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Resource Management and Transition in Central Asia, Azerbaijan, and Mongolia

Richard Pomfret



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Richard Pomfret

Richard Pomfret is professor of economics at the University of Adelaide, Australia. During the 2010-2011 academic year he was visiting professor of International Economics at the Johns Hopkins University, Bologna Center, Italy. He is the author of *"The Economies of Central Asia"* (1995) and *"The Central Asian Economies since Independence"* (2006), both published by Princeton University Press.

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RESOURCE MANAGEMENT AND TRANSITION IN CENTRAL ASIA, AZERBAIJAN AND MONGOLIA

Richard Pomfret

Professor of Economics, University of Adelaide, Australia

and (for 2010-11)

Visiting Professor of Economics, The Johns Hopkins University Bologna Center, Italy

ABSTRACT: I present a comparative analysis of resource-rich Asian transition economies. For Uzbekistan and Turkmenistan the ability to earn revenue from cotton exports permitted avoidance of reform. Oil in Azerbaijan and Kazakhstan was associated with large-scale corruption, but with soaring revenues in the 2000s their institutions evolved and to some extent improved. Kyrgyzstan and Mongolia illustrate the challenge facing a small economy with a large potential mineral resource, with the former suffering from competition for rents among the elite and the latter from lost opportunities. Overall the countries illustrate that a resource curse is not inevitable among transition economies, but a series of hurdles need to be surmounted to benefit from resource abundance. Neither the similar initial institutions nor those created in the 1990s are immutable.

JEL codes: Q32, P35, O13

key words: resource curse, Central Asia, Mongolia

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INTRODUCTION

After the dissolution of the Soviet Union and the termination of the centrally planned economy, the resource wealth of the southern Soviet republics (Azerbaijan, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan) 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 first decade of the 21st 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).

There is a large literature on the relatively poor performance of resource-rich countries. The recent literature views a resource curse as a conditional relationship, into which some resource-rich countries fall but other resource-rich countries do not, and has focused on two sets of conditioning variables: poor government spending associated with the volatility of state revenues, and institutional dysfunction, especially when there is competition for control over resource rents.¹ A central question in this paper is whether countries in transition from a centrally planned economy and Communist polity are particularly vulnerable to a resource curse due to their fragile and changing institutions and their inexperience with policymaking in a market-based economy.²

The seven countries provide a rich mine of information because policies have varied across countries over the two decades. To simplify the structure of the paper, the individual countries' experiences are presented in appendix A, while the main text of the paper presents the central arguments and cross-country evidence. Summary statistics for the seven countries and annual data on foreign direct investment inflows and GDP growth are presented in tables 1 to 3. Production data for oil and gas are in table 4, and world prices for cotton, oil, copper, and gold are shown in figures 1 to 4.

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

¹ The theme is old, but the modern resource curse literature was stimulated by Sachs and Warner (1995). In the 1980s and 1990s the focus was on Dutch disease effects, but more recent contributions emphasize volatility or institutions. Volatility issues are emphasized in Gelb et al. (1988), Eifert, Gelb, and Tallroth (2002), Papyrakis and Gerlagh (2004), and van der Ploeg and Poelhekke (2010). Tornell and Lane (1999) modeled the perverse impact of rent-seeking after a resource windfall. Tsalik (2003), Sala-i-Martin and Subramanian (2003), and Bulte, Damania, and Deacon (2005) highlighted the deleterious impact of poor institutional quality. Mehlum, Moene, and Torvik (2006) found 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) emphasized the interaction between the appropriability of resources and quality of institutions.

² Esanov, Raiser, and Buiter (2001) argued that resource abundance was particularly harmful in the Soviet successor states because it allowed reform to be postponed and encouraged rent-seeking behavior, but that paper was written before the booms of the 2000s. Brunnschweiler (2009) reached the opposite conclusion that among former Soviet and Eastern European countries in transition, oil had a positive impact on growth between 1990 and 2006.

source of their rapid growth in 2000–08. Natural gas is more important for Turkmenistan and Uzbekistan (and is also important for Kazakhstan and Azerbaijan) and raises issues of pipelines and long-term contracts.³ Minerals are important across the region, but especially copper for Mongolia and gold for the Kyrgyz Republic and Uzbekistan. In Central Asia conflict between upstream and downstream countries over water use has energy aspects, especially the development of hydroelectric capacity in the Kyrgyz Republic and Tajikistan. Water is also a critical input for cotton production, which is a significant export for all Central Asian countries, especially Uzbekistan. Although this paper focuses 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 and Mongolia). This may be endogenous, as the dominant role of cotton in the Uzbek and Turkmen economies at the time of independence contributed to a policy focus on rent appropriation. 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 in the early and mid-1990s (figure 1), the cotton-exporting countries were able to maintain public expenditure relatively well and were under less pressure to reform their economic and political systems than other countries in transition from central planning.

The economies reliant on energy and mineral resources were under pressure to find foreign investors to help exploit the resources and to be more market-friendly in their policies. In the 2000s oil-exporting Azerbaijan and Kazakhstan reaped the fruits of contracts signed in the 1990s and had to decide how to manage the resource boom. Kazakhstan also appeared to reconsider the terms under which it had allowed foreign investors into its energy sector, raising doubts about the security of long-term contracts and of institutional arrangements. The smaller economies of the Kyrgyz Republic and Mongolia had greater difficulty striking a balance in negotiations with large foreign companies to explore and exploit their mineral (i.e., gold and copper) reserves.

The extensive literature on whether resource abundance is a curse indicates that many resource-rich countries have had poor economic performance, but many others have not. This paper assumes the existence of a potential bounty from resource abundance, but to realize the bounty a country must surmount several hurdles, and each has potential pitfalls:

- The resources need to be found and exploited. For many mineral and energy resources this requires specialized skills, not possessed by domestic companies. Forgoing significant external participation

³ The seven countries are land-locked and transport infrastructure is important, but it is also commodity specific. For both oil and gas, pipelines are the least-cost mode of transport, but for oil, rail (and boat across the Caspian) is a plausible alternative. For gas, pipelines dominate, and construction of a pipeline is associated with long-term supply contracts to restrict opportunistic behavior by the monopoly supplier or the monopsony customer.

can constrain output and lead to missed opportunities (as in Turkmenistan and Mongolia), but attracting competing foreign investors may create institutional problems, such as opportunities for corruption.

- When the resources are sold, revenues need to be divided. Resource rents typically accrue to the state, but individuals may try to capture rents. Excessive competition for rents can lead to a tragedy of the anticommons (i.e., too little output) or to state capture by a narrow elite. In both cases institutional degradation is the result. Recontracting to decrease the share of rents accruing to foreign partners will reduce a country's attractiveness to future foreign investors.
- Once rents have accrued to the state, a sovereign wealth fund may help macropolicy (minimizing Dutch disease effects) or smooth the earnings flow or save for future generations, but politicians may be tempted to raid the fund. Having an easy source of public revenue may be associated with poor public policy and lack of accountability, as the government does not need to seek public approval (e.g., via parliament) for its spending policies. Both the size and composition of current public spending may be inappropriate for long-run economic development.

These challenges will be addressed under three headings: producing resource exports, competing for rents, and using resource revenues.

PRODUCING RESOURCE EXPORTS

After the dissolution of the Soviet Union, Tarr (1994) estimated which Soviet successor states would benefit most from being able to trade at world prices rather than Soviet prices. The big gainers were energy exporters, including Turkmenistan and Kazakhstan in Central Asia. In fact, energy resources proved less valuable than expected during the transition from central planning, because world energy prices were stagnant between 1992 and 1998 and because oil and gas exports had to use the Russian pipeline network, whose operator charged high transit fees. Turkmenistan's gas was sold to customers on the network under long-run contracts; Ukraine and Azerbaijan did not pay their gas bills, causing Turkmenistan eventually to cut off gas supplies in 1997–99 and suffer loss of GDP.

The big gainers from the shift to world prices after 1992 were cotton exporters. Cotton has a high value/weight ratio and is relatively easy to export by a variety of modes. In addition world prices rose between 1992 and 1996 (figure 1), benefitting especially Uzbekistan and Turkmenistan; cotton production in the third-largest producer, Tajikistan, was disrupted by civil war until 1997. Uzbekistan was the best performing former Soviet republic in the 1990s, but there were pitfalls. Cotton revenues cushioned the transitional recession but also reduced the perceived need for radical reform; Uzbekistan and Turkmenistan remain, with Belarus, the least reformed formerly centrally planned economies. The

downturn in world cotton prices in 1996 triggered draconian foreign exchange controls in Uzbekistan, and Turkmenistan followed in 1998. Maintaining controls led to further measures fostering state control and stifling economic activity. Even after Uzbekistan lifted controls de jure in 2003 and made the national currency convertible, de facto convertibility was restricted by bureaucratic obstacles.

Outcomes in the Uzbek and Turkmen cotton sectors were similar but not identical. Both governments used state marketing to extract rents from cotton and leave farmers' revenues far below world prices, and both provided incentives to shift from cotton to wheat in the name of food security. In Uzbekistan, however, the state played a positive function in maintaining irrigation channels and ensuring input supply so that long-run cotton output remained roughly constant, whereas in Turkmenistan these functions were not performed well.⁴ The explanation most likely lies in the initial conditions: Tashkent was the center of Soviet Central Asia with greater administrative capacity (and the Ministry of Water Resources employed more people than any other ministry in the Uzbek Soviet Republic), but Turkmenistan lacked such a legacy of competent administration.

Turkmenistan was, however, saved from its economic mismanagement by rising energy prices just when the economy seemed to be in deep trouble at the end of the 1990s. Turkmenistan was the world's fourth largest gas producer in 1991 with fairly modern facilities. Gas production was not much different in 2010, but soaring oil prices increased demand for gas and improved Turkmenistan's bargaining position vis-à-vis Ukraine and Russia's Gazprom.

The two major Caspian oil producers, Azerbaijan and Kazakhstan, needed foreign expertise to exploit their oil and gas reserves. During the final decades of the Soviet Union, attention focused on Siberian oilfields to the neglect of Azerbaijan, which had been the major producing region in the early 1900s. Kazakhstan was not a major oil producer in the Soviet era, but the biggest foreign investment contract in Soviet history happened to be on Kazakhstani territory: the Tengiz oilfield, in which Chevron was the lead producer. Tengiz came online in the 1990s, but the process was delayed by continual maneuvering by the Kazakh leadership to restructure the ownership in return for private payments. Azerbaijan's oil sector was in a more parlous state, but in the dire economic and political conditions following the war with Armenia, the Azerbaijani leadership was desperate to have oil flowing as soon as possible. The Deal of the Century was signed in 1994 with a BP-led consortium of Western companies to develop a major offshore oilfield.

⁴ Virtually all crop land in Turkmenistan is irrigated. During the 1990s the budget for maintaining the Karakum Canal, the core of the irrigation system in southern Turkmenistan, fell from \$3.2 million to \$20,000 and the personnel employed in maintenance fell from 1,700 in 1987 to 640 in 1999; a consequence was increased salinization—a problem that had been avoided in irrigated agriculture in the area since prehistoric times (O'Hara and Hannan 1999). By 2001 the World Bank estimated that salinization affected 97 percent of the irrigated land in Turkmenistan.

Both Azerbaijan and Kazakhstan were thus placed to benefit from the post-1998 increase in world oil prices (figure 2). Whether the negotiating paths made a difference is disputed: Jones Luong and Weinthal (2010) argue that Azerbaijan's approach of foreign ownership with domestic control of the oil sector is superior to Kazakhstan's ceding control to foreign firms. This distinction is not so clear; BP had substantial independence of action in Azerbaijan in the 1990s, and in the 2000s Kazakhstan has shifted the ownership structure of its energy sector towards ever-greater involvement of the state energy company, KazMunaiGas (KMG). More important than this difference is the common feature that both countries signed contracts in time to benefit from the oil price increases in the first decade after 1998. Completion of new pipelines, the CPC pipeline to the Black Sea in 2001 and the Baku-Tbilisi-Ceyhan pipeline to the Mediterranean in 2005, accentuated the benefits from the foreign investment of the 1990s.

A more striking pair-wise contrast is between the Kyrgyz Republic and Mongolia. The Kyrgyz government quickly reached agreement with the Canadian company Cameco to develop the Kumtor goldmine. Despite allegations of corruption, concerns that the foreigners are taking the country's resources, and environmental setbacks, the Kumtor mine began production and was providing about a sixth of Kyrgyz GDP in the early 2000s—a situation highlighted in 2002 when production suffered technical disruption and GDP growth dropped to zero. Mongolia by contrast prevaricated over the terms under which its resources would be exploited, discouraging major mining companies and, even when one of the world's largest copper and gold deposits was confirmed at Oyu Tolgoi, exploitation was delayed by almost a decade due to negotiations over contracts and amendments to the mining and taxation laws.

The timing of exploitation matters. The Hartwick-Solow rule, that timing is unimportant and what matters is whether natural capital is transformed into physical or human capital, ignores changes in the relative price of the three forms of capital. In 1999–2008 the relative price of oil and gas and of copper and gold increased dramatically, and being able to take advantage of those favorable price trends gave resource-rich countries greater opportunity to create physical or human capital than if the resources had been sold in the 1990s or in 2009–10. Mongolia had no choice but to leave its copper and gold in the ground during the boom, because it had not created conditions for exploitation of its mineral resources. An even worse scenario could arise if country-specific resources become less valuable due to technical change (as, for example, happened to guano-exporting countries when superphosphate fertilizers were developed in Britain). Turkmenistan may face this scenario for its gas, if liquefied natural gas (LNG) or shale gas drive down prices and make new pipelines to Europe uneconomic. Mongolian coal may face a similar future if customers turn to cleaner energy sources, but at least coal does not depend on expensive pipelines.

In conclusion, if resources are not extracted, then there is no chance of a resource boom. If the delay is due to political bickering, which distracts policymakers' attention from other matters, or rent-

seeking behavior, then it may contribute to a negative (i.e., resource curse) outcome. If the resources are extracted, then how it is done may make a difference. Jones Luong and Weinthal (2010) laud the Uzbek/Turkmen approach of domestic ownership and control, but this can smother pressures for economic reform and become associated with stagnant output. Corrupt allocation of exploitation rights to favored partners may also have negative consequences, although the jury is still out on the long-run impact of institutional degradation in Kazakhstan in the 1990s when granting of exploration rights and reapportioning of shares in consortia were associated with massive corruption; for Tengiz, the lead operator was technically competent, but this is less clear for the troubled Kashagan offshore mega-field.⁵ Similarly in the Kyrgyz Republic, the initial deal with Cameco, for all its shortcomings, was with a major producer, whereas the more convoluted negotiations in the 2000s over other goldfields have been with companies of lesser standing.⁶ The best outcomes are when a government keen to do business makes a deal with a good foreign partner, as Azerbaijan did with BP in the Deal of the Century. However, haste may lead to poor bargaining over distribution of the spoils, to which I will now turn.

SHARING THE RENTS

Sharing the rents is typically the most controversial part of the process. Host governments are understandably concerned about the extent to which revenue from national resources accrues to foreigners. Preserving the rents for the host country can, however, lead to a resource curse when the government becomes addicted to the grasping hand (as in the treatment of cotton in Uzbekistan and Turkmenistan) or when internecine conflict among the elite challenges social cohesion (as in the Kyrgyz Republic). Mongolia's mining laws and negotiations for development of Oyu Tolgoi were disastrously hampered by a fixation on a 51 percent shareholding. Kazakhstan's resource nationalism in the 2000s involved increased shareholdings for the state-owned energy company KazMunaiGas (KMG) even when it contributed little, creating a poorer national environment for future foreign investment.

In practice, sharing the rents equitably is difficult. Foreign participation is necessary when only foreign firms have the required technical expertise, skilled labor, and financial resources to explore and exploit the resources. These firms need to recoup their costs and make a normal profit as well as self-insure for projects that prove barren. Moreover, there is a time inconsistency problem: The foreign firm

⁵ The Kashagan PSA was signed in 1997 with Eni as the lead operator. Repeated delays and cost increases have led some of the consortium partners to sell out, while Italian prime ministers Romano Prodi and Silvio Berlusconi have flown to Astana to negotiate terms for maintaining Eni's position (Nurmakov 2010, 29–32). Relations continued to deteriorate. In November 2010 Kazakhstan's financial police reported that Eni was under investigation for overrepresenting costs at Kashagan, which meant that the company had "avoided taxation and stolen state property" (reported in *Financial Times* (London), November 20, 2010).

⁶ This may be changing as the license for exploration of the Aktash/Andash gold and copper deposits was granted in 2010 to the Australian listed company Kentor Gold.

becomes more expendable once production is in train, so the foreign firm will insist on front-loading its share to reduce the costs of possible expropriation. Production sharing agreements (PSAs) are typically structured to reflect this time inconsistency. With asymmetric information and transfer pricing, however, the foreign firm may present the accounts so that cost recovery appears to take longer than in reality.⁷ 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 social or other politically sensitive matters; ignoring an arbitration decision risks serious loss of future foreign investment.

Sharing the rents is controversial because changing the shares is perceived to be a zero-sum game, but there are long-term implications. The host nation should leave the foreign firm with a reasonable return on its physical and knowledge capital, recognizing that investment in natural resources is a risky business. If the government pushes too hard, as in Mongolia, there will be no resource exploitation. PSAs worked better in Azerbaijan and Kazakhstan than in the Kyrgyz Republic because the size of the oil price increase after 1998 led to massive windfall gains to the host countries whether or not they had managed to maximize their share of the rents. Nevertheless, after about half a decade, the governments of both Azerbaijan and Kazakhstan tried to shift the shares in their favor by increasing the national oil companies' participation, with some success but at the risk of discouraging future foreign investment.

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 skills is 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 nontransparent 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 behavior, and hence institutional degradation.

The rent-sharing stage leads to a resource curse when governments and elites become addicted to grasping hand strategies, which lead to internecine conflicts among the elite. The former appeared to be a danger in Kazakhstan in the 1990s but seems to have been averted in the 2000s largely due to the personality of the president. Internecine conflicts among the elite have been most apparent in the Kyrgyz Republic, but succession crises could be a catalyst in the autocratic countries.

⁷ In Pomfret (2011) I provide more details on the PSAs signed by Azerbaijan and Kazakhstan. Disputes with Eni, lead operator of Kazakhstan's Kashagan oilfield, centered on whether the foreign company was overstating costs and hence postponing the date when revenues would flow into Kazakhstan's public purse.

USING RESOURCE REVENUES

Once resources are being exploited governments face the question of how to use the revenues. 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. As oil prices began to rise after 1998 and then soared after 2003, revenues far exceeded domestic absorption capacity, and both countries created sovereign wealth funds to manage the windfall.⁸ Both the State Oil Fund of the Republic of Azerbaijan (SOFAZ) and the National Fund of the Republic of Kazakhstan (NFRK) were established by presidential decree rather than by legislation that passed through parliament, thus leaving them subject to presidential discretion. 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 to invest domestically to promote future growth.

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 (compare tables 5 and 6). Azerbaijan used 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 nontransparent, way. Between 2003 and 2006 Azerbaijan's government borrowed abroad an amount equal to about 4 percent of 2006 GDP, which made little financial sense when SOFAZ funds were being invested internationally to fetch 3 to 4 percent in nominal dollar terms, and ran a nonoil fiscal deficit equal to 30 percent of GDP (Usui 2007). By contrast Kazakhstan was paying off external debts to reduce future obligations. The situation changed in Kazakhstan in 2007 as the financial sector ran into serious problems; in 2008–09 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.

In both countries it is early to assess how well the revenues are being used. Azerbaijan's heavy current spending looks more risky, especially as its oil reserves have a relatively short projected life. Surges in social spending may be associated with diminishing returns and waste; Esanov (2009) finds diminishing efficiency of expenditures as spending on health, education, and social policy increased in resource-rich former Soviet republics. Kazakhstan has placed more emphasis on diversification of the economy and on human capital formation, but in the 2008–09 stimulus package withdrawals from the NFRK supported delinquent banks and funded inefficient diversification. Walewski and Chubrik (2010), using household budget surveys, conclude that although poverty rates declined substantially in Azerbaijan between 2004 and 2009 this was almost entirely due to direct impacts of the oil boom through the labor

⁸ Kalyuzhnova and Kaser (2006) and Kalyuzhnova (2006, 2008) provide assessments of the oil funds of Azerbaijan, Kazakhstan, and Turkmenistan. Franke, Gawrich, and Alakbarov (2009) argue that the Azeri and Kazakh oil funds are intended only to promote stability in order to ensure regime survival.

market and that redistribution by the government played no discernible role.⁹ Najman et al. (2008) report a similar lack of impact of state redistribution of oil revenues in Kazakhstan, although redistribution through the labor market helped to alleviate poverty.

Reliance on resource revenues rather than taxes reduces the need for governments to seek popular support for spending, fostering undemocratic systems and lack of checks on executive power. This is most clearly apparent in Turkmenistan where the country's large cotton and gas rents were largely spent on prestige projects in support of a personality cult or disappeared into foreign bank accounts. Populist measures to provide free or low-cost basic needs were provided at the government's pleasure, and residents had virtually no property rights (e.g., if the government chose to bulldoze their houses to make way for a new statue) or security of supply of power, heating, or plumbed water. In the absence of financial markets or real opportunity cost prices, the limited attempts at increasing productive capacity or diversification of the economy were grossly inefficient; textile mills and clothing factories to process Turkmen cotton had negative value-added at world prices (Pomfret 2006, 94–95).

Economic management has been better in Uzbekistan, but resource rent addiction fed an autocratic regime. This contributed to the disastrous decision to strengthen foreign exchange controls in 1996 and the difficulty that the government had in unraveling the system based on economic controls rather than on individual decisions taken in a market framework. Uzbekistan's economy has enjoyed fairly steady growth but has fallen behind its neighbors, especially Kazakhstan in living standards and the Kyrgyz Republic in economic freedoms. The main shopping centers for Uzbeks are the massive markets in Bishkek (Dordoi) and near Osh (Kara-su), the two largest cities in the Kyrgyz Republic (Mitra, Kaminski, and Kholmatov 2009). Migration in search of work in Kazakhstan and Russia and semi-legal cross-border shopping in the Kyrgyz Republic have negative social and institutional consequences, whose ultimate causes are lackluster economic performance and lack of economic freedom.

In contrast to Turkmenistan and Uzbekistan, where strong rulers have managed to ensure centralized control over rents, Tajikistan and the Kyrgyz Republic have had messier outcomes. In Tajikistan the first decade after independence was dominated by civil war. A major prize for the victor, who established the autocratic regime of the 21st century, is control over the revenues from the hydroelectric-aluminum complex, which accounts for the largest share of the country's export earnings.

The Kyrgyz Republic had the least autocratic president in Central Asia, and he introduced the most liberal economic regime in the region. Nevertheless, corruption remained pervasive, including allegations against members of the presidential family and concerns over why the country appeared to benefit little from its gold exports. President Askar Akayev was overthrown in the peaceful 2005 tulip

⁹ In an earlier study, Luecke and Trofimenko (2008) found some evidence of redistribution by the state, although they cautioned that this may have been no more than compensation to internally displaced people due to the conflict with Armenia.

revolution, but hopes for a better functioning democracy were dashed when his successor turned out to be, if anything, more corrupt. President Kurmanbek Bakiyev was overthrown in April 2010. The country remains poor with ethnic divisions that erupted in June 2010 but also has the greatest freedom and least repressive government in Central Asia. Early signs as it attempts to establish a parliamentary democracy are that competition over resource rents has shifted from the presidential palace to parliament, and the challenge will be to forge a political system in which governments are held accountable for public spending.

An alternative to channeling resource rents into the state budget or sovereign wealth fund is to redistribute resource rents to the population, who can make private spending decisions, including voting on how much to devote to public expenditures through taxes. In Mongolia both major parties have promised cash handouts to the people, but doing this before earning substantial resource revenues looks like fiscal profligacy. In general, 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.¹⁰

CONCLUSIONS

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 country 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. In a 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.

¹⁰ 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. Ölcer (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 committed to implement EITI in December 2005, and in October 2010 became the fourth country to be validated as EITI compliant. Both Kazakhstan and the Kyrgyz Republic made earlier commitments but have yet to obtain validation, although the Kyrgyz Republic in October 2010 and Kazakhstan in December 2010 have been rated "close to compliant" (status from the EITI website, <http://eiti.org> [accessed 27 January 2011]). The EITI only relates to how revenues are collected. 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 EITI.

Resources are not destiny. There are choices to be made that determine whether resources are a boon or a curse. Initial policy choices may lead to adverse institutional developments, but these institutions in turn may be changed. Failing to take advantage of resource abundance may 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.

None of the seven countries covered in this paper suffers yet from a full-blown irreversible resource curse, but the main potential source of a resource curse is institutional degradation. Turkmenistan, Uzbekistan, and Tajikistan all have autocratic regimes based on rent extraction rather than on wealth creation. This has been especially harmful for Turkmenistan because the country's first president wasted much of the rents on personal aggrandizement. Azerbaijan and Kazakhstan share some of these features, but the governments have attracted foreign investors and increased their countries' productive capacity. In the Kyrgyz Republic, resource abundance may have contributed to a culture of corruption and rent seeking among the elite, but in early 2011 the Kyrgyz Republic has the most open and democratic political and economic system in Central Asia, albeit with elements of instability.¹¹

Earnings volatility has been less of a resource curse source, despite the massive surge in oil prices. Azerbaijan and Kazakhstan both created sovereign wealth funds in which windfall gains were deposited. Their differing approaches had costs and benefits: Azerbaijan saved less and the massive increase in current public-sector spending was associated with inefficiencies, while Kazakhstan saved more but ultimately had to use some of the savings to deal with private-sector inefficiencies. Yet, neither country has suffered permanent damage to the public finances, and the real sector has benefited from expenditures financed by the funds. Volatility may have been more damaging to Uzbekistan, insofar as the government's hasty and disastrous response to the downturn in cotton prices in 1996 blighted future economic policymaking.

¹¹ The Kyrgyz outcome may be due to chance. Political developments in the closing years of the Soviet era led to discrediting of the Communist leadership, and Mikhail Gorbachev appointed a relative outsider to the post of first secretary of the Soviet republic. As elsewhere, the first secretary became president of the new independent state. President Akayev was more open to advice from Western economists and willing to adopt more liberal policies than his neighbors (e.g., the Kyrgyz Republic was the first Soviet successor state to join the World Trade Organization). Reforms did not have immediate positive outcomes and slowed down in the late 1990s, but the economy and media remained open.

In contrast to the varying experiences of the former southern Soviet republics, Mongolia had a major failure of public policy in not benefiting from its abundant mineral resources during the two decades after reforms began. The presence of minerals in the Gobi Desert was well-known even if precise locations were not, but a poor policy environment failed to encourage sufficient exploration—and without that there could be no exploitation. Consequently Mongolia missed out on the resource boom of the first decade of the 21st century. It was not a resource curse outcome but a missed opportunity. Mongolia could be looking forward to a resource boom in the 2010s.

APPENDIX A

Country Experiences¹²

In the early 1900s **Azerbaijan** produced half of the world's oil, but output stagnated in the second half of the 20th century as Soviet oil investment focused on Siberia. After independence, war with Armenia in 1992–93 over the disputed territory of Nagorno-Karabakh further disrupted production, which by 1994 only just covered domestic demand.¹³ 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 moved to kick-start the economy by speedy increase in oil production.

Two state oil companies were merged to create the state energy company SOCAR, which has signed 25 production sharing agreements (PSAs) with consortia of foreign oil companies, including the Deal of the Century. The deal was signed in September 1994 with a consortium of eight foreign oil companies led by BP, which committed to invest \$7.4 billion in offshore oilfields over 30 years. Starting in 1997 oil production began to increase rapidly (table 4), with oil accounting for almost 90 percent of Azerbaijan's exports by 2002. The Baku-Tbilisi-Ceyhan pipeline to the Mediterranean was completed in 2005. SOCAR has a minority stake in all PSAs currently operational in Azerbaijan, including the 2003 PSA for the Caspian Sea's largest gas field, Shah Deniz. A gas pipeline linking to the Turkish network at Erzurum was completed in 2006.

The involvement of foreign companies was crucial in overcoming opposition to the development of Azerbaijan's oil industry in the 1990s from Russia, which controlled the main pipelines, and from Iran, which disputed the demarcation of the South Caspian Sea. 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 in 1997–99, and oil now 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.

In January 2003 SOCAR's charter was revised so that the company retains ownership over oil it produces (previously it relinquished ownership once the oil went to be processed). SOCAR operates about 40 older oilfields, which are generally high-cost due to depletion and aging equipment, and SOCAR's payroll of 50,000 to 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 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. 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 2007–08 SOCAR initiated international expansion, including acquisition and renovation of Georgia's Kulevi oil terminal, offices in the United Kingdom, Romania, Switzerland, and Turkey, and plans to open 20 petrol stations in Georgia.

Oil revenues accrue to the State Oil Fund of Azerbaijan (SOFAZ), which became operational in 2001, as oil revenues rapidly increased (table 5). SOFAZ transfers a portion to the government budget and

¹² This appendix draws on my paper presented in Panel XVII.16 Eurasia: Natural Resources and Economies at the VIII World Congress of the International Council for Central and East European Studies (ICCEES) in Stockholm on July 26–31, 2010. For general background on the Central Asian economies, see Pomfret (1995, 2006).

¹³ The conflict began in 1988 when the majority-Armenian enclave of Nagorno-Karabakh declared independence from the Soviet republic of Azerbaijan. After the dissolution of the Soviet Union the secession turned into open war between Armenia and Azerbaijan, with Armenia not only gaining control over the disputed territory but also occupying about 9 percent of undisputed Azerbaijan territory. A ceasefire was agreed in May 1994, but no peace treaty has been signed.

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. There was also debate over the extent to which the fund should support social welfare spending; in 2003 the fund provided \$24 million to finance resettlement and other assistance to people displaced by the Nagorno-Karabakh conflict and transferred \$115 million to the state budget for other purposes. By 2006 expenditures from SOFAZ amounted to \$357 million. Azerbaijan had by 2008 saved less than one-tenth of its oil windfall, in contrast to Russia and Kazakhstan, which both saved over half of their 2003–07 windfalls in oil funds (CASE 2008, 121). 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.

Kazakhstan has the Caspian Sea region's largest recoverable crude oil reserves and 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 Soviet Union in 1990—the largest foreign investment deal in Soviet history, which was inherited by Kazakhstan after the dissolution of the Soviet Union. During the 1990s, exploitation of the Tengiz oilfield and exploration for other 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 percent per year in 2000–07 and accounted for a third of the country's GDP in 2005–07.

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. The process was extremely opaque, leading to drawn-out legal proceedings in New York and elsewhere (dubbed “Kazakhgate” by the media) and imprisonment in the United States 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.¹⁴ Foreign participation helped to ensure construction of new pipelines, which reduced dependence on the Russian pipeline company; 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 explained by the inexperience of Kazakh lawyers in the early postindependence years, foreign investors feared that this was a prelude to rewriting contracts and protested strongly; in response 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. There has been a growing tendency to favor domestic partners, and the 2005 PSA Law mandated a minimum 50 percent participation of KazMunaiGas (KMG).

KMG was created in 2002 by merging state corporations with a variety of oil and gas operations to form a 100 percent 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 required to supply subsidized 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 generally acquired larger shares of energy projects in a

¹⁴ In contrast to Azerbaijan, whose main PSAs have been published, Kazakhstan's remain secret, although according to Muttitt (2007) the terms are known to all major oil producers.

straightforward and transparent manner by purchase or the transfer of state-held licenses.¹⁵ By 2009 KMG owned about 30 percent of oil production and 40 percent of proven reserves in Kazakhstan. Rather than being an instrument for crude resource nationalism, KMG is being promoted by the government as a national champion that will become a major international company in the mold of Statoil or China National Petroleum Corporation (CNPC).¹⁶

In 2004 Kazakhstan began to revise the tax and other laws pertaining to PSAs.¹⁷ 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. 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 percent. Meanwhile, in September 2007 Kazakhstan's parliament passed a law giving the government power to renegotiate contracts deemed a threat to national security, although political leaders made clear that they were not intending to nationalize resources.

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 that in the 1990s had developed the second-largest oil and gas output after Tengiz but that came into conflict with the government in 2005, including a fine for anticompetitive behavior and protests of its environmental and labor record. In August 2005 CNPC bought PetroKazakhstan for US\$4.18 billion—at the time the largest overseas acquisition by a Chinese company. In 2009, in return for providing nearly \$13 billion in credits and loans to help Kazakhstan weather its financial crisis, China was allowed to increase its interests; CNPC bought the Kazakh oil producer MangistauMunaiGaz (MMG) in a joint deal with KMG worth \$2.6 billion,¹⁸ and China Investment Corporation purchased 11 percent of the KMG Exploration and Production company for \$939 million. The Chinese and Kazakh presidents, together with their Turkmen and Uzbek counterparts, opened a gas pipeline in December 2009, and an oil pipeline from western Kazakhstan to China is under construction. Agreements have also been reached with China on joint uranium production and a joint venture to develop a major copper project.

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 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. During the 2003–07 boom, when oil prices rose far above the reference price of \$19, Kazakhstan showed prudence in depositing most of the windfall in the NFRK.

The private sector showed no such prudence. The high growth was associated with foreign borrowing based on a strong country credit rating. Banks borrowed abroad and lent domestically, fueling a real estate bubble. Foreign debt, which had been zero at independence, amounted to over 90 percent of GDP by 2008 and Kazakhstan faced a home-grown financial crisis as domestic loans turned bad;

¹⁵ However, the use of environmental regulations to push out PetroKazakhstan's Canadian owner was reminiscent of Russian policy in Sakhalin. 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 to give a share to KMG) is under arbitration.

¹⁶ See Olcott (2007), Kennedy and Nurmakov (2010) and Domjan and Stone (2010). KMG's substantial investments in Georgia after 2006 were negatively affected by the 2008 Russia-Georgia war. KMG bought Romania's second largest oil company, Rompetrol, for \$3.6 billion in 2007.

¹⁷ Legislation tightened the definition of which development costs are covered by PSAs. The government 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 nonextractive sector while increasing revenues from extractive industries.

¹⁸ 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 favor, but the MMG takeover was conducted by a more accepted legal process and did not result in a simple state takeover.

repayments to foreign creditors of around \$14 billion due in 2008 coincided with the collapse of world oil prices. In late 2008 the government launched an anticrisis plan, pledging \$10 billion or 9.5 percent of GDP, largely from the NFRK. The plan focused on capital injections into four major banks (made through Samruk-Kazyna, the government holding company for state-owned assets), support for construction and the real estate market, assistance to small and medium-sized enterprises and agriculture, and public investment in industry. After a February 2009 devaluation of the tenge by 20 percent, Kazakhstan's debt/GDP ratio exceeded 100 percent.

Esanov and Kuralbayeva (2010) refer to this combination of public prudence and private profligacy as the Ricardian curse of the oil boom. The public prudence meant that Kazakhstan was able to weather a serious domestic financial crisis by calling on the liquid assets held by the NFRK. However, holding liquid foreign assets that would be used to bail out banks that had overcommitted in the housing bubble was surely not the best use of resources from a national perspective. The government did attempt to use the windfall revenues to diversify agriculture, promote clusters of manufacturing activity, and invest in human capital, but given the country's endowment it could have used oil revenues to an even greater extent to promote future productive capacity rather than supporting construction in the main cities.

The unrestrained private sector boom and bust is also having implications for the structure of ownership in the Kazakhstan economy. KMG is becoming an increasingly important player in the energy sector but the larger issue is the role of Samruk-Kazyna, the National Welfare Fund. The state is the sole shareholder of Samruk-Kazyna, which was created in October 2008 with the merger of two funds, Samruk and Kazyna. Samruk-Kazyna owns, either in whole or in part, over 400 companies, including KMG, the state uranium company, Air Astana, the national rail and postal service, and numerous financial groups; according to International Monetary Fund (IMF 2009) estimates, it accounted for 46 percent of GDP. Kalyuzhnova and Nygaard (2011) argue that Samruk-Kazyna's role as a vehicle for state policy has increased in 2009–10 following the perceived failure of the banking sector to allocate resources in line with national priorities. Despite public commitments to save a larger share of future oil revenues in the NFRK, relations between NFRK and Samruk-Kazyna will be crucial in determining leakages from the Oil Fund into the domestic economy and how those funds are used.¹⁹

Turkmenistan, the other major energy producer, 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) used 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 production was falling. 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).

Gas exports went to or through Russia to markets in the former Soviet Union, primarily Ukraine and Azerbaijan. Payment was partly by barter and bills were often not paid, to the extent that in 1997–99 Turkmenistan resorted to the extreme step of cutting off supplies to Ukraine (reflected in gas output, table 4, and in the fall in GDP in 1997, table 3). As energy prices increased after 1998, Turkmenistan's bargaining position strengthened and the payment terms gradually improved after 2003 (Pomfret, forthcoming). In Turkmenbashi's final year, 2006, and under his successor, Gurbanguly Berdimukhamedov, there were signs that the government was concerned about increasing gas output and negotiating a better price. A deal with China included construction of a gas pipeline through Uzbekistan

¹⁹ The IMF's 2010 staff report (IMF Country Report 10/241, July 2010, 14) reported the government's commitment to rebuild the NFRK by saving a higher proportion of oil revenues over the next decade and setting a ceiling on annual transfers from the NFRK to the state budget with the target of reducing the nonoil budget deficit from 11 percent of GDP in 2009 to 3 percent by 2020.

and Kazakhstan to western China, which was completed in 2009, breaking Russia's quasi-monopoly.²⁰ In sum, Turkmenistan has been successful in recent years in increasing and diversifying its gas exports; exports to China will be 4.5 to 5.0 bcm in 2010, reaching 40 bcm by 2013 and gas exports to Iran will increase from 8 bcm to 20 bcm. Although Turkmenistan was vulnerable to disruption of exports to Russia between April and December 2009, this dependence will be less problematic in future.

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 favor of smaller companies such as Burren Energy, Dragon Oil, and Petronas.²¹ Mobil and Monument cut their activities by half in the late 1990s due to high costs of extraction and transportation and dissatisfaction with the tax regime. 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 nonoperating partners in joint ventures with the national company TurkmenNeft. Schlumberger, the only foreign service company operating at oilfields in western Turkmenistan, serviced the wells and provided 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 of raising oil production to 10 million tons by 2000 was not reached; the output of just over 7 million tons in 2000 was not much higher than in 1985 and less than the 1975 peak.

In 2003 Turkmenbashi signaled an intention to sign a PSA with a consortium of Russian companies to exploit offshore oil and gas fields but did not finalize the deal. By the mid-2000s it was becoming clear that to increase oil and gas output Turkmenistan needed foreign capital and know-how.²² The energy majors responded by showing renewed interest in Turkmenistan. Eni purchased Burren Energy in 2007, but this may have been primarily to acquire Burren's African interests.²³ 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 (CNPC), South Korea (LG International and Hyundai Engineering) and the United Arab Emirates (UAE Gulf and Oil Gas) and Petrofac, with financing from China's State Development Bank. Although Russia and Turkmenistan remained mired in a price dispute for most of 2009, President Berdymukhamedov seemed unwilling to antagonize Russia by bringing in Western energy firms.

In sum, 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. Relations with foreign companies remain politicized and centralized, with potential investors having to pay "gatekeepers" for access to the president. The pervasive corruption, reflected in the country's abysmal rankings in the Transparency International corruption perceptions index, has been itemized in the Wikileaks US diplomatic cables. The US embassy reported that the "access fee" to meet the president had risen by 10 to 15 percent since Berdymukhamedov came to power. The most ostentatious act occurred in autumn 2008, when Itera presented President Berdymukhamedov with a gift of a 60-million-euro luxury yacht, after a

²⁰ For gas exports there was no practical alternative to pipelines and, apart from a small pipeline to Iran completed in 1997, all pipelines ran north to Russia. A second pipeline to Iran opened in 2010.

²¹ Investor confidence was not helped by contractual disputes with Bidas over a transAfghanistan pipeline. The Argentinean company's contract was terminated in favor of one with Unocal, but US support terminated in 2007 when relations with the Taliban government deteriorated.

²² Kalyuzhnova (2008, 83–86) emphasizes lack of technical skills after the departure of Soviet specialists as the cause of falling revenues per cubic meter of gas exports (e.g., due to poorly maintained pipelines). She also highlights how much time in exploring offshore oil reserves (as of 2007) had been wasted due to lack of technical expertise.

²³ The Turkmen government was annoyed that it had 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 expressing disappointment with Eni's performance as lead operator of Kashagan.

consortium including Itera had signed a PSA and shortly before Itera won a \$250 million contract to build a five-star hotel in Avaza.²⁴

Uzbekistan has also been reluctant to involve foreign firms in its resource sectors. Given that it has the largest population and second largest GDP of the countries covered in this paper, the foreign direct investment (FDI) inflows have been modest (table 2). Kalotay (2010, 63) reports that FDI into Uzbekistan between 1992 and 2009 accounted for less than 5 percent of gross fixed capital formation, the lowest of any of the Eastern European and former Soviet Union transition economies.

The Uzbekistan economy is better managed than that of Turkmenistan, and buoyed by rising world cotton prices in 1992–96 Uzbekistan had the shallowest transitional recession of any former Soviet republic. Cotton remains a major export. Uzbekistan's second largest export is gold, in the production of which 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. The economy has continued to grow, but the rate of growth since the late 1990s has lagged that of other Central Asian countries.

Tajikistan is the poorest of the former Soviet republics. Independence was accompanied by a civil war, which was not settled until 1997, and the government's hold over parts of the country remains 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, despite recurrent reports of Russian FDI. The main use of existing hydro-power is in a Soviet-era aluminum 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 does 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 hydroelectricity development is stymied by opposition from downstream neighbors—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. Uniquely in Central Asia, two presidents have been replaced by popular uprisings and in 2010 a constitution limiting presidential power and promising a parliamentary democracy was adopted. Kumtor, 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.

Kumtor was considered commercially nonviable by Soviet geologists, 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 by Cameco. The arrangement was a PSA with initial revenues accruing to Cameco until it had recouped its upfront costs, but negotiation

²⁴ Itera originated as a US-registered company (International Trading Energy and Resources Association), whose founder and main shareholder, Igor Makarov, was a Turkmenistan citizen with good connections in Ukraine and Turkmenistan. In 2000 Itera held the contract for selling Turkmenistan gas; despite owning the pipeline, Gazprom allowed Itera to handle the sales and bought about a third of Turkmenistan's exports from Itera at a much higher price, \$45 per 1,000 m³, than Itera paid Turkmenistan (\$35.37 per 1,000 m³). By 2001 the main holding company of Itera was registered in the Dutch Antilles and over 60 percent of the shares were held in trust for unnamed individuals, one of whom turned out to be a former deputy prime minister of Turkmenistan and others were believed to include high-ranking Gazprom managers. After Vladimir Putin came to power in Russia and the Gazprom senior management was revamped in 2001–02, Itera lost the contract. In February 2004, Makarov and the governor of Saint Petersburg, led a high-level delegation to Turkmenistan and signed a PSA for the Zarit consortium (in which Rosneft and Itera each held 37 percent shares) to develop an offshore oil and gas field. The PSA was not finalized due to concerns over territorial disputes with Iran, but in March 2007 Zarit met with President Berdymukhamedov to discuss offshore oil and gas development, and in April 2008 Zarit signed PSAs to develop three offshore blocks.

details were nontransparent. The mine started operation in 1997 and by the end of 2006 had produced more than 5.8 million ounces of gold. The mine was controversial, in part because despite its substantial contribution to GDP it appeared to contribute little to public revenues. Protests about environmental damage (e.g., an incident in 1998 when a truck carrying 1,762 kilograms 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) 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 Cameco and the state gold agency restructured the joint venture as Centerra Gold. The Kyrgyz share was reduced from 66 to 30 percent 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 the actual destination of these revenues contributed to the public unrest, which culminated in the overthrow of President Akayev in March 2005. The new government renegotiated the arrangement, reaching an agreement in November 2006 that increased the Kyrgyz state's share from 16 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 Centerra to sign a new agreement, e.g., in June 2008 a district court in Bishkek voided Centerra's exploration license and the government used the court ruling as a pretext to suspend the company's bank accounts and other liquid assets. The Supreme Court reinstated the license after Centerra threatened to take the matters to the International Court of Arbitration. Finally, the joint venture agreement was revised in April 2009; the Kyrgyz state's share in Kumtor was increased from 15 to 33 percent, tax will be levied at a 14 percent flat rate instead of six separate duties, which included withholding taxes of up to 30 percent, and the company had to pay \$22.4 million in back taxes.

The Kyrgyz Republic's second-biggest goldmine project, Jerooy, was abandoned in the 2000s by Oxus, a British company frustrated by continuous corruption and intimidation. Two weeks after Oxus representative Sean Daley was shot at his home in Bishkek in 2006, the government announced that the license had been transferred from Oxus to an Austrian-based company called Global Gold, believed to be in cahoots with the president's son. Residual claims by Oxus were settled in 2007, but in 2006–08 the country lost an estimated \$88 million to \$98 million per year in forgone revenues (International Crisis Group 2008, 11). In November 2009 the Kyrgyz Republic Development Fund announced that Jerooy was up for sale; a feasibility study had been concluded, but no gold had been produced.

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. Political transition was relatively easy, and Mongolia has a democratic political system with rotation of power following elections. Economic transition was much harder, as termination of Soviet assistance to Mongolia in 1990–92 contributed to what may have been the largest peacetime decline in gross national expenditure anywhere. Mongolia has established a market-based economic system, although as in the Kyrgyz Republic this has not brought the anticipated level of prosperity.

Mongolia's largest enterprise, the Erdenet copper and molybdenum complex in the mid-north, was established with Soviet aid in 1978 and expanded in several stages, the last in 1987. Thus, Mongolia had a reasonably modern facility at the end of the Soviet era, but since independence that complex has been in decline.²⁵ 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. In 1990–92 many Soviet technicians departed.

Although Mongolia was believed to contain unexploited mineral resources, little exploration took place during the 1990s. 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,

²⁵ Erdenet had produced a million tons of copper concentrate by 1989. Dorian (1991, 46) reported that it was the largest copper mine in Asia at that time.

neither of which encouraged the long-term capital inflows necessary to fund copper or coal mines. 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. During the commodity boom of the 2000s, Mongolia passed laws placing punitive taxes on foreign companies.²⁶ 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, near the Chinese border, and estimated to hold 45 million ounces of gold and 79 billion pounds of copper (nearly 3 percent of the world's total supply). The mine was discovered by Canadian company Ivanhoe in 2001. 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 to capitalize on high metal prices. In September 2009, Mongolia's parliament revoked four 2006 mining laws, including a windfall profits tax, which exacted a 68 percent tax on copper sold above \$2,600 per ton and gold sold above \$500 per ounce (in 2009 copper traded around \$6,470 per ton and gold around \$960 per ounce) and a law giving the government a 34 percent stake in mines explored without government funding and a 50 percent share in projects with such funding; under the parliament's new deal, the windfall tax was thrown out, and the government gets a flat 34 percent stake in Oyu Tolgoi and other mines.

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, uranium, and other mineral deposits. China Investment Corporation took a \$500 million stake in South Gobi Energy, a company with coal assets in Mongolia, and announced a \$700 million investment in Iron Mining International, a company with interests in Mongolia. 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.

²⁶ In 2008 the World Bank estimated an effective tax rate (the present value of all taxes, fees, and other imposts paid by a mine to the state) of over 60 percent, higher than any other country except Burkina Faso and about equal to that in Uzbekistan and Côte d'Ivoire (World Bank, *The Mongolia Minerals Sector—Key Issues*, unpublished paper). The Fraser Institute ranked Mongolia 50th out of 51 jurisdictions (behind Zimbabwe, Democratic Republic of Congo, Venezuela, Bolivia, etc.—only Ecuador was worse) in policy attractiveness for mining companies (*Survey of Mining Companies 2009/2010: 2010 Mid-Year Update*, Vancouver, August 2010, available at www.fraserinstitute.org).

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Table 1: Demographic Data, Output and Income, 1991 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, 1992-2009 (USD million)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Azerbaijan	0	0	22	155	591	1,051	948	355	130	227	1,392	3,285	3,556	1,680	-584	-4,749	14	473
Kazakhstan	100	1,271	660	964	1,137	1,322	1,161	1,438	1,284	2,836	2,593	2,082	4,131	1,982	6,360	11,096	15,775	12,649
Kyrgyz Rep.	na	10	38	96	47	83	109	44	-2	5	5	46	132	43	182	208	265	60
Mongolia	2	8	7	10	16	25	19	30	54	43	78	132	93	185	191	360	683	437
Tajikistan	9	9	12	10	18	18	30	7	24	9	36	32	272	54	339	360	376	8
Turkmenistan	na	79	103	233	108	108	62	125	131	170	276	226	354	418	731	804	820	1,355
Uzbekistan	9	48	73	-24	90	167	140	121	75	83	65	83	177	192	174	705	711	750

Source: UNCTAD data at <http://unctadstat.unctad.org/TableViewer/tableView.aspx> (accessed 17 January 2011)

Table 3: Growth in real GDP 1989-2010 (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	2009	2010
Azerbaijan	10	11	11	10	11	11	10	24	31	23	11	9	9
Kazakhstan	-2	3	10	14	10	9	9	10	11	9	3	1	6
Kyrgyz Republic	2	4	5	5	0	7	7	0	3	8	8	2	-4
Mongolia	4	3	1	1	4	6	10	7	9	10	9	-2	7
Tajikistan	5	4	8	10	9	10	11	7	7	8	8	3	6
Turkmenistan	7	17	19	20	16	17	17	10	11	12	11	6	11
Uzbekistan	4	4	4	4	4	4	8	7	7	10	9	8	8

Source: European Bank for Reconstruction and Development data at <http://www.ebrd.com/pages/research/economics/data/macro.shtml#macro> (accessed 16 January 2011).

Notes: 2010 = 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> (accessed 16 January 2011).

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: Walewski and Chubrik (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.

Table 6: National Fund of the Republic of Kazakhstan, Financial Data, 2001-9
(USD millions)

	Assets (as of 1 January)	Revenues	Expenditures
2001		1,345	51
2002	1,293	715	1
2003	2,007	1,539	3
2004	3,543	1,024	4
2005	4,564	3,113	5
2006	7,672	6,145	7
2007	13,810	9,300	2,117
2008	20,993	13,737	8,937
2009	25,793		
Total 2001-08		36,918	11,125

Source: Esanov and Kuralbayeva (2010, 21), based on Ministry of Finance data.

Figure 1: World Cotton Prices (Cotlook A Index), January 1991 to January 2011, US cents per pound



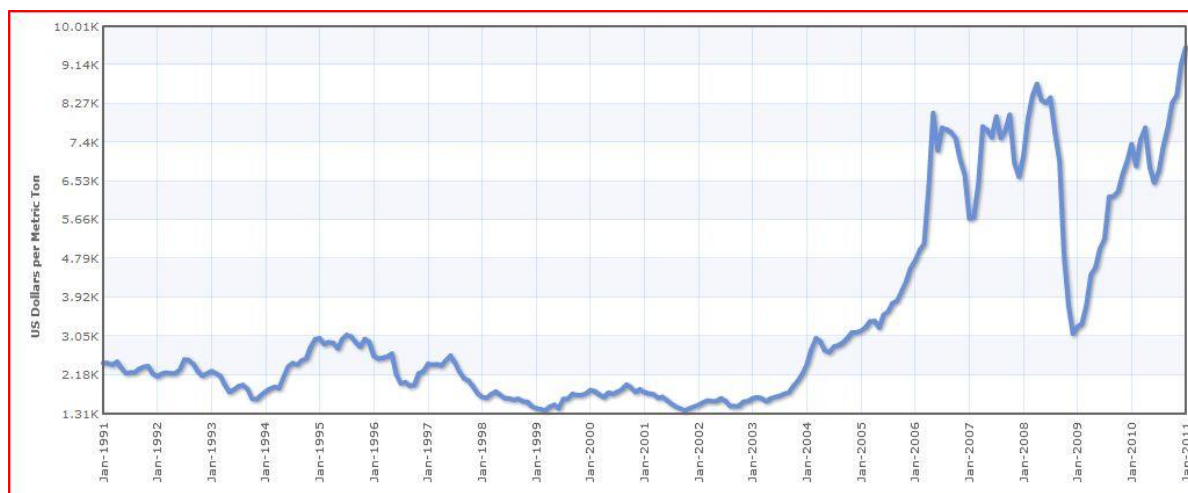
Source: <http://www.indexmundi.com/commodities/?commodity=cotton&months=240> (accessed 15 February 2011).

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> (accessed 30 July 2010).

Figure 3: Copper Prices, dollars per tonne, January 1991 - January 2011



Note: copper, grade A cathode, LME spot price, CIF European ports, US\$ per metric tonne

Source: <http://www.indexmundi.com/commodities/?commodity=copper&months=240> (accessed 22 February 2011)

Figure 4: Gold Prices, dollars per ounce, January 1991 - January 2011



Note: Gold (UK), 99.5% fine, London afternoon fixing, average of daily rates

Source: <http://www.indexmundi.com/commodities/?commodity=gold&months=240> (accessed 22 February 2011)