



School of Economics

Working Paper 2005-18

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School of Economics
University of Adelaide University, 5005 Australia
ISSN 1444 8866

19 June 2005
(revised December 9, 2005)

HOW ARE OIL REVENUES REDISTRIBUTED IN AN OIL ECONOMY?

The Case of Kazakhstan

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Paper to be presented at the American Economic Association conference in Boston (MA) in January 2006. Patricia Sourdin's work on the 2002 household survey was supported by a University Research Grant from the University of Adelaide.

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1. Introduction

In 2010, Kazakhstan will have joined the club of the ten largest oil exporters in the world. The IMF is forecasting oil revenues of \$99 billion over the next 45 years for this country of fifteen million people; compared to the current level, GDP per capita could be multiplied by four. The coming decades will see a huge stimulus to Kazakhstan's economy and potential for economic development. Within this encouraging framework, Kazakh authorities strive "to generate a pattern of growth in the coming decades that is conducive to job creation and raise living standards across the vast majority of the population" (World Bank, 2005). With this end in view, redistributing oil revenues appears to be the crux of future economic and social development in Kazakhstan.

The cross-country evidence, however, suggests that there may be pitfalls. Sachs and Warner (1995) found a negative relationship between resource abundance and economic growth in cross-country regressions. Subsequent contributions have refined the debate of oil as a curse, establishing that the relationship is conditional (on variables proxying for institutions or on democracy) and that the negative relationship is stronger for oil and minerals than for agriculture.¹ Papyrakis and Gerlagh (2004) obtain a negative coefficient on their natural resource variable (share of minerals in GDP) in a simple conditional convergence growth regression, but the coefficient becomes positive when measures of corruption, openness and schooling are added to the right-hand side. This fits with the observation that successful resource-rich countries like Norway or Australia or Malaysia have open economies and low levels of corruption, but does not address the issue of whether resource-abundance has fuelled corruption in countries like Nigeria or Venezuela.

The Sachs-Warner results are interesting, but beg the next questions. What transmission mechanisms make a resource boom a curse? How are oil revenues redistributed in an oil economy? How should redistribution mechanisms be designed to benefit across a vast majority of the population? As oil exports grow, discontent in oil-producing regions and in the poorest regions of the oil country simultaneously grow, as oil-producing regions wish to keep a higher share of oil revenues whereas poorest regions request a higher redistribution share. Nigeria has experienced this conjunction of discontents for decades (Ikein et al., 1998). In Russia, approximately three-quarters of oil revenues flow to Moscow creating a struggle between the politicians in regions of oil extraction and the central authorities (Dienes, 2002, 451).

The main value added of this paper is the empirical approach we use to assess the impact of the oil boom. The selected case study is Kazakhstan² because an oil

¹ See, for example, the literature review and regression analysis in the first two sections of Sala-i-Martin and Subramanian (2003), and Stevens (2003). Isham et al. (2003) distinguish between point-source resources (oil, natural fertilizers and cotton) and coffee/cocoa, which have been associated with poor growth performance, and other natural resources, which have not. This is the usual result, although Korhonen (2004) finds that the largest negative effects on growth come from non-fuel extractive raw materials.

² Kazakhstan is the second largest country of the Former Soviet Union, covering an area of 2.7 million square kilometres. The population has shrunk since 1991 and is now less than 15 million.

boom has driven Kazakhstan's economy since the discovery of large new oilfields in the late 1990's and early 2000's. We use household survey data from before and after the start of the oil boom to assess the extent to which the benefits from the oil boom were retained in the oil-producing regions, or spread evenly across the national economy, or were concentrated in metropolitan centres.

Our assessment of the impact of oil boom confirms that oil revenues are not widely spread in the country, especially in rural regions (where oil is extracted). One of the two largest oil-producing regions remains, on average, the poorest region of the country. On the contrary, the two capitals of the country (Almaty, the former capital and financial centre, and Astana, the capital since 1997), home to the country's elite, have seen a major improvement of living conditions and revenues. Neither redistribution which oil companies undertake through social projects nor official redistribution through regional budgets seems to reach the poorest population in oil-producing regions, and it remains a major challenge for any government to redistribute evenly oil revenues in an oil economy. So far the main channel for redistribution has been unofficial, through the informal economy.

The next section gives figures presenting the oil boom in Kazakhstan as well as production prospects. The third section presents the importance of oil sector in Kazakhstan's economy. The fourth section identifies three redistribution mechanisms, and the fifth section gives a preliminary assessment of the mechanisms in Kazakhstan. The sixth section presents poverty and living standards figures before and after the first oil boom. The seventh section introduces a first-cut analysis of the household survey data and assess the importance of the of each redistribution mechanisms. The eighth section concludes.

2. Oil Boom in Kazakhstan

Despite the fact that the start of oil extraction in Kazakhstan dates back to the early twentieth century, oil production only started to grow significantly in the 1970s and 1980s (see Graph 1). During the Soviet times, Kazakhstan was a Republic whose two main economic pillars were agriculture and livestock farming (over two-fifths of GDP in 1990) and coalmining and metal smelting (Pomfret, 1995, 80-5)

When independence occurred in 1991, the oil sector in Kazakhstan confronted several handicaps.

First of all, prospecting for new reserves under the potentially oil-rich North Caspian was delayed for several years by disagreements over delimitation of national territories and by domestic wrangles over selling exploration rights to foreign firms possessing the technology to explore the offshore fields.

Secondly and even more importantly, the pre-existing pipelines were controlled by a Russian enterprise, Transneft, which overtly discriminated against Kazakh oil. After the dissolution of the USSR, the government of Kazakhstan took over the state's share in the TengizChevroil³ joint venture, but Russia claimed rights to part of the oil and also controlled the only existing pipeline about whose access no commitment had been made in the original agreement. The Russian state-owned

Administratively, the country is divided into fourteen oblasts (or regions) and two cities (Astana and Almaty).

³ Current Tengizchevroil ownership structure is the following: Chevron (operator) 50%, ExxonMobil (25%), Republic of Kazakhstan/Kazmunaygaz (20%), LukArco (5%).

pipeline company engaged in monopsonistic practices such as artificially high assessments of technical losses, arbitrary long route allocations, and other discriminatory pricing including absence of a quality bank which would recognize the higher quality of Tengiz oil; the net effect was that transit tariffs for Kazakhstan's crude were typically double those for Russian crude.⁴ High transportation costs have been a severe obstacle to develop oilfields, especially in central Kazakhstan such as Qyzylorda region. Developed by Hurricane Hydrocarbons of Canada, which was renamed PetroKazakhstan in 2003, Kumkol's expansion has been constrained by transport costs of around \$12/bbl.⁵

The turnaround in 2000 was highlighted by rising oil prices and discovery of the huge Kashagan offshore field (see map 1 for details). Although Kazakhstan only reached agreement with Russia in 2002 over delimitation of the Caspian Sea bed, oilfields explored in the late 1990s will come online in the first decade of the twenty-first century with huge potential production levels.

The pipeline issue is also taking time to resolve, but since 2001 the situation is becoming more favourable to Kazakhstan. The opening in autumn 2001 of the first privately owned and commercially operated pipeline, the Caspian Pipeline Consortium (CPC), provided an alternative route through Russia, which cut transport costs from Tengiz in half.⁶ Other producers in Kazakhstan have also benefited from the CPC. In early 2003 a 450 km pipeline was completed to link the Uzen (Aktöbe region) oilfield, operated by the Chinese National Petroleum Company, to the CPC. A 985 km pipeline (second section of the Kazakhstan-China pipeline) linking Atasu, in northwestern Kazakhstan, to Alatau pass (Xinjiang) should be completed in December 2005. Also in 2005 the Baku-Ceyhan pipeline was completed, which is of less immediate benefit to Kazakhstan but is likely to become an important outlet as Azerbaijan's oil production is projected to plateau rather rapidly while Kazakhstan's production should continue to expand after 2015. The late 1990's game could then resume with new players. Indeed, the CPC's existence led to reductions in the costs of using the Transneft pipeline, but with Kazakhstan's oil production booming, additional pipelines will need to be upgraded or built.

⁴ IMF estimates from International Monetary Fund, "Cross-Border Issues in Energy Trade in the CIS Countries", *IMF Policy Discussion Paper PDP/02/13*, December 2002. See also International Monetary Fund (2003b).

⁵ The firm has been exporting oil by railcar to China and to the Transneft Russian pipeline system. The \$12 calculation is reported in International Monetary Fund (2003b, 9). Costs would have been reduced to \$8 if PetroKazakhstan could have joined the Caspian Pipeline Consortium, which opened a new pipeline to the Russian Black Sea coast in 2001, but it was induced by the Kazakhstan government to sign on to construction of a 700 km link to the existing pipeline network which would reduce its transport costs to \$9.5 per barrel. In 2003, the company signed an agreement to sell 1 mmt per year to Tehran in exchange for Iranian crude on the Gulf. In 2005 PetroKazakhstan was bought by the Chinese National Petroleum Corporation, so its oil's future destination is likely to be China.

⁶ The CPC is half-owned by Russia (24%), Kazakhstan (19%) and Oman (7%), and the other half is divided among ChevronTexaco (15%), LUKoil (12.5%), ExxonMobil (7.5%), Rosneft/Shell (7.5%), Agip (2%), British Gas (2%), Kazakhstan Pipeline Ventures (1.75%) and Oryx Caspian Pipeline (1.75%). After the dissolution of the USSR, the CPC (then consisting of Transneft, Kazakhstan and Oman) was awarded the rights to transport oil from Tengiz to the Black Sea, but negotiations dragged on how much Chevron should pay towards construction. After Mobil bought 25% of Tengiz and LUKoil/Arco purchased 5%, the Tengiz partners together with other investors took a half-share in the CPC.

Institutionally, the state-owned sector was integrated in 2002, when the oil exploration and production company, Kazakhoil, merged with the transport company, Transport Nefti i Gaza,⁷ to form Kazmunaigaz.

Oil output and exports began to grow rapidly after 1999 (Table 1). Between 1999 and 2003, Kazakhstan's oil production grew year-by-year by approximately 14%, roughly doubling production since independence. By 2010, oil exports could almost double in comparison with the 2005 figure. Oil is produced from 55 fields (Ernst and Young, 2005, 3), the largest of which include: Tengiz (oil), Karachaganak (oil and gas condensate), Kumkol (oil) and Uzen (oil and gas-bearing).⁸

Oil production is dominated by two regions: Mangghystaou and Atyraou, which represented 98% of Kazakhstan's production in 1970 and now accounts for $\frac{3}{4}$ of national production (see Graph 2 for details). Until the mid 90s, one region, Mangghystaou region (located in the Caspian basin) has been traditionally the main oil-producing region of the country accounting for more than $\frac{3}{4}$ of Kazakhstan's oil production. The second old oil-producing region is Atyraou region (again located in the Caspian basin). Production started to increase in the 1970s and boomed in the 1990s after the start of extraction operations in Tengiz. Since then, this oblast, and especially its eponym capital, has become the main oil center of the country.

In the last decade, three new (or relatively new) oil-producing regions have emerged: Aqtöbe region and its oil and gas field of Karachaganak, Qyzylorda and West Kazakhstan. However, production of these three regions is expected to remain limited to $\frac{1}{4}$ of the production of the country in the next decade. Among them, West Kazakhstan remains the most promising.

Prospects are bright since the bigger offshore Caspian field of Kashagan was discovered in 2000. Estimates give 45 billion barrels of which 8-13 billion are recoverable with existing technologies. Production should only begin in 2008. By 2010, the IMF is forecasting annual oil exports of 84 mmt. Kazakhstan's production should reach a plateau around 2030 and a first peak in 2018. Unexplored areas of the north Caspian are expected to also contain relatively large reserves.

3. Oil Sector in Kazakhstan, the Key Economic Sector

In the 1990s, the oil sector rapidly became the most important economic sector in Kazakhstan. During this period, due to the privatization process, Kazakhstan transformed its ownership structure from that of a Communist economy to an oil booming economy (Pomfret, 2005). Today, the oil sector represents approximately 35% of export revenues and 20% of budget revenues (or approximately 6.5 % of GDP).⁹ This trend should be strengthened in the coming years.

⁷ Literally Oil and Gas Transport. It had been the result of a previous merging operation between KazTransOil and KazTransGaz.

⁸ The Tengiz field with recoverable reserves of 6-9 billion barrels is the largest active field in Kazakhstan. Kumkol field now produces over 7 mmt per year. Uzen production was expected to rise to 6 mmt by 2005, from around 2.5 mmt in the late 1990s. Approximately 1 mmt corresponds to 20,000 barrels per day.

⁹ These figures are equivalent to Russian figures: Russian oil sector represents 20% of GDP, 40% of total export revenues and 20% of fiscal revenue of state budget (Cukrowski 2004, 295).

Despite the problems, Kazakhstan is the country, which has attracted the largest amount of FDI (per capita) among CIS countries.¹⁰ Chevron began negotiating for the Tengiz oilfield in 1990, in what was the biggest FDI deal of the USSR's history, but otherwise FDI was sluggish in the first half of the 1990s. However, from 1996 to 2000, FDI exceeded one billion dollars a year and since 2001 it has exceeded two billion dollars, with over 85 percent going to natural resource activities (the amount of FDI in manufacturing remaining small). Investment flows into the oil sector reached \$4 billion in 2003 (or 13% of GDP). Kashagan developing costs are estimated to \$29 billion (US DOE, 2004, 4), which will imply large amount of incoming FDI to Kazakhstan.

Oil production growth has had a strong positive impact on Kazakhstan's economic growth and revenues. In 2003, real GDP grew by almost 10%. Since 2000, current fiscal receipts from oil sector, excluded one-time payments, have accounted for almost 20% of general government revenue (IMF, 2004, 18).

Box 1: Which revenues stem from oil in Kazakhstan?

- **export sales of crude oil**, Kazakhstan's share in consortia (after deduction of cost recovery expenses under a PSA regime). Export of petroleum products remains a minor item; Kazakhstan still imports most of petroleum products consumed in the country
- **tax applicable to subsurface users**. They depend on the type of tax regime of the contract: excess profit tax (EPT) or production-sharing agreement (PSA).¹¹ In a EPT tax regime, the company is liable to pay bonuses, royalty, excess profits tax and a rent tax on export of crude oil,¹² whereas in a PSA the company is subject to bonuses, and gives up a share of production,¹³ rent on export of crude oil (except in fixed price PSA) and "top up tax".
- **taxation of business profit**, such as corporate income tax and branch profits tax,
- **indirect taxation** such as VAT, excise and customs duties,
- **other taxes** such as environmental fees, property tax, land tax, vehicle tax and other fees and licenses.

Source: For more details on the various taxes see Ernst and Young (2005), on which this Box is based

¹⁰ Data from European Bank for Reconstruction and Development, *Transition Report 2003*; cumulative FDI 1989-2002 of \$13,568 million or \$938 per capita is the highest in the CIS, although less than FDI in Poland, Hungary and the Czech Republic

¹¹ Under a PSA regime, the foreign oil company, as its own risk, is expected to pay all initial exploration and development costs. The government receives a direct share of the field's production, in cash or in kind, without any investment by it. The key factors to determine the profit of the foreign oil company is the percentage of total production to be used for cost recovery, the share in total production to be shared, the procedure to determine the profit and the percentage shares of the profit. According to Ernst and Young (2005, 17), PSA and EPT contracts entered into force after 1996 and before January 1, 2004 are unequivocally grandfathered. Under a PSA tax regime, foreign companies are exempted from excise, property tax, land tax and vehicle tax

¹² This progressive tax was introduced in 2004. The rate depends on market price of a barrel of crude oil. For price above \$40/barrel, tax rate reaches 33%.

¹³ The share attributed to Kazakhstan is determined after deduction of the cost recovery production. The share of production allocated to cost recovery may not exceed 75% prior to payback and 50% post payback.

Oil production generates major revenues for Kazakhstan, especially since tax code was amended in 2004. The introduction of the rent tax on export of crude oil has raised the government's share of oil income to a range of 65 to 85% (US DOE 2004, 3). In 2003, oil exports brought almost \$2 billion to the budget revenue. By 2010, revenues stemming from oil exports should reach more than \$7 billion. The IMF is forecasting undiscounted revenues of \$270 billion over the next 45 years, equivalent to \$99 billion discounted at 5 percent (IMF, 2004, 27). The latter figure corresponds to \$6600 per capita.

4. A Typology of Redistribution Oil Revenues in an Oil Economy

This section presents a literature review of the political economy of redistribution of oil revenues and a typology of redistribution of oil revenues in oil economies. It strives to answer three questions. Why should oil revenues be redistributed in an oil economy?¹⁴ What are the redistribution mechanisms in place in an oil economy? What is the political economy of redistribution mechanisms?

Why should oil revenues be redistributed in an oil economy? As Isham et al. (2003, 3) point out, oil is a “point-source” natural resource, which means that it is extracted from a narrow geographic and economic base. Consequently, when oil production emerges, horizontal inequality strengthens: oil-producing regions may disproportionately benefit from additional revenues whereas poor regions could be left out of these revenues flows.

Growing inequality between regions, as a result of an oil boom, justifies that oil revenues are substantially redirected to the center and then redistributed. Revenues drained to the center may ensure efficient redistribution of oil revenues by producing economies of scale in the production of a public good and by stabilizing the economy insuring against region-specific shocks (Ahmad and Singh, 2003, 2-3).¹⁵

However, balance between oil-producing and poorest regions of an oil-producing country is difficult to reach. Indeed, as equalization and stabilization mechanisms (performed by the center) start to function, oil-producing regions express discontent because they wish to keep locally a growing share of oil revenues and poorer regions of the country express discontent because they wish to benefit more from redistribution schemes.

What are the redistribution mechanisms in place in an oil economy? To answer this problem, we propose a typology based on two main questions: who redistributes oil revenues, and how is it organized? We distinguish between three categories:

1. *Official public redistribution* encompasses taxes and revenues stemming from oil production shared locally as well as financial transfers from the center. In oil-producing regions, revenue-sharing schemes generally replace financial transfers from the center unlike what happens in the poorest regions. Local governments may redistribute oil revenues through social transfers.

¹⁴ A trade-off exists between spending and saving oil revenues. As known, oil revenues in the case of an oil boom might have deleterious effects via Dutch disease mechanisms (ie. an appreciating exchange rate makes production of other traded goods unprofitable). However, this section only describes redistribution mechanisms.

¹⁵ The authors give those justifications for a federal State probably because they built their demonstrations on a case of a federal State: Nigeria.

2. *Company redistribution* encompasses direct, indirect and induced revenues that oil companies invest or spend locally. In the case of the oil sector, however, there is no need for large employment or for social programs (or “social assets”) and so this type of redistribution is rather geographically limited. Oil companies’ headquarters, especially in the case of non-operating foreign companies, employ a limited number of staff.
3. *Unofficial redistribution* results from two factors:
 - (i) not registered household activities. Oil production generates money and people inflows. In order to fulfill the new demands, individuals or households may start small businesses. Self-employment can therefore be the result of oil production.
 - (ii) informal “leakage” of oil revenues redistributed to the economy. In this case, revenues may be used for political or individual purposes. Measurement of this type of unofficial redistribution is obviously the least easy to achieve but the “oil curse” literature refers to these types of mechanisms, explaining their negative impact on institutions and consequently on growth.

What is the political economy of redistribution mechanisms when informal leakage prevails? Ross (2001) describes in details the three effects of oil on political economy. According to this author, the “rentier effects” may characterize the link between oil and a type of rule. In this case, “governments use oil revenues to reduce social pressures that would otherwise result in demands for greater accountability” (IMF 2004, 12). Ross (2001) defines three possible sets of mechanisms used to reduce those social pressures:

- taxation effect: thanks to oil revenues, governments are less likely to tax their populations and the population in turn will be less likely to demand accountability from their government,
- expenditure effect: oil wealth may lead to greater spending on patronage, reducing the latent demand for participation in democratic processes, what is called “fiscal pacification”,
- group-formation effect: government may use oil revenues to prevent the formation of social groups that could be inclined to demand more accountability.

Finding comparable results, Kronenberg (2004) demonstrates empirically that oil flows has strengthened corruption in transition economies. To confirm this relationship between oil and spending, Robinson and Torvik (2005) explain that governments may finance “white elephants” because it produces high political benefits.

To summarize, redistribution of oil revenues is desirable in a context of revenue equalization and stabilization. However, efficient redistribution of oil revenues remains a difficult task. In practice, redistribution of oil revenues may be used for political purposes in order to reduce social pressures for accountability and representation.

5. A Preliminary Estimation of the Impact of Kazakhstan’s Oil Boom

This section presents preliminary results of the impact of the oil boom on employment, regional GDP per capita, revenues and expenses of households and poverty at the oblast level. It appears that early revenues of the oil boom have benefited cities (in oil or non-oil producing regions), whereas people living in rural

areas in oil-producing rayons do not seem to benefit from this rent. Consequently, oil revenues have strengthened the inequality gap between rich and poor people in the country. In general, oil does not generate employment but generates large revenues. Kazakhstan confirms those peculiarities of oil production.

In Kazakhstan (as in most oil exporting countries), oil is produced in few regions of the country: five out of fourteen oblasts. At the district level, the share is even lower with only 21 oil-producing rayons out of the country's 158 rayons (cities excluded).¹⁶ Concentration of oil production in a limited number of districts should enable us to assess the preliminary impact of the oil boom in Kazakhstan.

A first assessment of the redistribution mechanisms could partially explain why cities benefit more from oil revenues than urban areas.

First of all, it is worth noting that oil revenues are not wholly redistributed in Kazakhstan. Indeed, a large share of oil revenues is allocated to the National Fund for the Republic of Kazakhstan (see Box 2).

Box 2: The National Fund for the Republic of Kazakhstan

The Fund was established in 2001. The main objective of the Fund is to reduce the impact of volatile market prices of natural resources and to smooth the distribution of oil-wealth over generations.

Initially, the authorities identified 12 major companies in the natural resources sector. However, this figure was reduced to 6 in 2004 and the list limited to petroleum companies. Flows consist of a *savings* component equal to 10 percent of the budgeted baseline revenue invariant to price changes and a *stabilization* component that includes all revenues above the baseline price, fixed at \$19/bbl. The Fund's capital is supplied by shares of government income from the oil sector, royalties, bonuses and revenues from PSA. Fund is invested in foreign equities. Thus, a large share of oil revenues is allocated to the NFRK, which had accumulated \$5 billion in late 2004 (or approximately 17 % of GDP).

Source: Kalyuzhnova and Kaser (2005) and IMF (2004:19).

In terms of value added, oil production has produced significant results. Except for Qyzylorda oblast, regional product per capita is above the national average for all oil-producing regions (see Graph 3 for details). The difference is especially acute for the old oil-producing regions such as Mangghystaou and Atyraou regions (three and four times above the national average). However, the largest increases in regional product were recorded in Astana and Almaty cities.

Following the typology defined in section 4, a preliminary assessment of oil revenues redistribution can be undertaken:

1. Official public redistribution

Regional budgets in oil-producing oblasts have largely benefited from oil revenues. However, transfer mechanisms have been put in place and are increasingly important for lagging regions, especially in the South of the country.

Between 1997 and 2002, budget revenues of the five oil-producing regions increased by 280% whereas budget revenues of the other regions increased by 180%

¹⁶ Aqtöbe region: 3 (out of 17), Atyraou region: 7 (all rayons of the oblast), West Kazakhstan: 4 (out of 12), Qyzylorda region: 3 (out of 7), Mangghystaou region: 4 (all rayons of the oblast). We identified oil-producing rayons combining detailed maps of oilfields and oblasts.

(Table 2). Regional authorities in oil-producing regions have increasingly used fines and quasi-fiscal policy as a means to increase regional revenues. Previously, central authorities levied greenhouse emission rights, but this has become the mandate of regional authorities and, probably as a result, environmental fines increased by 400% in 2004 compared to the previous year. Besides, some taxes are collected locally like social and income taxes¹⁷.

Several regions (oil-producing or not) have succeeded in benefiting from revenues of the oil boom. Indeed, social expenditures per capita are on average higher in oil-producing regions than non-oil producing regions (Graph 4). However, Kazakhstan remains a centralized State and, as Dabla-Norris, Martinez-Vasquez and Norregaard (2000) point out, local fiscal autonomy in Kazakhstan appears limited. Fiscal federalism with revenue-sharing arrangements was tentatively developed (McLure 2000), but the implementation seems to vary across regions. Undeniably, certain redistribution mechanisms seem to occur but criteria to identify benefiting regions are obscure. On average, the share of official transfers in regional revenues is indeed higher in most poor regions (Graph 4).¹⁸ Thus, poor regions mainly depend on official transfers from the central authorities. As expected, official transfers do not reach oil-producing regions (except Qyzylorda region). Two facts remain disturbing about the equal redistribution of oil revenues. First, central and southern regions of the country mainly benefit from those transfers (Jambyl, South Kazakhstan, Almaty, Aqmola and Qyzylorda) and not the northern regions, which are equally poor. Second, Astana also benefits from those transfers (almost one-fifth of regional revenues).

2. *Company redistribution*

Oil companies try to contribute to the development of communities where they operate. However, taking into account the immense needs, these projects only address a fraction of the needs in infrastructure.

According to the PSA agreements, consortia are requested to invest in social infrastructure projects (SIP). Regional authorities propose local development projects, which should reflect the real needs local communities. Despite their possible local impact, AgipKCO's investments only represent 1.25% of the revenues of Mangghystaou and Atyraou regions¹⁹ and Karachaganak Petroleum Operating (KPO) 6,5% of the revenues of West Kazakhstan region. Until now, AgipKCO has mainly financed the building of schools, hospitals, gas pipelines to villages and other infrastructure. Annually, this consortium spends \$5 million (or 0,15% of regional GDP) in Mangghystaou and Atyraou regions.²⁰ KPO invests annually \$10 million in West Kazakhstan (or 0,8% of regional GDP).

¹⁷ Although oil-producing regions transfer a major share of revenues collected: more than 40% of total expenditures of Mangghystaou and Atyraou regions.

¹⁸ Calculated on average for the period 2000-2003 from official data. The difference between the poorest and richest regions in terms of budget revenues is declining, whereas in terms of regional product per capita the difference is widening. Regarding regional budget revenues, in 1997, the ratio between the richest and the poorest regions was equal to 5,4 and, in 2002, it decreased to 3,6. Regarding regional product per capita, this ratio was equal to 5,6 and, in 2002, it increased to 10,3.

¹⁹ Data on regional budgets from Abdiev (2003, 426).

²⁰ This amount will grow to \$18 million per year when Kashagan is fully operational (or 1% of expenses to develop Kashagan oilfield).

3. *Unofficial public redistribution*

The fulfillment of local additional demand may generate the expansion of self-employment and small unregistered businesses, and this could be a good explanation of unofficial redistribution in Kazakhstan.

The “leakage” part of the unofficial redistribution is even more difficult to assess than the two previous redistribution categories because of an obvious lack of data. We propose to give some indications of the symptoms of a possible unofficial redistribution. An example of unofficial redistribution concerns the bargaining and negotiation processes between oil companies and local and central authorities. The definition of the quotas of local employees provides an opportunity for this type of process. It is worth noting that quotas were previously agreed in Astana (in the Ministry of Labor and Social Protection), but have now become the mandate of regional hakims. This bargaining process is said to increase revenues redistribution in the circles around hakims in oil-producing regions.

6. Poverty and Living Standards in Kazakhstan Before and During the Oil Boom

Regionally, influx of oil revenues seems to have accelerated the catch-up of several lagging regions. But, what is the impact on employment and poverty? Do oil revenues strengthen inequality between some well-off cities and poor (oil-producing or not) rural regions? This section gives preliminary results using two sources of information: regional descriptive statistics and LSMS data. Deriving from both sources, oil-producing regions seem not to have experienced any sustained employment growth and poverty and inequality remain worse in oil-producing regions than in non-oil regions, especially in rural areas. The most surprising aspect of the location results of LSMS is that in 2002, in the midst of an oil boom, location in the oil-producing western region is not associated with higher living standards.

As far as employment is concerned, oil production only expands construction activities and only on a temporary basis. One of the best illustrations was the impact of the building of the CPC (Caspian Pipeline Consortium) in West Kazakhstan, which was positive for employment in the region between 1998 and 2000. However, after the inauguration of the pipeline, building activities shrank, and in 2001 West Kazakhstan had a higher unemployment rate than the national average.

Regarding the unemployment rate, in 2002 all the producing-regions were situated above the national average (Graph 5). In Kazakhstan, direct employment in the oil sector is estimated to be less than 50,000 people, including employees working in the refining sector, which is equivalent to less than 1% of Kazakhstan’s active population.²¹ The fifty companies included in the *Kompass Kazakhstan*²² in the sector of oil production only totals 41500 employees. The largest employers in this sector are mainly branches in which Kazmunaigaz is a major shareholder such as Ozenmunaigaz (12,500 people), Embamunaigaz (12,000) or Mangghystaoumunaigaz (4,400). Kazmunaigaz, of which headquarters are located in Astana, acknowledges 400 employees. As far as joint foreign-Kazakh companies or foreign operators in Kazakhstan are concerned, Tengizchevroil declares 2800 employees, Karachaganak

²¹ Three refineries, located in Kazakhstan: Atyraou, Pavlodar and Shymkent, have a workforce of approximately 10000 people. The active population was 7,4 million in 2002 (Abдиеv (2003): 478).

²² *Kompass Kazakhstan* is the largest company directory in Kazakhstan. All the major oil companies (foreign and national) oil companies are included.

500 and Petrokazakhstan 900. For the foreign companies, which do not operate oilfields (such as British Gas, Total, or Lukoil), the presence on the ground is limited to a dozen or so people to represent the interests of the company. In those conditions, needless to say that unemployment rate is not particularly favorable in oil-producing regions

Except in Aktöbe region, the poverty headcount in all oil-producing regions remains above the national average (Graph 6): the worst figures being for both the old oil-producing regions, Mangghystaou and Atyraou regions. Despite the importance of oil production in Mangghystaou, almost 40% of the population of the region is poor, which is the worst result among Kazakhstan's regions. Mangghystaou region has even a higher poverty headcount than Jambyl region, which records the lowest regional product per capita. In contrast, poverty in Astana and Almaty cities represents respectively 2,2 and 4,1% of cities population (UNDP, 2004, 58).

In oil-producing regions, the discrepancy between urban and rural areas is strong; the poverty headcount is two to three times higher in urban compared to rural areas. Producing oil in a rayon is not a guarantee to have less poverty, and in the three regions mixing oil producing and non-oil producing rayons (Aktöbe, Qyzylorda and West Kazakhstan) only four out of ten rural oil-producing rayons experience less poverty than the regional average poverty headcount (Table 3).²³ In the oil-producing regions, cities may benefit from oil rents, and in Mangghystaou region the town of Aktau has a poverty headcount of 18% whereas the regional average reaches 40%.

Inequality has substantially grown in oil-producing regions. These regions lie above the national average (Table 4). The discrepancy between poor and rich is especially acute in Atyraou region, and to a lesser extent in Mangghystaou region.

We can also use household survey data to compare the determination of per capita household expenditure in Kazakhstan during the 1990s transition era with a year from the sustained growth period. We examine whether the determinants of household expenditure levels changed in importance between the 1996 survey conducted under the aegis of the World Bank's Living Standards Measurement Study (LSMS) and a comparable survey in 2002.²⁴ In the estimating equation, the per capita expenditure of households is determined by the level of human capital, the number of household members, and the location of the household. Summary statistics for the two years are reported in Table 5.²⁵

In all of the formerly centrally planned economies the transition to more market-based systems was accompanied by changes in the labour markets and in the determinants of household expenditure levels. The role of human capital variables, which are consistently significant determinants of earnings in established market economies, became more important. In Central Asia this pattern was accompanied during the 1990s by a large increase in the cost (in terms of lower per capita

²³ Poverty data at the rayon level are detailed in Ivashenko (2004).

²⁴ Data availability in the 1990s was hampered by the poor quality of the inherited household budget surveys, and external researchers rely almost exclusively on the one-off 1996 LSMS survey; examples of use of the dataset are Anderson and Pomfret (2002; 2003), Rama and Scott (1999), and Verme (2001). In 2001 the National Statistical Agency revised the household budget survey using sampling techniques and questionnaires comparable to those of the LSMS, although the data are now collected continuously and reported quarterly and annually rather than for the two-week period of the 1996 survey.

²⁵ The aggregate level of household expenditures is not of interest in the present context because we are trying to understand the determinants of relative living standards.

household expenditure) of large family size, especially the presence of children. Large regional differences in household expenditure, *ceteris paribus*, also indicated that national labour markets were not yet established in Central Asia. In Anderson and Pomfret (2002; 2003) these three sets of variables were consistently significant in various specifications, while other demographic characteristics such as the ethnicity, age, health or marital status of the head of the household were seldom statistically significant and had little explanatory power.

The dependent variable is household expenditures per capita, based on a headcount of household members²⁶ and the reported expenditures on goods (excluding vehicles), food, health, education and other services, housing, utilities, communication, and transportation.²⁷

To capture human capital, we report regression results using completed secondary education as the control variables. Measures of the education level attained by the highest-educated household member are assumed to be indicative of the household's human capital.²⁸ In the education categories the major change has been the fall in the portion reporting vocational-technical education.²⁹ The proportion of households without anybody who completed secondary education is higher in 2002 than in 1996, although there appear to be some anomalous entries in this category. In analysing the 1996 data, Anderson and Pomfret used the incomplete secondary schooling as the omitted education category, but with the 2002 data this led to generally insignificant coefficients. The reason for this anomaly appears to be the presence of a few households reporting no education but having high expenditure

²⁶ Anderson and Pomfret (2002) test the sensitivity of the results to this assumption (ie. assigning equal expenditure weight to all children and adults in the household) by estimating the model with an alternative dependent variable in which children, women and the elderly are assigned lower expenditure weights than prime working age adult men. The results do not change in any significant way. The numerical results might also be sensitive to the implicit assumption of no scale economies in the provision of household services; adjusting for economies of size with a scaling such as $E^* = E/n^\theta$, where E is household expenditure and n is family size, would soften the main conclusion about household size. Given that small households typically consist of adults, the equivalence scale implicitly makes some allowance for scale economies, but beyond that it is uncertain which equivalence scale would be appropriate. Some studies of transition economies find that the qualitative results are not sensitive to assumptions about size economies, eg. Jovanovic (2001) reports that varying θ within a plausible range did not alter his results for Russia in any significant way.

²⁷ Expenditure is preferred to income because the arrears problem in former Soviet republics during the 1990s meant that income often came in lumps so that many households reported zero income during the two-week survey period. We also expect under-reporting to avoid tax or other impositions to be less prevalent for expenditure. Non-purchased items, such as food grown on household plots, are valued and included in expenditure. Because the log of expenditure more closely follows a normal distribution, we estimate semi-logarithmic regressions of the log of per capita expenditure on household characteristics.

²⁸ Education is characterized by five levels: higher education (university and postgraduate), Technikum education, vocational or other technical training, completed secondary education, and incomplete secondary schooling. In analysing the 1996 situation Anderson and Pomfret found no significant difference between using education variables based on the head of household's education and using the highest-educated person. For 2002, we use highest-educated person because, rather than following a consistent definition, the surveyors appear to have treated the person who answered the questionnaire as the head of household.

²⁹ This is consistent with other evidence from Central Asia and elsewhere that during the 1990s much of the specialized lower-level technical training from the Soviet era had no market value in the transition economy. People ceased taking such courses, and in some cases may no longer have claimed this type of training as an education. The drop in the vocational-technical category is largely matched by an increase in the number reporting completed secretary as their highest level of education.

levels; 28 of the households reporting nobody with completed secondary education had income levels around 600,000 tenge, ie. over six standard deviations above the sample mean.³⁰ For this reason we omit the 9.4 percent of households in the lowest education group; the results for the other variables are almost identical to the results when the entire sample is used.

Location of the household is measured by five region-specific dummy variables.³¹ The Central region contains Aqmola and Qaraghandy oblasts and Astana City. The South is Jambyl, Qyzylorda and South Kazakhstan oblasts. The West consists of Aqtöbe, Atyraou, West Kazakhstan and Mangghystaou oblasts, where most of the country's oil-production is located. The North is Qostanai, Pavlodar and North Kazakhstan oblasts. The East is East Kazakhstan and Almaty oblasts, but not Almaty city. The omitted category for regional location is the largest city, Almaty.

Household composition is measured by three variables describing the number of children under the age of 18, the number of elderly, and the number of non-elderly adults in the household.³²

The regressions demonstrate that the three groups of variables, which dominated in 1996, remain statistically significant, but the magnitude of the coefficients changes considerably in 2002 (Table 6).

Family size continues to be negatively related to household living standards, but the magnitudes are much smaller in 2002 and there is little distinction between the age groups. Whereas in 1996 having an extra child was the largest cost in terms of lower per capita household expenditure and an elderly person brought the next highest cost, the impact of these two age groups in 2002 differs little from that of an additional working-age adult.

Education remains important. In 2002 having a university or Teknikum educated person in the household is associated with 6-7% higher per capita household expenditures, *ceteris paribus*, than having nobody educated beyond completed secondary education. The changes in the magnitudes of the effect of different levels of human capital between 1996 and 2002 are difficult to assess because there is a difference in definition (household head in 1996 versus highest-educated person in 2002) and in control group between the first and last columns of Table 6.³³ Nevertheless, it does appear that the returns to greater skill and education levels were lower in 2002, which is surprising.

The location variable shows the most striking differences between 1996 and 2002. In 1996 a household located in the North had on average a 30% higher living

³⁰ The average per capita expenditure level for households in the lowest education category is over 114,000 tenge, which is above the sample average and higher than for any other education category apart from those with university degrees.

³¹ The main change in location is an increase in the proportion of households from the oil-producing western region and a decline in the proportion in the Centre and North. The number of people per household increased slightly from 3.59 to 3.69. The change was due to an increase in working age adults per household and a smaller increase in the elderly, partially offset by a smaller number of children. This reflects the demographic patterns of the 1990s when the birthrate fell and the death rate rose. It also might be influenced by emigration patterns, as a disproportionate number of elderly were among the Germans and Slavs who left Kazakhstan during the 1990s.

³² For 2002 "elderly" is defined as aged 60 or over. For 1996 Anderson and Pomfret (2002) defined a person as elderly if he or she was eligible for a state pension, ie. at age 60 for a man and age 55 for a woman.

³³ In regressions using the entire sample and having incomplete secondary education as the control, the coefficients on all education levels apart from university did not differ from zero at the five percent significance level.

standard than a similar household in Almaty and a household located in the South had a 45% lower living standard than one in Almaty *ceteris paribus*, while the other regions were not significantly different from Almaty. In 2002 households in all locations outside Almaty had significantly lower living standards than otherwise similar households in Almaty. The difference is still most pronounced, negatively, in the South, but the situation of households in the North and East is significantly worse than Almaty in 2002 whereas they were better off than Almaty households in 1996. The improved position of the Central region (relative to all other regions except Almaty) may have been due to moving the capital to Astana, located in the Centre, and the substantial public construction associated with that decision. The most striking aspect of the location results is that in 2002, in the midst of an oil boom, location in the oil-producing western region is not associated with higher living standards. It is even more problematic for those populations because they may face possible relocation, environmental and health problems linked to oil extraction.³⁴

7. Informal Redistribution, the Current Prevalent Redistribution Mechanism in Kazakhstan

This section presents the results of analysis of the 2002 household survey data to distinguish between channels for redistribution of the oil boom benefits. Initial results suggest that little happens through higher wages in oil-producing districts or through social transfers, but that “informal” earnings (captured by households having much higher expenditures than incomes) are more important in the oil districts than in the country as a whole. Informal earnings are, however, even more prevalent for households in Astana, the new national capital, and to a lesser extent in Almaty, the financial capital.

One faces a major problem to measure the informal incomes of households, though that could demonstrate the importance of “unofficial redistribution”. Usually, unofficial incomes are underestimated in surveys. However, when one compares incomes and expenditures, a large share of expenditures is not covered by corresponding incomes. We construct a specific variable as a proxy for the undeclared incomes; if the household’s total expenditures are more than twice as large as the total incomes, then we assume that the household participates in some kind of informal activities.

Building on the typology of redistribution mechanisms presented in section 4, variables were created proxying for the three types of redistribution: official public, company redistribution and informal redistribution (see Appendix). With this end in view, we construct the following mutually exclusive categorical variables:³⁵

1. Official public redistribution is the dominant mechanism if the income from wages is *lower* than the income from social transfers. In addition, we verify that total household expenditures are lower than twice the total incomes of the household. In a household that fulfils both conditions, we conclude that the household essentially benefits from official public redistribution (social transfers). This category represents 12.5 of the sample if we compare this

³⁴ In Kazakhstan, a buffer zone exists, requesting relocation when new drilling sites are closer than 6.2 miles. In 2004, people from Saykamys (3500 inhabitants), located close to new drilling sites for Tengiz, were relocated.

³⁵ Redistribution may combine several types of redistribution. However, in this paper, we try to identify *the* main source of incomes, which means that the three types of redistribution are exclusive.

result with the poverty rate in Kazakhstan there is 24.2 % (graph 7) there is probably a lack of social transfers in 2002. If we take into account only the household head, less than 5 % of them benefit from social transfers.

2. Company redistribution is the dominant mechanism if the income from wages is *higher* than the income from social transfers and if total household expenditures are less than twice total income. In a household that fulfils both conditions, we conclude that the household essentially benefits from wage redistribution, *i.e.* a wage-earning household. Because wages in the oil industry are high, if oil companies employ a large number of employees, this type of redistribution can be expected to be high. About 44 percent of the sample is in this category, which is indicative of how little importance the formal sector has in Kazakhstan, and how difficult it is to tax wages.
3. Informal redistribution is the dominant mechanism if total household expenditures are *higher* than twice the total incomes. In this case we conclude that the household essentially benefits from informal redistribution, *i.e.* undeclared activities.³⁶ The informal redistribution group represents 43.5 % of our sample. This figure is similar to other measures of the informal economy, about 34.2 to 38.2 % of GDP, gathered by Enste and Shneider (2000).

If we cross our dummy on redistribution with some of the main individual characteristics of the household head (under 60 years old) we find some preliminary results (Appendix 1). First women (58.5%) benefit more from social transfers. This is quite normal because women during the transition are usually a more vulnerable part of the society especially when they are single with children. For both formal and informal redistribution, males are more frequently (about 55%) accessing to job and incomes. A second observation is that with respect to age characteristics the only significant difference comes from social transfers; older household heads³⁷ receive more social transfers than others. For education differences, less educated heads of household seem to benefit more from the social redistribution. This is also true for informal redistribution. Finally we ask whether oil producing rayons influence the kind of redistribution occurring in Kazakhstan. We observe that informal redistribution is more often happening in oil producing rayons.

We will now try to verify this preliminary result, by using multinomial logistic regression in order to analyze the three different possible redistributions. Our three constructed modalities of oil redistribution (1- social redistribution, 2-enterprise, 3-informal) are exclusive. We assume that our three redistributions are not correlated. At this stage of the paper we use a simple multinomial regression without any conditionality; we assume that individuals are free to choose the redistribution they want, which is of course a simplification.

The main results are reported in Table 7. Compared to the control category (enterprise redistribution) social redistribution is positively associated with residence in a small town or in a rural area and is negatively related to the household head's education level or residence in Almaty or Astana. The effect of residence in an oil-producing rayon is not statistically significant. Informal redistribution is also positively related to residence in a small town or in a rural area and negatively related to the household head's education level, but it is positively related to residence in the capital city and to residence in an oil-producing rayon.

³⁶ An informal activity is considered as a small, family activity by the ILO.

³⁷ Here we analysed the head of the household younger than 60.

The individual data allow us to more precisely characterize the redistribution mechanisms. Our main result is that in oil districts (rayons) we do not find any particular social redistribution but rather a strong informal redistribution. However the informal redistribution may include also domestic agriculture and could explain the rural area effect. Both social and informal redistribution are more prevalent for less educated household heads and small town inhabitants relative to company redistribution. There is some evidences that low skilled people and rural area inhabitant are not benefiting from the oil sector development. This is consistent with reports from the Tengiz region of complaints by the local population that they are not employed in oil production. On the other hand capital and large cities seem to benefit from the oil production but mainly through informal redistribution.

8. Conclusions

Whether resource abundance is a curse or a blessing depends upon the nature of the resource and on variables reflecting institutions and governance. Of all resources, oil appears to produce the most extreme outcomes, from Nigeria to Norway. Kazakhstan is interesting because the scale of the future oil boom was scarcely anticipated during the 1990s and because key institutions remain in embryonic and malleable form.

The evidence marshalled in this case study is preliminary, as the story is still unfolding. Political and institutional developments during the decade after independence created a situation where political economy mechanisms could turn oil wealth into a curse.

The household survey analysis presented in this paper gives a preliminary assessment of the impact of oil revenues expansion. Early results could explain that most benefits may have not been redistributed evenly across the country. The household survey analysis gives evidence that oil boom has not resulted in higher living standards in the oil-producing regions, but have been associated with higher living standards in the capital city and in the metropolitan centres where the country's elite lives. As a Kazakh living in Sarykamys, a settlement near Tengiz oilfield, was saying: "we have a lot of oil, but we're not the masters of this oil", expressing a feeling many people in Kazakhstan share.

Unofficial redistribution could seem to be the main transmission channel of redistribution of oil revenues. A complementary analysis would be needed, especially in oil-producing regions, to distinguish if it results from unregistered household small activities or "leakage" of oil revenues. Transparency concerning oil revenues is probably a guarantee to limit those leakages.

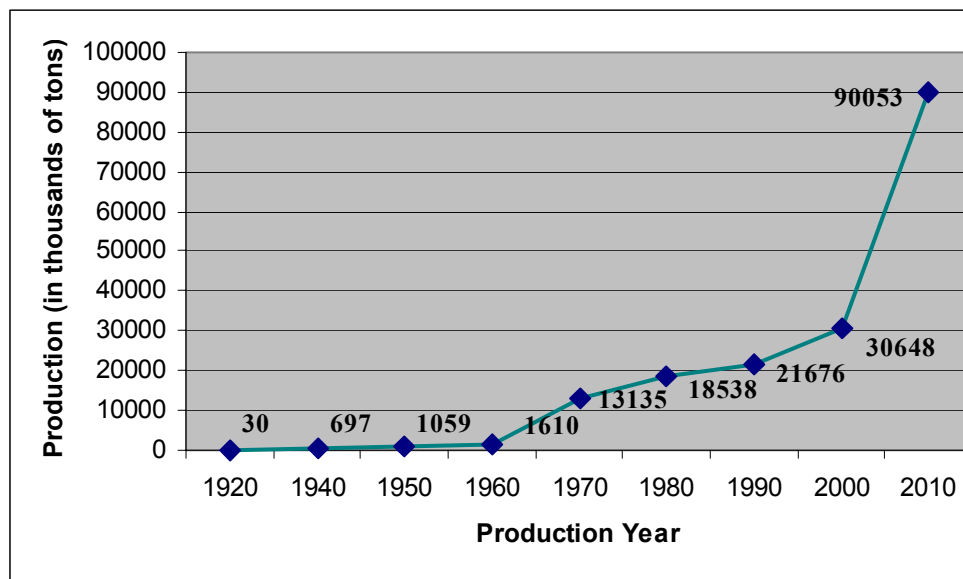
Use of oil revenues remains an evolving process. In Kazakhstan, the early stage of the oil boom means that the jury still has a long wait before determining whether oil will be a blessing or a curse.

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Graph 1: Oil Production Trend in Kazakhstan (1920-2010)

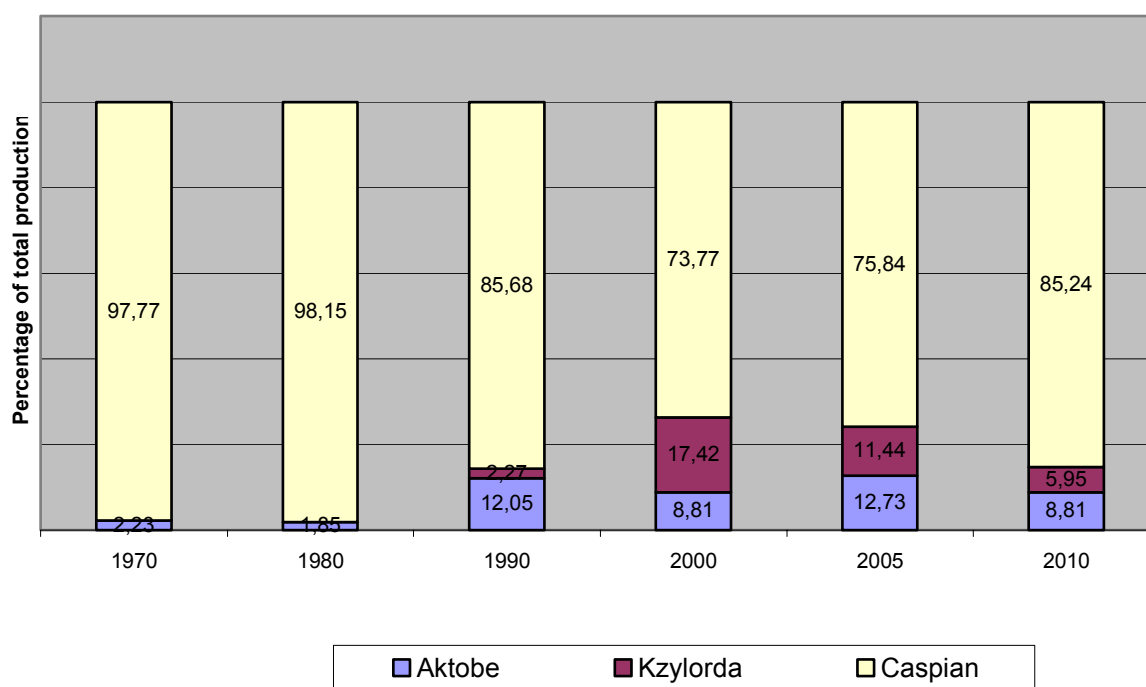
Source: Kazakhstan Republic Statistical Agency (2001) and IMF (2004).

Map 1: North Caspian Main Oilfields

Table 1: Oil and Gas Output and Exports, 1998-2002

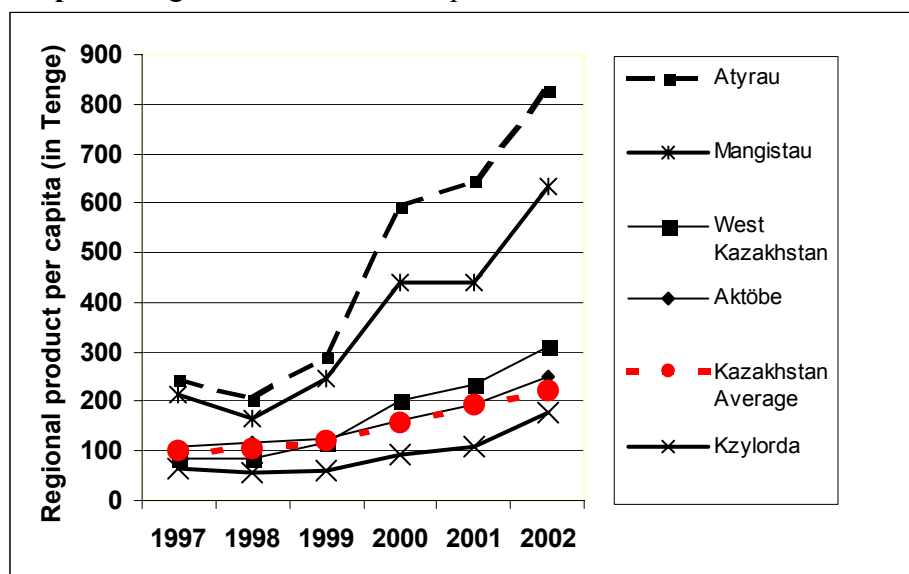
	1998	1999	2000	2001	2002
Oil production (mmt)	25,6	29,4	35,4	39,3	47,3
Oil exports (mmt)	20,4	23,7	29,4	31,7	39,5
Oil exports (\$m.)	1650	2164	4429	4463	5157
Oil exports (in % of GDP)	7,5	12,8	24,1	20,2	20,9
World oil price (\$/bbl)	13,1	18,0	28,2	24,3	24,9
Natural gas production (bcm)	7,9	9,9	11,5	11,6	13,1

Source: International Monetary Fund (2003b, p.8 (oil) and p.72 (gas)).

Graph 2: Share of Oil Production by Regions, 1970-2010

Source : Kazakhstan Republic Statistical Agency (2001) and Kazakhstan Ministry of Energy.

Note: Caspian includes Mangghystaou, Atyraou and West Kazakhstan regions

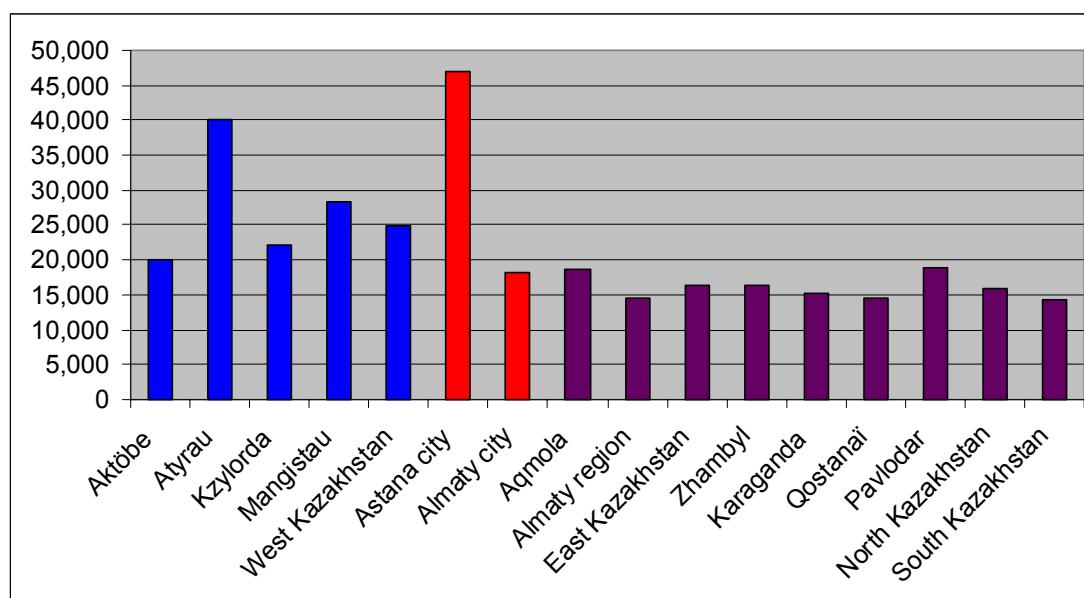
Graph 3: Regional Product Per Capita

Source: Smailov (2001) and Abdiev (2003).

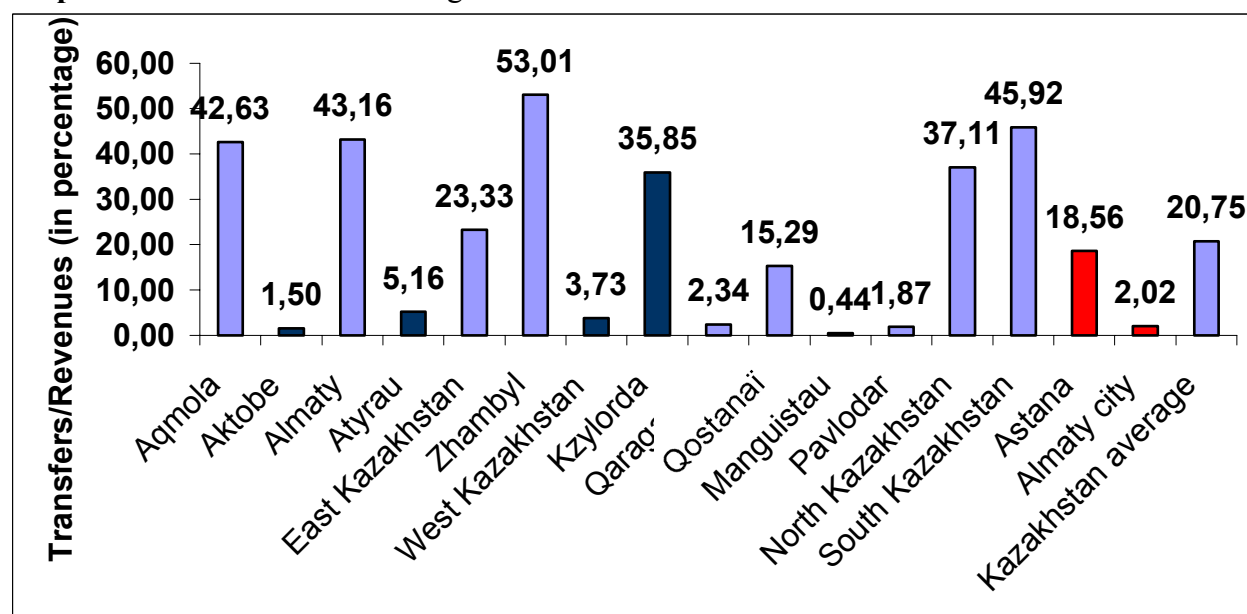
Table 2: Regional Budgets 1997-2002

	1997		2000		2002	
	Balance	Budget/ GDP	Balance	Budget/ GDP	Balance	Budget/ GDP
Aktöbe	0,98	14,6	1,02	24,5	1,02	17,1
Atyraou	0,98	9,0	1,12	36,1	0,92	22,7
Qyzylorda	1,00	47,9	0,98	40,4	1,03	27,3
Mangghystaou	0,99	9,6	1,05	32,3	0,94	20,1
West Kazakhstan	0,96	26,3	1,05	18,7	1,00	24,0
Astana city	1,00	74,4	1,00	40,3	0,96	32,9
Almaty city	1,05	8,6	0,99	22,7	1,01	18,6
Aqmola	1,02	48,7	1,02	29,8	1,01	31,3
Almaty region	1,00	23,3	1,02	25,2	1,00	30,9
East Kazakhstan	1,01	21,9	1,01	31,2	0,96	22,1
Jambyl	0,99	30,7	1,00	33,5	0,97	42,1
Qaraghandy	0,90	15,2	1,13	20,6	0,96	16,9
Qostanaï	0,96	16,5	1,02	16,7	1,00	22,0
Pavlodar	0,92	18,7	1,03	17,0	0,96	20,8
North Kazakhstan	1,00	25,4	1,04	28,1	0,98	29,2
South Kazakhstan	1,00	25,1	0,99	27,6	1,00	30,8
Oil Regions Average	0,99	17,4	1,07	30,7	0,97	22,0
Kazakhstan Average	0,99	19,8	1,04	26,6	0,98	23,6

Source: Smailov (2001) and Abdiev (2003).

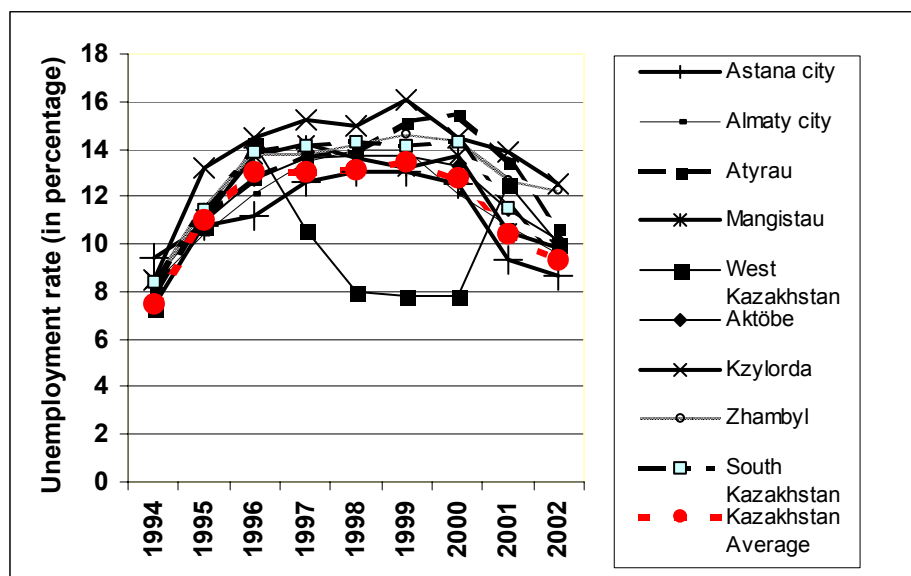
Graph 4: Oblasts Social Expenditures per Capita

Source: Data from Sarsenov (2005).

Graph 5: Share of Transfers in Regional Revenues

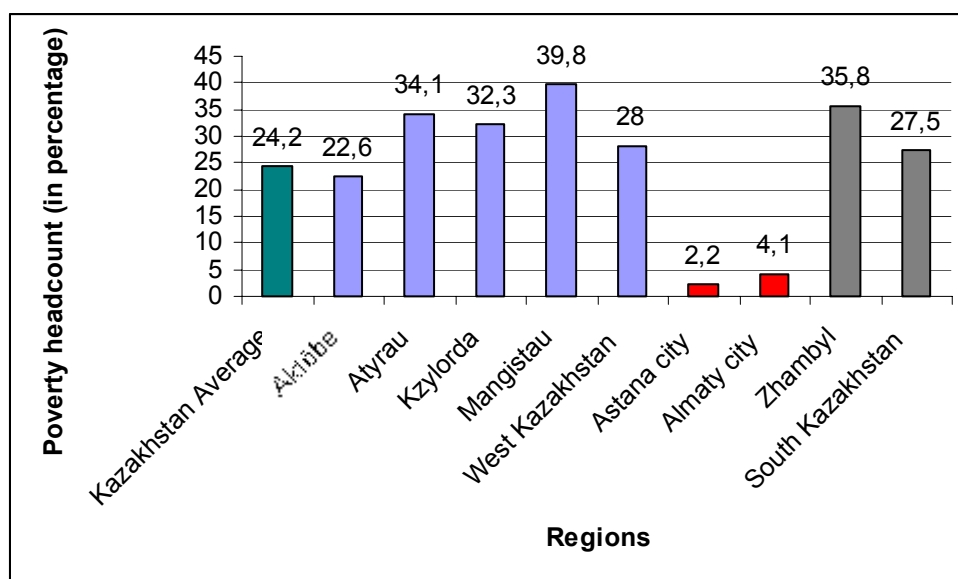
Source: Data from Shokmanov (2004).

Graph 6: Regional Unemployment Rate



Source: Abdiev (2003).

Graph 7: Regional Poverty Headcount



Source: Abdiev (2003).

Table 3: Urban and Rural Poverty by Region in 2002

		Urban poverty	Rural poverty
Kazakhstan Average	24,2	15,6	34,7
Aktöbe	22,6	6,9	21,3
Atyraou	34,1	27,5	44,4
Qyzylorda	32,3	22,1	48
Mangghystaou	39,8	28,8	84,6
West Kazakhstan	28	11,4	39
<i>Astana city</i>	2,2	2,2	-
<i>Almaty city</i>	4,1	4,1	-
Jambyl	35,8	31,3	39,1
South Kazakhstan	27,5	22,3	30,4

Source: Abdiev (2003).

Table 4: Gini Coefficient in 2002

	Gini Coefficient
Kazakhstan Average	0,328
Aktöbe	0,344
Atyraou	0,429
Qyzylorda	0,323
Mangghystaou	0,36
West Kazakhstan	0,345
<i>Astana city</i>	0,314
<i>Almaty city</i>	0,293
Jambyl	0,293
South Kazakhstan	0,275

Source: Abdiev (2003): 147.

Table 5: Household Surveys: Summary Statistics

Variables	Kazakhstan (1996)	Kazakhstan (2002)
Per capita expenditure:	4963.76 (3515.27)	112,524.3 (75,999.73)
Education of Most Highly Educated:		
University (%)	26.8	24.9
Tecnikum (%)	33.1	32.9
Vocational-technical (%)	26.6	12.9
Completed secondary (%)	7.8	19.9
Incomplete secondary (%)	5.7	9.4
Location of household:		
Central (%)	20.7	19.5
South (%)	18.1	18.8
West (%)	8.5	12.5
North (%)	22.3	19.5
East (%)	21.0	21.0
Almaty city (%)	9.4	8.8
Household composition:		
Number of children	1.263 (1.228)	1.167 (1.244)
Number of elderly	0.414 (0.676)	0.460 (0.685)
Number of non-elderly adults	1.914 (1.119)	2.060 (1.386)
Sample size (households)	1,890	12,000

Notes: Standard deviations of continuous variables are in parentheses. Expenditures are in national currency units (tenge); note that the two surveys' observation periods differ so that the nominal tenge values are not comparable even apart from problems of measuring inflation.

Table 6: Household Expenditure Model: Kazakhstan, 1996 and 2002.

Variables	1996		2002	
	Coefficient	t-statistic	Coefficient	t-statistic
Intercept	8.542*	89.60	12.19*	488.62
Education:				
University	0.272*	5.62	0.069*	4.53
Tecnikum	0.167*	3.63	0.057*	3.97
Vocational-technical training	0.114*	2.56	0.020*	1.13
Completed secondary	-.001	-0.02	--	--
Location of household:				
Central	-0.036	-0.70	-0.527*	-23.43
South	-0.447*	-8.38	-0.971*	-42.16
West	0.089	1.43	-0.626*	-25.92
North	0.295*	5.67	-0.720*	-31.72
East (not Almaty city)	0.038	0.74	-0.742*	-33.02
Household composition:				
Number of children	-0.174*	-14.04	-0.023*	-5.02
Number of elderly	-0.116*	-3.82	-0.017*	-1.97
Number of non-elderly adults	-0.058*	-4.18	-0.012*	-2.87
R-square	0.30		0.17	
F-statistic	47.14*		223.44	
Sample size	1,890		10,716	

An asterisk indicates significant at the 5% level.

Table 7: Multinomial Logistic Regression Results
(dependent variable is the redistribution variable defined in the Appendix Table 1)

Variables	Coefficient	Standard error	Probability of coef. =0
1. Official public redistribution			
sex	-0,08	0,04	0,06
age	0,05	0,00	0,00
married	-0,32	0,04	0,00
Education	-0,26	0,01	0,00
Almaty	-1,49	0,12	0,00
Astana	-1,77	0,39	0,00
Medium city	0,24	0,08	0,00
Small town	0,34	0,07	0,00
Rural	0,99	0,05	0,00
Oil production	0,07	0,10	0,45
Size of the household	-0,19	0,01	0,00
Constant	-1,88	0,12	0,00
3. Informal redistribution			
sex	0,12	0,03	0,00
age	0,01	0,00	0,00
married	-0,33	0,03	0,00
Education	-0,13	0,01	0,00
Almaty	0,11	0,05	0,03
Astana	1,30	0,09	0,00
Medium city	-0,05	0,06	0,42
Small town	0,44	0,04	0,00
Rural	1,30	0,03	0,00
Oil production	0,23	0,06	0,00
Size of the household	-0,13	0,01	0,00
Constant	-0,08	0,07	0,29
Number of observations	32,229		
LR chi2(22)	6,618.2		
Prob > chi2	0.0000		
Pseudo R2	0.104		

Outcome redistribution==2 (enterprise redistribution) is the control group

Appendix: Descriptive Statistics by Type of Redistribution

1. Type of Redistribution

Redistribution type	Number of households	Percentage
Official Public	4039	12.5
Company	14166	44.0
Informal	14024	43.5
Total	32229	

Source: own calculations with LSMS Kazakh data

2. Cross Table Gender

sex	Official Public	Company	Informal	Total
male	134	2,268	1,956	4,358
(in %)	41.49	55.74	54.11	54.43
female	189	1,801	1,659	3,649
(in %)	58.51	44.26	45.89	45.57
Total	323	4,069	3,615	8,007
	100.00	100.00	100.00	100.00

Sources: own calculations using LSMS Kazakh data for household head under 60 year old.

3. Cross Table Age

	Average age	Standard deviation	Number of obs.
<i>Official Public</i>	48.5	9.0	323
<i>Company</i>	44.9	8.4	4069
<i>Informal</i>	45.3	8.4	3615
Total	45.2	8.5	8007

Sources: own calculations using LSMS Kazakh data for household head under 60 year old.

4. Cross Table Education

Redistribution	Primary and no education	Secondary	University	<i>Total</i>
<i>Official Public</i> (in %)	48 14.86	239 73.99	36 11.15	323 100.00
<i>Company</i> (in %)	187 4.60	2,922 71.81	960 23.59	4,069 100.00
<i>Informal</i> (in %)	297 8.22	2,791 77.21	527 14.58	3,615 100.00
Total	532	5,952	1,523	8,007
	6.64	74.33	19.02	100.00

Sources: own calculations using LSMS Kazakh data for household head under 60 year old.

5. Cross Table Oil/Non-Oil rayons

Redistribution	Non-oil rayons	Oil-producing rayons	
<i>Official Public</i> (in %)	303 3.96	20 5.63	323 4.03
<i>Company</i> (in %)	3,924 51.28	145 40.85	4,069 50.82
<i>Informal</i> (in %)	3,425 44.76	190 53.52	3,615 45.15
Total	7,652	355	8,007
	100.00	100.00	100.00

Sources: own calculations using LSMS Kazakh data for household head under 60 year old.