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EXPLOITING ENERGY AND MINERAL RESOURCES IN CENTRAL ASIA, AZERBAIJAN AND MONGOLIA*

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ABSTRACT: Recent literature has focussed on institutional degradation and revenue volatility as major sources of a resource curse. Formerly centrally planned countries may be especially vulnerable due to their mutating institutions and macropolicy inexperience. This paper examines these issues through case studies of six former Soviet republics and Mongolia. The principal focus is on the methods of involving foreign partners in exploration and exploitation of natural resources and, to a lesser extent, on the use of revenues during resource booms. The consequences of alternative resource ownership patterns are difficult to model due to path dependency and the significance of the conjuncture of circumstances. Kazakhstan in the 1990s was a prime example of rent-seeking institutional degradation, but an exceptionally positive conjuncture in the 2000s (soaring oil prices, large oil and gas discoveries,, and new pipelines) triggered institutional and policy evolution. Uzbekistan, by contrast, had less resource-rent-driven institutional degradation in the 1990s, but stagnated in the 2000s. Turkmenistan and Mongolia highlight the missed opportunities from not involving foreign partners, while Azerbaijan and the Kyrgyz Republic illustrate the less predictable outcomes following quick deals with foreign investors. Institutions matter, but the case studies suggest more complex relationships than revealed by simple correlations between indicators of institutional quality or of ownership patterns.

JEL codes: Q32, P35, O13

key words: oil, gas, minerals, Central Asia, resource curse

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EXPLOITING ENERGY AND MINERAL RESOURCES IN CENTRAL ASIA, AZERBAIJAN AND MONGOLIA

After the dissolution of the Soviet Union and the transition from a centrally planned economy, the resource wealth of the southern Soviet republics and Mongolia was seen as a major advantage for their national economic development. However, all seven countries experienced severe transitional recessions during the 1990s and, even though economic performance improved in the twenty-first century it has been uneven and there are doubts about sustainability. This paper examines the links between resource management and economic performance during the transition from central planning (effectively 1990-2010).

Comparative analysis is complicated by the differing resource bases and evolution of world prices for different primary products. Oil is the principal export of Kazakhstan and Azerbaijan, and was the source of their rapid growth in 2000-8. Natural gas is more important for Turkmenistan and Uzbekistan, and increasingly significant for Kazakhstan and Azerbaijan.[1] Minerals (copper for Mongolia, gold for the Kyrgyz Republic and Uzbekistan) involve related issues of large capital requirements, technology, timing, distributing rents, price volatility, etc. In Central Asia water is a source of conflict between upstream and downstream countries, but there are energy aspects, especially the development of hydroelectric capacity in the Kyrgyz Republic and Tajikistan (and the hydroelectric-intensive aluminium plant that produces most Tajik exports in a good year). Water is also a critical input into cotton production, which is a significant export for all Central Asian countries, especially Uzbekistan. Although the paper will focus on energy and mineral resources rather than agricultural production, it is difficult to ignore cotton.

An important economic policy variation is between more dirigiste regimes (e.g. Uzbekistan and Turkmenistan) and more liberal regimes (e.g. the Kyrgyz Republic or Mongolia).[2] This may, however, be endogenous, as the dominant role of cotton in the Uzbek and Turkmen economies at the time of independence contributed to a rent-appropriating policy stance. Cotton required extensive government presence in maintaining irrigation channels and other functions, and this presence spilled over into the maintenance of state marketing monopolies and subsequent squeezing of farmers' margins. Moreover, with buoyant cotton prices from 1992 until mid-1996 (Figure 1), the cotton producing countries were able to maintain public expenditure relatively well and were under less pressure to reform their economic and political systems. When cotton prices fell, Uzbekistan in 1996 and Turkmenistan in 1998 resorted to draconian foreign exchange controls, which in turn led to other restrictions on economic freedom.

The economies reliant on energy and mineral resources were under more pressure to find foreign investors to help exploit the resources, and to be more market-friendly in their policies. From 1992 to 1998 world oil prices stagnated in a $12-20 range (Figure 2). In the 2000s, as both their production and world oil prices rose rapidly, Azerbaijan and Kazakhstan reaped the fruits of contracts signed in the 1990s. The smaller economies of Mongolia and the Kyrgyz Republic had greater difficulty striking a balance in negotiations with large

[1] Oil and gas face similar issues and are often treated together (e.g. by Jones Luong and Weinthal, 2010) . An important difference is that, whereas pipelines are important for both oil and gas, alternative transport modes do exist for oil, and there is a global market for oil with a world price. As liquid natural gas becomes more important and a world gas market emerges, the economic distinction is becoming less clear, but that development has yet to affect Central Asian gas producers.

[2] Of the seven countries covered here, only Mongolia (in 1997) and the Kyrgyz Republic (in 1998) have joined the World Trade Organization. Uzbekistan (1994), Kazakhstan (1996), Azerbaijan (1997) and Tajikistan (2001) have applied for WTO membership, but all of the accession negotiations are currently stalled or moving very slowly. Turkmenistan is one of the few countries not to have or have applied for WTO membership.

foreign companies to explore and exploit their mineral (i.e. gold and copper) reserves; for the Kyrgyz Republic the contract signed soon after independence for exploitation of the Kumtor goldmine has been a source of political controversy and of fears that too much was given away to the foreign firm, while Mongolian attempts to reserve a large share of the benefits for the state meant that exploitation of the country's best mineral reserves has yet to begin.

There is a large literature on the relatively poor performance globally of resource-rich countries. In the 1980s and 1990s the focus was on Dutch Disease effects, i.e. the negative impact of a resource boom on output of other traded goods with greater long-term development potential, but the more recent literature has downplayed the importance of this mechanism. A resource curse is a conditional relationship, into which some countries fall but other resource-rich countries do not. The recent literature has focussed on two sets of conditioning variables associated with a resource curse outcome: institutional dysfunction, especially when there is competition for control over resource rents, and poor government spending associated with the volatility of state revenues.[3] A central question in this paper is whether countries in transition from a centrally planned economy and Communist polity are particularly vulnerable to adverse consequences of a resource boom due to their fragile and changing institutions and to their inexperience with policy-making in a market-based economy.[4]

The first section sets out the individual countries' conditions. The second section introduces production sharing agreements (PSAs) used to attract foreign investment for energy and mineral exploitation which requires foreign expertise as well as capital. The specific details of PSAs impact on how resource abundance affects institutional development. Sections 3-7 examine individual countries' experience. Section 8 identifies key decision variables for national governments as how and how fast to exploit natural resources, how to share revenues from resource exports between companied and the state, and how to use revenues accruing to the state. The final section draws conclusions.

1. Background

The seven countries covered in this paper are small open economies whose exports are heavily concentrated in a few primary products. Table 1 provides summary statistics at the end of the Soviet era and two decades later. All seven achieved reasonably high levels of human capital in the Soviet era, as measured by literacy rates and life expectancy. Since 1991 they have experienced an increase in per capita income at purchasing power parity, but economic growth has been extremely uneven. The energy exporters - Azerbaijan,

[3] The theme is old, but the modern resource curse literature was stimulated by Sachs and Warner (1995; 2001). The classic paper on the Dutch Disease is Corden (1984). More recent literature reviews are in Najman et al. (2008). Volatility issues are emphasised in the case studies in Gelb (1988), and by Eifert, Gelb and Tallroth (2002) and Papyrakis and Gerlagh (2004). Manzano and Rigobon (2001) argue that the "resource curse" identified empirically by Sachs and Warner really picked up the post-1982 debt overhang from excessive foreign borrowing by oil producers who over-spent during the post-1973 boom and were unprepared for a fall in oil prices. Tornell and Lane (1999) model the perverse impact of rent-seeking after a resource windfall. Tsalik (2003) and Sala-i-Martin and Subramanian (2003) highlight the deleterious impact of poor institutional quality, and Bulte, Damania and Deacon (2005) find an econometric link. Mehlum, Moene and Torvik (2006) find that resource abundance is a boon with good (producer-friendly) institutions and a curse with bad (rent-grabber-friendly) institutions, while Boschini, Petersson and Roine (2007) emphasise the interaction between the appropriability of resources and quality of institutions.

[4] Esanov et al. (2001) argued that resource abundance was particularly harmful in the Soviet successor states because it allowed reform to be postponed and encouraged rent-seeking behaviour, but that paper was written before the booms of the 2000s. Brunnschweiler (2009) reaches the opposite conclusion, that among former Soviet and Eastern European countries in transition oil had a positive impact on growth between 1990 and 2006.

Kazakhstan and to a lesser extent Turkmenistan - attracted inflows of capital in the 1990s (Table 2) and enjoyed exceptionally rapid growth in the period 2000-7 (Table 3).[5]

Azerbaijan has a long history as an oil producer, but its facilities were in dilapidated state when the country became independent. After initial political disruption and a disastrous war with Armenia in 1992-3, the government moved rapidly to involve foreign oil companies in the 1994 "Deal of the Century". Development of Azerbaijan's oil industry in the 1990s was hampered by opposition from Russia, which controlled the main pipelines and whose Lukoil only had a 10% share in the Deal (which it sold to Inpex of Japan in 2003), and from Iran, which disputed the demarcation of the South Caspian Sea and was upset that Caspian oil was not being routed southwards to Indian Ocean ports.[6] On the other hand, coherence was given by the dominant position of BP, which took the lead in organizing the Baku-Ceyhan pipeline when oil prices began to rise. Azerbaijan was able to increase oil production faster than Kazakhstan, and today oil accounts for about half of GDP, but with more limited reserves Azerbaijan's life as a major oil producer will be shorter than Kazakhstan's.

Kazakhstan has the Caspian Sea region's largest recoverable crude oil reserves, and it accounts for over half of the oil currently produced in the region (Table 4). The modern Caspian oil industry dates from the Tengiz agreement signed between Chevron and the USSR in 1990; the largest foreign investment deal in Soviet history. After the dissolution of the Soviet Union, the project was inherited by Kazakhstan. During the 1990s, exploitation of the Tengiz oilfield and exploration for other potentially abundant oilfields was hampered by lack of technical expertise, lengthy negotiations with potential foreign partners, and Russian control over pipeline routes. These obstacles had been more or less overcome by the early 2000s, coinciding with the start of the rapid rise in oil prices. Kazakhstan's oil exports drove growth rates of over 9% per year 2000-7 (Table 3), and accounted for a third of the country's GDP in 2005-7. The high growth was, however, sustained by foreign borrowing based on a strong country credit rating,[7] which led to a debt overhang and a domestic banking crisis in 2007; repayments of around $14 billion due in 2008 coincided with the collapse of world oil prices.

The other major energy producer, Turkmenistan, was less eager to negotiate contracts with foreign energy companies. At independence the resource base was cotton and a recently developed natural gas sector, neither of which was in urgent need of foreign expertise. President Niyazov (or Turkmenbashi the Great as he preferred to be known) relied on resource rents to fund populist polices and grandiose buildings. Cotton provided the revenues in the mid-1990s, but the government offered little incentive to farmers and by the end of the decade the sector was languishing (Pomfret, 2006b). As rents from cotton exports declined, revenues from gas exports began to increase after 2000, largely due to external price changes; the volume of gas produced was lower in the 2000s than it had been in 1990 (Table 4).

[5] For more background on the five Central Asian countries' economies see Pomfret (1995; 2006a). Tajikistan's high growth in 2000-4 was recovery from the civil war, which caused massive output decline 1992-6; growth was slow in 1997-9 as the government sought to assert control over the entire country. Note that national accounts data for the Central Asian countries should be treated with caution, especially for the 1990s, and that data for Turkmenistan are especially dubious.

[6] The dissolution of the Soviet Union threw into question the 1921 and 1940 agreements between the USSR and Iran which defined the legal status of the Caspian Sea. While Russia, Azerbaijan and Kazakhstan worked on agreements for the Sea's territorial division, the two countries with the potentially least valuable segments, Iran and Turkmenistan, argued in favour of treating the Sea as a common resource. As Azerbaijan became more energetic in auctioning exploration rights to its assumed territory, it ran into conflict with Iran and Turkmenistan; e.g. in July 2001 Iranian navy vessels supported by fighter jets forced two ships chartered by BP to quit an offshore site claimed by Azerbaijan.

[7] Foreign debt, which had been zero at independence, amounted to over 90% of GDP by 2008 and after the February 2009 devaluation of the tenge the debt/GDP ratio exceeded 100% (Barisitz and Lahnsteiner, 2010).

Although natural gas is a substitute for oil in many uses, the market differs because pipelines are the dominant transport mode for gas and prices are set in long-term contracts between the countries at each end of a pipeline. In Turkmenbashi's final year, 2006, and under his successor there were signs that the government was concerned about increasing gas output and negotiating a better price, reflected most dramatically in a deal with China which included construction of a gas pipeline through Uzbekistan and Kazakhstan to western China, completed in 2009.[8]

Uzbekistan has also been reluctant to involve foreign firms in its resource sectors, but the economy is better managed than that of Turkmenistan and cotton remains a major export. Uzbekistan's second largest export is gold, in whose production foreign partners have played a role, but the arrangements and gold output are not publicized by the government. Although Uzbekistan is a large producer of natural gas and minor producer of oil, this meets domestic demand and Uzbekistan is roughly self-sufficient in energy.

Tajikistan is the poorest of the former Soviet republics and independence was accompanied by a civil war, which was not settled until 1997. Even today the government's hold over parts of the country is tenuous. Tajikistan was a major cotton producer in the Soviet era, but the sector has declined since independence. The country also has substantial hydroelectric potential which has yet to be realized; the main use of existing hydro-power is in an aluminium smelter which is by far the country's largest industrial facility. Although many of the country's resource-related issues are similar to those covered here, Tajikistan will not feature much in this paper because its main challenge continues to be the construction of a functioning state and post-Soviet economy.

The Kyrgyz Republic shares some of Tajikistan's characteristics - a poor mountainous country whose most abundant potential resource is hydroelectricity - but it has been more successful in nation-building. The Kyrgyz economy is the most liberal in Central Asia, although it does not function as well as a market economy should because institutional development is flawed and corruption remains a major feature. The political system is the most liberal in Central Asia, with, uniquely, two presidents replaced by popular uprisings and in 2010 the adoption of a constitution limiting presidential power and promising a parliamentary democracy. The Kumtor goldmine, the eighth largest goldmine in the world, accounted for about a sixth of the Kyrgyz Republic’s GDP in the early 2000s, and dominated the country's exports; when the mine's production was disrupted in 2002, GDP growth dropped to zero (Table 2).

Mongolia was an independent country before 1991, but so closely integrated into the Soviet economy that it was referred to as the sixteenth republic of the Soviet Union. Termination of Soviet assistance to Mongolia in 1990-2 contributed to what may have been the largest peacetime decline in gross national expenditure ever. Since 1991 the country has a more democratic political system than the former Soviet republics covered here, with peaceful rotation of power following elections (Pomfret, 2000). It has also established a market-based economic system, although as in the Kyrgyz Republic this has not brought the anticipated level of prosperity. Mongolia's principal resource is copper, which was produced in a large Soviet era complex in the mid-north of the country, but since independence that complex has been in decline. Mongolia also has coal and massive copper and gold reserves in the south, but exploitation of what is perhaps the largest copper complex in the world has been delayed by drawn out negotiations with foreign mining companies.

[8] The China deals improved Turkmenistan's bargaining position relative to Russia, as did the opening in January 2010 of a pipeline to Iran. Russia and Turkmenistan remained mired in a price dispute for most of 2009, but President Berdymukhamedov seemed unwilling to antagonize Russia by bringing in western oil firms; despite strong lobbying by western majors, contracts worth $9.7 billion to develop the South Yolotan gasfield were awarded in December 2009 to firms from China, South Korea and the United Arab Emirates.

2. Production Sharing Agreements

The transition economies with abundant oil, gas and mineral reserves often lacked the technical expertise to efficiently exploit their resources. The extent of this gap varied with the resource. Existing facilities could continue to produce and export with limited foreign involvement, but opening up new oil or gas fields or mineral deposits required some form of partnership with one of the, often few, foreign firms with the necessary state-of-art technology. Azerbaijan and Kazakhstan were involved in major negotiations with energy firms to exploit their abundant oil and gas reserves, the Kyrgyz Republic reached agreement with a Canadian firm on the exploitation of the Kumtor goldmine and the Mongolian government was in negotiation with another Canadian firm to exploit the rich copper deposits in southern Mongolia.

These negotiations did not take place in a global institutional vacuum. During the second half of the twentieth century, host governments' attitudes towards multinational companies evolved from general suspicion to a more accommodating approach.[9] The state has legitimate right to ensure that foreign investors comply with national labour, environmental and other laws, as well as with the specific terms of the firm's own contracts, but foreign firms may doubt their ability to receive fair treatment in a national court if sued by the government. Over 2,500 bilateral investment treaties have been signed, mostly since 1990, between host and home countries of which a key provision permits individual firms to sue the host government with an agreed arbiter. Arbitration is expensive and controversial; typically a case involves a minimum cost of at least $2 million, and it is controversial because the arbitration process is usually non-transparent and narrow, avoiding matters such as human rights, ecological damage, etc.[10]

The dominant contractual form for exploiting oil and gas resources in the Caspian Basin and minerals elsewhere in Central Asia (such as the Kumtor goldmine in the Kyrgyz Republic) has been Production Sharing Agreements (PSAs) between foreign companies and the state. PSAs reflect the need to draw on firm-specific technical expertise, the high initial costs (and risks) to the foreign companies of exploring and developing a new oil or gas field, and the right of the state to residual returns. Typically PSAs are front-loaded so that the foreign investor retrieves much of the pre-production costs before revenue from the flow of oil or gas or gold is shared in agreed proportions.[11] Under a PSA the state cedes some

[9] The suspicion was based on concern about multinationals' use of transfer-pricing to minimize the share of rents accruing to the host country and fear of the threat to sovereignty if the host tried to change the profit-sharing arrangement; evidence of the latter came from the overthrow of the Mossadegh government in Iran in 1953 and of the Allende government in Chile in 1973. Many developing countries sought to replace direct foreign investment (DFI) by loans in the 1970s, but after the 1982 debt crisis they came to appreciate the benefits of DFI in terms of risk-sharing and provision of complementary inputs. The economic success of China and other countries in the 1980s and 1990s further highlighted the potential benefits of DFI in providing technical, management and marketing expertise.

[10] In 2009 approximately 200 cases were under arbitration, of which the biggest was the case in the Hague between foreign investors in Yukos and the Russian government. An example of controversy was the case won by a French investor in water in Ecuador whose assets were expropriated after price increases led to riots; the social implications of the firm's behaviour were not relevant to judgment on the legitimacy of the state's actions.

[11] The PSAs signed by former Soviet states often followed World Bank advice and involved complex formulae based on output and profitability, such that if the project were successful the host country would eventually receive a larger share of revenues than under previous models. Critics argue that the host also bears most of the burden of delays and cost increases (Muttitt, 2010; Kennedy and Nurmakov, 2010, 5), although this cost is in foregone revenues rather than increased expenditures. The PSAs also gave significant contractual guarantees to the foreign companies, and have been criticized as neo-colonial (Muttitt, 2007, 20). These features reflected the increased acceptance of investors' rights as well as specific concerns about instability in new independent states.

sovereign immunity by entering into a detailed arrangement in which contractual disputes are subject to international arbitration.

PSAs address a time inconsistency problem: the host government needs the foreign companies to develop the resources, but once output is flowing the foreign firms are less necessary.[12] To commit financial and human resources, the foreign companies need credible commitments that they will not be expropriated once natural resources are being profitably exploited – or at least an arrangement whereby they can recoup their investment quickly and thereby reduce the cost and risk of expropriation. The picture was complicated in the post-Soviet space by the rapid increase in energy prices once oil and gas projects began to come online in the late 1990s and by the new independent states' negotiating inexperience. The latter was used as an excuse for renegotiation which was really driven by the former (or by a simple wish to renegotiate the contract in the host country's favour once exploitation was under way). The danger for the host country is that any one-sided renegotiation of contracts might deter future foreign investment.[13]

3 Azerbaijan

For Azerbaijan the dissolution of the Soviet Union was accompanied by a disastrous war with Armenia over the disputed territory of Nagorno-Karabakh.[14] Military failure contributed to the overthrow of the Popular Front government and election of Heydar Aliyev as president in October 1993. Aliyev negotiated a ceasefire in May 1994, and set about kick-starting the economy by speedy increase in oil production.

In the early 1900s Azerbaijan was the centre of the world oil industry, producing half of the world's oil, but output stagnated in the second half of the twentieth century as Soviet oil investment focused on Siberia.[15] War further disrupted production, which by 1994 only just covered domestic demand (Dorian and Mangera, 1995, 8). The revival of Azeri oil production dates from the merger of two pre-existing state oil companies in 1994 to create the state energy company SOCAR. Since then SOCAR has signed 25 PSAs with consortia of foreign oil companies, including the 1994 "Deal of the Century", and the Baku-Tbilis-Ceyhan pipeline agreement.

The Deal of the Century was signed 20 September 1994 with a consortium of eight foreign oil companies, who committed to invest $7.4 billion in three major offshore oil fields (Azeri, Chirag and Guneshli) over thirty years, projecting an increase in Azerbaijan's output from 160,000 barrels per day in 1994 to 700,000 bpd within a decade.[16] A National Oil Strategy was articulated with four components: technology provided by major oil companies, multiple transport routes, accumulation of managerial expertise, and investment in

[12] This is an old pattern. Many of the large producing nations in the Middle East nationalized oil production in the 1950s or early 1960s once the exploration and initial exploitation had been completed.

[13] The most hard-line reaction came from Russia, which effectively scrapped PSAs in a 2003 amendment to the law governing PSAs, which would henceforth only be permissible if development of the resource under the licensing procedure defined in Russia's Subsoil Law could be proven to be implausible. At the same time the Russian government used various pressures to terminate existing PSAs. After cancellation of environmental permits for the largest project, Sakhalin-2, the foreign operators sold 50 percent of shares plus one share to Gazprom for $7.5 billion in 2006. Similar pressures were placed on Exxon, operator of Sakhalin-1.

[14] Since the ceasefire Armenia has occupied both the disputed territory and 9% of Azerbaijan's territory lying between Nagorno Karabakh and the Armenian border.

[15] Azerbaijan's crude oil production declined from just under 15 million tonnes in 1980 to 11 million in 1992 (IMF *Economic Survey Azerbaijan*, April 1993, 53). In 1901 the Baku oilfield produced 11 million tonnes, half of world output (Dorian and Mangera, 1995, 3).

[16] The consortium consisted of BP, Amoco, McDermott, Pennzoil, Exxon, Statoil, Ramco, TPAO, LUKoil and SOCAR. Upon ratification the Azeri parliament received a $150 million payment, with a further $500 million signature bonus to be paid on ratification and agreement of a pipeline route.

sustainable development. Oil production rose rapidly in the late 1990s and early 2000s (Table 4), with oil accounting for almost ninety per cent of exports by 2002. Although for several years there were doubts whether the Baku-Tbilis-Ceyhan pipeline would be built, it was completed in 2005. SOCAR has a minority stake in all thirteen PSAs currently operational in Azerbaijan, including the 2003 PSA for the Caspian Sea's largest gas field, Shah Deniz, in which SOCAR is a partner with BP, Statoil (Norway), TotalFinaElf, LukAgip, OEIC (Iran) and TPAO (Turkey). Construction of a gas pipeline to link with the Turkish network at Erzurum began in 2004 and was completed in 2006.

In January 2003 SOCAR's charter was revised by presidential decree so that the company retained ownership over oil it produces (previously it relinquished ownership once the oil went to be processed).[17] SOCAR operates about forty older oilfields, which are generally high-cost due to depletion and aging equipment. SOCAR's payroll of 50-70,000 employees is considered bloated. However, with increasing output of oil and gas and increasing energy prices, SOCAR's financial position strengthened after 2003 - as did the assets of the State Oil Fund (Table 5).

The nature of SOCAR's activities began to change around 2005 from resource-rent management to a more proactive role in knowledge transfer and geopolitics. Ilham Aliyev, who had succeeded his father as president in 2003, appointed a younger cohort of senior officials, and oversaw a closer integration of state company and government, including use of SOCAR to promote foreign policy goals.[18] The rising importance of gas after the Shah Deniz PSA and the limited flexibility of gas delivery modes contributed to the shift, e.g. decisions to exclude Turkmen gas from Azerbaijan's pipeline plans and to route pipelines through Georgia were politically driven. In 2007-8 SOCAR initiated international expansion, beginning with acquisition and renovation of Georgia's Kulevi oil terminal on the Black Sea, followed by opening offices in the UK, Romania, Switzerland and Turkey and plans to open twenty petrol stations in Georgia.

In the use of oil revenues, SOCAR's role also goes beyond that of a commercial company. Oil revenues accrue to the State Oil Fund of Azerbaijan (SOFAZ), which was established in 1999, and became operational in 2001, just as oil revenues began a rapid increase (Table 5). SOFAZ transfers a portion to the government budget and invests the remainder overseas to mitigate Dutch Disease effects, but from the start disputes arose over the use of funds. In 2002 SOFAZ, contrary to its statutes, supported a commercial venture, the Baku-Tbilisi-Ceyhan pipeline (Laurson, 2002). There was also debate over the extent to which the fund should support social welfare spending; in 2003 the Fund was used to finance resettlement and other assistance to people displaced by the Nagorno Karabakh conflict ($24m) and to contribute to Azerbaijan's share of the cost of the Baku-Tbilisi-Ceyhan pipeline ($133m), while $115m was transferred to the state budget for other purposes.[19] By 2006 expenditures from SOFAZ amounted to $357 million, including $40 million for housing of refugees and internally displaced persons (Lücke and Trofimenko, 2008). In consequence,

[17] SOCAR also gave up some of its non-oil businesses. Kalyuzhnova (2008,77-8) provides an eyewitness account of the dilapidated state of some SOCAR facilities.

[18] The connection between SOCAR and government was not new. Ilham Aliyev had been Vice President of SOCAR since 1994, participating in the Deal of the Century negotiations. The oil card influenced the US decision in 2002 to lift economic sanctions on Azerbaijan (imposed soon after independence in response to the Azeri blockade of Armenia), but that US policy was an anomalous response to the Armenian lobby; Azerbaijan was the only Soviet successor state to be denied MFN status on imports to the USA, and the reason was feeble. Pressure in 2009 on Turley to ease up on its rapprochement with Armenia and on the EU not to support that rapprochement was more explicitly linked to gas supplies, and caused policy shifts that neither Turkey nor the EU really wanted to make.

[19] IMF *Staff Country Report 04/322*, 2004, p.14.

Azerbaijan had by 2008 saved less than one tenth of its oil windfall.[20] Meanwhile, from its revenues that are not transferred to the Oil Fund, SOCAR has been expected to make expenditures on hospitals, schools and other social welfare areas, which are usually made by the state rather than an employer.

4. Kazakhstan

The 1990s in Kazakhstan were characterized by a series of deals between the President and the oil majors to revise the shareholdings in Tengiz and for the development of other large energy projects such as the Kashagan offshore oilfield and the Karachaganak gasfield which were to be developed by consortia. The process was extremely opaque, leading to drawn-out legal proceedings in New York and elsewhere (dubbed *Kazakhgate* by the media) and the imprisonment in the USA of a Mobil Vice-President for failing to declare a "commission" in his tax return (Pomfret, 2005). Despite the corruption, PSAs succeeded in involving foreign companies and developing energy resources, but the process was slower and less transparent than in Azerbaijan.[21] Foreign participation also helped to ensure construction of new pipelines which reduced dependence on the Russian pipeline company, Transneft; the private CPC pipeline to the Black Sea opened in 2001 and the Baku-Tbilisi-Ceyhan pipeline to the Mediterranean opened in 2005.

Since 1997 there has been concern in Kazakhstan that PSAs gave too much to foreign partners at the expense of Kazakhstan. When such concerns were first voiced, and explained by the inexperience of Kazakh lawyers in the early post-independence years, foreign investors protested strongly and President Nazarbayev guaranteed that no existing PSAs would be amended without consensus. In 1999, amendments to the Oil and Gas Law strengthened local content requirements, and subsequent PSAs specified local sourcing elements. There has been a growing tendency to favour domestic partners, and the 2005 PSA Law mandated a minimum fifty percent participation of KazMunaiGas.

KazMunaiGas (KMG) was created in November 2002 by merging state corporations with a variety of oil and gas operations to form a 100% state-owned vertically integrated company. KMG's operations include exploration and production, transportation, oil refining, petrochemicals and marketing of oil and gas, as well as being the government's negotiating arm in PSA contracts. The company is also required to supply subsidised fuel to domestic markets and to provide some social services, reflecting its close connection to government and role in policy implementation. KMG's role also includes increasing rent extraction for the government. In this aggressive intent KMG has some resemblance to Russian state-owned energy companies, Gazprom and Rosneft, although unlike the latter KMG has acquired larger shares of energy projects in a straightforward and transparent manner by purchase or the transfer of state-held licences.[22] By 2009 KMG owned about 30% of oil production and 40% of proved reserves in Kazakhstan (Kennedy and Nurmakov, 2010, 10).

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[20] CASE (2008, 121) contrasts this with Kazakhstan and Russia, which both saved over half of their 2003-7 windfall in their oil funds. However, SOFAZ assets increased significantly in 2008 due partly to the oil price peak, but more to PSAs reaching the point where the operators had recouped up-front costs and a larger share of revenues accrued to the host. country

[21] In contrast to Azerbaijan, whose main PSAs have been published, Kazakhstan's remain secret, although according to Muttitt (2010) the terms are known to all major oil producers.

[22] However, the use of environmental regulations to push out PetroKazakhstan's Canadian owner was reminiscent of Russian policy in Sakhalin; after purchase of PetroKazakhstan, CNPC offered KMG a share in the company. The disposal of MMG had echoes of the Yukos affair (see below). Karachaganak is the only major energy project in which KMG does not have a share; a government threat to halt production if increased export duties are not paid (putting pressure on the existing partners British Gas, Eni, Chevron and Lukoil to give a share to KMG) is currently under arbitration.

Rather than being an instrument for crude resource nationalism, KMG is being promoted by the government as a national champion which will become a major international company in the mould of Statoil or CNPC (Olcott, 2007; Domjan and Stone, 2010).[23]

In 2004 Kazakhstan began to revise the tax and other laws pertaining to PSAs.[24] The government also began to demand a larger share for the national oil company, KMG, in energy projects. A flashpoint arose in 2007 when the development of the Kashagan megafield ran into technical difficulties, cost overruns and revised projections of when oil exports would begin.[25] In January 2008 the foreign participants (Eni, Shell, Total, ExxonMobil, ConocoPhillips and Inpex) agreed to reduce their shares in order to permit KMG, to increase its share to 16.8%.[26] Meanwhile, in September 2007 Kazakhstan's parliament passed a law giving the government the power to renegotiate contracts deemed a threat to national security, although political leaders made clear that they were not intending to nationalize resources (as had happened in Venezuela, Bolivia and Russia).

Kazakhstan has also increased pressure on western participants in its energy sector by accepting Chinese participation. An early example was the case of PetroKazakhstan, a Canadian company which in the 1990s had developed the second-largest oil and gas output after Tengiz, but which came into conflict with the government in 2005, including a fine for anti-competitive behaviour and protests of its environmental and labour record. In June 2005 PetroKazakhstan announced it had been approached for a possible takeover, but the government asserted its right to acquire the company prior to any change of ownership. In August 2005 China's state energy company, China National Petroleum Corporation (CNPC), bought PetroKazakhstan for US$4.18 billion - at the time the largest overseas acquisition by a Chinese company.[27] In 2009 China was allowed to significantly increase its interests in return for providing nearly $13bn in credits and loans to help Kazakhstan weather its financial crisis; CNPC bought the Kazakh oil producer MangistauMunaiGaz (MMG) in a joint deal with KMG worth $2.6 billion,[28] and China Investment Corp purchased 11% of the KMG Exploration and Production company for $939 million. In June 2010 energy minister Sauat Mynbayev reported that China held a 50-100% stake in fifteen companies working in Kazakhstan's energy sector, and that out of 80 million tonnes of crude oil which Kazakhstan was expected to produce in 2010, 26 million would go to China.[29] The Kazakh-China oil pipeline, partly owned by CNPC and the first direct oil pipeline from Central Asia to China, grew an additional 762 kilometres from Kazakhstan's Caspian Sea oilfields to western

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[23] KMG's substantial 2006-8 investments in Georgia were negatively affected by the August 2008 Russia-Georgia war. KMG has also invested in Romania, buying the country's second largest oil company, Rompetrol, for $3.6 billion in 2007.

[24] In particular, legislation tightened the definition of which development costs are covered by PSAs. The government also introduced a rent tax on oil exports in 2004 and increased royalty payments on oil and gas in 2005. In 2009 royalties were replaced by a natural resources extraction tax as part of a major tax reform aimed at easing the burden on small and medium-sized enterprises and on the non-extractive sector while increasing revenues from extractive industries (Kennedy and Nurmakov, 2010,7).

[25] Eni, the operator, announced that the costs of first stage development had increased from $10 to $19 billion, and production would be delayed from 2008 to 2010 with peak output being reached in 2019 instead of 2016. The exceptionally large cost over-runs threatened to reduce Kazakhstan's state revenues by as much as $20 billion over the decade 2007-17 (Kennedy and Nurmakov, 2010, 5-6).

[26] It was also reported that Eni and its partners would make an additional payment to Kazakhstan of $5 billion in compensation for lost revenue due to the delays.

[27] Peyrouse (2008) analyses the Chinese economic presence in Kazakhstan up to 2008.

[28] The MMG case was complicated by the involvement in MMG of the president's son-in-law, who was under investigation for criminal activities. Domjan and Stone (2010) liken the case to that of Yukos in Russia, where a previously powerful oligarch was displaced after falling out of political favour, but the MMG takeover was conducted by a more accepted legal process and did not result in a simple state takeover (although KMG's share of the deal was 51% and CNPC's 49%).

[29] http://news.bbc.co.uk/2/hi/world/asia_pacific/10175847.stm

China's in 2009. The Chinese and Kazakh presidents, together with their Turkmen and Uzbek counterparts, opened a gas pipeline in December 2009. Agreements have also been reached on joint uranium production, and Kazakhstan's biggest copper mining company, Kazakhmys, and China's Jinchuan Group created a joint venture to develop Kazakhmys' major copper project at Aktogay.

Kazakhstan's national oil company has been largely insulated from non-commercial use of oil and gas revenues. When prices exceed reference prices extra revenues from oil, gas, copper, lead, zinc and chrome are transferred to the National Fund for the Republic of Kazakhstan (NFRK), which was established in August 2000 The NFRK must keep at least a fifth of its assets in the stabilization portfolio, which has specific criteria requiring investment in liquid foreign financial instruments.[30] President Nazarbayev has the authority to request special transfers from the NFBK to state or local budgets for purposes defined by the President. In late 2008. the government launched an anti-crisis plan in which $10 billion or 9.5% of GDP, largely from the NFRK, was pledged.[31] The plan focused on capital injections in four major banks (made through Samruk-Kazyna, the government holding company for state-owned assets),[32] support for construction and the real estate market, assistance to small and medium-sized enterprises and agriculture, and public investment in industry.[33] At the end of 2009 the government announced that the need for crisis measures was past and tasked Samruk-Kazyna with promoting diversification and greater economic efficiency in firms; the future relationship between the NFRK and the funding of Samruk-Kazyna is unclear, but it will impact on KMG.[34]

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[30] The stabilization role was inactive before 2008, in part because of low reference prices relative to current price levels (e.g. $19 per barrel for oil), but more fundamentally because Kazakhstan's resource exports enjoyed almost continuously increasing prices from 2000 to 2008 so that stabilization was not an issue. The NFRK's savings portfolio appears to be conservatively managed, but actual criteria are non-transparent. In a 2007 book, Medet Sartbayev (Deputy Governor of the Central bank) and Anuar Izbasarov (senior analyst at the Treasury) reported that 75% was in fixed income and 25% in equities, essentially tracking a basket of stock market indices; the assets are distributed across fifteen currencies, e.g. the fixed income assets are 45% US Treasury paper, 30% eurozone government bonds, 10% UK gilts, 10% Japanese government bonds, and 5% Australian government bonds.

[31] Jandosov and Sabyrova (2010) analyse the anti-crisis plan, arguing that as a percentage of GDP it was the biggest package in the world.

[32] The National Welfare Fund Samruk-Kazyna, of which the state is the sole shareholder was created in October 2008 with the merger of two funds, Samruk and Kazyna, in order to enhance the competitiveness and sustainability of the national economy and to prevent any negative impact of changes in the world markets on the country's economic growth. Samruk-Kazyna owns, either in whole or in part over 400 companies, including Kazmunaigas, the state uranium company Kazatomprom, Air Astana, the national rail and postal service, and numerous financial groups; according to IMF estimates (Republic of Kazakhstan, *IMF Staff Report for the 2009 Article IV Consultation*, 18 June), it accounts for 46 percent of GDP.

[33] At the end of 2009 Samruk-Kazyna reported that it had received 1,087.5 billion tenge from the NFRK in order to safeguard the economy, of which 486 billion tenge were directed for stabilization of the financial sector, 360 billion for the real estate market, 120 billion for support of small and medium enterprises and 121.5 billion for implementation of innovative, industrial and infrastructure projects. Samruk-Kazyna expected to finish all debt restructuring procedures of BTA and Alliance banks in the first quarter of 2010, writing off $10 billion of the $15 billion foreign debt of these banks now owned by the government. Samruk-Kazyna financed the completion of 13 construction projects in cooperation with second-tier banks and a nother 21 construction projects are being finished with funds allocated by a specially established Real Estate Fund Samruk-Kazyna; Samruk-Kazyna also financed mortgage loans for 31,300 borrowers. Over 2,500 borrowers benefited from reduced interest rates under the SME support program. According to critics of the governmental anti-crisis program at a November 2009 National Business Forum, the size of the inactive portfolio of banks is too big, the non-oil-and-gas sector remains depressed due to unresolved problems in debt restructuring, and the unemployment rate is at least 20%, not the 6-7% in official statistics (http://investkz.com/en/projects/173.html).

[34] There may also be a moral hazard issue if firms come to see the NFRK as a source of bail-out funds. NFRK's existence may have contributed to the 2007 bank crisis, if bank depositors and creditors assumed they would be compensated if a bank's loan portfolio went sour.

5. Turkmenistan

In Turkmenistan the involvement of foreign firms was minimized. Gas exports went to Russia under a long-term contract, whose terms began to gradually improve after 2003 (Pomfret, forthcoming). Only in the last year of his life did Turkmenbashi become seriously concerned about increasing revenue. In 2006 he made a trip to Beijing whose purpose was to involve China in Turkmenistan's gas sector. This strategy was followed by his successor, Gurbanguly Berdymukhammedov, and culminated in the opening of a Turkmenistan-China gas pipeline through Uzbekistan and Kazakhstan in December 2009, breaking Russia's quasi-monopoly on gas exports.[35]

At independence oil output was small, but onshore and offshore reserves in western Turkmenistan were believed to be substantial. Large western firms were encouraged by PSAs in the 1990s, but after the turn of the century initial involvement of ExxonMobil and Monument was changed in favour of smaller companies such as Burren Energy, Dragon Oil and Petronas.[36] Mobil and Monument cut their activities at the Garashyzlyk and Chelken fields by half in the late 1990s due to high costs of extraction and transportation and to dissatisfaction with the tax regime (Lubin, 1999, 65). In mid-2000 Burren took over the interests of Monument, and ExxonMobil pulled out of Turkmenistan in 2002. In other oilfields, small foreign companies (e.g. Pado Oil and Chemical of Austria) became non-operating partners in joint ventures with TurkmenNeft. Schlumberger, the only foreign service company operating at oilfields in western Turkmenistan, helped the national companies increase oil production, servicing the fields' wells and providing necessary equipment. under a five-year contract, signed in February 1998, but Schlumberger's work was hindered by government interference and TurkmenNeft failed to pay the company on time. The target for the Turkmen companies to raise their oil production to 10 million tonnes by 2000 was not reached, and the output of just over 7 million tonnes in 2000 was not much higher than in 1985 (Table 4), and less than the 1975 peak.

In 2003 Turkmenbashi signalled an intention to sign a PSA with a consortium of Russian companies, Zarit, to exploit offshore oil and gas fields, but did not finalize the deal.[37] By the mid-2000s it was becoming clear that Turkmenistan needed foreign capital and know-how, if it were to increase oil and gas output. Two onshore (Khazar and Nebitdag) and three offshore projects are being developed under PSAs (Kalyuzhnova and Nygaard, 2008, 1835), but it remains unclear how much progress has been made.[38] The energy majors responded by showing renewed interest in Turkmenistan, but here too the picture is blurred.[39] In sum,

[35] A pipeline was opened to Iran in 1997, but its capacity was small and it often operated below capacity. A second, larger pipeline to Iran was opened in 2010.

[36] Investor confidence was not helped by contractual disputes with Bridas over a transAfghanistan pipeline; the Argentinean company's contract was terminated in favour of one with Unocal, but US support ended in 2007 when relations with the Taliban government deteriorated. Burren was purchased by Eni in November 2007.

[37] Reports at the time suggested that he was concerned about conflict with Iran over the delimitation of the South Caspian.

[38] Kalyuzhnova (2008, 83-6) emphasises lack of technical skills after the departure of Soviet specialists as the cause of falling revenues per cubic metre of gas exports (e.g. due to poorly maintained pipelines) rather than Russian monopsony power. She also highlights how much time in exploring offshore oil reserves (as of 2007) had been wasted due to lack of technical expertise.

[39] Eni purchased Burren Energy in late 2007, but this may have been primarily to acquire Burren's Africna interests. The Turkmen government was annoyed that it ha d not been involved in the negotiations and in 2008 refused to issue visas to Eni personnel. The bad blood reportedly also reflected information-sharing between Kazakhstan and Turkmenistan, with Kazakhstan warning that it was disappointed with Eni's performance as lead operator of Kashagan.

whatever the signals since Turkmenbashi's death in December 2006, Turkmenistan has not yet created a positive environment for foreign investors in oil and gas.

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6. The Kyrgyz Republic

The Kumtor goldmine was considered commercially non-viable by Soviet geologists in 1989, but in 1992 a Canadian company, Cameco, offered to take managerial control of the mine, which would be structured as a joint venture, two-thirds owned by the Kyrgyz government and one-third owned by Cameco. The arrangement was a PSA in that the initial revenues would accrue to Cameco until it had recouped its upfront costs, but negotiation details were non-transparent and clouded by suspicion of corruption. Cameco reportedly contributed $167 million of the $450 million cost, while the International Finance Corporation provided a $40 million loan as a lead partner in a cluster of public international financial institutions supporting the project, including the Multilateral Investment Guarantee Agency, the European Bank for Reconstruction and Development, the US Overseas Private Investment Corporation, and the Canadian Export Development Corporation.[40] The involvement of so many multilateral financial institutions is explained by the high risks inherent in such a large-scale project involving a strategic resource in an unstable former Soviet Union country, as well as support for the Kyrgyz Republic which was emerging as a prized pupil for World Bank advice (both the IFC and MIGA are part of the World Bank Group).

The mine started operation in 1997 and by the end of 2006 had produced more than 5.8 million ounces of gold. The mine remained controversial, in part because despite its substantial contribution to GDP it appeared to contribute little to public revenues. There were also concerns about environmental damage (e.g. an incident in 1998 when a truck carrying 1762 kg of sodium cyanide fell into a river on the way to Kumtor) and mine safety (e.g. a 2002 death when part of the mine collapsed). Protests about environmental and safety standards were inflamed in 2005 when it turned out that compensation paid by the company to people suffering from the 1998 incident had ended up in the pocket of a senior official (Ababakirov, 2008).

In 2004 Comeco and the state gold agency, Kyrgyzaltyn, restructured the joint venture as Centerra Gold Inc. The Kyrgyz share was reduced from 66% to 30% in return for larger payments into the state budget. The government subsequently sold half of its share to raise money for public expenditure on social projects. Concerns about where these revenues actually went to contributed to the public unrest which culminated in the overthrow of President Akayev in the March 2005 tulip revolution.

The new government renegotiated the arrangement to increase the Kyrgyz share. The Kyrgyz government and Centerra Gold reached an agreement in November 2006 that increased the Kyrgyz state's share in Kumtor from 16 percent to 29 percent, but the Kyrgyz parliament refused to ratify the agreement. After December 2007 elections President Bakiyev sought a more than 30 percent stake in the gold production, and throughout 2008 the Kyrgyz authorities made efforts to compel the company to sign a new agreement, e.g. in June 2008 a district court in Bishkek voided Kumtor Gold Company's exploration license and the government used the court ruling as a pretext to suspend the company's bank accounts and other liquid assets.[41] Finally, the joint venture agreement was revised in April 2009; the Kyrgyz state's share in Kumtor was increased from 15% to 33%, tax will be levied at a 14

[40] Their support helped leverage private bank involvement in the project, which in 1995 reportedly included Chase Manhattan Corporation, Republic National Bank of New York, ABN AMRO-Bank of Canada, Bank of Nova Scotia, Chemical Bank, Royal Bank of Canada and Credit Lyonnais.

[41] The Supreme Court reinstated the license after Centerra Gold threatened to take the matters to the International Court of Arbitration.

percent flat rate instead of six separate duties which included withholding taxes of up to 30 percent, and the Kumtor Gold Company is to pay about $22.4 million in back taxes. With another change of government in 2010 the agreement may again be amended as some parliamentarians call for the state to obtain a 50% share or even fully nationalize the mine, while others point to the risks of alienating future foreign investors.

7. Mongolia

The biggest enterprise in Mongolia in 1989 was the Erdenet copper and molybdenum complex which had been established with Soviet aid in 1978.[42] The Erdenet complex was expanded in several stages, the last in 1987, so Mongolia inherited a reasonably modern facility at the end of the Soviet era.[43] Domestic coal production met most of the energy requirements of the main towns and industrial and mining sites. Gold was also produced in many small-scale operations. The Mardai mine, which operated under a 1981 concession to produce uranium for Soviet nuclear warheads, was staffed by Russians and was so secret that it did not appear on maps.[44] In 1990-2 many Soviet technicians departed.

During the 1990s copper and gold were the main mineral exports, with the Erdenet copper complex dominating the sector but operating at a loss. Coal accounted for about 5% of GDP. Although Mongolia was believed to contain unexploited mineral resources, little exploration took place during the 1990s. Development of the Mardai uranium mine by a Canadian-Russian joint venture was dogged by mutual recriminations as the Canadians complained about government delays in issuing a mining lease and an arbitrary windfall profits tax, Russian workers complained about delayed pay and the Russian partner complained that Mongolian workers stripped the town's assets; the Canadian partner pulled out in 1998 after investing $6 million.

Democracy in Mongolia has been associated with alternation of governments and large swings in economic policy from freewheeling but corrupt capitalism to a more dirigiste approach, neither of which encouraged the long-term capital inflows necessary to fund copper or coal mines. During the commodity boom of the 2000s, Mongolia passed laws placing punitive taxes on foreign companies.[45] The aim was to ensure that the state gained a large share of Mongolia's mineral wealth, but the effect was to deter investors.

Mongolia's first major new mining project should be the Oyu Tolgoi copper and gold mine located in the Gobi desert, just north of the Chinese border. Oyu Tolgoi is estimated to hold 45.2 million ounces of gold and 78.9 billion pounds of copper (nearly 3% of the world's total supply), and is expected to produce 450,000 tons of copper and 330,000 ounces of gold annually over 45 years. The mine was discovered by Canadian company, Ivanhoe, in 2001.[46]

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[42] In 1989, out of 2,968 million tugriks of exports, livestock and livestock products accounted for 1,068 million and the main mineral exports were copper, 584 million tugriks, and fluorspar, 118 million (Milne et al., 1991, 62).

[43] Erdenet had produced a million tonnes of copper concentrate by 1989. Dorian (1991, 46) reports that it was the largest copper mine in Asia at that time.

[44] Mongolia lacks processing facilities, and insufficient Soviet funding led to delays with the first shipment until 1988 (Dorian, 1991, 47). By the late 1980s the Russian workforce numbered about 200, and between 700 and 1,300 Mongolians were in the town.

[45] In 2008 the World Bank estimated an effective tax rate (ETR, the present value of all taxes, fees and other imposts paid by a mine to the state) of over 60%, higher than any other country except Burkina Faso and about equal with the ETR in Uzbekistan and Côte d'Ivoire (World Bank, *The Mongolia Minerals Sector - Key Issues*, unpublished paper).

[46] The initial exploration rights were obtained by Magma Copper, a US company, which was acquired by BHP Billiton in 1996. BHP began exploration at Oyu Tolgoi in 1997 and undertook a second phase of drilling in 1998, but when these holes failed to return significant mineralization the project was suspended. In 1999 further exploration at Oyu Tolgoi by BHP was discontinued due to cut-backs in BHP's exploration budgets (and a drop

Negotiations between the Mongolian government and Ivanhoe stretch back to 2003, but something always prevented an investment deal from being signed, notably laws passed by the government in 2006 to capitalize on the high metals prices during the boom.[47] In September 2009, Mongolia's parliament revoked four 2006 mining laws, including a windfall profits tax, which exacted a 68% tax on copper sold above $2,600/ton and gold sold above $500/ounce (in 2009 copper traded around $6,470/ton and gold around $960/ounce) and a law giving the government a 34% stake in mines explored without government funding and a 50% share in projects with such funding. Under Parliament's new deal, the windfall tax was thrown out, and the government gets a flat 34% stake in Oyu Tolgoi and other mines, which it can raise to 50% after thirty years.

In October 2009 Ivanhoe and its partner Rio Tinto signed an investment agreement with the Mongolian government committing $6 billion investment in Oyu Tolgoi to begin full-scale construction in 2010 and production in 2013. Settlement of the disputes surrounding Oyu Tolgoi sent a crucial signal to investors interested in Mongolia's rich coal deposits, uranium and other minerals. China Investment Corporation took a $500 million stake in South Gobi Energy, an Ivanhoe company with coal assets in Mongolia,[48] and announced a $700 million investment in Iron Mining International, a mining company with interests in Mongolia backed by private equity firm Hopu and Singapore state investment group Temasek. Australian company, Leighton Holdings, which had earlier in 2009 won the contract for the Ukhaa Khudag coal mine in the South Gobi region, announced additional investment of A$195 million to increase the contract's value to A$480 million.

8. The Key Policy Issues

Governments of resource-rich countries must decide how and how fast to exploit their natural resources, how to share the revenues between companies and the state, and how to use the state's revenues. These are interconnected. If the "how" is unacceptable to any company with the technology to exploit the resource, then the other questions are irrelevant. If the terms are too attractive to a private-sector partner, then the county may achieve rapid exploitation, but not have revenues to spend. Moreover, this is not a one-shot game: either side may try to recontract, leaving the other to accept, renegotiate or give up on the deal. Because of the bilateral monopoly situation, the government may win a battle over division of the spoils, but deter future investors concerned about the credibility of government commitments.

There is no simple rule about the optimal rate of exploitation to guide governments of resource-rich countries. Some commentators cite the Hartwick-Solow rule (Hartwick, 1977; Solow, 1974), which by assuming substitutability between natural capital and man-made capital, provides a guideline for ensuring that resource depletion does not harm future generations. Supporters of the rule argue that conventional measures of investment greatly overstate the real (net) investment in resource-rich economies which are reallocating their asset portfolio from natural resource capital to physical and human capital (e.g. Humphreys et

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in copper prices from $1.25 in 1995 to 65 cents in 1999), and Ivanhoe Mines bought the Oyu Tolgoi Concession in May 2000. The Magma acquisition which cost BHP over $4 billion by the time BHP wrote off the last of Magma's US assets in 2003 was one of the most disastrous takeovers in mining history, but if BHP had persevered with Oyu Tolgoi it could have been a major success, illustrating the uncertainties and risks that allow even the biggest of mining companies to make major errors of judgment.

[47] Nevertheless, in 2006 mining giant Rio Tinto took a 9% share in Ivanhoe, which was an indication of the seriousness and size of Oyu Tolgoi.

[48] South Gobi's Ovoot Tolgoi coalmine is expected to produce 8 million tonnes a year by 2012, and located close to the Chinese border it has a ready market.

al., 2007, 170).[49] But what is capital and how do we measure the value of natural resource capital when estimated reserves are frequently revised by large amounts and the value of natural resources fluctuates?

Even if the goal is to maintain the aggregate capital stock, it is desirable to convert natural capital into mad-made capital when the relative price of natural capital is high. Azerbaijan and Kazakhstan were fortunate that their oil output increased as oil prices surged from $12 per barrel in 1998 to almost $150 in 2008. Turkmenistan was less prepared to take advantage of the energy boom because it did not have the capacity to increase gas output substantially, nor to export gas to any market other than Russia where it faced a monopsony buyer. Similarly in negotiations over the exploitation of a dominant mineral resource in a small economy, the Kyrgyz Republic had many disputes with the Canadian mining company but did benefit from substantial export earnings and local employment when gold prices were high in the 2000s, while Mongolia's drawn-out contractual negotiations meant that the country largely missed out on the 2000s boom in copper prices. Turkmenistan's failure to ride the energy price boom between 1998 and 2007 may be even more damaging, because global gas markets are shifting in favour of delivery of liquefied natural gas (LNG) which will benefit large producers with ocean ports (e.g. Qatar and Australia) and penalize land-locked gas producers (Pomfret, forthcoming).

There is a downside to rapid negotiation of PSAs. There is an asymmetric information issue: the operating firms have a better idea of the magnitude of upfront costs, and may overstate these in negotiations so that they recoup more money before the state starts to take a larger share of revenues. The state's negotiators may even be aware of such a discrepancy, but be bribed to turn a blind eye and sign off on the PSA.[50] If the state fails to specify environmental or work safety obligations or to hold the partner responsible for other negative externalities, then the partner will not be obligated to spend money on these. Because many energy or mining PSAs cover long-life projects, conditions will change, but the host may be tied to a contract under which changes can be challenged under arbitration that focuses on the narrow contractual arrangements without concern for any social or other politically sensitive matters; ignoring an arbitration decision risks serious loss of future FDI.

The shares between foreign companies and nationals depend also on the role of domestic companies. If domestic companies are part of the exploiting consortium, then more revenues accrue domestically. The trade-off is that the domestic energy or mining companies often do not have anything to contribute to the consortium; absence of technology and skill sis usually the principal reason for involving foreign companies. Moreover, state energy companies have often been highly politicized. The possibility that the rents may be siphoned off in the negotiating stage or through a non-transparent state entity or in Turkmenbashi's case simply placed into off-budget accounts under presidential control highlights the potential for rent-seeking rather than productive behaviour, and hence institutional degradation.

Azerbaijan and Kazakhstan were able to generate large revenues during the 1998-2008 oil boom because they had involved foreign companies in exploration and exploitation of energy resources. Once resources were being exploited governments faced the question of how to use the revenues from a resource boom. As oil prices began to rise after 1998 and then soared after 2003 revenues far exceeded domestic absorption capacity in Azerbaijan and

[49] "Genuine savings", defined as the difference between total investment and total disinvestment in all types of capital, have been estimated for many countries by the World Bank. Positive genuine savings are often linked to long-run economic sustainability, but Asheim, et al. (2003) have challenged this link to the Hartwick rule.

[50] Speed may also lead to mistakes in the choice of partner, as in the Kashagan debacle whee Kazakhstan cane to rue its choice of Eni as lead operator. It is unclear whether overhastiness contributed to lack of due diligence in assessing Eni's technical merits or whether lack of transparency in negotiating PSAs camouflaged the full nature of negotiations.

Kazakhstan, who both created sovereign wealth funds to manage the windfall. Both funds were established by presidential decree rather than by legislation which passed through parliament, thus leaving them subject to presidential discretion.[51] For both countries a major issue has been making a credible commitment to avoid short-term plundering of the fund's assets, especially as both countries had pressing reasons to increase social expenditures, as well as invest domestically to promote future growth.[52]

Kazakhstan appears to have been more successful in this respect, at least before the 2007 financial crisis, whereas Azerbaijan saved little of the windfall revenues. Between 2003 and 2006 Azerbaijan's government borrowed abroad an amount equal to about four percent of 2006 GDP,[53] which made little financial sense when SOFAZ funds were being invested internationally to fetch 3-4% in nominal dollar terms. Azerbaijan was using its oil windfall to finance public expenditure, including poverty alleviation through water and irrigation projects, but it was doing so in an inefficient, and to some extent non-transparent, way. By contrast Kazakhstan was paying off external debts to reduce future obligations. The situation changed with the dramatic decline in oil prices in 2008. In Kazakhstan the crisis actually began in 2007 as the financial sector ran into serious problems ahead of the US/UK crises, but government response was more pronounced in 2008-9 when substantial funds were transferred from the NFRK to help the ailing banking and construction sectors and provide stimulus for small and medium-sized enterprises and fund public investment. Kazakhstan has a similarly flexible approach to diversification, which is not directly funded from the NFRK but could be the subject of future withdrawals; the government has tried various approaches, but has been willing to drop ones that do not work rather than becoming overcommitted to a dead-end strategy.[54] More generally, success in both attracting investment and managing resource rents in ways that produce a resource boon rather than a resource curse depends upon good governance and transparency.[55]

9. Conclusions

[51] Kalyuzhnova and Kaser (2006) and Kalyuzhnova (2006; 2008) provide assessments of the oil funds of Azerbaijan, Kazakhstan and Turkmenistan.

[52] Esanov (2009) finds diminishing efficiency of expenditures as spending on health, education and social policy increased. He also examines the spending patterns across regions, concluding that Kazakhstan, in contrast to Russia, was successful in avoiding increased regional inequality during the 2003-7 resource boom.

[53] This was a counterpart to a huge non-oil fiscal deficit equal to 30% of GDP (Usui, 2007).

[54] The government has pursued a variety of diversification strategies since the turn of the century. The billion dollar 2003-5 Agriculture and Food Program revived the farm sector, but created some inefficient parastatals (Pomfret, 2009). Various industrial policies, such as the promotion of clusters advocated by Michael Porter, have been adopted (Zabortseva, 2009), but the clusters that failed were quickly dropped. The most long-lasting of these initiatives seems to have been the promotion of education; in a country with universal primary and widespread secondary completion, this has focused on tertiary education.

[55] Extractive Industries Transparency Initiative (EITI) commitments can provide a signal of transparency, although EITI endorsement does not reduce corruption if the government makes no implementation effort. Őlcer (2009) found that in the six years after the launching of the EITI in 2002, countries endorsing EITI principles experienced deteriorating standards, as measured by World Bank Governance Indicators or Transparency International's Corruption Perception Index, and performed worse than the global average on these indicators. Azerbaijan joined the EITI in 2002, became a pilot country in July 2004, and in February 2009 was the first country to be validated as EITI compliant, which sent a positive signal about transparency and accountability. Mongolia, which committed to implement EITI in December 2005 is currently rated "close to compliant", whereas both Kazakhstan and the Kyrgyz Republic made earlier commitments but have failed to obtain validation (status obtained from the EITI website http://eiti.org/ accessed 15 July 2010). The EITI only relates to how revenues are collected, but in April 2008 the World Bank proposed a new initiative (EITI++) focusing on the generation, management and distribution of revenues, rather than just on the relationship between companies and governments as in the original EITI.

The impact of resource abundance on institutions depends upon many factors. One branch of the resource curse literature emphasises the nature of the resource, with point resources more likely to lead to rent-seeking than diffused resources (Isham et al., 2003). Jones Luong and Wienthal (2001) argue that domestic political factors and the availability of alternative sources of export revenue are crucial determinants of how governments choose to exploit energy resources. Jones Luong and Wienthal (2006; 2010) develop the argument further, making distinctions between public and private ownership and state control or lack of control; in their taxonomy the outcomes in Russia (domestic private ownership) and in Uzbekistan and Turkmenistan (state ownership and control) are superior to that in Azerbaijan (state ownership with foreign operational control), and Kazakhstan (foreign private ownership and control) is worst of all. Thus, even with a point resource, weak institutions are not inevitable.

The argument that "mineral-rich states are cursed not by their wealth per se but rather by the ownership structure they choose to manage their mineral wealth" (Jones Luong and Wienthal, 2010, Preface) is convincing, but their taxonomy less so. Economic development in Uzbekistan and, especially, Turkmenistan has been stifled by an overpowering state. The economies of Azerbaijan and Kazakhstan have been more dynamic and fundamentally similar in ownership structure, insofar as both negotiated PSAs during the 1990s that were sufficiently attractive to foreign oil companies to ensure exploitation of their oil resources, and both have tried to rebalance the arrangements in the 2000s by increasing the involvement of the national oil company, which is promoted as a national champion but which is a less predatory state agent than Russia's state energy companies.

The Kyrgyz Republic and Mongolia illustrate the opposing dangers facing a small economy with a world-class mineral resource requiring the technical competence of a foreign partner. The Kyrgyz government rapidly sealed a deal with Cameco that was non-transparent and generated suspicion of corruption and of failure to defend the state's interests - concerns which have been fuelled by lax environmental and workplace safety standards. Most fundamentally, critics have pointed to the disappointing revenue flows to the state. Mongolian governments adopted a harder bargaining stance to protect national interests, but in doing so they discouraged foreign investors and, even when a foreign firm discovered and was ready to develop a copper bonanza, the government's negotiating position delayed production through the decade 2001-10. In consequence, Mongolia failed to benefit from the copper price boom of the 2000s.

The ownership issue involves trade-offs between speeding up exploitation of resources and potential costs of haste. Guidelines such as the Hartwick-Solow rule that imply no cost from keeping resources in the ground ignore the volatility of resource prices relative to the prices of other forms of capital, as well as the possibility that a resource may become obsolete. The costs of exploiting resources also vary because the setting for PSA negotiations is affected by external conditions; depressed world oil prices during the 1990s meant that Azerbaijan and Kazakhstan negotiated PSAs under conditions unfavourable to the host countries, and had to make substantial concessions in order to ensure foreign companies' investment. Moreover the size of the contracts contributed to large-scale corruption in countries establishing new political and legal institutions and without effective checks and balances on presidential power. Yet, both external conditions and the new independent states' institutional development have been changing, so that any static taxonomy of institutional structures and policy responses is likely to be inadequate.

Both Azerbaijan and Kazakhstan have super-presidential regimes with high levels of corruption, but the regimes are less rigid than those of Turkmenistan or Uzbekistan and in the Caspian context increased oil wealth appears to be creating pressures for positive developments of civil society. As in all authoritarian regimes the outcome will be strongly

influenced by the president's decisions. However, presidents do not decide in a vacuum and the conjuncture of circumstances at each point in the institutional evolution affects the next step. In Kazakhstan, the elite had enriched itself hugely in the 1990s, but the favourable conjuncture of rising oil prices, the world's largest oil discovery for over thirty years (Kashagan) and the breaking of Russia's pipeline monopoly meant that in the 2000s the regime had abundant revenues with which to promote economic development through investment in education, infrastructure, etc. Azerbaijan, by contrast, had no major oil discovery after the Deal of the Century and ran down the windfall oil profits by current spending on infrastructure and social welfare, although discovery of a massive offshore gasfield changed the behaviour of SOCAR after 2005. If a general conclusion is to be drawn from the experience of the Central Asian countries, it is that a more open approach to trade and investment may be a catalyst for positive institutional change either directly through greater exposure to ideas and practices elsewhere or indirectly through rising incomes and expectations of social and political inclusion.

Resources are not destiny. There are choices to be made which determine whether resources are a boon or a curse. Moreover, this is not a one-shot game. Initial policy choices may lead to adverse institutional developments, but these institutions in turn may be changed. Failing to take advantage of resource abundance is likely to be a missed opportunity, because the value of resources in the ground is constantly changing and what is valuable today may be obsolete in the future. Resource exploitation is, however, only the first step towards a resource boon. Failure to pursue good policies can often produce a resource curse, as the cross-country evidence shows. The formerly centrally planned economies may be especially prone to such an outcome due to their inexperience with policymaking in market-based economies and the absence of strong economic institutions, but the malleability of institutions can also be an advantage as adverse institutional consequences of initial decisions can be corrected. As in other resource-rich countries, a resource curse is not inevitable.

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Table 1: Demographic Data, Output and Income, 1990-1 and 2007.

	1991					2007			
	Population (million)	GDP (USD billion	GNI per capita (PPP in current international $)	Life expectancy (years - 1991)	Adult literacy (percent 1991)	Population (million)	GDP (USD billion)	GNI per capita (PPP in current I$)	Trade/GDP (per cent)
Azerbaijan	7.3	8.8	2,100**	65	97	8.6	33.0	6,630	97
Kazakhstan	16.5	24.9	4,680	68	98	15.5	104.9	9,520	92
Kyrgyz Rep	4.5	2.6	1,690	69	97	5.2	3.8	1,980	133
Mongolia	2.2	2.0	1,987	61	98	2.6	3.9	3,160	130
Tajikistan	5.4	2.5	2,080	63	97	6.7	3.7	1,710	87
Turkmenistan	3.8	3.2	2,200**	63	98	5.0	9.5	5,510	153
Uzbekistan	21.0	13.8	1,290*	69	97	26.9	22.3	2,430	71

Source: World Bank *World Development Indicators* at www.worldbank.org.
Notes: * 1992, ** 1993,

Table 2: Inward Foreign Direct Investment (USD million)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Azerbaijan	0	0	22	155	591	1,051	948	355	30	220	1,393	3,227	3,535	1,679	-601	-4,817	11
Kazakhstan	100	1,271	660	964	1,137	1,321	1,151	1,472	1,283	2,835	2,590	2,092	4,157	1,971	6,278	11,126	14,543
Kyrgyz Republic	na	10	38	96	47	83	109	44	-2	5	5	46	176	43	182	208	233
Mongolia	2	8	7	10	16	25	19	30	54	43	78	132	93	185	191	360	683
Tajikistan	9	9	12	10	18	18	30	7	24	9	36	32	272	54	339	360	376
Turkmenistan	na	79	103	233	108	108	62	125	131	70	276	226	354	418	731	804	820
Uzbekistan	9	48	73	-24	90	167	140	121	75	83	65	70	187	88	195	739	918

Source: UNCTAD *World Investment Review 2009* - http://stats.unctad.org/FDI/TableViewer/tableView.aspx (accessed 9 July 2010)

Table 3: Growth in real GDP 1989-2007 (per cent)

	1990	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**1999; 1989 = 100**
Azerbaijan		-1	-23	-23	-20	-12	1	6	10	10	45
Kazakhstan	0	-13	-3	-9	-13	-8	1	2	-2	2	63
Kyrgyz Republic	3	-5	-19	-16	-20	-5	7	10	2	4	63
Mongolia	-3	-9	-10	-3	2	6	2	4	4	3	
Tajikistan	-2	-7	-29	-11	-19	-13	-4	2	5	4	44
Turkmenistan	2	-5	-5	-10	-17	-7	-7	-11	5	16	64
Uzbekistan	2	-1	-11	-2	-4	-1	2	3	4	4	94

Source: European Bank for Reconstruction and Development *Transition Report Update*, April 2001, 15.

	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Azerbaijan	10	11	11	10	11	11	10	24	31	23	11
Kazakhstan	-2	3	10	14	10	9	9	10	11	9	3
Kyrgyz Republic	2	4	5	5	0	7	7	0	3	8	8
Mongolia	4	3	1	1	4	6	10	7	9	10	9
Tajikistan	5	4	8	10	9	10	11	7	7	8	8
Turkmenistan	7	17	19	20	16	17	17	10	11	12	10
Uzbekistan	4	4	4	4	4	4	8	7	7	10	9

Source: European Bank for Reconstruction and Development *Transition Report Update*, May 2009.
Notes: 2008 = preliminary actual figures from official government sources.

Table 4: Production of Crude Oil (million tonnes) and Natural Gas (billion cubic meters), Azerbaijan, Kazakhstan, Turkmenistan and Uzbekistan,1985-2009

Oil	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Azerbaijan	13.2	13.1	13.9	13.7	13.2	12.5	11.8	11.2	10.3	9.6	9.2	9.1	9.0	11.4	13.9
Kazakhstan	22.7	23.3	24.1	25.0	25.4	25.8	26.6	25.8	23.0	20.3	20.6	23.0	25.8	25.9	30.1
Turkmenistan	6.8	6.6	6.5	5.7	5.8	5.7	5.4	5.2	4.4	4.2	4.1	4.4	5.4	6.4	7.1
Uzbekistan	2.3	2.5	2.7	2.4	2.7	2.8	2.8	3.3	4.0	5.5	7.6	7.6	7.9	8.2	8.1

Oil	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Azerbaijan	14.1	15.0	15.4	15.5	15.6	22.4	32.5	42.8	44.7	50.6
Kazakhstan	35.3	40.1	48.2	52.4	60.6	62.6	66.1	68.4	72.0	78.0
Turkmenistan	7.2	8.0	9.0	10.0	9.6	9.5	9.2	9.8	10.2	10.2
Uzbekistan	7.5	7.2	7.2	7.1	6.6	5.4	5.4	4.9	4.8	4.5

Gas	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Azerbaijan	12.7	12.3	11.3	10.8	10.0	9.0	7.8	7.1	6.2	5.8	6.0	5.7	5.4	5.1	5.4
Kazakhstan	4.9	5.2	5.7	6.4	6.1	6.4	7.1	7.3	6.1	4.1	5.3	5.9	7.3	7.2	9.0
Turkmenistan	75.3	76.7	79.7	79.9	81.4	79.5	76.3	54.4	59.1	32.3	29.2	31.9	15.7	12.0	20.6
Uzbekistan	31.3	34.9	36.0	36.1	37.2	36.9	37.9	38.7	40.8	42.7	43.9	44.3	46.4	49.6	50.3

Gas	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Azerbaijan	5.1	5.0	4.7	4.6	4.5	5.2	6.1	9.8	14.8	14.8
Kazakhstan	10.4	10.5	10.2	12.6	20.0	22.6	23.9	26.8	29.8	32.2
Turkmenistan	42.5	46.4	48.4	53.5	52.8	57.0	60.4	65.4	66.1	36.4
Uzbekistan	51.1	52.0	51.9	52.0	54.2	54.0	54.5	59.1	62.2	64.4

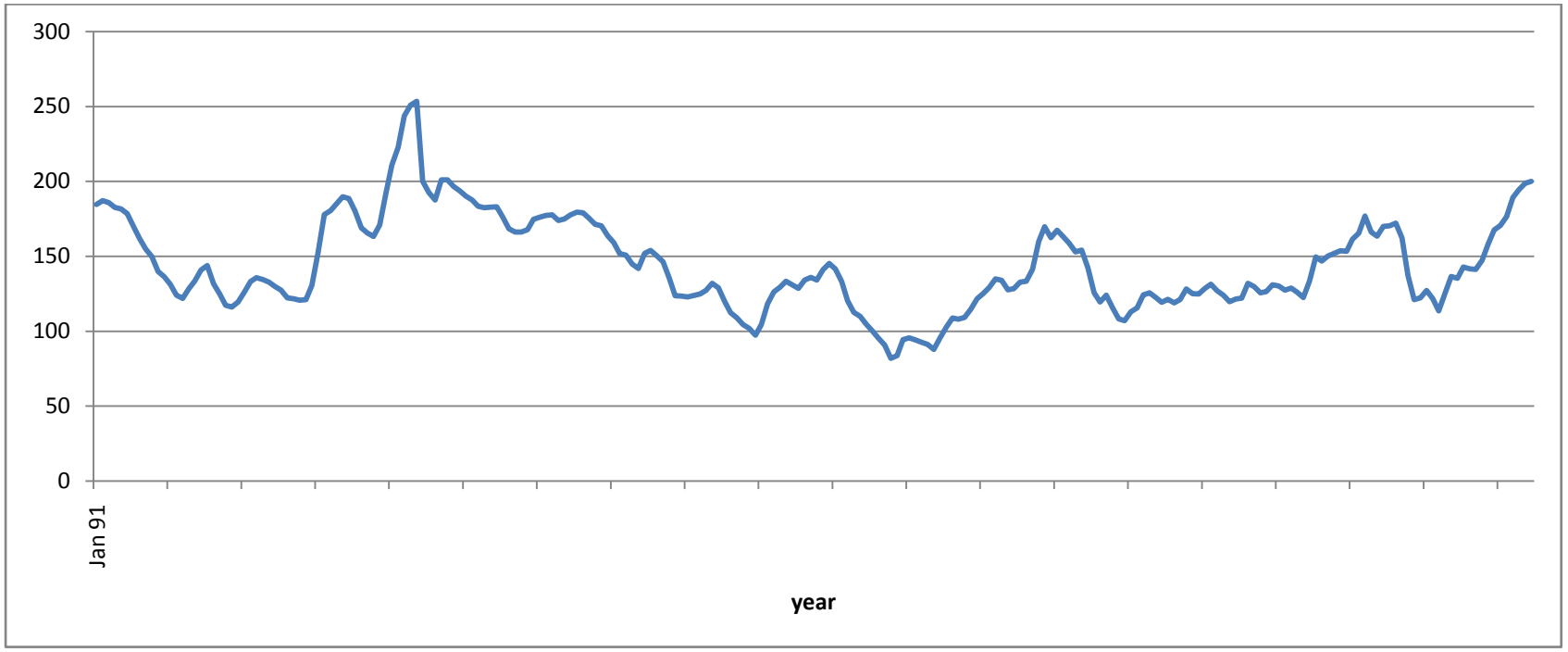
Source: BP *Statistical Review of World Energy* http://www.bp.com/productlanding.do?categoryId=6929&contentId=7044622 - Historical Workbook

Table 5: State Oil Fund of Azerbaijan, Financial Data, 2001-10 (AZN millions)

	Assets (as of 1 January)	**Revenues**	**Expenditures**
2001	248	225	3
2002	470	295	87
2003	678	364	237
2004	805	317	171
2005	950	660	330
2006	1,280	986	999
2007	1,267	1,886	1,061
2008	2,092	11,865	4,970
2009	8,987	8,177	5,295
2010	11,869		
Total 2001-10		24,774	13,154

Source: Chubrik and Walewski (2010), based on SOFAZ accounts at http://www.oilfund.az/en/account
Notes: all figures are in new manats (i.e. 2001-4 data are adjusted for the redenomination of the currency); on 1 January 2010 AZN 1 = 0.87euros = USD 1.24.

Figure 1: World Cotton Prices (Cotlook A Index), Annual Averages, January 1991 to June 2010, US cents per kilogram



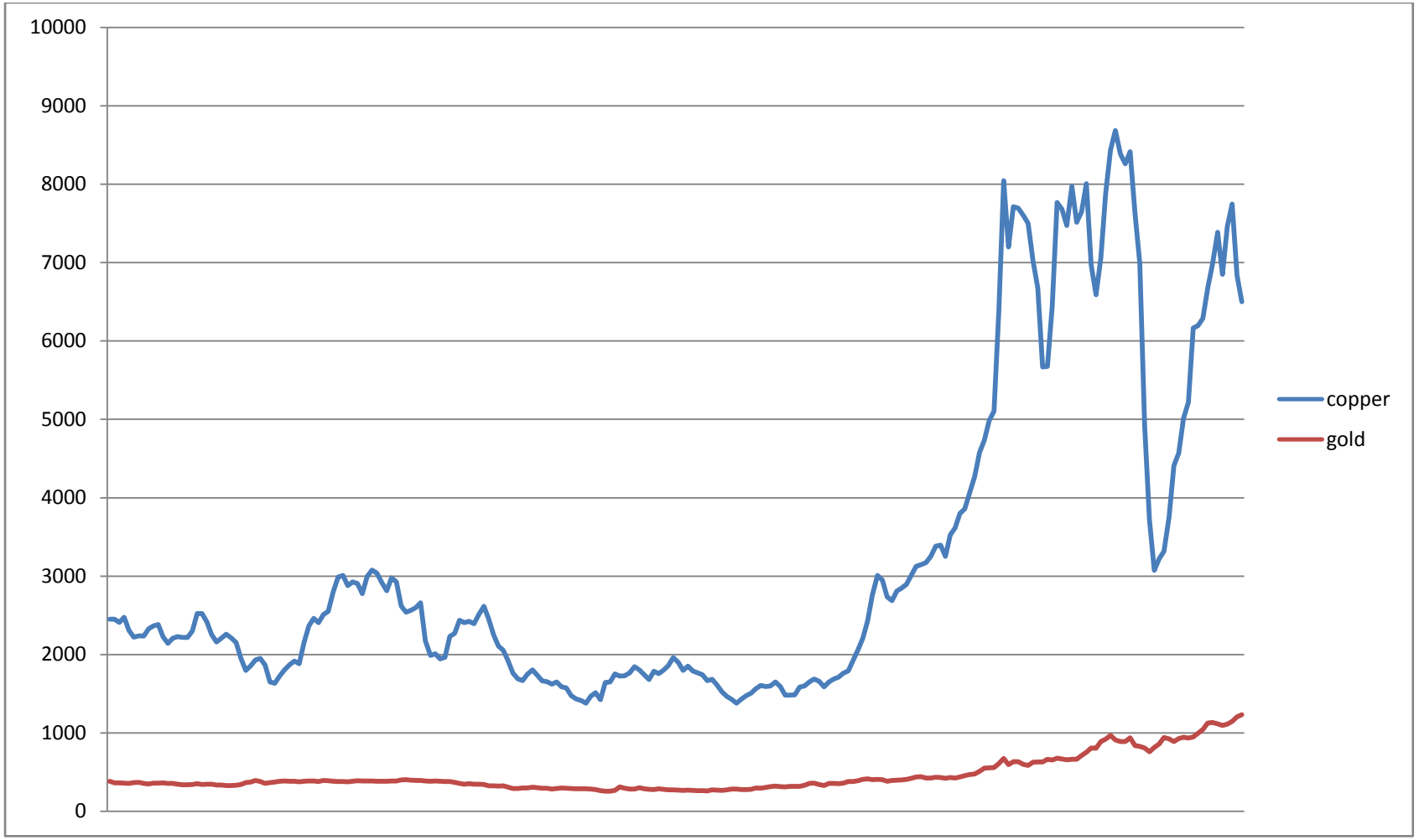
Source: World Bank *Global Economic Monitor* - at http://data.worldbank.org/data-catalog/global-economic-monitor (accessed 20 July 2010).

Figure 2: Oil Prices 1987 - 2009, US dollars per barrel



Source: US Energy Information Administration at http://tonto.eia.doe.gov/dnav/pet/hist/wtotworldw.htm

Figure 3: Copper (dollars per tonne) and Gold (dollars per ounce) Prices, January 1991 - June 2010



Source: World Bank *Global Economic Monitor* - at http://data.worldbank.org/data-catalog/global-economic-monitor (accessed 20 July 2010).