift from five to three year degrees following the Bologna recommendations. In addition, while it is the Ministry of Education or equivalent that might recommend such changes, it is the HEI themselves that must implement them and they may not be party to the decisions. Thus there is a real need for great information and discussion about the content of new degrees between employers, their associations, the government and HEIs In the Kyrgyz Republic, for example, the new three or four year Bachelors is considered by employers as "incomplete higher education". In Tajikistan there is "no mechanism for information exchange between higher educational institutions and the labor market". And in Uzbekistan, it is noticeable how it is the Ministry that is expected to take the lead.

The new institutional structure of a market based higher education would hopefully come to terms with these issues. However, at present, whatever the quality of institutional and market relations, there is every reason to expect, as Mishra and Sementov point out, that educational wage premiums are likely to become more important as a cause of wage disparities[61]. Early analysis of household survey data showed that higher household expenditures are most closely associated with the head of household having advanced education (as well as other dimensions such as living in a capital city). Most important, "college educated individuals did relatively well while vocational training lost value during the 1990s"[62] A similar conclusion was reached when two Kazakhstan surveys, (1996 and 2002), were compared and it was shown that the most important determinants for per capita expenditure were the level of human capital, the number of household members and the location of the household[63]. The results for 2002 show that "having a university or *Tecnikum* educated person in the household is associated with a 6-7 percent higher per capita household expenditures..." . They also found, rather to their surprise, that the education premium had diminished when compared to 1996. The same authors also found that the estimated returns in the Kyrgyz Republic were far higher, around 25 per cent. The results show that there was

> "no return to secondary education without additional training. The large returns to college education provide an incentive for children to complete secondary school and advance to post secondary training"[64]

(v) Short summary

The labor markets of the four Central Asian countries continue their long process of adjustment to the post transition economies. The transition has altered the relationship between schooling, training and employment, because decisions about each – whether to go to school, and for how long (a particularly important question for rural families and girls), how to select training and subsequent employment (rather than it being allocated) – are now being

[61] See article cited above n.58.
[62] Pomfret R., "Economic Diversification of the Newly Independent Central Asian Countries", International conference Brunei (2001) reporting on previous research, p. 12.
[63] Najman B., Pomfret R., Raballand and Sourdin, (2005) p. 11-13.
[64] See Anderson K.H., Pomfret R., & Usseinova N.S., "Education in Central America during the Transition to the Market Economy", in Heyneman S. & De Young A.J. The Challenge of Education in Central Asia, Greenwich, Con, (2004), p.145. They add, that "..the cost of post secondary training increased over the transition period so that for many households the net benefit from completing high school and going to college fell" p. 145-146.

organized through rules (such as fees) that give greater primacy to the market. The only exceptions would appear to be for priority professions, discussed above. Further the labor market has performed differently in each country; a distinction can be drawn between Kazakhstan, which has commenced a different and stronger growth path based on hydrocarbons, and the other economies. Even here there are differences as the employment and unemployment data shows, with Uzbekistan, in contrast to Kyrgyzstan and Tajikistan, showing low unemployment and stable employment growth.

b. Research and Development

During the final period of the Soviet Union, research and development were synonymous with science and technology. Social science and policy research were undeveloped and there was only a very functional relationship between teaching and research, often sponsored through specific ministries. Finding a way to harness the undoubted skills of scientists and the Academies to national goals is a good example of the need for market based bridging institutions.

Universities and technical institutes were one of the three pillars around which Soviet Science and technology was organized, the others being the Academy system and the ministerial research establishments[65]. They were financed by block grants from the central government and to this core financing Academies and universities could receive supplementary funding for military, technology and other applied activities. The Academies however could sign external contracts only up to 25 percent the value of total income; this restriction did not apply to universities, some of which became highly dependent on this alternative source. Neither source of funds survived the end of the Union exacerbating the financial problems of tertiary institutions[66].

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[65] The USSR Academy of Sciences headed the academy system which included specialized institutes and the academies of the republics and policy co-ordination was the responsibility of the State Committee on Science and Technology (GKNT). Loren Graham describes them as three pyramids which gives some indication of their independent power and the difficulty of combining pure and applied research even in a command economy, see his Science in Russia and the Soviet Union; a short history , Cambridge, (1993), p. 180-196.

[66] In the 1980s some institutions and academies formed joint ventures with private foreign companies to market their skills and compensate for the already declining state revenue. In the 1990s some scientists and academics created private companies for the same purpose.

The universities were not, under the Soviet science system, at the center of research but post 1991, with its emphasis on mass tertiary education, the balance between university and academy has altered. In summary this reconfigured balance places a much greater emphasis on research as part of the education process and its contribution to applied technology as it does to pure science and weaponry. However the national role of scientific research cannot be an abstract discussion because applied science is expensive. While the principal discussions in the four countries have been about, (i) the value and cost of research and its overall contribution to national goals, economic growth and competitiveness; and (ii) whether and how research should be integrated into universities, so ending the dual system, the question that overshadows both is (iii) who should pay and how?

First, the external demand for science and technology depends increasingly on the market (private companies) rather than public enterprise, while internal demand is increasingly an issue of education (between higher educational institutes and the Academy). External demand has to be created and requires government support. **Kazakhstan,** the only government with substantial guaranteed long term income, has seen absolute, although not relative, increases in funds. Support for science and technology research was erratic until 2000 but has now become more stable. Main sources are domestic (around 94%)with companies increasing their funding from 7.5 per cent to 18.3 per cent (2004). The government has recently helped form a new initiative, the Foundation of Science, which provides grants allocated by competition. Although 60 per cent of R&D is carried out by scientific research institutes and 20 per cent by HEIs, the new Regional University Complexes (RUC) are an attempt to harness university expertise to local business. The government's new policy statement is set out in the Law, "On Innovative Activities", which deals with funding and training and has been followed by the *Strategy of Industrial and Innovative Development, 2003-2015* which in turn is part of Kazakhstan's economic development program for competition and globalization. **Uzbekistan,** the most populous country and one which undertook important research in the USSR was located, has reorganized its programs as competitive funds through the Ministry of Education (MTSVE) and funding through the National Scientific and Technical Program, (NSTP) and National Program for Fundamental Research (NPFR) and the National Innovation Program of the Science and Technology Center as competitive funds. The Center has a US$5m budget and grants to universities are made through the MTSVE; these institutions are also responsible for research contracts for about US$1.9m and received extra budgetary funds in 2005 for US$430 thousand and $2.4m

(2003-2005). Uzbekistan supports the integration of university research centers into the Academy's Scientific Research Institute. The other countries, the Kyrgyz Republic and Tajikistan, are without, as yet, clear policies not least because of lack of funding. For example, the **Kyrgyz** Republic's support for science decline from 0.7 per cent of GDP in (1990) to 0.2 per cent. (2005) and in consequence does not appear to support university research, although the integration of physics into the Kyrgyz National University (KNU) was considered to be successful. There is greater use of annual competition and review in association with the Finance Ministry; in general activities are conditioned by what can be afforded. **Tajikistan's** R & D budget constitutes no more than 0.13 per cent of GDP (2005) of which a proportion is distributed by the Ministry of Education as supplementary funds to universities. This amounts to US$ 70,790 in 2005 for 53 subjects. This lack of resources strengthens the system's unwillingness to make rapid changes and to shift the research balance further in favor of universities,

Second, the demand for overall scientific or technical research may not be as important at this development stage as building up the social sciences, particularly economics, and the policy sciences such as management. In **Kazakhstan** universities, for example, undertake only 20 per cent of national scientific research but 70 percent of all research. In the **Kyrgyz Republic** universities only carry out 7 per cent of research, with 70 per cent of funds allocated to the Academy of Science which then distributes to its own members. Universities have to apply directly to Ministry for permission to apply for Academy funds while the remaining 20-25 per cent is subject to competition, run by the Ministry's Department of Science. Again in **Uzbekistan** well over 60 per cent of scientists are now working at universities, which run 43 per cent of 144 post graduate courses, and train 917 research students. Staff are expected to spend 200-400 hours undertaking research. In **Tajikistan**, scientific research activities are shared with the Academy but the Report admits that division between universities and Academy is awkward and 'slows down' science, which could be helped by greater competition. The government assumes that academic staff will spend around 20 per cent of their time in research.

For the foreseeable future, broad social and domestic demand for science and technology products may be as strong as scientific demand. So, there are strong reasons, given resource scarcity, to reduce costs and merge scientific and technological research capacity into universities. The **Kyrgyz Republic** is not the only

country to see that merging the Academy with universities will improve university infrastructure. The **Tajikistan** Report comments that " Unfortunately at the present, the economy of the Republic undergoes difficult times; the industry virtually stands idle and therefore the scientific relations between tertiary institutions and industry, except for the aluminum plant have been lost". The demand for R & D is changing and policy makers expect external funds, linked to foreign direct investment (FDI), to grow. Today Uzbekistan's universities receive funds in Euros and dollars for around $5m while a number of Kazakhstan's universities receive off budget funds that include international clients.

The last ten years have shown that research can continue to play a role when it is able to respond to markets as part of education and local business needs. This modest view of research and development is at odds with those who see science and technology as a valuable platform for innovation and future economic growth. However commercial innovation does not depend on is science and technology alone – however good – but on a range of supporting and interacting activities which together (and with difficulty) builds the innovation system. A recent examination of commercial innovation in transition economies concludes that policy will only be effective if it is adequately supported in four dimensions. These multidimensional prerequisites are economic incentives, higher education, effective innovation and information infrastructure. The combined index of the four dimensions (KEI score) allow the classification of countries into three groups. The four CARs are placed in Group I, (table **4.10**), with the recommendation these countries should not consider extensive public commercial innovation programs[67]. The indices show that the CARs are well above the world average with the educational dimension but well below in the other three dimensions. However it must be acknowledged that the indicators are not sophisticated enough to be a foundation for policy (see table **4.11**).

Research and development is a multi-dimensional activity of which education is a component and that on its own is unlikely to create a dynamic toward applied science technology and products.

[67] "Countries with a KEI score below 4 should likely, for the time being, concentrate on reforming other areas of their NIS, and only after significant advances have been made in that sphere should they consider public support programs to foster commercial innovation", Goldberg I. et al, Public Financial Support for Commercial Innovation, Regional Working Paper Series, January 2006, p. 48.

c. Competitiveness and the longer term

The challenge that faces the three relatively poor CAR landlocked economies – the Kyrgyz Republic, Tajikistan and Uzbekistan – is to increase their competitiveness by some specialization, service or set of products. In contrast, of course, oil and hydrocarbons will drive Kazakhstan economy well into the middle of the present century. Competitiveness will require relatively open economic policies, stronger trade and service links, a renewed commitment to regionalism and most important of all a substantial improvement in the human capital and its organization. Human capital improvements are synonymous with education, while a new educational order is likely to be based on meritocracy. One test of human capital is its ability to compete internationally and its contribution to international trade and long term growth.

(i) Current growth & outlook

The four CARs showed a marked contrast between their first decade 1990-2000, and the first half of the second, 2000-05 with growth being positive and likely to continue at different rates to 2008. The ADB sees the continuation of regional growth because of the oil sector (Azerbaijan and Kazakhstan) together with an increase in external remittances which made up around 14 per cent and 12.5 percent of Tajikistan's and the Kyrgyz Republic's GDP respectively[68]. The recent Asian Development Outlook Update believes, against the skepticism of other economists, that oil growth

> "..continues to have spillover effects into other parts of the economy by spurring expansion in activities of enterprises servicing the oil sector and by financing stepped up government expenditures – both current and development"[69]

The fortunes of the non oil exporting economies continue to depend on gold (the Kyrgyz Republic and Uzbekistan), aluminum (Tajikistan) and cotton (Uzbekistan, the Kyrgyz Republic). Their economies depend on world economic conditions and prices – at least the Kyrgyz and Tajikistan have been effected by higher fuel and transport prices. Again according to the ADB, these two economies to impart,

> "resilience to growth will depend on diversification away from their traditional heavy dependence on gold and aluminum exports respectively; on continued inflows of remittances; and on attracting FDI'[70]

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[68] See Fig.2.2, Migration and Remittances: Eastern Europe and the Former Soviet Union , World Bank, (2006) p.59.
[69] ADB Development Output Update, 2006 p. 24
[70] As above, p, 26.

There have been a number of economic explanations which attempt to account for the resumption of growth after 1996/1998 (see t. 1.10 above). They are,

- the process of catch up that follows severe readjustments as current existing capacity is increasingly put into use;
- increasing productivity which result from the reallocation of resources among agriculture, industry and service sectors to improve efficiency [71].
- the emergence of exports and investment as the principal drivers of growth, replacing domestic consumption which supported first phase growth [72] .
- the increasing impact of the market reform process which in those economies where it has when intensively applied, has diffused across economic sectors and positively influenced future growth. A recent analysis distinguishes initial and second phase reforms noting that "..there is a strong positive link between the advance of transition in one year and growth in subsequent years" .[73] Most studies use the European Bank for Reconstruction and Development (EBRD) transition index (see above) consisting of eight or fourteen dimensions.

While it is likely that all played some part, only Kazakhstan shows any increase in output per employed person between 1995 and 2005 (own calculations) while the other three CARs actually saw output decline. Again, although there has been some improvement in capital output ratios and the residual (TFP), this does not appear to have been sustained. Total factor productivity (TFP) – often taken as an indicator of efficiency – appears to have improved since 1998, but any increase in manufacturing is limited to raw materials and simple processing[74].

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[71] See Raiser M., Schaffer M & Schuchhardt J, "Benchmarking Structural Change in Transition", EBRD Working Paper, 79, (February 2003)

[72] Loukoianova E. & Unigovskaya A. "Analysis of recent growth in Low Income CIS countries". IMF Working Paper, (WP/04/151), August 2004.

[73] Falcetti E., Lysenko T. & Sanfrey P., " Reform and Growth in Transition: re-examining the evidence", EBRD Working Paper, 90, (March 2005).

[74] Loukoianova E. & Unigovskaya A., "Analysis of Growth in Low Income CIS Countries", IMF Working Paper, August 2004. "Industrial growth in the CIS-7 countries still depends on the production of raw materials and the manufacturing of goods with a low degree of processing such as...nonferrous metallurgy in the Kyrgyz Republic, aluminum and cotton in Tajikistan, and gold and cotton in Uzbekistan. New investment is mainly directed into industries associated with production and manufacturing of raw materials and goods with a low degree of processing mainly for exports", p.18.

These ten years were an intense period through which the economies went through considerable readjustments and these structural changes are likely to have had a considerable impact on a general indicator such as labor output per employed person. Dynamic growth is more likely to be found in the external sector.

(ii) International trade

The four countries show diverse export to GDP ratios (1995,2000, and 2005) [4.12] and from 1994 and with the exception of Tajikistan relatively stable total value of trade to GDP ratios (4.15). However it is clear that the four countries have retained their Soviet product export pattern. As T.4.16 shows it is only in the case of Tajikistan that there has been a fall in value of the two leading exports plus manufacturing as a percentage of total exports. Equally important for any diversification strategy is the value of manufacturing exports which have declined as a proportion of total exports in all countries with the exception of Uzbekistan. While partly a statistical illusion, (Kazakhstan's exports have doubled at time when its proportion was halved) expansion has been disappointing for any strategy of diversification.

The case for improved regional trade integration is repeated by almost all economic observers. As small economies "...they need to promote trade and closely integrate into the international trading system to achieve sustainable economic development"[75]. The same report describes recent trade performance '..as characterized by (i) rapid expansion of trade, (ii) the continuing dominance of a few primary commodities in exports and (iii) concentration of trade in a small number of countries" [76]. Further as landlocked states, the governments must pay special attention to internal transport and cross border facilities. These circumstances also impose additional costs and legal requirements.

A regional rather than national policy will bring considerable rewards and change the long term dynamics of the skill market in all four CARs. However a recent World Bank examination of the factor intensity of CIS exports describes them as almost "frozen in time" and "..not active participants in the evolving modern international division of labor". They continue that the.

[75] ADB, Central Asia: Increasing Gains from Trade through Regional Co-operation in Trade Policy, Transport and Customs Transit, Manila, (2006).
[76] As above, Chapter 2, p. 11 to 24.

> "The existing composition and factor intensity of exports put the future capital growth prospects of the CIS at risk. Skilled-labor-intensive and capital intensive industries tend to pay higher wages and growth of exports in these sectors can lead to expanded production, an increase in economic growth. On the other hand an excessive reliance on exports of natural resource based products that involve little processing – such as in the case of many CIS countries – will not have the same effect on wages[77]"

One does not have to accept these arguments entirely to see that any move from unskilled to skilled products must involve a more active and effective higher education policy. Further, the same report call attention to product networks which require, apart from a strong FDI platform, both a communications infrastructure and informatics skills. The recent examination of obstacles to business shows that it is the general conditions of doing business that require improvement. Skilled manpower is not an issue (see T. 4.)

(iii) Long term competitiveness

The two most common arguments to promote non-commodity growth are, first the importance of product diversification and second, renewed support for small and medium sized companies to create employment and diffuse modern skills. These economic development policies can only be long term and must face the uncomfortable possibility that

> "the patterns of industrialization may change systematically depending on the date of take-off and the distance to the technological leader of the world. ...Thus as industrialization is no longer available as a major outlet for surplus rural labor, the focus of policies might shift toward creating the conditions in services[78]"

In their discussion of Central Asia to 2015, Malcolm Dowling and Ganeshan Wignaraja produce three scenarios, Business as Usual, (*BAU*), Closing the Gap (*CG*) and *Falling Behind* (FB). The difference between them is based on reform, the competitiveness of the industrial sector and regional co-operation. The first, *BAU*, sees "a moderate policy reform agenda, relative lack of competitiveness strategy for the industrial sector and intermittent regional cooperation'; in CG, there is a strong commitment to "implement further policy reforms, develop a market friendly competitiveness strategy and pursue the aggressive implementation of regional co-operation initiatives" ; and FB assumes a "moderate level of internal political instability

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[77] World Bank, From Disintegration to Reintegration. Eastern Europe and the Former Soviet Union in International Trade, (2006) p.86-87.

[78] Raiser M. Schaffer M and Schuchhardt J, "Benchmarking structural change in transition", EBRD Working Paper, 79, (February 2003) p.36

some backsliding of the policy reform agenda, a more inward-orientation of policies toward industry and limited regional co-operation[79]". Their results are to be found in T.4.18, for GDP growth, GDP per capita, poverty incidence and manufacturing exports per capita. Taking this later indicator, both Tajikistan and Uzbekistan, might be able to quadruple their per capita manufacturing exports by 2015, to levels similar to Kazakhstan today. The same article sets out the results of a Transition Economies Manufacturing Export Competitiveness Index (TEMECI) for 2003 where Kazakhstan is ranked at 13 out of 23 with a score of .45; Uzbekistan ranked 18 (.23); Tajikistan at 20 (.18) and the Kyrgyz Republic at the 21st position with an average TEMUCI index of .18 also. To get from here to there is the problem and the authors' analysis of the here and now is trenchant.

> " a nascent private manufacturing sector with little exposure to international markets or technology best practices; underdeveloped banking and financial systems; lack of modern technology and export marketing support institutions; inefficient regional energy market; high transport and transport costs due to landlocked geographical conditions and fragmented transport systems; lack of appropriate legal and regulatory system for a market economy; and variable levels of administrative capacity to design and implement market orientated economic policies[80]".

Surprisingly there is no direct mention of education and training and yet behind each of these problems is the call for greater skills, knowledge and its applications.

d. Education and Development

The challenge to education in the Central Asian Republics is to support each of the four nations' competitiveness at a time of expanding world trade and globalization. Further if there is one economic 'fact' about the CARs it is they are trading nations by vocation because of their location, a strategic position that is being enhanced because of their location to China (PRC). However a trading nation, strategically situated, must offer more than frontier markets and itinerant traders but reliable and sophisticated physical and service facilities. These service facilities, to borrow a concept, are examples of "soft" trading power when compared to vehicles, road systems and airlines which are examples of 'hard' service power. Soft service power depends crucially on advanced education and therefore on effective HEIs.

While each country will find its own educational path, there are some common patterns, which emerge from the four studies. First, higher education is conceived as

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[79] Central Asia: Mapping Future Prospects to 2015, *ERD Working Paper,* no.80, April 2006, p.2-3.
[80].See above, p.10.

centered on universities and not other types of tertiary education institution. For example, the labor-skill problem for the emerging manufacturing sector may not be solved by university graduates but those from technical institutes with special and advanced diplomas. Recall that two relatively successful economies – Canada and Japan – have expanded their tertiary education enrolment rates principally through technical and other institutions. These tend to be more flexible and less expensive than four or five year university courses.

The second area where each nation will have to set its own priorities is research. It seems unlikely that without substantial cash injections from government or business, research facilities will stabilize and grow. Sustaining a broad research infrastructure is costly; however good universities, in the modern model, without research are a contraction in terms. While there are successful sub systems that have minimum research (like the two year regional/local colleges in the USA), they are part of hierarchy where the leading universities are defined by excellence of which research is an important component. Further, research plays a balancing element to regarding higher education as a money making activity and provides a greater sense of mission than national politicians can offer. The private foundation based university or non profit private university is one way forward assuming different obligations agreed to by both parties – the national government and the private university. Moreover these obligations would be quite different from those currently in existence which are rules and regulations about the use of resources, buildings, staff and teaching.

To encourage this long term social agreement – between the state and the private sector - the government's principal responsibility is to create a friendly environment for non profits in order to encourage their active educational presence in the higher education system. Examples of such an environment are a friendly tax code for philanthropists; laws which protect private teaching and research and knowledge activities; loan systems for students and particularly important, at all levels of education system, greater use and applications of information technology from the humblest class room task to sophisticated modeling. The second responsibility, to be shared with the nascent private sector or public enterprise company is that of innovation, from new methods of teaching and learning to advanced research on markets and products. This requires more investment from the government and other national or international resources. Everyone knows that the four CAR countries can produce solid and talented graduates with many valuable skills. Will one of those skills be innovation and initiative? And will there be facilities (credit, offices, telephones, advice) to assist the potential

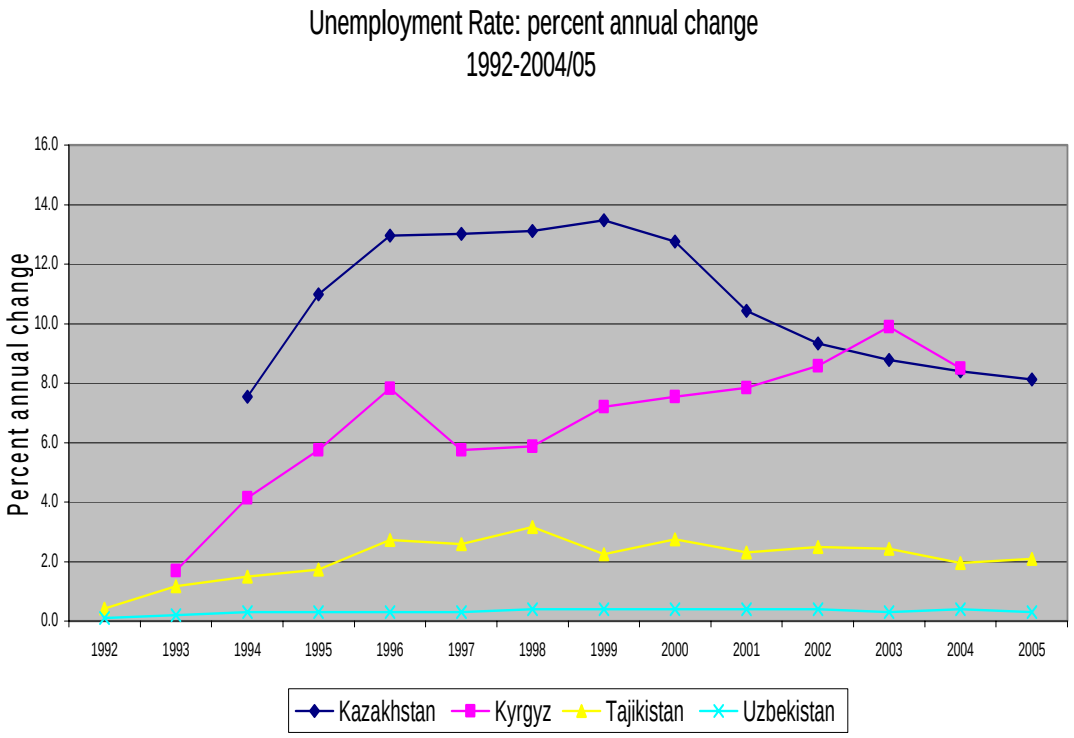
entrepreneur. These activities may be just – possibly more - valuable as conventional course development and teaching.

The reports demonstrate a valuable and legitimate fear that the emerging university system is exacerbating inequality, as increasingly only the better trained, better schooled student can pass the university entrance examination and has the study skills will keep him or her intellectually solvent. First, while there appears to be little doubt that there has been increasing inequality of opportunities in some CARs, neither the root cause nor its solution lies within the tertiary sector. Poor rural schools are the responsibility of the whole education sector not one component and, of course, it should be added that universities can make a useful contribution to their efficiency in terms of modern communication technology, Second, as noted, there are strong arguments for promoting a broad post secondary education system which is not solely based on the university and Ministry defined courses and regulations. Third, it is unlikely that universities can achieve excellence without political tolerance and liberty.

The future welfare of the CARs will be closely linked to higher education in its broadest sense, either for jobs, knowledge or competitiveness. For these reasons it is important to continue and deepen the research found in these pioneering reports, not least to ensure that these costly decisions are fully debated, and the inevitable trade offs made transparent.

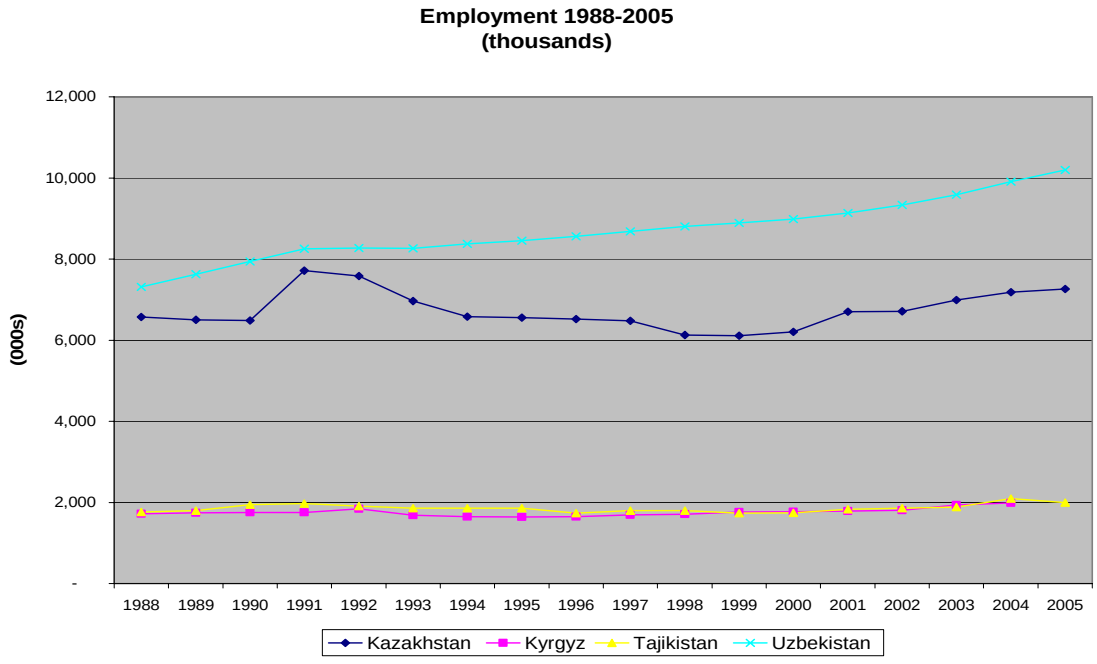
Support tables 4

4.1 Unemployment rates 1992-2003/05



Source: Asian Development Bank

4.2. Employment 1988-2005 (thousands)



4.3 Sectoral shifts (Value added), 1990,2000,2005

Shares of Major Sectors in GDP (percent)				Change 1990/2005	Change 1990/2000	Change 2000/2005
	1990	2000	2005			
Kazakhstan						
Agriculture	34.0	8.1	6.5	-27.5	-25.9	-1.6
Industry, of which:	32.6	37.8	37.6	5.1	5.2	-0.1
Manufacturing	20.5	32.6	30.2	9.7	12.1	-2.4
Services	33.4	54.1	55.9	22.5	20.7	1.8
Kyrgyz Republic						
Agriculture	33.6	36.7	34.1	0.6	3.2	-2.6
Industry, of which:	35.0	31.4	20.9	-14.1	-3.6	-10.5
Manufacturing	27.1	19.5	14.1	-13.0	-7.6	-5.4
Services	31.4	31.9	45.0	13.6	0.4	13.1
Tajikistan						
Agriculture	32.9	27.4	24.2	-8.6	-5.5	-3.2
Industry, of which:	37.0	38.5	25.9	-11.0	1.5	-12.6
Manufacturing	24.7	36.2	26.6	1.9	11.5	-9.6
Services	30.1	34.1	49.8	19.7	3.9	15.7
Uzbekistan						
Agriculture	32.9	34.4	28.1	-4.8	1.5	-6.3
Industry, of which:	33.2	23.1	28.7	-4.5	-10.1	5.6
Manufacturing	22.8	14.2	20.7	-2.1	-8.6	6.5
Services	33.5	42.5	43.2	9.7	9.0	0.7

Source: Asia Development Bank, Key Indicators, T.12.

4.4 GDP Employment by sectors: percentage change

		(Percent)		Change 1990/2005	Change 1990/2000	Change 2000/2005
	1990	2000	2005			
Kazakhstan						
Agriculture	18.8	31.4	32.2	13.3	12.6	0.7
Industry	21.0	13.9	12.3	-8.7	-7.1	-1.6
Others	60.2	54.7	55.5	-4.6	-5.5	0.9
Kyrgyz*			2004			
Agriculture	32.7	53.1	38.9	6.2	20.3	-14.1
Manufacturing	27.9	10.5	17.6	-10.3	-17.4	7.1
Others	39.4	36.5	43.5	4.1	-2.9	7.0
Tajikistan			2005			
Agriculture	46.4	64.9	69.8	23.3	18.5	4.8
Industry	13.6	9.0	8.8	-4.8	-4.6	-0.2
Others	40.0	26.0	21.5	-18.5	-13.9	-4.5
Uzbekistan			2005			
Agriculture	39.3	34.4	29.1	-10.2	-4.9	-5.3
Industry	15.1	12.7	13.2	-1.9	-2.4	0.5
Others	45.6	52.8	57.7	12.1	7.2	4.8

Source: ADB

4.5 Per capita Gini co-efficients

	1987/90	1993	1994	1996	1997	1998	1999	2000	2001	2002	2003
Kazakhstan											
Official	0.297		0.33								
Consumption	0.257	0.327		0.353					0.346	0.33	0.318
Kyrgyz Rep											
Official	0.308	0.353			0.47	0.411	0.399	0.41	0.377	0.382	0.342
Consumption	0.260	0.537		0.523	0.405	0.360	0.346	0.299	0.290	0.292	0.276
Tajikistan											
Official	0.334						0.470				
Consumption							0.289				0.327
Uzbekistan											
Official	0.351		0.330								
Consumption	0.250	0.333				0.453			0.355	0.326	0.354

Source: Mitra & Yemtsov see footnote 56.

4.6 Poverty rates

Source	WBDI		ADB -		WB - Household Surveys									
Poverty indices	GNI per capita/PPP		1990	2003	1999		2000		2001		2002		2003	
P.D rate (US)	1990	2003	$2	$2	$2.15	$4.30	$2.15	$4.30	$2.15	$4.30	$2.15	$4.30	$2.15	$4.30
Kazakhstan	6,380	6,170	11.7	3.7					31	71	26	73	21	66
Kyrgyz Republic	3,690	1,660	0	22			78	97	74	97	73	97	70	96
Tajikistan		1,040	3.3	34.4	91	100							74	96
Uzbekistan	2,520	1,720	10.6	63.1			54	89			42	86	47	86
Russian Federation	10,100	8,920			21	59	17	54	11	47	9	41		

Source: Asian Development Bank, World Bank, Growth Poverty and Inequality, (2005)

4.7 Poverty and education

Poverty Rate by Education						Structure of Poverty by Education				
Poverty indices	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Percent receiving US$2.15 per day or less						Percent receiving US$2.15 per day or less				
Kazakhstan										
None/Unfinished primary			25	23	19			7	8	7
Primary/basic			32	27	22			15	17	16
Secondary/Gen			36	31	26			43	43	45
Secondary/Special			24	19	14			29	27	26
Tertiary			13	9	7			7	5	5
Kyrgyz Republic										
None/Unfinished primary		80	67	66	92		2	1	2	1
Primary/basic		75	71	72	65		13	14	15	16
Secondary/Gen		80	75	74	74		54	52	56	56
Secondary/Special		69	67	62	57		22	24	18	18
Tertiary		56	49	48	41		9	9	10	9
Tajikistan	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
None/Unfinished primary	91				75	13				7
Primary/basic	91				76	18				20
Secondary/Gen	91				75	46				58
Secondary/Special	88				63	17				9
Tertiary	79				50	6				6
Uzbekistan										
None/Unfinished primary		57		46	48		5		4	3
Primary/basic		51		40	44		16		16	15
Secondary/Gen		58		45	52		57		56	59
Secondary/Special		43		33	37		16		19	18
Tertiary		30		20	24		5		5	5
Russian Federation										
None/Unfinished primary										
Primary/basic	17	14		7		6	6		5	
Secondary/Gen	19	15		8		38	40		46	
Secondary/Special	15	12		6		40	40		38	
Tertiary	10	7		3		16	14		12	

Source: W.B. Growth, Poverty & Inequality , Various appendices

4.8 HEI graduates as percent of enrolment and annual employment differences

	1998/99	1999/2000	2000/2001	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006
Kazakhstan								
Grads (000s)			64.6	73.8	87.1	102.7	123.9	154.2
Enrolment %			14.7	14.3	14.6	15.6	16.6	19.9
Emp. diff %			13.0	738.0	31.6	52.1	156.8	
Kyrgyz								
Grads(000s)			15.1	17.9	22.5	26.3		
Enrolment %			9.5	9.5	10.9	13.2		
Emp diff %			77.3	91.8	18.2	43.8		
Tajikistan								
Grads (000s)	11.8	12.1	13.6	12.0	11.6	13.4	14.4	
Enrolment %	15.6	15.3	17.5	14.3	12.0	12.5	12.2	
Emp diff %	-20.0	151.3	16.2	42.9	41.4	6.6	-15.8	
Uzbekistan								
Grads (000s)	35.65	35.5	33.8	36.9	46.3	51.5	59.6	61.5
Enrolment %	22.5	21.0	18.4	17.7	20.2	20.4	22.6	21.6
Emp diff %	41.9	36.2	22.1	18.7	18.1	16.0	20.9	

Source: Reports, ADB

4.9 Technology and communication indicators

Year	Index Per		KAZAKHSTAN	KYRGYZ	TAJIKISTAN	UZBEKISTAN	Russia
2003	Mn	Researchers in R & D	744	413	660	1,754	
2003	1000	Telephone mainlines	141	76	37	67	253
	1000	Cellular subscribers	64	27	7	13	249
2003	1000	Internet Users	38	15.7	1	19	40.9
2000	1000	Newspapers		15	20	3	105
2003	1000	Radios		110	141	456	418
2003	1000	TV sets	338	49	357	280	538
2003	1000	Cable subscribers	6.6	3.6	0.1	3.7	76.7

Source: UNDP, Central Asia Human Development Report (p.154 f)

4.10 Knowledge Economy Indicators

	KEI	Economic Incentives	Innovation	Education	Information Infrastructure
Tajikistan	2.18	1.71	1.22	5.36	.43
Uzbekistan	3.26	1.40	3.77	5.64	2.23
Kyrgyz R	3.53	3.09	1.79	6.53	2.70
Kazakhstan	3.92	1.47	4.07	7.11	3.05
World	5.63	4.80	7.15	4.26	6.33
Russia	6.05	3.01	7.47	7.85	5.88

Source: Goldberg I. et al, Public Financial Support for Commercial Innovation, Europe and Central Asia, Chief Economist's Regional Working Paper Series Vol.1, no 1, January 2006.

4.11 Knowledge Economy Index

Pillar	Components
Economic Incentive and Institutional Regime	Tariff and non tariff barriers Regulatory quality Rule of Law
Education and human resources	Adult literacy rate [15 and above] Secondary enrollment Tertiary enrollment
Innovation system	Researchers, R&D, per million population Patent applications granted by the USPTO per million population Scientific and technical journal articles per million population
Information infrastructure	Telephone per 1000 persons [mainline and mobile] Computers per 1000 persons Internet users per 1,000 persons

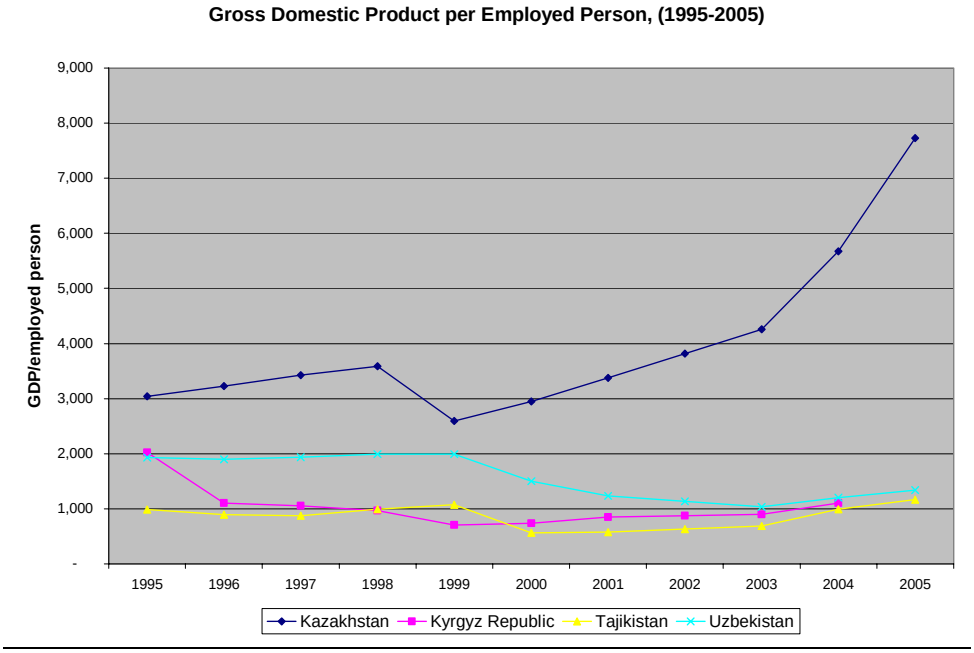
Source; as above, p. 58.

4.12 GDP Growth Rates, 1990-2000, 2000 – 2005 and 2006/2007

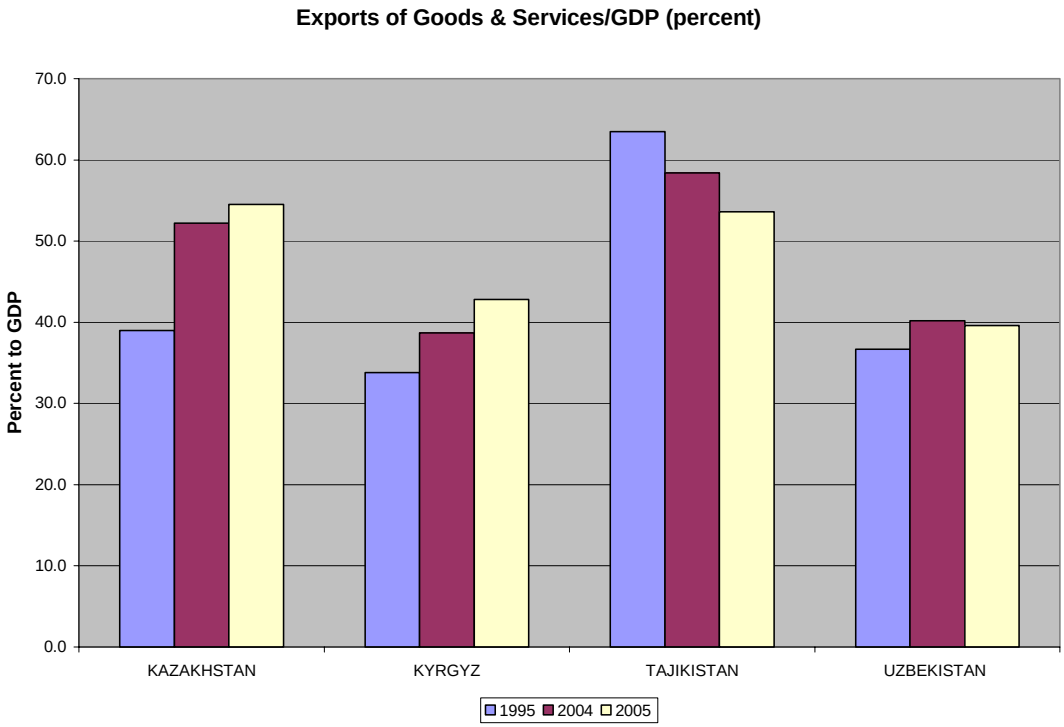
	1990-2000	2000-2005	2006*	2007*
Kazakhstan	-4.6	10.1	9.0**	9.0**
Kyrgyz Republic	-4.1	4.0	5.0	5.5
Tajikistan	-1.7	9.7	8.0	6.0
Uzbekistan	-0.5	5.3	6.2	6.0

Source: World Bank,
*Asian Development Bank, Asian Development Outlook, 2006 & Update which revised upward by .5 per cent Kazakhstan's expected growth (**).

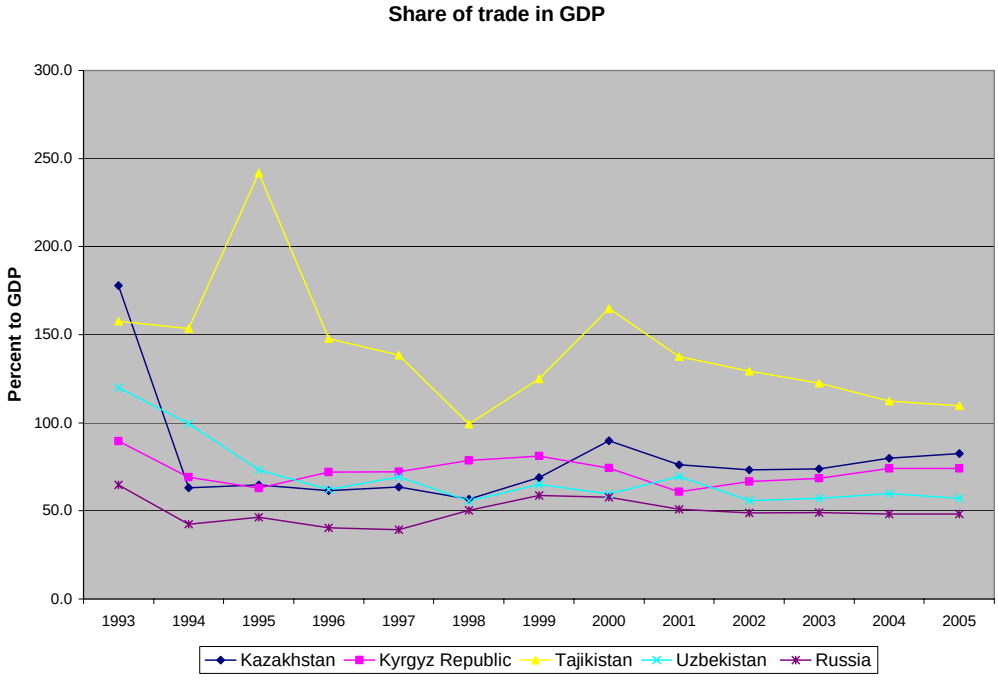
4.13. GDP (US$) per employed person



4.14 Exports to GDP (%)



4.15 Value of Trade to GDP



4.16 Structure of Exports and Imports

Exports	**KAZAKHSTAN**			**KYRGYZ**			**TAJIKISTAN**			**UZB**
	1995	2004	2005	1994	2003	2004	1995	2004	2005	1995
Exports of Goods & Services	5,975	22,602	30,552	373	745	942	782	1,211	1,248	3731
Total Exports (US $m)	5,440	20,603	28,307	340	590	733	779	1,108	1,231	3475
Of which Fuel & Oil	1,306	12,902	19,525							
Ferrous Metals	1,062	2,187	2,325							
Gold				-	260	287				611
Aluminum							395	484	525	
Cotton fiber							212	202	205	1584
Manufactures	1,255	1,963	2,644	116	124	208	15	75	83	200
Electricity				63	19	19				
Subtotal (3)	3,623	17,052	24,494	179	403	514	622	761	813	2395
Percent of exports	66.6	82.8	86.5	52.6	68.3	70.1	79.8	68.7	66.0	68.9
Manuf. Percent Exp	23.1	9.5	9.3	34.1	21.0	28.4	1.9	6.8	6.7	5.8
Exports Goods & Service/GDP%	39.0	52.2	54.5	33.8	38.7	42.8	63.5	58.4	53.6	36.7
IMPORTS										
	1995	2004	2005	1994	2003	2004	1995	2004	2005	1995
Imports (Goods & Services)	6,102	18,844	25,445	498	875	1,135	840	1,451	1,683	3745
Total Imports (US $m)	5,326	13,818	17,979	462	717	941	838	1,307	1,461	2748
Of which Food	309	666	910	52	78	112	56	106	118	526
Fuel & Energy	938	1,693	2,062	184	180	256	317	207	231	54
Capital goods	1,094	5,481	7,609	24	128	163	87	107	120	1386
Subtotal (3)	2,341	7,840	10,581	260	386	531	460	420	469	1966
Percent of imports	38.4	41.6	41.6	52.2	44.1	46.8	54.8	28.9	27.9	52

Source: WB – Economies at a Glance

4.17 Obstacles to Business Operation and Growth: Skills of available workers

[More/less important]

		More		Less	
		Subtotal	Rank	Subtotal	Rank
A	CEE, EU Member countries	8	1	10	
B	EU Accession countries	9		9	2
C	Southeastern Europe	7		11	11
D	Middle income CIS	9	5	9	
E	Low income CIS	11		7	3

Source: Enhancing Job Opportunities; Eastern Europe and the Former Soviet Union, Washington, (2005), pages 31-33

4.18 Projections to 2015

	Kazakhstan	Kyrgyz Republic	Tajikistan	Uzbekistan	All CARs*
Real GDP Annual Growth, (2005-2015) (%)					
Historic (1997-2004)	6.8	5.1	7.4	4.7	
1. Business as Usual	7.1	5.6	6.0	5.2	
2. Closing the Gap	7.5	6.7	7.1	6.3	
3. Falling Behind	6.2	4.3	4.7	4.0	
Manufacturing exports per head (US$)					
2003	142.1	38.2	39.7	30.7	**50.7**
1. Business as Usual	266.4	59.4	84.2	89.6	**126.2**
2. Closing the Gap	295.3	72.4	136.4	154.2	**165.6**
3. Falling Behind	201	45.4	65.5	55.9	**89.5**
GDP per capita (average annual, US$)					
Current (2004)	2,724	432	323	461	889
1. Business as Usual	4,807	739	552	733	1,871
2. Closing the Gap	4,918	829	620	822	1,939
3. Falling Behind	4,387	644	482	645	1,667
Poverty Incidence - Population below National Poverty Lines (%)					
(2000-2003)	27.9	47.6	56.6	27.5	39.9
1. Business as Usual	18.0	30.1	33.2	17.8	25.1
2. Closing the Gap	17.6	20.7	23.7	12.3	20.9
3. Falling Behind	18.8	37.2	43.3	31.8	29.3

Note: CARs – the four countries noted and Azerbaijan and Turkmenistan.Source: Dowling, M. & Wignaraja G., Central Asia: Mapping Future Prospects to 2015, ERD Working Paper, 80, Asian Development Bank, April 2006.