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"INVESTMENT IN CHILDREN AND THE YOUTH IN POST-SOVIET OIL ECONOMIES: THE CASE OF KAZAKHSTAN"

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Abstract

Kazakhstan's economy has been driven by an oil boom in the recovery period of transition, with a good performance in terms of growth in the early 2000s. Child and youth wellbeing within the country, negatively affected by the radical changes recorded since the onset of transition, has been not improving at the same path. Public resources allocated to human capital development, as education and health sectors, suffered a big decline during the years of transition and at present have remained low. The aim of this work is to show the benefits of increasing education public expenditure, avoiding risks of "resource curse" and saving the objective of intergenerational allocation of oil revenues in the case of the Republic of Kazakhstan. We argue that such investment in human capital is likely to yield higher economic returns, improving therefore the welfare of the current and future generations. We also held that, within the whole expenditure on education, Kazakhstan should increase the share allocated to pre-primary programmes, prioritize vocational/technical programmes and improve the whole efficiency in spending.

I. INTRODUCTION

Since 2000 Kazakhstan' economy has been growing rapidly, led by oil-boom revenues. The oil boom came in the recovery period of the transition when the institutional weakness within the country remained a reason of concern. The political influence of the new elites and rent seeking behaviour, indeed, reduced the ability of the state to promote institutional building and hampered the development of a comprehensive protection system and more egalitarian society (Section II). In spite of large flow of revenues from oil, government expenditure on GDP stagnated at low levels and did not visibly increase in the period of economic recovery. Relating to allocation of expenditures, the shares of education and healthcare on total have been decreasing for the last 15 years. As a consequence of this limited policy priority given to social spending, Kazakhstan has experience a considerable disintegration in living standards and a huge increase in income inequality. Indicators of children and the youth wellbeing declined sharply. Economic commitment for human capital development and wellbeing of young people in Kazakhstan is hampered by political economy features in budget allocation decisions making and by the constrains imposed by the budget execution at different level of administration.

The purpose of this study is to show the benefits of transferring a share of oil revenues, so far assigned to the National Fund of Republic of Kazakhstan, towards social expenditure. Resources spent in the public education and health, those activities which have high rates of returns in terms of human capital, have better effects on the welfare of future generations than those due to monetary gains generates from Oil Fund financial assets. We investigate also macroeconomic problems (features of the so called "curse of natural resources") which can be lengthened with an expansion of public expenditures. Regarding policy priority given to different educational sectors, the Kazakh government invest the most in the relatively few students who continue their education after secondary level, because of elitist public education policies and because of higher skilled labour demand in oil producing sector. We argue that distribution within education budget is biased in favour of richest income groups and bigger priority to pre-school education and vocational/technical programmes is suitable.

In Section III we analyse the management of oil revenues and the evolutionary patterns of education public expenditure. In spite of lack of detailed data on expenditure by functions and sectors, we give some considerations about inefficiency of education budget allocation and spending process. Section IV reports theoretical and empirical support on return to schooling and the distribution effects of education budget composition. We conclude with Section V, arguing that the investment of oil revenues in children and youth human capital is an efficiency-equity case.

II. KAZAKHSTAN'S ECONOMIC RECOVERY: WINDFALLS OF OIL REVENUES AND THE NEGLECT OF INVESTMENT IN CHILD AND YOUTH WELLBEING.

(i) Kazakhstan's transition to a market economy: the opacity of institutional environment and trends in living standards.

Kazakhstan is the largest of the former Soviet Republics, and one of the five Republics of Central Asia. During the Soviet economy, the role of Central Asia Republics was primarily as a supplier of raw materials to the more industrialized area of Soviet Union. In that period the social sectors were expanded in the area, leading to universal literacy and increased life expectancy. After independence, all the post-soviet Republics experience a huge economic shock and the recovery was lower and smaller than that experienced in Central and Eastern Europe. In terms of initial conditions, at the independence, Kazakhstan appeared the best placed among Central Asia Countries (higher per capita income and higher education and

human capital indicators); additionally the resource endowment (oil and gas reserves, rich unmined veins of copper, chrome and aluminium, substantial gold deposits) held great potential once concluded the under-price regime in the USSR.

Table 1 Central Asia Republics of Former Soviet Union in 1989-1990

	Population, total (millions) -1990	GNI per capita, Atlas method (US$)-1990	GINI index-1989	Poverty headcount ratio at national poverty line (% of population)-1989
Kazakhstan	16.3	2600	0.289	15.5
Kyrgyz Republic	4.4	1570	0.287	32.9
Turkmenistan	3.6	1690	0.307	35.0
Tajikistan	5.3	1130	0.308	51.2
Uzbekistan	20.5	1340	0.304	43.6
Armenia	3.5	2380	0.259	14.3
Azerbaijan	7.1	1640	0.328	33.6

Source: WDI 2006 and Pomfret (2003) for GINI Index and Poverty

Kazakhstan's transition could be likened to the "Russian inconsistent shock therapy" (Cornia and Popov, 2001). The economic policy in 1992-1994 was driven by attempts to maintain economic ties to Russia following the Russian road to market economy: radical reforms with price liberalization and early privatization. Its bad performances in the first decade of transition can be analyzed from the following three perspectives: ethnic composition, the presence of plentiful oil reserves and institutional setup. According to Pomfret (2003) the majority of Russian ethnic group and the presence of oil sector were two factors hampering a smooth transition. The Russian population, better educated compared to Kazakhs, fearing "Kazakhisation", had chosen to emigrate[1], leading in this way to a part of the brain drain in the early transition. This phenomenon contributed to erode the country's human capital basis. Moreover, at the beginning of 1990s, the country experienced a precarious ethnic balance between Kazakhs and Russians that made institutional developments rather complex. In spite of their abundance, at the beginning of transition the exploitation of oil reserves was heavily conditioned by the dependence on Russian pipelines for the transport of oil to the Western markets. In addition oil reserves contributed to spreading a rent seeking behaviour. The third factor that has hampered the transition is the opacity of the institutional environment. This remains a source of concern in Kazakhstan. The privatization process was characterized by lack of transparency and corruption[2]. Furthermore, the impact of resource abundance on institution, because of rent seeking behaviour, is usually very bad, in particular in a period with relatively political instability as transition. Institutional factors, in transition literature, have received limited attention. Cornia and Popov (2001) focused on institutional developments[3] to explain lags in output performances during the course of transition, they argue that "illiberal democracies" in transition experienced large increases in assets and income inequality that strengthen the new élites and reduce the ability of the state to promote institutional reforms. A similar argument to explain differences in output performances is offered by Svejnar (2002). From this perspective, Kazakhstan and most other CIS countries performed much worse than Central and Eastern European Countries. According to these authors, one of the measure of institutional capacity is the ratio of ordinary government expenditure to GDP, that declined

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[1] In the early post-independence years, most of the Germans (a large ethnic group at the beginning of transition) emigrated, taking advantage of the opportunity of obtaining German citizenship. Many smaller ethnic groups, including Uzbeks, Uigurs, and Kyrgyz also left Kazakhstan at the beginning of transition.

[2] For a detailed description of Kazakh privatization process see Pomfret 2005, pp. 863-867.

[3] According to the authors, institutional developments include between others: establish of competitive market, introduction of adequate incentives, maintenance on an incentive-compatible distribution of income, preservation of an adequate capability of the state (Cornia, Popov; 2001).

sharply in former Soviet Union; government expenditure to GDP in Kazakhstan collapsed eroding early post-independence wide social sector and high level of life expectancy. Alam and Banerji (n.d.) have compared social sectors investments in Kazakhstan with which of Uzbekistan, they note that, while the former has neglected the social sector, the latter has strengthened it. For instance, in 1998 Kazakhstan invested 3.4% and 2.6% percent of GDP on education and health, while Uzbekistan invested 7.2% and 3.3% of GDP respectively.

Since 2000 Kazakhstan's economy has been growing rapidly, led by exports stimulated by currency depreciation and, especially, by oil-boom revenues (Pomfret, 2005). In 2000 the huge Caspian field of Kashagan was discovered and oil prices started rising. Since 2001 also the structural situation of pipelines improved[4] leading to reduction in oil and gas transportation costs. Real GDP in Kazakhstan achieved double-digit growth in the early 2000s.

Tabella 2 Oil and Gas Production and Exports, 1998-2002

	1998	1999	2000	2001	2002	2003	2004
Oil production (million metric tons)	25.6	29.4	35.4	39.2	47.3	52.3	59.4
Crude oil and oil products export revenues to total export revenues (in percent)	..	..	48.8	51.4	51.5	54.9	57.5
Oil exports (in % of GDP)	7.5	12.8	24.1	20.2	20.9	..	..
Government oil revenues (in percent of GDP)	..	5.5	3.3	6.6	4.4	6.0	7.4
World Oil Price ($/bbl)	13.1	18.0	28.2	24.3	24.9	..	..
Natural gas production (bcm)	7.9	9.9	11.5	11.6	13.1	..	..

Source: IMF (2004) and Pomfret (2005)

In coming years, with the full operation of Kashangan field and new investments programme in Tengiz the country should benefit from huge revenues from oil and gas.

Due to "shock therapy" reforms, combined with institutional weakness mentioned, Kazakhstan has experienced a considerable disintegration in living standards: male suicide rate in Kazakhstan reached 38 per 100000 male in the early transition, and life expectancy drop dramatically.

Another phenomenon experienced in Kazakhstan, possibly correlated with the slow development of institutions, is huge increase in income inequality. Political influence of the new elites, indeed, reduces the ability of the state to promote institutional hampering the development of a more comprehensive protection system and a more egalitarian society. According to Cornia and Popov (2006), a factor generally ignored in the transition literature is the large disruption experienced in income and asset inequality. Authors reported that, in former Soviet Union and South Eastern Europe Gini coefficients of formal sector incomes rose by 10-20 percentage points[5]. This is particularly true in CIS countries, where poor output performance was accompanied by huge increase in inequality and poverty, especially in the Central Asia Republics. Those countries experienced a sharp decline in average living standards (Pomfret, 2003 and World Bank's Living Standards Measurement Study). Evidence suggests that large families have been the most vulnerable to that phenomenon. Poverty in this region is presented as higher in rural areas, varies across regions, related to ethnicity, education and dependency ratio. According to the World Bank Report "Kazakhstan Dimensions of Poverty", in 2002, about 15% of population was living in poverty: poverty incidence was

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[4] Thanks to the opening of first privately owned pipeline: the Caspian Pipeline Consortium (Pomfret, 2005). The new pipelines gave ad alternative way through Russia cutting transport costs from the largest active field in Kazakhstan (Tengiz field).
[5] These coefficients bring inequality in the transition economies into the range of capitalism economies: from the relatively egalitarian Sweden to the relatively inegalitarian United States and in line with developing countries such as India (Svejnar, 2002)

highest in rural area (22 percent) and lowest in large cities (7 percent)[6]. Pensioners suffered a smaller decline in living standards than children: for instance in Kazakhstan an additional child reduces per capita household expenditure by 17 per cent, and an elderly adult reduces per capita expenditure by 12 per cent[7] (Pomfret, 2003).

Analyses of the impact of oil revenue expansion after 2000 show that benefits are not redistributed across the country. In particular Pomfret found that oil boom did not result in higher livings standards in the oil producing regions, but was associated with higher living standards in the metropolitan centres where the country elites lives (Pomfret, 2006). In terms of living standards before and after the oil boom, Pomfret, using 2001 KHBS and 1996 KLSM, finds that variables influencing household's expenditures (such as education, family size and location) still significant also after oil boom period: this is particularly true for what concern relation between household expenditure with education and location.

(ii)   The 2000s oil boom and resource curse features.

Even if resource abundance should accelerate growth, large empirical evidence supports the "resource curse" hypothesis. Both theoretical and empirical literature on why countries may suffer from resource curse are substantial. This paragraph concentrates on some features examined in the literature for transition economies to analyze the sustainability of future growth in Kazakhstan and to verify the feasibility of extension of social sector spending. Three of those features are studied extensively in the literature: (1) negative relationship between abundance of natural resources and economic growth, (2) volatility of terms of trade and thus state revenues, (3) government expenditure and state capture (Kalyuzhnova and Kaser, 2005; Kronenberg, 2004). There are two more features relevant in our case study: first, as noted by Kalyuzhnova and Kaser (2005), the choice of the way to allocate or invest the oil rent; second, according to Kronenberg (2004), the neglect of investment in human capital.

The first theoretical explanation of the resource curse hypothesis is the "Dutch disease" model. The term "Dutch disease" was coined in 1977 by "The Economist" to describe the decline of the manufacturing sector in the Netherlands after the discovery of natural gas in the 1960s. The classic model describing Dutch Disease was developed by Corden and Neary (1982). In the model, there is a non-traded good sector and two traded good sectors: the booming sector and the lagging or tradable sector. The booming sector is usually the extraction of oil or natural gas but can also be of other primary commodities. The lagging sector is the manufacturing sector. A resource boom will affect this economy in two ways: "resource movement effect" and "spending effect". (i) According to the first effect, the resource boom sector increases its demand for labour. This bid up wages and the other traded sector risks to contract. For Stevens (2003), the "resource movement effect" in transition economies is relevant manly in terms of "crowding out effect". The process of transition has indeed destroyed the old productive base and a new private sector needs huge investments to develop. But the non oil sectors find difficult to secure the resources needed to development. (ii) The spending effect occurs as a result of the extra revenue brought in, by the resource boom. Demand rises in the two sectors but tradable one have price determined internationally: higher demand is met by higher imports. Prices in non tradable sector rise relatively to the other and there is a shift of labour and capital. (Corden, 1984). The combination of these two effects result in appreciation of the real exchange rate: inflation rises from spending and an appreciation of the real exchange rate occurs as the domestic currency attracted higher demand (Stevens, 2003). The result is a contraction of the non oil sector. The literature on the Dutch Disease has underlined the relevance of manufacturing sector development for

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[6] The issue will be deeply analyzed in the Section IV

[7] According to Falkinghan, the cost of children is more difficult to estimate than the cost of pensioners. The cost of children is more than simply their consumption minus child support payment (Falkinghan, 2000).

sustainable growth and social development: manufacturing maximise forward and backward linkages (Matsuyama, 1992 reported in Stevens, 2003), produce learning by doing externalities (Torvik, 1999; Kronemberg, 2004), technological progress and fosters social capital development. Empirical analyses mainly support the existence of Dutch Disease. Sachs and Warner (2001) found that resource abundant countries tend to be high price economies and miss export-led growth. In Kazakhstan the tenge has strengthened markedly in real terms against the U.S. dollar over the past half decade, moreover estimations from IMF (2005) show that the real exchange rate of the tenge against the dollar can be expected to appreciate toward its long-run "equilibrium" level. The fact supports the concern for Dutch Disease hypothesis in Kazakhstan, after the oil boom.

Figure 1 Real Effective Exchange Rate against US Dollar in 2000-2007
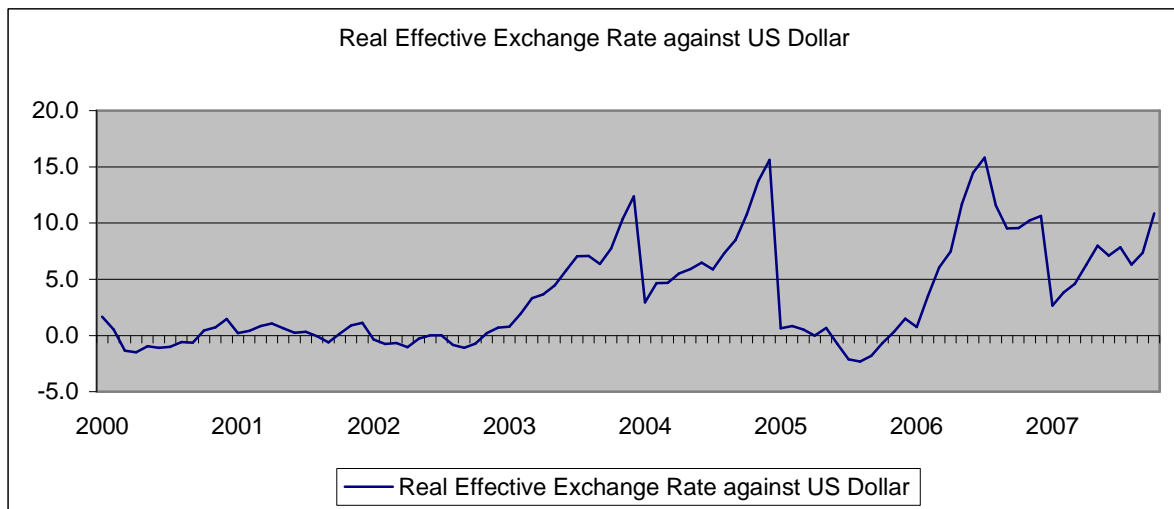
Source: Central Bank of Republic of Kazakhstan (2007)

Other evidences go in the opposite direction: Égert and Leonard (2007) explore the evidence that Dutch Disease is at work in Kazakh economy, they found that so far there is no concern for non oil manufacturing relating to effects of oil price increase; even if the real exchange rate has appreciated in the last year, this appreciation would not be linked with movement in oil price and oil revenues[8]. Even Mahmudov (2002) argue that Kazakhstan doesn't suffer "Dutch Disease". According to the author although real exchange rate has appreciated rapidly, it may still remains well below its equilibrium value and thus not harm competitiveness. Relating to competitiveness of tradable sector, the trend of non oil sectors of the economy since 2000 suggests stable growth, but large wage differentials between the mining and non-mining sectors (IMF, 2005). Manufacturing value added (Figure 2) seems to confirm a held in the sector competitiveness.

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[8] Authors use a testable version of classical monetary model which expresses the nominal exchange rate, against US dollar, as a function of money demand, income and interest rate:

$$e_t = m_t^D - m_t^{D*} - \alpha_1(y_t - y_t^*) + \alpha_2 + (i_t - i_t^*)$$

They curried out the analysis fore the whole period (1994/1995 to 2005) and post-Russian crisis period (1999-2005), finding that:
(i) regarding nominal exchange rate, the monetary model indicates that the rise in the nominal price of oil and the rise in nominal oil revenues are possibly linked to an appreciation of the nominal exchange rate versus US dollar, less in effective terms.
(ii) real exchange rate model indicates that only the real exchange rate of the entire tradable sector, including oil production, and not that of the tradable sector excluding oil production, appreciated following a rise in the oil variable (Égert and Leonard, 2007).

Figure 2 Manufacturing, value added, % of merchandise exports and % of GDP, 1995-2004.
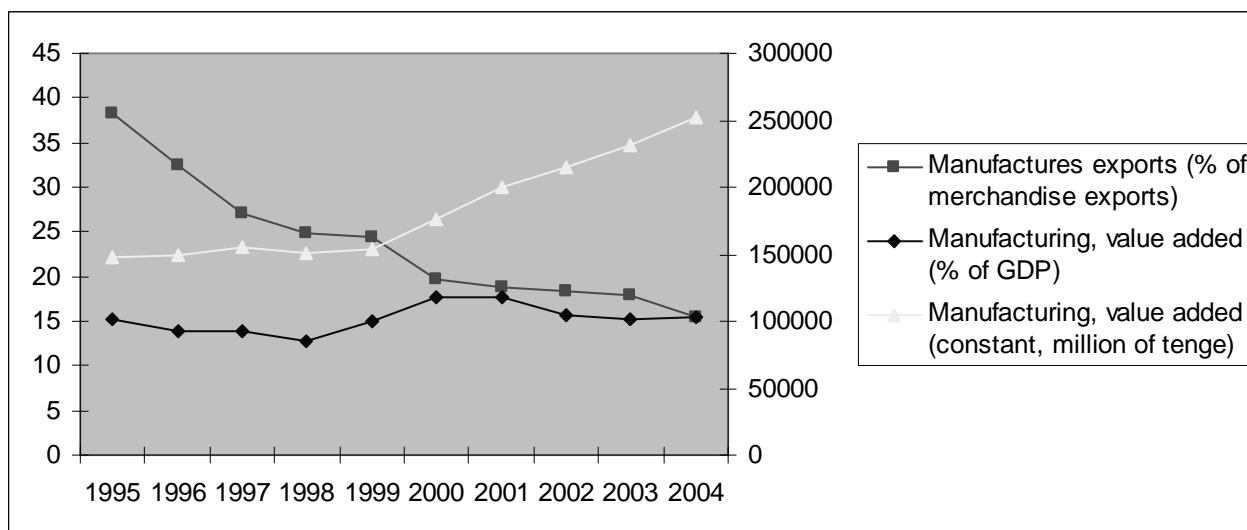
Source: WDI (2006)

However investments in manufacturing have been decreasing. Since the growth of manufacturing produces several externalities in terms of technological progress and development of social capital, Kazakhstan should therefore increase the share of investment to foster this sector. Diversify the economy is indeed the solution to avoid the dominance of natural resource sector, secure long run growth and spread the benefits of growth across the whole population; however it is difficult to implement[9].

The second theoretical argument, relating to the "resource curse", is the volatility due to change in terms of trade. The volatility and unpredictability of world oil prices affect government revenue through change in the value of export earnings. Generally the literature underlines the need for fiscal prudence, to prevent revenue rises translating immediately into greater aggregate demand and inflation (Stevens, 2003). This issue of macroeconomic stability viewed in the prospective of long run curse is also related to limited amount of endowment and the need to set aside funds for future generations: stabilizing spending means ensuring stable and moderate growth. Revenues are used counter cyclically in the short run, and to guarantee wellbeing of the next generation. At the same time governments in emerging economies should undertake a broad range of structural measures to reduce their vulnerability: strengthen domestic institutions to encourage private investment, build human and physical capital and, last but not least, provide adequate and sustainable social protection mechanisms (Kalyuzhnova and Kaser, 2005). Preventing too large fluctuations in revenues can be achieved in several ways; one of the most widespread mechanisms is to create a Stabilization Fund. Such Funds generally have three key objectives: first insulate the economy from large windfalls that would increase spending by investing them outside in particular when Dutch Disease works, stabilize revenues (setting a price assumption to ensure budget equilibrium[10]), put assets aside for future generations (Stevens, 2003)[11]. There are examples both of successful funds and failed funds (Fasano, 2000): successful examples are those of Norway and Chile, a famous counterfactual experience is that of Venezuela. Fasano (2000) conclude that success of the Funds depend as much as on the fiscal discipline as on the fund's

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[9] For a critical review of difficulties of diversification see Stevens (2003), p. 19-20
[10] Similar experience is that of some resource poor countries that have established fiscal reserve funds financed by fiscal surplus or privatization proceeds: for instance Hong Kong, Singapore and Estonia (Fasano, 2000)
[11] Stabilizations or Oil Funds can help avoid rent-seeking and corruption and create common rules for management of the revenue (see below).

management. However, the experience of Norway is relevant for the priority given to current public expenditure in the operational management; the fund accumulates resource only if the central government achieves a general budget surplus: the decision about how much oil revenue to save is made through the budget process. One of the powerful feature of the Chile's Copper Stabilization Fund is that it stabilizes both exchange rate and fiscal revenue, using a benchmark mark copper price.

Tabella 3 Poverty Incidence in 2002, by Oblast

Oblast (region)	Headcount index (P0)			Share of all poor	Share of total population
	National	Rural	Urban		
Akmola	10.0	12.5	6.9	3.5	5.4
Aktobe	13.8	25.5	4.6	3.9	4.3
Almaty	11.3	13.3	6.3	8.0	10.9
Atyrau	23.3	27.1	20.8	4.9	3.2
West-Kazakhstan	11.7	16.5	3.8	3.1	4.1
Jambyl	23.0	24.3	21.4	10.2	6.9
Karaganda	16.5	32.7	12.7	11.1	10.3
Kostanay	23.0	32.5	14.4	10.3	6.9
Kyzylorda[2]	32.2	49.2	20.2	8.3	4.0
Mangystau[2]	23.5	76.1	8.8	3.8	2.5
South-Kazakhstan	18.0	18.6	17.0	15.9	13.6
Pavlodar	12.0	22.1	5.1	4.0	5.1
North-Kazakhstan	9.2	13.5	2.4	2.7	4.5
East-Kazakhstan	15.2	21.3	10.6	9.5	9.6
Astana (city)	2.9	n/a	2.9	0.4	1.9
Almaty (city)	1.6	n/a	1.6	0.7	7.0
National	15.4	21.7	10.2	100.0	100.0

Source:World Bank (2004)

The third theoretical issue is related to institutional building: resource curse, mainly in transition economies, is due to rent seeking and corruption, as well. These can be assumed of delaying institutional building of giving a false sense of security that does not give to decision makers the incentives to pursue the necessary reforms. As much as resources are controlled by huge corporations or state authorities[12] as rent-seeking behaviour are widespread. Pervasive corruption will almost surely have a negative effect on economic performance (Mauro, n.d.). We also point out that corruption discourage private entrepreneurship, development of human and cognitive capital, social commitment and political participation of young people. Kronemberg (2004) found a very strong relation between natural resource abundance and high corruption[13] in transition economies. Torvik (2002) developed a model to explain why natural resources increases may decrease welfare and income: mechanism is a result of combination of increasing returns to scale and rent seeking[14]. In an analysis of Kazakhstan, Pomfret (2006) found that the resource curse depended mainly upon variables reflecting institutions and governance.

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[12] Natural resources are not produced in a competitive market environment, there are huge barriers to entry and, in contrast to manufacturing or services, and it is not simple for private investors to start up a natural resource extraction company. Because of the need to acquire mining concession, there are close ties between the state authorities and the companies.
[13] He regresses "State Capture Index" and "Share of primary good export" using data on 26 transition economies
[14] The model can applied also to other types of exogenous increase in income, such as foreign and or regional transfers (Torvik, 2002).

According to the author, Kazakhstan institutions remain weak: in this case, the main dangers of resource are of political economy nature. Evidence from the Kazakhstan Household Budget Survey 2001 and 2002 suggest that the benefits of oil boom have not been equally distributed across the country. As can be seen in Table 3, poverty rates vary greatly between oblasts, and within oblasts, by urban and rural status. The poorest oblasts are Kyzylorda, South-Kazakhstan and Jambyl in the south, Atyrau and Mangystau in the west (that are also oil producing regions), and Kostanay in the north. Together, these five oblasts account for 53 percent of all the poor, but only 37 percent of the population (World Bank, 2004).

The oil producing regions did not improve much their living standards, while in the metropolitan centres where the country's elites live, i.e. Almaty the largest city and former capital and Astana, the current capital, incomes per capita have risen sharply.

(iii) The neglect of human capital investment in resource-rich transition economies.

According to Kronemberg (2004), other important curse transmission mechanism, particularly for transition economies, is the neglect of human capital investment. The argument is very similar to that we mentioned for crowding out effect: government may fail to see the long-term benefits of education (Gylfason, 2001)[15], particularly public education and health. Since oil extraction is typically capital-intensive, lobbies can push government to spend on the accumulation of physical capital with the effect of eroding public spending on education. Also private investment in education can suffer from resource curse because job in oil sectors are generally filled by the country's higly skilled workers or by foreign workers. Other sectors do not generally expand the demand of skilled workers during the oil boom. Moreover wealthy elites consume many services that are produced by low skilled workers. Thus, considering the time and money spent on education can lead many household to consider private investment in education as inefficient. Following Gylfason (2001) the main channel for natural resources curse is its depressive effect on education. He found a statistically significant relationship between natural resources abundance and low level of educational efforts. Moreover he found a positive relationship between secondary school enrolment and economic growth. Kronemberg find strong negative relation between resources abundant countries and human capital performance, as well. A negative relation between natural resources abundance and human capital stock is plausible, but there is not an agreed position in the literature, relation between education and growth is more strongly recognized but there is not always empirical evidence on it as well.

Large literature deal with mechanism through education would impact growth. In this paragraph we report studies on macro impact of education. In Section IV we will investigate microeconomic benefits of education to explore the profitability of investment in human capital. Following Lucas (1988)[16], human capital is a production factor just like physical capital: thus investment in human capital is the same as investment in physical one. In particular, Lucas distinguishes between two main sources of human capital accumulation: education and learning by doing (Aghion and Howitt, 1998). As we mentioned before, both suffer of crowding out effect in resources-rich economies: education because lobbies and large companies monopolize investment in physical capital, and learning by doing because of the contraction of manufacturing sector that is typically characterized from learning by doing externalities. Lucas's basic idea is that growth is primarily driven by accumulation of human capital; this implied that differences in growth rates are attributable to differences in the rates at which those countries accumulate human capital. A second important approach relating to human

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[16] Lucas approach is inspired by Becker's (1964) theory of human capital (Aghion, Howitt; 1998).

capital literature is that of Nelson and Phelps (1966), revisited recently in the Schumpeterian literature. In this second approach growth is influenced by stock of human capital that determines country's ability to innovate. The importance of producing a large stock of human capital (investing in education) is emphasized also in augmented Solow model of Mankiw, Romer, Weil (1992): the stock of human capital in this model is an input of production within a classical Cobb-Douglas production function. Both Lucas's model and Nelson and Phelps suggest growth effects of educational policies: the models address perfectly the question whether economic development can be promoted by educational policies. As for the allocation between different level of education (such as primary versus secondary or higher) it is necessary to follow the Nelson-Phelps approach. In their view, human capital is referred to highly skilled level: it depends on forward-looking decision of individuals based on their expectations about labour demand[17]. But elitist education policies are absolutely not the optimal choice, even when the key objective is to maximize innovation absorption or creation: indeed training to very high standars few workers but ignore the rest may be inefficient because the poorly trained workers are unable to utilize or implement new innovations. Moreover, as Aghion and Howitt (1998) note, elitist education policies, that encourage innovations, will increase inequality. Thus, design of education policies needs to take account of the complementary nature of different forms of human capital.

Among case studies on developing countries, Matovo and Norris (2002) developed a computable dynamic general equilibrium model of overlapping generations to address the potential effects on human capital accumulation and economic growth of the alternative composition of public expenditure. They found that increase in education spending leads to higher output and improvement on poverty. These authors show that primary education spending gives the most significant increase in human capital stock and output. Human capital has "n" levels. Shultz (2003) computed it by the linear approssimation of household demand for human capital:

Equation 1

$$H_{ij} = a_j Y_i + b_j X_i + e_{ij}$$

where i refers to the individual, j to the form of human capital, and e the error that is assumed uncorrelated with the demand determinants, Y and X. The critical distinction is between Y that affects the demand for human capital partly through its impact expected on wages that motivate individual, family, and community investment in these forms of human capital, as well as through other possible channels, and X that affects the demand for human capital without modifying directly an individual wage opportunities, such as the local quality of and access to schools or health care, or disease environment, and parent physical and human capital endowments. In the next Section we deal with different dimensions of child wellbeing to study Kazakhstan's performances in terms of present commitment for future human capital development.

(iv) Multidimensionality of child wellbeing: trends on child poverty, child health, education and child/youth protection.

Generally, from a children perspective, transition has been a period from a position of security to one of uncertainty. In the late 1990s, the majority of children in almost all Caucasus and Central Asia Countries were living below the minimum consumption level[18]. In

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[17] In the framework, government has the role of provide sufficient incentives for researcher.
[18] The World Bank estimates for 2003 a level of $2.15 as poverty line for the region, this threshold is suitable measure for the region because the cold climate needs more expenditure on heat, winter clothing and food than for the other developing countries.

those years, infant mortality rates were at the level of poor developing countries. Declines in overall public expenditure and in general expenditure on social services worsened the situation since they were accompanied by increases in income inequality and poverty that affected the children (Falkhingam, 2000). In spite of this the importance of the state as a source of welfare, both in the form of in-kind and cash transfers, in the region should not be underestimated (Menchini and Redmond, 2006). In this Section we analyze multiple dimensions of child well being (poverty profile, health, education and social protection) in Kazakhstan during transition and nowadays: we will pay attention to indicators of education outcomes and equality of education opportunity among children of different economic status of living in different regions. While in next Section we will go deeply in expenditures commitment by the government, in order to investigate if trends in enrolment rates and quality of education are due to lack of public resources.

Analyses on Kazakhstan showed that child poverty is higher than in transition economies with a similar GDP level, this is due to high inequality in distribution of income: those households in the bottom fifth of the income distribution had, on average, two-thirds more children than those at the top of the distribution and families with young children were disproportionately represented in the lower quintiles. Families with young children are disproportionately represented in the lower quintiles, with over 40 per cent of bottom quintile households having small children compared to less than a quarter of all households. Incidence of child poverty is therefore higher than that of the population. Over the period 2001-2003, child poverty fell from 35% to 28%. The improvement didn't benefit much families with more than three children where the rate decline only of 14%. The incidence of child poverty varies a lot among regions and it is higher in rural areas: World Bank (2005) shows that in Kazakhstan 13 per cent of people in urban areas were living in households with per capita consumption of less than $2.15, compared with 31 per cent in rural areas.

Figure 3 Correlation between Under five Infant Mortality Rate and GDP/c in ECA Transition Economies, 2004
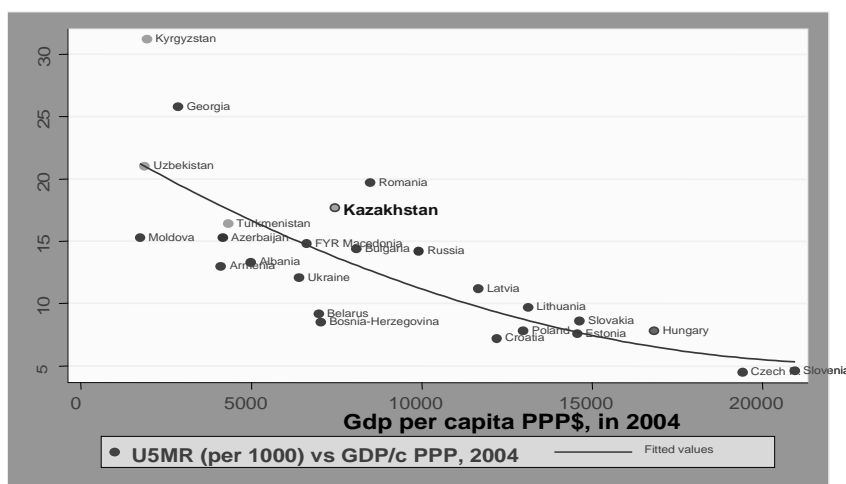
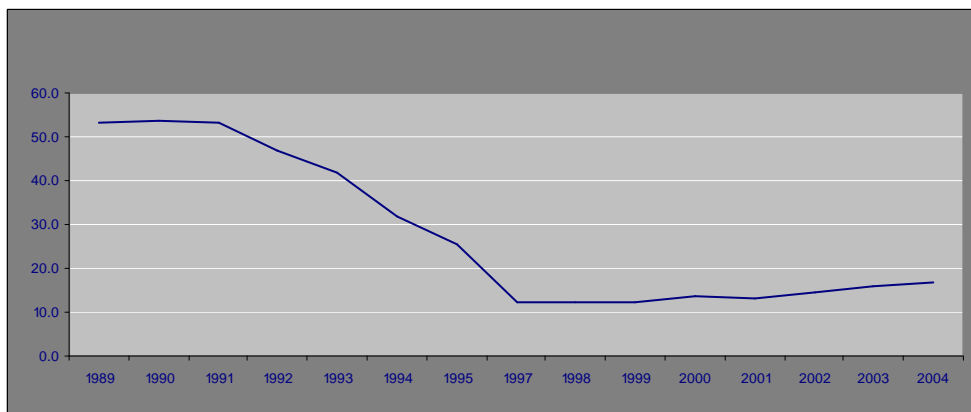Source: Author's elaboration on TransMONEE,UNICEF (2007) data

To analyse health dimension of child wellbeing, that is one the most important factor of human capital development in the country, we look at the trend in child mortality rate and we report also indicators of attendance to early childhood care programmes. Kazakhstan's comparative performance on under five mortality rate, in relation to the region norm (Figure

3), are quite bad in terms of under-five mortality rate. Differentials in child mortality rate by level of income, education and location are wide.

Attendance in early childhood programmes is an indicator of health care monitoring for children. Early childhood care supports children's survival, growth and development including health, nutrition and hygiene. In the short term attendance to preschool secures children providing regular monitoring of health and nutrition status (UNESCO, 2007). Also it is an important element for development of human capital in the future: attendance to early programmes prevent socialization problems and improve cognitive skills for the next step of education. Kazakhstan, between CIS countries, experience the hugest disintegration of pre-school system (UNICEF, 2006) with a level of 16.9% of 3-6 age children enrolled in 2004 against the 53.1% before independence (Figure 5).

Figure 4 Pre-primary school enrolment over 1989-2004 in Republic of Kazakhstan

Source: Author's elaboration on TransMONEE,UNICEF (2007) data

Data from World Bank show also a relative bad position relative to other countries in the region recently (Figure 4).

Figure 5 Pre-primary school enrolment over in 2004 in ECA transition economies.
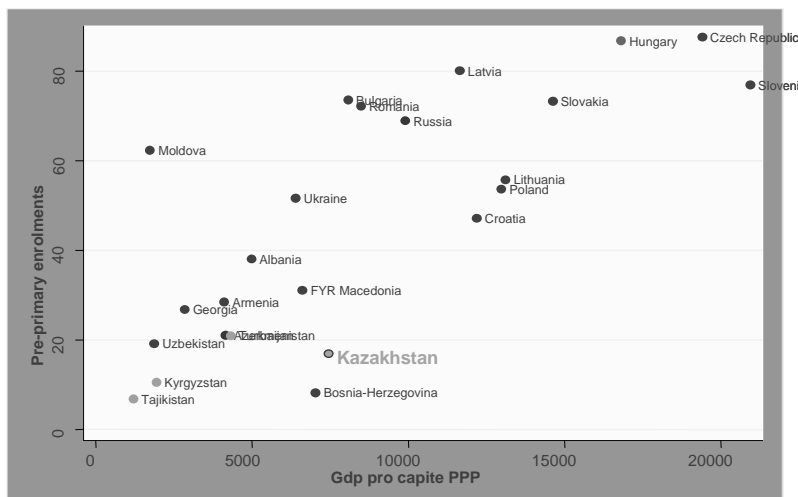
Source: Author's elaboration on TransMONEE,UNICEF (2007) data

Furthermore, as shown in table 4, access is hugely influenced by monetary constrains. In the poorest quintile only the 2.8% of children in 2006 took part to early childhood programmes, while the 43.5 richest children did. Between children currently attend to primary

school, the 73.8 of richest had already taken advantage of pre-school, while only the 22.7 of poorest first year children had been at pre-school the year before.

Table 4 Percentage of children aged 36-59 months attending any organized early learning program, and percent of first-grade schoolchildren who were attending pre-school institution, Kazakhstan, 2006

Wealth index quintiles	Percentage of children aged 36-59 months attending early learning programmes	Number of children aged 36-59 months	Percentage of first grade school children, who last year attended pre-school institution program
Poorest	2.8	444	22.7
Poor	6.6	349	41.1
Middle	12.7	312	49.3
Rich	19.8	281	54.7
Richest	43.5	262	72.8

Source: Statistical Agency of Republic of Kazakhstan (2006)

Data reported in the UNICEF-MONEE Kazakhstan Country Analytical Report 2003 confirms that main factors that hamper to benefit pre-school programs are related to lack of public delivering. The absence of centres and the high costs of services have indeed main negative impact on attendance (Table 5).

Table 5 Reason for children not attending pre-school facilities

	Total			In town			In countryside		
	2001	2002	2003	2001	2002	2003	2001	2002	2003
Reason for children not attending pre-school facilities:									
High cost	21.9	16.8	18.2	43.0	35.2	42.0	5.1	6.5	6.5
Absence of daycare centres	42.4	40.5	47.6	13.0	17.4	15.9	65.9	53.4	63.2
Inferior quality of a children centre	0.2	0.5	0.1	0.4	1.2	…	0.1	0.1	0.1
Health reasons	0.7	0.6	0.3	1.3	1.2	0.7	0.2	0.2	0.1
There is someone to look at the children at home	22.7	31.7	27.9	25.8	35.9	29.4	20.2	29.4	27.1
The child is too small yet	11.6	8.5	5.8	16.1	6.9	11.7	8.0	9.5	3.0
Other reason	0.5	1.4	0.1	0.4	2.2	0.3	0.5	0.9	…
Total	100	100	100	100	100	100	100	100	100

Source: Kazakhstan MONEE Country Analytical Report 2003

Moving to education system on the whole, some countries of Central Asia and Caucasus region have better educational outcomes (whether enrolment rates, average years of schooling, or learning scores) than would be expected given their levels of per capita income or public spending on education, while others have worsened outcomes than would be expected (World Bank, 2007). Education systems in the Central Asia Republics, during Soviet era, were hugely developed with universal enrolment at basic level; there were also many opportunities for children and youth of informal education.

Figure 6 Trends in enrolment by levels of education between (1990 – 2005).
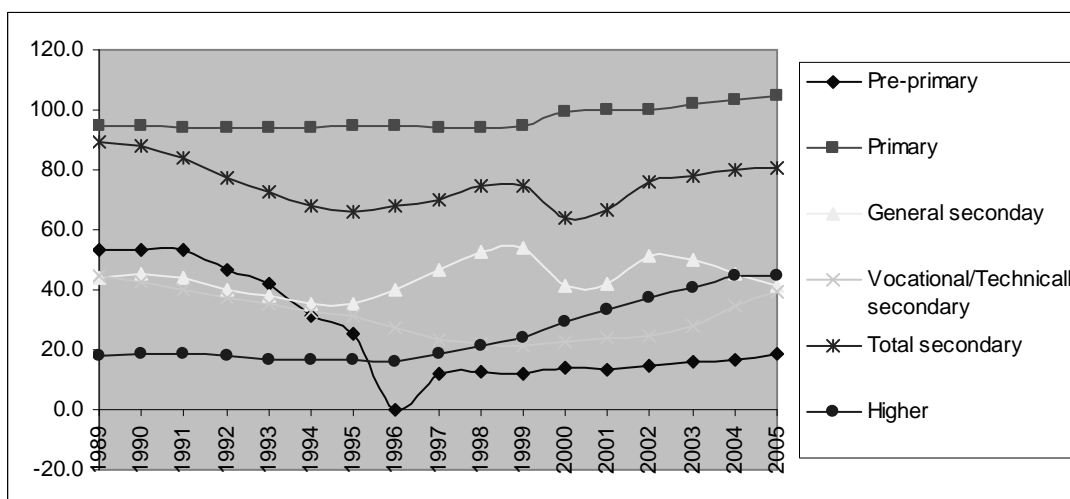
Source: Author's elaboration on TransMONEE,UNICEF (2007) data

Human capital in Kazakhstan was very high during the soviet period and already in the 1930s Kzakhstan reached a literacy rate of 83,6% thanks to the educational reform introduced by the communist government (Arasheibani and Mussorov, 2006). Later on, a network of vocational schools for unskilled workers was established and placement of graduates from vocational or technical school was managed by state authorities.

Figure 7 Percentage of prime age adults with secondary schooling, by expenditure decile.
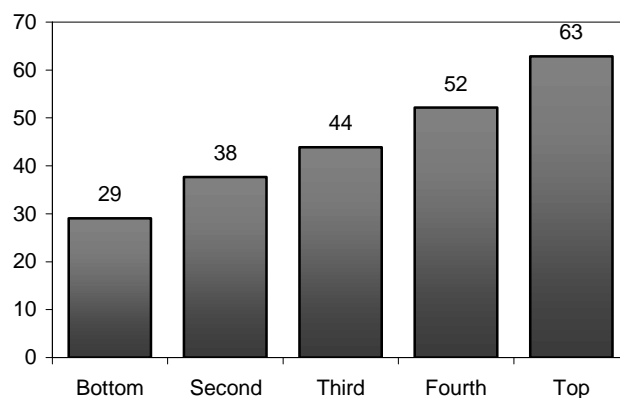
Source: World Bank (2004) on KHBS 2002.

During the transition was abolished the state monopoly education, colleges and universities introduced tuition fees, scholarships was assigned to a competitive basis but in small number. However, in spite of the high level of human capital at the beginning of transition and even if compulsory school enrolments have relative high level, quality of education deteriorated. Enrolment rates in pre-primary and in vocational schools dropped (Figure 6).

Evidence suggested (Figure 7, Table 6) that education attendance correlate with economic status as data of Kazakhstan Household Budget Survey 2002 reported from World Bank (2004) show: as consequence, children whose families are not able to contribute towards their education costs face risk to be excluded or not complete compulsory school (World Bank, 2004).

Table 6 Education Levels of Adults (16-59 years), (%), bottom and top expenditure quintiles.

Education Level	Bottom		Top		Total	
	2001	2002	2001	2002	2001	2002
None	1.1	0.6	0.5	0.3	0.8	0.4
General Primary	6.5	6.4	3.3	2.9	4.9	4.6
General Basic	19.9	16.9	7.6	7.5	13.1	12.0
Basic Vocational	44.2	47.1	25.7	26.5	36.8	37.6
General Secondary	11.0	12.2	8.9	9.4	9.8	11.4
Secondary Vocational	13.2	13.4	28.9	28.4	21.8	21.5
Higher Vocational	4.2	3.4	25.1	24.9	12.9	12.6
Post-graduate	0.0	0.0	0.1	0.1	0.0	0.1
All	100.0	100.0	100.0	100.0	100.0	100.0
With at least general secondary or secondary vocational	28.4	29.0	63.0	62.8	44.4	45.5

Source: World Bank (2004) on KHBS 2002.

Negative indicators on youth wellbeing show that child protection and socialization dimension is a reason for concern in Kazakhstan. Data on 15-19 mortality rates have dramatic negative trends during transition due mainly to high incidence of suicides (Table 7).

Tabella 7 Youth protection indicators (1989-2005)

	Mortality rate for population aged 15-19 (deaths per 100,000 relevant population)	Mortality rate due to external causes for population aged 15-19 (including suicides, death per 100,000 relevant population)	Suicide rate for population aged 15-19 (deaths per 100,000 relevant population)	Crimes committed by or with participation of juveniles (absolute numbers)	Sexually transmitted diseases in population aged 15-19 (newly registered cases of syphilis and gonorrhoea per 100,000 relevant population)	Homicides committed by or with participation of juveniles (absolute number)
1989	109	69	16	9272	190	55
1990	105	70	17	10806	201	86
1991	119	77	18	12378	228	95
1992	123	79	21	12980	242	62
1993	135	86	25	12819	126	113
1994	125	76	20	11199	106	93
1995	129	77	20	9730	210	144
1996	130	77	22	8811	267	110
1997	133	79	25	7435	277	146
1998	126	73	20	7197	225	145
1999	122	71	21	7159	138	124
2000	126	80	23	7359	126	128
2001	112	70	20	8184	108	115
2002	109	65	21	8237	85	147
2003	109	66	20	7001	74	128
2004	108	69	22	7948	61	142
2005	108	70	20	8608	48	122

Source: TranMONEE, UNICEF (2007)

Also indicators representing involvement of youth in crime actions are very high and have been increasing during the whole transition and after the oil boom. As suggested by World

Bank (2007) in "The World Development Report" deals with youth in developing countries youth is a crucial period of intense learning when people can acquire the human capital to move themselves and their families out of poverty, on the contrary missing opportunities to learn, to acquire good health habits and to engage in the community are difficult to reverse. The human capital formed in youth, in skills, health or civic and societal engagement, is very important for long terms growth (World Bank, 2007). It is arguable that the decline in vocational curricula attendance typically of young people belonging to household in the lowest quintiles of income distribution, have affected social protection of the poorest young people, pushing them towards crime, alcoholism and depression.

III. RETURNS TO SCHOOLING IN KAZAKHSTAN AND REDISTRIBUTION EFFECTS OF EDUCATION BUDGET COMPOSITION.

(i)   Returns to education in transition economies

In previous section we reported the literature supporting the relationship between human capital and growth. Expenditures on education and health (both by the State and households) are investment flows finalized to build human capital, in all its *n* forms (see Equation 1). Now we deal with economic returns of such allocation in order to evaluate the profitability of allocate resources in the sectors. Aghion and Howitt (1998) underline the value of microfoundations of education policies in the process of human capital accumulation: our analysis follow this criterion showing the opportunity of investment in education by a microeconomic point of view in order to have comparative terms with alternative investments.

At the level of the individuals, statistical studies of random sample surveys and censuses reveal significant positive partial correlations between wages, earnings or income and a worker's schooling, nutrition, and health, stratified by sex and controlling for age or post-schooling experience. This idea is based on microeconomic aspects of education and on the side of expenditure linked to the targeting and effectiveness, in particular organization of funding (i.e. local versus global) and the targeting of public resources (i.e. primary/secondary versus higher education and so on).

Seminal works that investigated the profitability of schooling compared since the early 1960s. Becker (1962) and Hanoch (1967) studied for example the marginal internal rate of return and its role in determination of amount of investment in human capital. Mincer in 1973 proposed the "accounting identity model" taking steps from Becker's theory. Algebraically specification is:

Equation 2

$$\ln Y_t = a + bS_t + cEX_t + dEX_t^2$$

where y(S,X) represent the log of wage earnings for an individual with S years of education and X years of work experience. The rate of return is nothing else than the relative change in earnings (∂lnY) following a given change in schooling (∂s). Empirically, Psacharopoulos (1973, 1985, 1994) and Psacharopoulos and Patrinos (2002) have collected results of many studies on the rate of returns to schooling conducted in every country in which data on earnings by age and education were available. The estimated rates of returns to schooling at micro level tend to be negatively related to the degree of economic development. For low and middle income countries the mean of coefficients reported is between 10% and 11%, reaching the level of 20% in some Sub-Sahara Africa and Latin-America Countries.

Returns to schooling had a flat profile during Soviet period, the functioning communist system succeeded in using the wage grid to set and maintain for decades extremely small wage differentials. While ideology led the planners to impose narrow education-related wage

differentials and cap the experience-earnings profile, they built into the grid enough wage progression with initial years of experience to generate a Mincerian-type quadratic profile in the grid. The transition from the centrally planned to a market system resulted in a major gradual increase in the rates of return to education, with the rates of return reaching West European levels by 1996. Although earning inequality increased through the 1990s, the scale of the effect of the transition varied greatly. While the decile ratio rose by the order of 30-50% between 1980 and 1997 in Central Europe, it doubled in Ukraine and quadrupled in Russia (Flemming and Micklewright, in Atkinson and Bourguignon, 2000).

Figure 8 Distribution of returns to schooling in Ukraine and Russia in 2002.
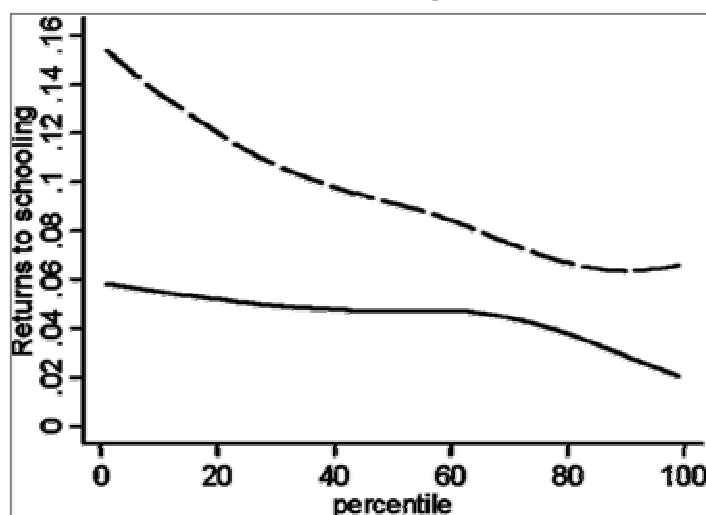
Source: Sabiranova and Gorodnichenko (2005)

In post-Soviet countries during transition also rates of return diverge significantly, the experience effects in the wage is small, since in transition economies younger, more mobile and adaptive people are rewarded. Then the increase in wage inequality can be attributed to skills differentials in all countries (of which observable variable is schooling). The distribution of returns to schooling, computed by equation 2 assumed the shape shown in figure 8, the figure is taken from Sabiranova and Gorodnichenko (2005) and represents two former Soviet republics in 2002: Russia and Ukraine (Figure 12). The bottom percentile of wage distribution in Russia during transition exhibits the largest increase in returns to schooling. Schooling differential impacts powerfully salaries at low level in the late transition.

Reasonably the raising in wage differentials in such economies and consequent increasing of marginal effect of schooling it is possible due to factors not strictly related with labour supply: changing in returns to schooling are mostly driven by demand side (or price) effects and depend on level of liberalisation of the economy (Sabiranova and Gorodnichenko, 2005) since the most part of labour force has been educated during Soviet period, under universally delivery of public education and widespread literacy. One can argue that rent seeking behaviour in distribution of resources during transition made a bias in distribution on earning, thus to capture the effect of schooling ceteris paribus one should introduce control variables.

However, most of the estimations of returns to schooling in transition economies are based on Mincerian earnings function using monthly log wage. Results of empirical studies showed that returns to schooling were low in many early transition economies[19], whereas they increased as market reforms take place, i.e. Sabirianova et al (2004) found, exploring the pace of increase in returns to schooling using metadata from 10 transition economies including China found that in 1989 the mean of rates of return was 4.6% whereas in 2001 it was 7.8%. On average, rates of return increased by 0.2 percentage points per year during the respective countries' planning periods; by 0.5 percentage points per year during early reform, and by 0.3

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[19] Due to wages compression under planning and the weak relationship between wage and efforts.

percentage points during late reform. Sabiranova and Gorodnichenko (2005) estimated for Russia an evolution of rate of return from 2.8% in 1985 to 9.2% in 2002. Following Campos and Jolliffe (2007) the returns to a year of schooling increased by 75 percent, from 6.1 in 1986 to 10.7 percent in 2004, in Hungary

(ii) The empirical evidence of returns to schooling in Kazakhstan during transition and recovery period

Rama and Scott found evidence of favourable rates of returns to schooling in the early reform period. These authors use the 1996 Kazakhstan Living Standards Measurement Survey (LSMS). The sample contains around 2000 randomly selected households and 2278 individuals who report a positive income in the form of salary, bonus, profit, pension, allowance and occasional earnings. The rates of return are estimated to be 7-9%. Arasheibani and Mussorov analysed rate of returns using 2001 KHBS, two years after the oil boom. They investigated possible change relative to the work of Rama and Scott and found a rate of return of 11.3% for men and 16.7 for women[20], the average value is around 14%: close to the level for middle income developing countries reported by Psacharopoulus and Patrinos (2004) but higher than levels found in other empirical analysis on transition economies. Kazakh labour market in transition period suffered a lot, starting with a sharp decline in real wages (65% till 1996). The unemployment rate declined from 13.5% in 1999 to 8.4% in 2004, on the other hand at the moment it is characterized by: high youth unemployment, long term unemployment, regional differences between unemployment and employment and wages inequalities (Arasheibani and Mussorov, 2006).

Table 8 Unemployment Rates (16-59 years) by Expenditure Decile and by Gender and Location (%)

Decile	Gender				Region					
	Female		Male		Rural		Urban		Total	
	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002
1	44.1	45.2	25.3	24.7	28.1	30.4	42.5	39.7	34.2	34.1
2	34.3	36.3	22.3	19.4	20.6	24.3	37.8	32.0	27.9	27.4
3	39.0	29.3	22.5	16.3	26.1	20.7	35.4	24.5	30.2	22.4
4	31.3	27.0	19.2	16.3	23.5	18.4	26.7	24.6	25.1	21.4
5	26.1	20.4	19.7	12.8	19.5	15.2	26.0	17.8	22.7	16.5
6	24.4	23.3	19.1	12.5	19.8	14.7	23.5	20.3	21.7	17.8
7	19.4	18.7	12.6	12.5	12.4	12.9	18.5	17.4	16.0	15.6
8	19.1	17.9	13.1	10.2	15.6	11.1	16.5	16.0	16.1	14.2
9	16.8	15.7	12.4	10.7	15.1	11.3	14.5	14.2	14.7	13.4
10	10.4	10.0	6.8	5.5	6.3	9.7	9.4	7.7	8.8	8.1
National	21.5	23.1	17.1	14.0	19.9	18.1	22.1	18.9	21.1	18.6

Source: World Bank(2004)

The educational profile of labour force shows that percentage of men with university degree increased from 15.5% to 19.2% in 2005. On the contrary there is a fall in the percentage with a secondary school degree from 38.3% in 2001 to 32.4% in 2005. Vocational qualification in labour force rose from 9.3% in 2001 to 14.6% in 2005 (Arasheibani and Mussorov, 2006). One can argue that the increase in university degree employment is a signal

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[20] Those are regression results from 2SLS estimation. OLS coefficient are 8% and 11.5% but they are underestimated by OLS because of inconsistency led by endogeneity of variable schooling.

of increasing wage inequality in favour of high skilled persons, who at the moment are those who can pay for the college attendance.

An expansion of education opportunities for poorest individuals, for who rates of returns are presumably higher (Figure 8), should improve the distribution profile of employment rate. Moreover decline in recorded employment rate during transition was heavily concentrated in the industrial sector. Therefore both investing in economic diversification and rebuild the supply of vocational curricula may help employment rates in not oil sectors, benefiting, ceteris paribus, poorest households. Insufficient public expenditure on education, even if the enrolment rates are high (such as in primary and pre-primary sectors) may raise loss of quality in education which result in slower human capital formation.

(iii)   Educational sectors investment: the progressive effect of pre-primary and primary spending.

The proportional effect of schooling on wages, call it r in Equation 2, may also not be constant across different levels of schooling. The determination functional form of return to investment in education by levels is also important for deciding the education budget allocations of resources e.g. the priority of primary rather than higher education levels or vice versa. Comparison may provide priorities for the allocation of public funds to different level of education. Relative to individual returns, so far we have been dealing with educational outcomes in terms of future monetary returns of cognitive skills. Differential externalities by level of education might alter more the real structure of social returns to education. Issue of allocation between different levels of education is thus linked to social return to schooling and in particular to not monetary returns (different levels are associated with different amount of externalities). Psacharopoulos and Patrinos (2004) found rates of return by levels: for Eastern Europe, Middle East and North Africa they reported rates of return of 15.6% for primary school, 9.7 for secondary and 9.9 for higher education as average data from developing and transition countries in 1980s and 1990s. Concerning pre-school attendance, although the theoretical case for universal pre-primary education is strong, the empirical foundation is weak. First empirical is that of Perry Preschool programme: an experiment started in 1962 with 123 young African-American children assessed to be at risk of school failure in Ypsilanti, Michigan, and is used to follow beneficiaries over four decades. It generates for every dollar invested over $7 in benefits. Gertler et al (2006) estimate for Argentina that one year of pre-primary school increased average third grade test scores by 8 percent of a mean or by 23 percent of the standard deviation of the distribution of test scores. They find also that pre-primary school attendance positively affected student's behavioural skills such as attention, effort, class participation, and discipline. Individual benefits of pre-school attendance are for instance: (short term benefits) enhanced achievement, improved health, increased non-cognitive skills, and social competence, (medium term) reduction in special education; reduction of grade repetition; higher learning; reduction in abuse and neglect; and lower reliance on public health care; (long term) higher likelihood of graduation and college enrolments; higher wages and employment; lower teen pregnancy; less delinquency. These positive effects on behavioural skills provides evidence of possible pathways by which pre-primary might affect subsequent primary school test performance as preschool education facilitates the process of socialization and self-control. The UNESCO (2007) has analyzed economic payoffs of early childhood programmes funding high returns for pre-school programmes: i.e. 3:1 for projects in Bolivia, Egypt and Columbia.

Relating to features of secondary school's curricula, the evidence from cross countries studies indicates that the costs of vocational/technical programmes are higher than general education while their benefits are comparable (Psacharopoulos, 1987). Vocation/technical

training, however, results in higher productivity gains, facilitate technical progress of non oil sectors and is generally target towards poorest young individuals.

In the case of Kazakhstan we have estimations only related to rates of return of secondary education against higher education. Anderson and Pomfret (2002, 2003)[21] found, measuring the return on household expenditure, that the effect of education raise with education levels: having completed a general secondary school doesn't rise earning level, while vocational/technical school has a rate of return of 12% and college graduation 26%. While in the study of Araisheibani and Mussorov (2000) using the augmented Mincerian function report a rate of 24% for vocational secondary school and more than double for University. It is arguable that vocational secondary school, even if it has an high cost, give high payoff. Confirming theory on vocational curricula's social payoff, data from World Bank (2004) shows that attending a vocational secondary school influenced positively household expenditures with a coefficient of 10% versus not significance of having completed a general secondary education. Allocation to technical programmes depend also on the overall development patterns mainly if it will be diversification-driven.

Moreover allocation between different levels of education could be a targeting issues in reducing poverty and fostering a more equitable distribution of education benefits (Selden and Wasyleinko, 1995). Usually distribution of rudimentary social services such as early child care, primary education or basic health care is pro-poor. This is presumably because the rich often turn to the private market for basic education and healthcare and because the poor generally have larger families or more dependants. Delivery of primary and pre-primary education is then a more progressive public intervention relating to higher education. Existing empirical studies of the incidence of the benefits of public spending suggest that this positive effect of basic education services in reducing poverty: for instance, Selden and Wasyleinko, analysing amount of public education outlays per capita by income decile and Level of education in Peru in 1985, found that while spending in primary affects for 88.9% in the first decile and only 27.3 % in top of distribution, the contrary happens for higher education expenditure with an incidence of 12.1% in the bottom and 157% in the top. Free delivery of pre-schools is a hugely progressive measure that may influence positively future performance of poorest children in compulsory curricula as well. It is widely recognized, the role of early childhood programmes in offsetting disadvantage and inequality. Taking account the more general wellbeing of child that may influence future performance ad student or worker, Patrinos (2007) notes that early childhood interventions are more effective than other remedies to compensate problems later in the life. These kinds of programmes have a strong track record in promoting achievements for disadvantage children, improving labour market outcomes and reducing youth social exclusion, a big concern for Kazakhstan (Table 7). Getting children into school early prevent child labours and compensate more disadvantages.

Tabella 9 Cost-Benefit Analysis of Early Childhood Interventions

	Poorest	2nd level	Average	4th level	Richest
Rate of return to a year of schooling	30	20	15	10	5
Early childhood development programs	3.50	2.70	2.30	2.10	1.80
Early childhood development programs (plus nutrition and health interventions)	4.10	3.35	2.93	2.45	1.92

Source: Patrinos (2007)

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[21] Anderson and Pomfret (2002, 2003) estimated the private rate of return to education in four of the five countries of Central Asia using household expenditures as dependent variable instead of monthly earnings to deal with the relation between schooling and households living standards.

To sum up, access to pre-school education is strongly related with a child's success or failure in the school system thus expand access to pre-school is likely to improve whole educational opportunities. Patrinos (2007) reported (see table) the outcomes of an experiment relative to early childhood programs, estimation are made using Micerian model. On the contrary, the distribution of the benefits of public spending for higher education is likely to be much more regressive. As saw in Section II, elitist education policies are usually related with increase in inequality: higher schooling has huge private returns but, relatively to other levels, fewer social benefits. Attending to university education is in any case too much cost-effectiveness for poorest young people.

IV. THE DISTRIBUTION OF THE BENEFITS FROM THE OIL REVENUES: THE NATIONAL FUND AND THE EVOLUTION OF PUBLIC EXPENDITURE.

(i)   Management of the Kazakh National Fund

The National Fund of the Republic of Kazakhstan was established in 2001, with the main objectives of controlling Dutch Disease effects, and smoothing the distribution of oil-wealth over generations. Official data from the Ministry of Finance of the Republic of Kazakhstan show that in 2006 the fund capital increased by US$ 6.03 billion, reaching the level of US$ 14.44 billions. The current value of the Fund is 19% of the Kazakh GDP.

The Fund's capital is fed by the government income derived directly and indirectly from the oil sector. In particular: (1) direct taxes levied on oil sector enterprises (such as corporate income tax, excess profits tax, bonuses and royalties), (2) the portion of the Republic of Kazakhstan with respect to production sharing under concluded contracts, (3) the rent tax on exported crude oil and gas condensate, (4) receipts from privatization of state properties belonging to mining and processing branches, (5) budget transfers in the amount of 10% of earnings planned in the budget from mining sector organizations, (6) investment income from the Fund management. The biggest share of receipts comes from direct income tax and royalties. In 2006, the income from the Fund's investments represented around 10% of the total inflows.

The Fund is divided in two sections, connected to its two main functions: the savings function (forming of accumulations for future generations) and the stabilization function (reduction of budget dependence on oil prices). Following the recommendations of International Monetary Fund, the savings part is 75 per cent of the National Fund of Kazakhstan, while the remaining 25 per cent is used for the stabilization of revenues. The savings portfolio is based on the 10 per cent of the baseline revenues at the reference price: the reference price for oil is fixed for a five-year period (currently US$19 a barrel) and it determines the baseline budgeted oil revenues. Ten percent of these are paid quarterly into the savings account, and 90 percent are retained for the budget. The revenues exceeding the budgeted amount are transferred into the stabilization account. The stabilization function works thanks to "excess profit tax": reference prices for gas, oil and metals have been fixed and oil and metals sector companies are charged with more taxes when the international oil price rises beyond the established level. Both portfolios are invested entirely abroad. The stabilization share of the fund is held in short-term financial instruments that can be accessed in case of shortfalls in the budget. On the other hand the savings portfolio is invested in long term foreign equities, like pension schemes. Approximately 60 percent of whole portfolio is held in the United States; the rest mainly in Europe and Japan.

In 2004, the stabilization fund had a value of US$1.3 billion and obtained a return of 1.42 percent against a benchmark of 1.22 percent, while the savings portfolio had a value of

US$3.8 billion and obtained a return of 9.33 percent against a benchmark of 9.46 percent (Bacon and Tordo, 2006). The savings portfolio thus performed worse that its benchmark.

Table 10: Budget Revenues from Oil and NFRK (current US$ millions)

	1999	2000	2001	2002	2003	2004
Budget revenues from oil[a]	158	604	1430	1075	1900	NA
NFRK	0	0	1240	1915	3663	5131
Return	..	…	2.86	-0.43	8.69	7.61

a. Excluded bonuses, privatization receipts, and other exceptional payments

Source: The World Bank (2006)

In respect of its accountability, the National Fund of Republic of Kazakhstan has fewer checks than other major oil funds, and all checks are directly overseen by the president of the Republic of Kazakhstan. The president can make changes to the NFRK structure and destinations; the parliament receives reports on the performance of the fund, but cannot approve, reject, or amend them. Only the president can propose spending from the NFRK and the parliament is requested to approve his decisions. The revenues for each period contribute to the stabilization portfolio and to increasing the long term savings even if they are not used normally for current expenditures. The budget exceeding revenues resulting from oil-price growth can be used in the following ways as well: increase expenses on budget programmes financing, development institutions and increase of social spending. Relative to the last item, between 2002 and 2004 those revenues have been used to increase expenditure on pension payments[22] and in public officials wages[23] (The World Bank, 2002).

(ii)   Public expenditures patterns on education

In the Soviet era, Kazakhstan seemed to have had a social expenditure pattern more in line with high income countries (although efficiency and quality of services could be questioned). After its independence and the financial crises, it became evident that these patterns could not be sustained under the country's economic and financial conditions (The World Bank, 2000).

Public expenditure reduction have been a prominent characteristic in most of the countries of Eastern Europe and the Former Soviet Union during the transition recessional period, a trend reinforced by the declining capacity of the States to raise revenues. The Kazakhstan's transition in the 1990s has been driven by a "shock therapy" reform process with a rapid and distorting privatization process and liberalization of markets: both factors that influenced the capacity of public financing. In the first half of the 1990s Kazakhstan suffered a deep recession and performed unsatisfactory compared for example with more gradualist reformers such as Uzbekistan (Pomfret, 2003).

In the 1990s the agricultural and manufacturing sectors collapsed. In this phase, the oil sector - managed in the framework of Soviet economy - faced considerable decreases in the demand due to a fall in consumption in the other CIS countries (Kalyuzhnova and Kaser, 2005), while the location of oil fields and the insufficient infrastructure (pipelines) did not facilitate the diversification of supply (to European markets).

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[22] This will cause an increase in expenditure of KZT 20 billion. (in 2003), or US$ 155 million, and KZT 40 billion. (in 2004) or US$ 311 million.
[23] This will cause an increase in expenditure of more than KZT 50 billion. current US$ 389 millions (in 2004)

Table 11: Evolution of GDP, Population and General government final consumption expenditure (1989-2005)

	GDP per capita PPP (current 2000 international $)	Population (millions)	General government final consumption expenditure (% of GDP)[a]
1990	4610	16.34	13.4
1991	4220	16.45	15.8
1992	4184	16.43	18.2
1993	3834	16.33	13.8
1994	3481	16.09	10.6
1995	3331	15.8	13.5
1996	3463	15.57	12.9
1997	3657	15.33	12.3
1998	3688	15.07	10.7
1999	3951	14.9	11.5
2000	4594	14.8	12.0
2001	5287	14.853	13.4
2002	5866	14.858	11.5
2003	6582	14.908	11.2
2004	7413	15.012	12.3

(a)Data include all government current expenditures (republican and local budgets) for purchases of goods and services. It excludes government military expenditures that are part of government capital formation.
Source: WDI (2006) and TransMONEE Database (2007)

The disruption and disarticulation of productive system generated a decline in state revenues from taxation and, to some extent; it explains the huge reduction of expenditure at the beginning of transition and until the economic recovery. Moreover the process of transformation from a centrally planned economy to a market economy is associated with a significant increase in the size of the informal sector that brings reduction of the taxation basis.

Table 12: Composition of public expenditure, as percentage of total, in Kazakhstan from 1995 to 2004

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
General state services	3.2	5.1	8.6	8.4	6.2	5.8	6.7	5.5	6.4	8.1
Defence	4.2	5.8	5.2	5.1	3.6	3.4	4.3	4.5	4.6	5.6
Security	6.7	11	8.2	8.2	6.9	7.9	8.5	9.3	8.9	11.5
Education	17.6	23.4	21.5	18.4	16.8	14.1	14	14.5	14.5	18.6
Health care	11.5	12.8	10.3	6.9	9.6	9	8.2	8.5	8.7	12.8
Social security (social insurance in 1998)	3	3.3	7.8	14.2	33.9	28.4	24.6	24.1	23.3	26.5
Recreational and cultural activities	-	-	3.2	3.1	2.6	2.9	2.4	2.7	3.4	6.7
Housing and utility services	-	-	1.7	1.1	1.3	3.7	4	3	3.3	4.3
Fuel and energy	0.4	0.5	0.3	0.1	-	-	0.7	0.9	0.8	2.5
Agriculture, forestry, water and fish industries, environmental protection	2.3	3.6	3.1	1.6	1.5	1.9	3	3.4	4.6	7.0
Mining and minerals excluding fuel, manufacturing, construction	0.2	0.5	1.7	0.5	0.6	1.2	0.6	0.7	0.4	0.2
Transport and communications	0.6	0.8	0.1	0.1	2.7	6.3	5.8	6.9	8.0	10.1
Other services related to economic activities	50.4	33.2	8.2	6.5	5.6	5.2	7.8	5.8	8.4	7.0
Expenditures, not grouped	-	-	13.3	19.2	-	-	-	-	-	-
Debt service	-	-	-	-	4.2	5.9	5	4.7	3.5	3.4
Official transfers	-	-	-	-	-	-	-	1.5	1.2	0.9
Credits	-	-	6.7	6.6	4.5	4.3	4.4	4	3.9	2.7

Source: UNDP National Indicator and Statistical Yearbook of Kazakhstan (2005)

Since the beginning of 2000s, Kazakhstan experienced a rapid growth of GDP fuelled by the oil boom. An increase in the share of public expenditure on GDP after the recovery and the oil boom was expected. However government expenditure as per cent of GDP stagnated at low levels and did not visibly increase in the period of economic recovery (Table 11). In line with such stagnation in expenditure's share, in 2000 Kazakhstan became the first former Soviet republic to repay all of its debt to the International Monetary Fund (seven years ahead of schedule).

Relative to allocation of expenditures, the shares of education and healthcare on total have been decreasing for the last 15 years (Table 12). The massive allocation of public resources at the beginning of 2000s for the construction of the new capital may raise fundamental questions pertaining to the country's expenditure prioritization (The World Bank, 2000) and, the examination of the budgets, suggest that government still has considerable room for manoeuvre prioritization to increase the efficiency of public expenditures in Kazakhstan.

Figure 9 Correlation between GDP and public expenditure on education (% GDP): comparative analysis of the Republic of Kazakhstan's performance in 2004.
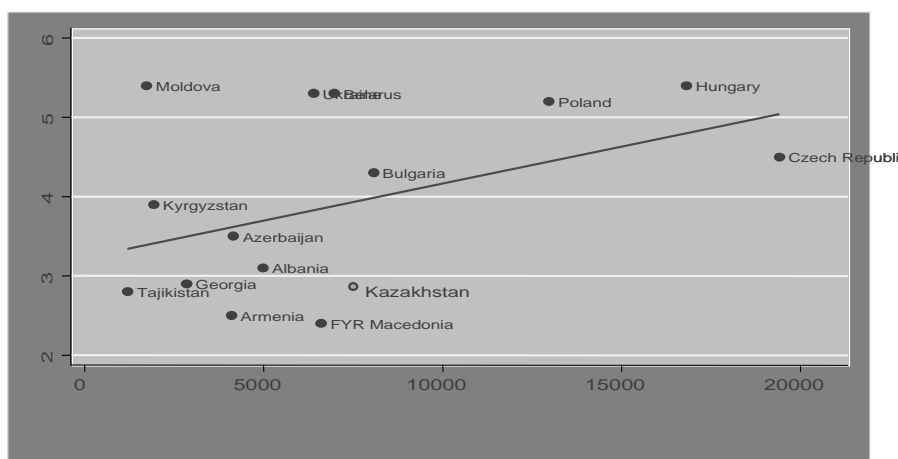
Source: WDI (2006) and TransMONEE database, UNICEF (2006)

Public expenditures in education made up 6.5% of GDP in 1991 and almost halved by 2005 (3.4 % of GDP). Expenditure dropped slightly after 1997. A similar trend has been followed by public provisions of health services (Table 11)[24].

Declines in enrolments and raising in education quality shown in Section II are thus correlated with the change in public expenditure on education. Resources allocated in education as share of GDP by Kazakhstan are low in comparison with countries with similar income levels and even with poorer countries: Kazakhstan is substantially below the regression line (Figure 2) that suggests a level of expenditure at least at of 4%. Among other Former Soviet Republics only Tajikistan performed worse in term of public education expenditure. Expenditure on education should almost double to fulfil average performance of other transition economies. Looking at EU transition economies in order to have a comparative norm (and Moldova, Bielarussia and Ukraine as well), Kazakhstan should reach a quota of 5% of GDP. That is however below the norm of 6% indicated by UNESCO as "Education for all" objective.

Beyond the whole amount of spending in education, analysing the outcomes of investment in human capital, it is necessary to consider the distribution of resources by levels of education. Education resources were also reallocated among different types of education.

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[24] As we noted in the previous Section II, health services are necessary for development of human capital, since they respond to fundamental needs of children and young people, allowing them to take benefits from schooling.

Education establishments are divided in permanent pre-school, general education schools (implementing education programmes in primary, basic and secondary general), vocational education establishments and colleges[25].

Table 13 Consumption expenditure of government on education and health, 1990-2005.

	Consumption expenditure of government on education (US Dollar, pro capite)[a]	Consumption expenditure of government on health (US Dollar, pro capite)[a]	Public spending on education (% of GDP)[b]	Public spending on health (% of GDP)[b]
1990	.	.	.	3.3.
1991	.	.	6.5	3.1.
1992	.	.	3.6	2.1.
1993	.	.	4.6	2.5.
1994	264	369	2.8	2.2.
1995	476	720	4.5	2.9.
1996	535	938	4.6	2.6.
1997	413	923	4.4	.
1998	780	268	4.0	2.1
1999	587	321	3.8	2.2
2000	533	359	3.2	2.1
2001	641	387	3.0	1.9
2002	711	432	3.0	1.9
2003	853	544	3.0	2.0
2004	1186	811	2.9	2.4

.
Sources: (a) TransMONEE Database (2007), (b) Statistical Agency of Republic of Kazakhstan, The World Bank (2000)

Data from World Bank (2000) show that the share of public expenditure on primary and secondary education increased from 44.7 per cent in 1994 to 62.3 per cent in 1998.

The share spent on higher education also increased from 11.2 per cent in 1994 to 14.4 per cent in 1998. During the transition period preschools delivery, together with vocational curricula supply, has experienced considerable declines in their share in total public education expenditures: the share of public education expenditure on preschool declined by 50 percent from 11.7 to 5.7. During the same period, the share of public expenditures on vocational education declined from 16.6 to 9.3 percent. A similar pattern characterizes also years after the oil boom.

Data from Global Education Digest, UNESCO (2007), show that Kazakhstan spend till 0.3 per cent of GDP in favour of university education, quota for pre-schooling is on the contrary relatively narrow.

**Table 14: Public expenditures by education levels, as percentage of GDP in 2005**

Pre-primary school	0.1
Primary school	0.7
Secondary and post secondary non tertiary school	1.2
Tertiary school	0.3

Source: Global Education Digest UNESCO (2007)

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[25] For statistical reasons general education schools are grouped by primary and secondary (some times in lower secondary and upper secondary).

Although there is not enough data to properly examine trends in unit costs by level of education institutions in the whole transition period, World Bank Kazakhstan Fiscal Policy Review (2000) exhibits that Kazakhstan spent on average about 10 times more per student in higher education than in primary education, that is higher relative to proportion of 2.5 times in OECD countries[26]. Proportion of expenditure remains the same during the years after the oil boom (Figure 10).

Figure 10 Public expenditure per student, levels of education (2001-2004), tenges.
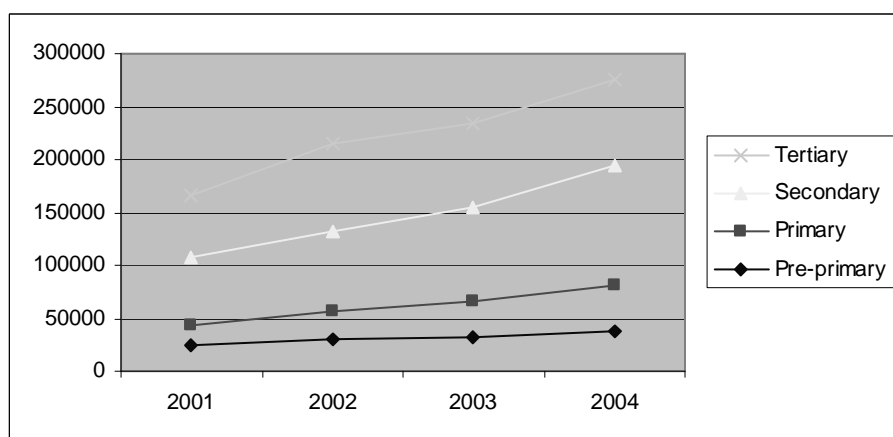
Source: Statistical Agency of Republic of Kazakhstan (2006), Statistical Yearbook of Kazakhstan (2005)

Relative to oil-boom period, Figure 10, compares the annual cost per student between education levels. It shows that, secondary and tertiary levels of education follow a similar pattern of increases relative to primary and pre-primary education. Whereas expenditure per tertiary student is five times the expenditure for pre-primary student, but the incidence of education only in the first case is due to liquidity constrains (see Section II). Spending pro-capita for a primary student in countries as Slovakia or Czech Republic is around 2000 PPP$, in Kazakhstan in the last years is around 300$; in OECD economies spending pro capita for pre-primary is on average 4000 PPP$ while in Kazakhstan is 270$. Countries whit hight level of inequality tends to allocate huge amount of money in tertiary education.

In 2005 comparing data from Kazakhstan with average data from other Central Asia and Eastern Europe Countries, annual public expenditure per primary student as a percentage of GDP per capita in 2005 was 10% of GDP per capita, above the average data from Central Asia (that is 9.3% of GDP per capita) but much lower than Central and Eastern Europe average of 16.6. In the Section IV, we will deal with the optimal allocation of education budget in order to maximize social return and reduce inequities in access to education.

To identify source of the low public per capita expenditures per child it can be used the following expression for each education sector:

Pre-primary education:

Equation 3

$$P\text{-}SE/c = GDP/c * PExp/GDP * EdE/PExp * PSEd/EdExp$$

In the case of pre-primary sector the insufficient expenditure is due to low total expenditure to GDP, low share of education expenditure and low pre-school allocation in the total education expenditure. For primary, secondary and tertiary education:

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[26] Generally developing and transition countries spend more resources in tertiary education relative to OECD economies (UNESCO, 2006).

Equation 4

$$PE/c = GDP/c * PExp/GDP * EdE/PExp * PEd/EdExp$$

Equation 5

$$SE/c = GDP/c * PExp/GDP * EdE/PExp * Pd/EdExp$$

Equation 6

$$TE/c = GDP/c * PExp/GDP * EdE/PExp * PSEd/EdExp$$

In those cases the problem of low allocation emerges from the scarcity of overall public expenditure on GDP and to the weak policy priority given to education in general. As we saw before there is no a problem of low Primary School, Secondary School or Tertiary School allocation in total education expenditure. Even if within the secondary school expenditure there is a problem of scarce priority given to vocational/technical programmes.

(iii)   The efficient use of resources to deliver public schooling

Public expenditure on education not necessarily yield a raise in the national level of human capital, this depends on several attributes to spending itself mainly the efficiency of the spending process which determines effectiveness of benefits for target individuals. Education costs are influenced by how efficiently education is provided. As well as education outcomes are influenced by other kind of public social provisions, as health services.

The extent to which educational expenditure is divided among different types of goods and services directly affects the quality of education, conditions of school infrastructures and the capacity of the system to absorb increased enrolments. This indicator reflects the breakdown between capital[27] and current expenditure[28] on educational institutions. Data available for Kazakhstan, and used in this work, reflect total expenditures but don't represent wholly actual resources invested in favour of pupils, because the figures are inclusive of infrastructures expenditures. Current expenditure generally exceeds capital expenditure, mainly due to staff costs: Table 14 gives an idea of the proportion. However, the magnitude can vary by educational level. Kazakhstan capital expenditures in 2005 was only the 6.5% of total for primary and secondary education, while in the case of tertiary level reached the 17%.

Tabella 15 Shares of capital and current expenditure in total public expenditure

	2002	2004	2005
Capital	3.7	4.4	6.2
Total current expenditure	96.3	95.6	93.8
Other current expenditure	30.2	31.2	13.7
Salaries	66.1	64.5	80.1

Source: UNESCO Statistics

Over 60% per cent of the budget was allocated to teacher salaries and utilities in 2000. Only 1 per cent was allocated to equipment and furnishings and 1 per cent to repairs and rehabilitation. School construction stopped, and space availability became a problem,

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[27] Expenditure for assets that last longer than one year. It includes expenditure for construction, renovation and major repairs of buildings and the purchase of heavy equipment or vehicles.
[28] Current expenditures is expenditure for goods and services consumed within the current year and which would be renewed if needed in the following year. It includes expenditure on: staff salaries, pensions and benefits; contracted or purchased services; other resources including books and teaching materials; welfare services; and other current expenditure, such as subsidies to students and households, furniture and minor equipment, minor repairs, fuel, telecommunications, travel, insurance and rents (UNESCO, 2007).

particularly in urban centres. One-third of schools dealt with overcrowding by offering two or three shifts per day (World Bank, 2000).

Table 16 Subnational spending by function (2004)

	as % of total public sector spending on function	as % total sub national spending
Administration	26%	4%
Defense	17%	2%
Police	21%	4%
Education	88%	31%
Health	82%	20%
social assistance	15%	7%
Utilities	98%	12%
Transport	33%	6%
Other	30%	14%
Total	43%	100%

Source: The World Bank (2005)

However teachers salaries are low in comparison to national average: low teacher salaries create morale problems in schools, encourage corruption, and force many teachers to take second jobs in order to support themselves, and so the quality of education is compromised (World Bank, 2000). In secondary and higher education, there are too many teachers relative to the number of students. These expenditures could be allocated more efficiently by raising salaries, reducing the number of teachers at all levels of education, and increasing the hours of work per teacher (Anderson and Heyneman, 2005).

Table 17 Distribution of expenditures between republican and local budgets (% of GDP)

	2000		2001		2002		2003		2004		2005	
	RB	LB	RB	LB	RB	LB	RB	LBs	RB	LB	RB	LB
Education	0.5	2.7	0.6	2.6	0.4	2.8	0.5	2.8	0.6	3.0	0.9	2.8
Health	0.3	1.8	0.4	1.5	0.3	1.6	0.4	1.6	0.5	1.9	0.8	2.0

Source: Statistical Bulletin of Ministry of Finance of Republic of Kazakhstan

Level of efficiency is due also to the functioning of allocation mechanisms between central and local governments. It is widely recognized in the literature that devolution of power to the local community usually brings some responsibility in decision-making and in implementation and can provide incentives for improving the quality and cost-effectiveness of the programmes.

So far we have used data on public expenditure from Consolidated Budget[29]. However public education funds are managed by different levels of public administration in the Republic of Kazakhstan: Republican Budget, Regional Budget and District Budget. Education expenditures were reallocated from the republican budget to the local budget through intergovernmental transfers. By 1999, in Kazakhstan, all expenditure on preschool and vocational education was determined at the local level, and over 90 per cent of expenditure on primary and secondary education was managed locally. The share of local government expenditures in total public expenditures on education increased from 66 per cent in 1990 to 89 per cent in 1999 (Anderson and Heyneman, 2005).

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[29] The Consolidated Budget Expenditures is the sum of the expenditure on education and education administration made by local, regional and national/ central governments, including municipalities. Household contributions and intergovernmental transfers are excluded (UNESCO, 2007).

Table 18 Incidence of education in local budgets, millions of tenge, 1999-2005.

	Expenditures of local budgets	Expenditures in education from local budgets	Percent
1999	214974	65326	30.4
2000	303809	71097	23.4
2001	394055	86558	22.0
2002	378549	104698	27.7
2003	468793	130976	27.9
2004	608796	167363	27.5
2005	783484	213534	27.3

Source: Statistical Bulletin of Ministry of Finance for 1999-2005

In 2005 in local budget quota spent in education is 2.8% of GDP while the central expenditure allocation for education was 0.9% of GDP. Cornia (2006) argues that local authorities often enjoy a considerable "informational advantage" in relation to central authorities as they are in touch with local beneficiaries of public expenditure.

Table 19 Public expenditure per capita by oblasts in 2001 and 2006, tenges.

	2001	2006
Akmola	6088	20002
Akubinsk	6938	20658
Almaty	5586	14809
Atyrau	10294	22806
East Kazakhstan	5555	14568
Zhambyl	4872	15898
West Kazakhstan	8571	23595
Karaganda	4913	14174
Kyzlorda	3770	20416
Kostanai	4551	15756
Mangistau	6125	23403
Pavlodar	15093	19181
North Kazakhstan	5057	20481
South Kazakhstan	5319	15885
Almaty City	13122	13265
Astana City	1833	16460
Average	6730	18210
Maximum	15093	23595
Miminum	1833	13265
Coefficient of variation	0.51%	0.19%

Source: Ministry of Finance of Kazakhstan (2001-2006)

Local administrations within appropriate standards could calculate expenses per pupil, per patient or persons targeted of social assistance providing better services to individuals. Even though resources for social expenditures in Kazakhstan are decentralized, although local authorities had acquired the responsibility for managing these expenditures, they did not acquire the authority to initiate new taxation. They were expected to finance social expenditures solely from the resources allocated to them from central authorities (Mahmudova, 2006). Nor did the responsibility for local finance necessarily imply that regional authorities were to acquire authority in other administrative arenas; on the contrary local administrations have limited rights in targeting social and economic problems in their regions because standards and rules are defined by the centre: i.e. curriculum standards, teacher salaries, pedagogical rules and regulations continue to originate from central authorities (Anderson and Heyneman, 2005). The lack of self-governments at local level has a negative

effect on efficiency and effectiveness of spending in health and education. According to the World Bank (2007) the fact that local governments accounted for the majority of public sector spending on primary and secondary education did not translate so far into improved efficiency of spending in those levels. As shown in table 19, the management of education resources at local level still in Kazakhstan generated disparities in schooling facilities across oblasts in expenditures per capita (The World Bank, 2000 and Pomfret, 2006). Until 2005[30], delimitation of functions among oblast and districts in each oblast was established by the oblast *akims*[31] at their discretion. For example education services are financed by oblast budget in certain oblast, whereas in others they were financed by district or city budgets. This unclear delimitation make difficult to evaluate amount of expenditures and efficiency (Makhmutova, 2006). Moreover it is arguable that in a situation of social and economic inequality at the local level, decentralization can be highly inadequate in targeting social interventions to benefit the poor.

V. TOWARDS ALLOCATIVE EFFICIENCY AND EQUITY IN THE DISTRIBUTION OF THE BENEFITS OF THE NATURAL RESOURCES REVENUES: RETURNS TO HUMAN CAPITAL VERSUS ALTERNATIVE INVESTMENTS.

(i)   Economic returns to education versus alternative investments.

The 2007 study of The World Bank relating to fiscal policy in European and Central Asia Countries shows a positive coefficient of 16% for education and health spending on government effectiveness[32]. Following the criterion of maximization of economic returns by allocating the huge flow of revenues coming from oil, we will attempt to show that the profitability of education spending is higher than other counterfactual investments using data reported in the previous sections.

In Kazakhstan, at the time, the revenues from the oil sector are wholly invested in the stabilization fund and only exceptionally (following the proposal of the president), they are used in other ways. An increase in social expenditure on activities with high rates of returns will have similar (or better) effects on the welfare of future generations than those due to the interest generated by the Oil Fund assets, as rates of returns of education and health expenditures are generally higher and have to attitude toward spending effect (see Section II). To compare returns of Kazakhstan Fund financial assets (savings section) with the potential future earnings from education we should have net benefits from education taking into account the cost per pupil hold by the State. Making several simplifications, we can use the most recent estimation of returns to an additional year of schooling for Kazakhstan and compare it with interest rates from financial markets. The rate is around 14% as average of value for men and for woman: thus twice the returns produced by saving portfolio of the National Fund (see Section III). Moreover if the education composition will be revised in favour of pre-school and professional curricula, there will be two additional advantages. Firstly if allocation within education budget is in favour of basic school services (widespread attendance to pre-school programmes preparing for primary curricula, effectiveness and quality of basic school spending with good outcomes) the return of this allocation should be higher and the effect on household incomes progressive. Secondly, even if vocational school seems to have in general low gains in terms of opportunity-cost, having a vocational curriculum has a significant impact in household expenditures and productivity of manufacturing sector, which enhances diversification driven

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[30] In 2005 a new budget code fixed expenditures for levels. Since 2005 the local share of consolidated budget for education remain almost the same.
[31] Heads of local administrations.
[32] The study uses a dynamic panel data regression on variables impacting high government effectiveness in ECA region, using the Arellano and Bond (1991) Generalized Method of Moments (GMM) technique.

development. Taking steps from these considerations seems that, presently, allocation of resources does not follow criterion of optimality in order to reach optimal allocation.

(ii)   Equality: improving the distribution of educational achievements.

The government spending on sectors as education and health can be viewed, following equality objective and a muldimentional definition of benefit, as the stock of government capital that could generate social welfare (Barnett and Ossowski, 2002). This happens in our case study in two ways: (1) generating the most equitable distribution of the benefits of oil revenues at the moment and (2) prioritizing the wellbeing of individuals (mainly young people) as important asset for the future (inter-generational equity): enhancing children wellbeing help to interrupt intergenerational transmission of poverty.

Educational choices are conditioned by factors which exhibit intertemporal and intergenerational persistence such as unobservable abilities, family cultural background, family financial resources, public resources and social capital. Income inequality may therefore prevent access to education resulting in higher inequality of educational achievements (Checchi, 2006). For wealthy agents the opportunity cost of funds spent on education is the market rate of interest while for poor individuals the price of these funds is the interest rate at which they can borrow to finance their human capital investments (Neal and Rosen, in Atkinson and Bourguignon, 2000). Public provision of education makes the two groups in the same situation. Moreover income inequality tent to be lower in countries where average educational achievements is higher, this could result from the fact that more people have access to education and therefore better employment opportunities, or because greater equality in educational achievement enhances social mobility, thus lowering long-term inequality (Checchi, 2006). Thus increasing equality in education access should improve the distribution of income: as consequence allocation to public education will be acting as inequality reduction strategy. Moreover education inequality is reduced by public policy that emphasizes universal primary and secondary education, assigning less priority to university education expansion (Cornia 2004, p. 11). Going back to the case of Kazakhstan, education benefits are at the moment unequally distributed and education levels are lower in poorest households. Individuals in wealthier households are more likely to have attended secondary schooling or beyond, compared to the population in the poorest quintile. Increasing the general allocation to education and transferring resources from high school to pre-primary, primary and vocational programmes should reduce level of education inequality and, ceteris paribus, inequality in the distribution of benefits from oil revenues.

(iii)   Maximization of population benefits over a long time horizon: investment in human capital as efficiency-equity case.

'It is a rare public policy initiative that promotes fairness and social justice and at the same time promotes productivity in the economy and in society at large. Investing in disadvantaged young children is such a policy' (Heckman, 2006)

The long run challenge for a resource rich country is deciding how to allocate national wealth across generations and make the distribution of them as equal as possible between nowadays individuals living in the country. That it means taking account of equality and efficiency criteria in the allocation of resources in a cross sectional or temporal perspective in order to maximize population benefits over a time horizon.

The concern of mainstream economics for efficiency-equity trade off (Okun, 1975; Browing and Johnson, 1984) is central to the policy debates on poverty. A society may very well consider the objective of redistribution in favour of the poor a sufficient worthy goal to warrant some sacrifice at level of efficiency but if the redistribution comes bring costs in terms of misallocated resources this can lead income losses in the long term and it is not economically sustainable. However a redistributive policy can help economic growth by correcting market failures that particularly affect the poor: this is the case of education provision (Benabou, 1996). Expanding the opportunity for education can at the same time promote growth in the long term (see endogenous growth models in Section II) and help the poor to climb out of poverty interrupting intergenerational persistence. Furthermore there are important long term externalities in public education delivering that also help efficiency and equality to go at the same pace. From the previous paragraphs we know that transferring part of the oil revenues from the Oil Fund to social expenditure (investment in the "*n*" aspects of human capital) is driven by "optimal allocation" and "intergenerational equity" criteria. Thus it is an efficiency-equity case tracking the two objectives of economic efficiency and equality.

If the positive effects on the welfare of future generations of investment in human capital are more advantageous than monetary gains generated by the Oil Fund financial assets, the following condition, where are taken into considerations issues of efficiency and equity, is true:

Equation 7

$$PNV_A(\sum_t^T \frac{\sum_j^T \alpha_j B_{Atj}}{(1+i)^t}) > PNV_B(\sum_t^T \frac{\sum_j^T \alpha_j B_{Btj}}{(1+i)^t})$$

On the left side of the relation the B_A are net-benefits weighted on the base of social relevance given to each benefit: thus the total amount takes into account benefits from redistribution, health monitoring for young children, child protection and development, reducing cost of crime and marginalization of young people, enhancing productivity of non-oil industry and raising social capital.

This result hinges, however, on the condition that such expenditures effectively increase the human capital of the children and the youth: this means improving the governance of spending process and limiting problems of expenditure targeting and monitoring which lead losses in education supply's quality.

CONCLUSIONS

This study supports the opportunity of allocate oil revenues to invest in human capital as strategy for sustainable growth and maximization of population benefits over time horizon in the oil economies of Former Soviet Union. This kind of investment has been proposed as alternative choice to Oil Fund assets and pursues the same objectives of avoiding spending effect (Section II) and smoothing resources across generations (Section III and V). Some other features of resource curse can be dealt with diversification policies and investment in physical infrastructures.

Public expenditure allocated to human capital formation suffered a big decline in Kazakhstan during transition and despite rapid economic growth in recent years, such social allocation have remained low, in relation to the average data from transition economies. The lack of policy priority in these sectors has to be corrected following criteria of efficiency in resource allocation and equitable distribution of benefits.

The education budget need also to be better allocated by sectors and functions and it is necessary monitoring the spending process. The sectors that appear in need of greater financial support are pre-school and technical/vocational curricula. Spending in both these sectors has progressive properties.

Taking steps from this study, further analysis has to be done, using micro data from household surveys, looking for demographic incidence analysis of educational and healthcare policies in the country and simulating different allocation along educational levels.

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