



Kiel

Working Papers

**Kiel Institute
for the World Economy**



**Stabilization and Savings Funds
to Manage Natural Resource
Revenues: Kazakhstan and
Azerbaijan vs. Norway**

by Matthias Lücke

No. 1652 | October 2010

Web: www.ifw-kiel.de

Kiel Working Paper No. 1652| October 2010

Stabilization and Savings Funds to Manage Natural Resource Revenues: Kazakhstan and Azerbaijan vs. Norway

Matthias Lücke

Abstract:

Do the sovereign wealth funds of Kazakhstan and Azerbaijan promote the sustainable use of government oil revenues? We review the operational rules and performance of the two funds and compare them to Norway's Government Pension Fund Global. The key challenges are to stabilize government expenditures despite volatile resource prices, build up a capital stock to draw on after the resource is depleted, and to save and spend resource revenues transparently. We conclude that the institutional framework of a resource fund may indeed enhance transparency and public scrutiny, limit discretionary control, and sustain public support for long-term savings of resource revenues.

Keywords: resource-based development, sovereign wealth fund

JEL classification: O13, Q32, L71

Matthias.Lücke.

Kiel Institute for the World Economy

24100 Kiel, Germany

Telephone: +49 431 8814-497

E-mail: matthias.luecke@ifw-kiel.de

The responsibility for the contents of the working papers rests with the author, not the Institute. Since working papers are of a preliminary nature, it may be useful to contact the author of a particular working paper about results or caveats before referring to, or quoting, a paper. Any comments on working papers should be sent directly to the author.

Coverphoto: uni_com on photocase.com

1. Introduction

Government revenue from natural resources consists mostly of a share of the resource rent, i.e. the “unearned” income from the exploitation of a natural resource. In practical terms, the resource rent is defined as the difference between the market price of the resource, which is determined by its scarcity relative to demand, and the cost of extraction. As a source of government revenue, natural resource rents differ in two respects from other sources such as taxes. First, resource rents tend to be very volatile, fluctuating with the world market price for the commodity. Second, for exhaustible natural resources such as mineral raw materials, the annual income stream will end when the stock of the resource is depleted (as any exhaustible resource, by definition, eventually will be).

Thus the prudent use of natural resource rents poses two special challenges. First, since government revenue fluctuates with the world market commodity price, medium-term expenditure plans should be based on cautious assumptions about the future price and related revenue. In essence, when the price is high, governments should spend less than current revenues and accumulate savings, which may be drawn down to keep expenditures stable when the price is low.

Second, to maximize the welfare from government expenditures in the long run, some proportion of natural resource revenues should be saved. In practice, this means building up a stock of capital (be it physical capital, human capital, or foreign financial assets) that will generate income and pay for government expenditures after the natural resource is exhausted.

These strategic considerations need to be framed in time spans over several generations. Such (very) long-term thinking sits uneasily with most countries’ annual budget process that is often still driven by cameralistic accounting that says little about the impact of annual flows on a government’s or a country’s total assets and liabilities. Hence, what institutions can help to guide fiscal decisions to account for the volatility of revenues as well as the eventual depletion of the resource?

One approach practiced by many resource-rich countries and sub-national regional bodies is to set up a stabilization and savings fund that is distinct from the annual budget and fed by certain streams of resource-related revenue. Inflows are invested in capital assets; detailed rules specify the allowable types of assets. A large share of

investments often goes into foreign assets in order to dampen the Dutch disease effects that arise when resource revenues inflate demand for domestic non-tradable goods and services. Capital income from the fund's assets may be reinvested or transferred to the annual budget.

Earlier studies have concluded that stabilization and savings funds are no panacea for the political pressures that often lead to the twin problems of overoptimistic price forecasts and insufficient concern for long-term fiscal sustainability (Davis et al. 2001). Whether a particular stabilization and savings fund is effective in accumulating assets for the medium and long run depends on whether its rules of operation (i) are appropriate and (ii) are being followed in practice.

Against this background, this paper assesses the rules and operation of the stabilization and savings funds in Kazakhstan and Azerbaijan. Since both countries became independent in 1992, their oil exports have risen sharply and now generate a large share of government revenues. Both countries have also implemented a stabilization and savings fund, aiming for prudent long-term investment of oil-based revenues.

We start out by reviewing forecasts of the time profile of oil extraction and related government revenue in Kazakhstan and Azerbaijan (Section 2). Oil production in Kazakhstan will provide large revenues well into the 2050s, whereas Azerbaijan is projected to run out of oil before 2030, i.e. within less than a generation. In Section 3 we consider the economics of stabilization and savings funds in more detail and review the resource funds in Norway and Alaska as benchmarks for good practice regarding operating rules and transparency. Against this standard, we assess the Kazakhstani and Azerbaijani funds in Sections 4 and 5. Section 6 concludes.

2. Oil Rents in Kazakhstan and Azerbaijan

By global standards, proven and extractable reserves of raw petroleum in Kazakhstan and Azerbaijan are relatively modest (Figure 1). Only Kazakhstan can count as a mid-sized producer at 3.0 percent of global reserves, against 0.5 percent for Azerbaijan (Table 1). Norway, whose oil fund we will compare to Kazakhstan's and Azerbaijan's in Section 3, has reserves similar to Azerbaijan's, but much higher annual production. As a result, at current extraction levels, Norway's reserves will be depleted in eight years, vs. 19 years for Azerbaijan and 65 years for Kazakhstan.

Table 1. Crude oil: proven and extractable reserves, 2009

	Reserves (billion barrel)	Share in global reserves (percent)	Reserves per capita (barrel)	Hypothetical resource rents per capita (US\$)	Reserves to annual production (R/P) ratio
Kazakhstan	39.8	3.0	2547	101,862	65
Azerbaijan	7.0	0.5	793	31,710	19
Norway	7.1	0.5	1471	58,858	8

Notes: Assumed resource rent: US\$ 40 per Barrel Crude Oil; Reserves-to-production (R/P) ratio: Reserves remaining at the end of any year divided by that year's production; indicates the length of time that remaining reserves will last if production continues at that rate.

Source: IMF International Financial Statistics Database; BP Statistical Review of World Energy (2010); own calculations.

Relative to the countries' populations, proven reserves and implied resource rents are nevertheless substantial. For our back-of-the-envelope calculation, we assume discounted resource rents of US\$ 40 per barrel. On this basis, resource rents per resident are estimated at US\$ 102,000 in Kazakhstan, US\$ 32,000 in Azerbaijan, and US\$ 59,000 in Norway. Although the precise amount of resource rents will depend on the future world market price of oil and is therefore unknown, it is clear that resource rents are large compared to current incomes. While the potential economic benefits from prudently using resource rents are considerable, so are the incentives for rent-seeking behavior of all kinds and conflicts over the distribution of rents.

Although resource rents per capita are much larger in Kazakhstan than in Azerbaijan, the macro-economic importance of the oil sector is greater in Azerbaijan (Table 2) where it accounted for nearly all exports, two thirds of government revenue and almost half of GDP in current prices in 2009. By contrast, in Kazakhstan, the oil sector was responsible for two thirds of exports, less than half of government revenue and one quarter of GDP.

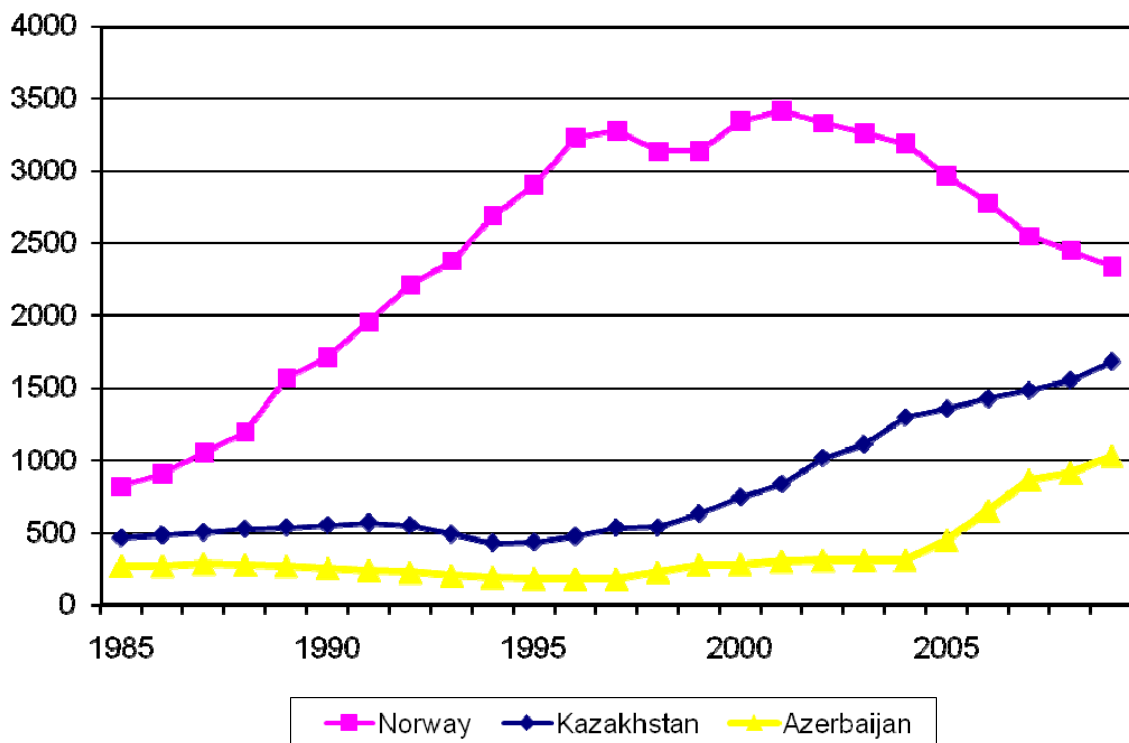
Table 2. Macroeconomic importance of oil sector, 2009

	Azerbaijan	Kazakhstan	Norway (memo)
Population (million)	8.8	15.6	4.8
Exports (US\$ billion)	21	43	118
of which: oil and gas	20	29	76
Government revenue (percent of GDP)	41.6	23.7	44.2
of which: oil-related	27.4	9.8	12.8
Share of oil sector in GDP (percent)	47.0	24.5	22.4

Source: IMF Country Reports; Statistics Norway website; UN Comtrade online database; own calculations.

In both countries, the surge in oil production is a recent phenomenon and occurred only after the dissolution of the Soviet Union (Figure 1). Although the hydrocarbon deposits in both countries had been known for a long time and were exploited on a modest scale before 1991, the Soviet leadership emphasized the development of larger deposits in Siberia. Only political independence allowed local elites to push for extended exploration and production in the Caspian basin through agreements with multinational energy companies. By comparison, Norway's oil output peaked around the year 2000 and is now firmly declining.

Figure 1. Oil production, 1985-2009 (thousands of barrels per day)



Source: BP Statistical Review of World Energy (2010).

The future time path of oil output is largely determined by past investment decisions because huge physical investments are required to develop an oil field. In theory, optimizing the time path of oil output might involve keeping oil in the ground longer; in practice, however, this is not economically feasible once the infrastructure has been put in place and the capital cost of the investment incurred. Only when the development of whole new fields can be delayed (such as in the case of the Kashagan field in Kazakhstan) is it possible to shift oil production and the corresponding flows of resource rents and government revenues into the future.

Therefore, in the short to medium run, the time profile of oil production and associated government revenues is fairly robust to changes in the world oil price.

Available forecasts of the time profile of oil output in Kazakhstan and Azerbaijan reflect the much larger size of reserves in Kazakhstan. Oil output in Kazakhstan is projected to rise to 3.5 million barrel/day around 2015, decline only marginally until 2030, and then decline gradually until reaching pre-boom levels from about 2040 (Lohmus 2005). If the development of the Kashagan field is delayed, output will rise less rapidly and reserves will last longer than projected. By contrast, oil output in Azerbaijan is expected to peak at less than 1.5 million barrel/day around 2011 and then decline gradually to reach pre-boom levels by the early 2020s (IMF 2010, Figure 1). Government revenue will follow this time path with a lag of several years because the government share in oil revenues rises after oil companies have recovered their initial investment (IMF 2007, Figure 5).¹

Oil reserves in Azerbaijan are projected to be largely depleted in approximately half a generation – in other words, in the very foreseeable future when most of the present generation of residents of Azerbaijan will still be alive. By contrast, oil output and related government revenue in Kazakhstan will remain substantial for at least another generation. While decision-makers in both countries are well advised to plan for their countries' economic development after oil reserves are depleted, the issue is clearly more urgent in Azerbaijan.

3. Sustainable Management of Resource Revenues: Benchmarks for Stabilization and Saving Funds

3.1 Economic Principles

In addition to accumulating savings to finance government expenditures in the long run, stabilization and savings funds establish an institutional framework for countering the effects of highly volatile commodity prices on government expenditures in the short to medium run. This task would not be too difficult if commodity prices followed a discernable long-term trend with an identifiable cyclical pattern (say, similar to the business cycle). In this case, the current price relative to

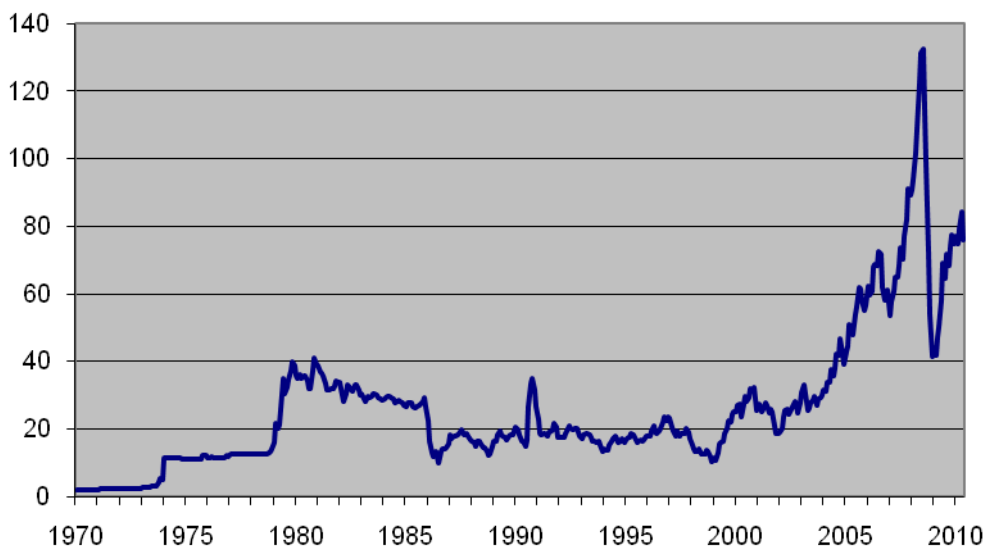
¹ Auty (2006) develops more detailed scenarios for the use of oil rents in Azerbaijan and Kazakhstan.

the long-term trend would determine what stance the fund should take in terms of saving or dis-saving.

Unfortunately, primary commodity price do not follow an easily discernible trend. Indeed, Akerlof and Shiller have recently argued that primary commodity prices are determined largely by the “animal spirits” of investor psychology, rather than by economic fundamentals (Akerlof and Shiller 2009). The upshot is that price increases can feed on themselves for prolonged periods to create further price increases. When the bubble ultimately bursts, long periods of depressed prices may follow.

The evolution of the world market price for crude oil since 1970 illustrates this point (Figure 2). Starting from less than US\$ 5 before 1973, the reference price climbed to almost US\$ 40 just 6 years later, only to come down to less than US\$ 20 for almost 15 years until around 2000. Since then, the price climbed to a high of around US\$ 130 in mid-2008, fell to just above US\$ 40 at the end of 2008, and mostly remained above US\$ 70 from mid-2009 to mid-2010.

Figure 2. World market price for crude oil, 1970-2009 (US\$, monthly average of main sources)



Source: IMF International Financial Statistics Database.

Government revenue from the oil industry typically fluctuates with the world market price; in addition, the ownership structure of the industry and the contracts between the government and the energy companies affect how revenue adjusts over time. As a basis for medium-term fiscal planning, the government needs to make an assumption about the evolution of the oil price. Oil-related revenues under this price

assumption determine the level of expenditures that can be financed sustainably from oil revenues. If revenues turn out to be higher, the windfall should be saved and drawn down whenever revenues fall below expectations later.

Because of the infrequent but violent swings in the world market prices for many commodities, revenue stabilization schemes may need to adjust their assumed world market prices regularly (typically, annually). Technically this can be achieved, for example, by defining the expected price as the moving average over the last several years and updating the medium-term fiscal framework on a rolling basis (as is indeed the usual practice in medium-term fiscal planning). A formula along these lines could be adjusted in a discretionary way whenever there are strong reasons to believe that a price increase reflects a bubble that will burst sooner or later (as in the case of the oil price in 2008). As the resource fund builds up assets, adjustments to the expected price and projected sustainable expenditures could be smoothed over longer periods.

While such guidelines are reasonable, there is no single, best-practice approach to designing a revenue stabilization scheme. Furthermore, whatever rules are designed on the drawing board must survive the pressures of the political process, including in most countries parliamentary approval of the annual budget. Unless governments err on the side of caution in their price assumption, they may quickly end up overspending and later having to adjust harshly. The longer the period over which expenditures are to be stabilized (a longer period implies a higher potential financing requirement), the more cautious the underlying price assumption should be.

Similar considerations apply to the long-term savings function of resource funds. With oil reserves expected to run out within the lifetime of most current Azerbaijani residents, there is clearly a general case for the government to save now. The underlying rationale is that most individuals prefer stable to sharply fluctuating consumption over their life cycles; they also act accordingly, saving out of current income to sustain consumption in retirement.

Formally, one may think of today's decision-makers as maximizing the discounted utility from all present and future government expenditures; the choice of the discount rate would determine how the welfare of future generations enters the calculation relative to the welfare of those alive today. This optimization calculus would produce a time path for government expenditures along with the annual savings required to build up sufficient assets by the time the resource is depleted.

However, the long-term trend of the resource price is uncertain (as discussed above) and so is the real value of total available resource rents. Therefore, the decision of how much to save in the long run also depends crucially on the assumed time path for the resource price. Furthermore, the chosen discount rate determines the relative importance given to the welfare of current vs. future generations and raises difficult ethical issues.

One radical position is represented by the Hartwick rule (Hartwick 1977): “Invest all profits or rents from exhaustible resources in reproducible capital such as machines.” In this case, only the capital income from the reinvested resource rents will be used for consumption – none of the resource rents themselves.

This approach gives current and future generations the same weight because they will have the same interest-bearing capital stock at their disposal. From a utility maximization point of view, this approach leaves current consumption too low because future generations will be better off in any case if technological progress continues (which it will, if our experience of the last 200 years is anything to go by). According to this reasoning, it would be entirely defensible for the current generation to consume some resource rents, rather than invest all current rents in reproducible capital. Furthermore, strictly applying the Hartwick would probably be politically infeasible in countries like Azerbaijan or Kazakhstan where average incomes are low and poverty still wide-spread.

While it is difficult to determine how much should be saved out of current resource revenues, it is easier to derive guidelines on the type of assets that resource funds should invest in. In particular, most domestic investments would magnify the Dutch disease effects that often come with the exploitation of exhaustible natural resources. Current investment demand will drive up the prices of non-tradable goods and the real exchange rate, worsen the international competitiveness of non-resource exports, and ultimately lead to de-industrialization (“resource curse”). This concern is particularly relevant because most fund assets will reflect either windfalls from an unexpectedly high oil price or long-term savings. Neither of these should be allowed to lead to “excess” deindustrialization that may be costly to reverse when the windfall turns into a shortfall or when the resource is depleted. Therefore, resource funds should acquire mostly foreign assets and thereby sterilize the potential impact of resource revenues on demand for (domestic) non-tradables.

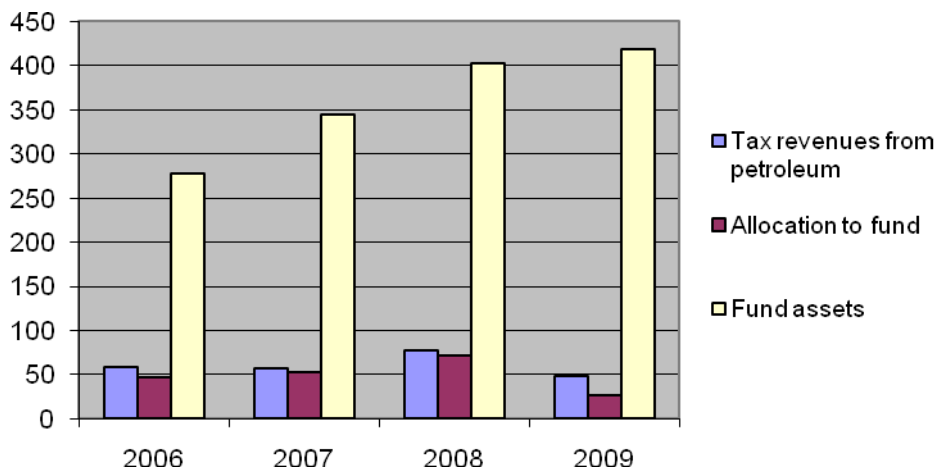
Based on these considerations, the following questions will guide our analysis of the oil fund of Norway (Section 3.2), which is broadly acknowledged as a benchmark case for good practice:

- Out of total resource-related revenues, what share goes toward current government consumption or investment? How much goes to the resource fund under the fund's stabilization vs. savings function?
- Under what circumstances is capital withdrawn from the fund when government resource revenues fall short of expectations (stabilization function)?
- How is the capital stock of the fund invested?
- How is the fund's investment income spent?

3.2 Benchmark: Norway's Government Pension Fund – Global

Norway's resource fund, called Government Pension Fund – Global, was established in the mid-1990s when oil output was approaching its peak (cf. Figure 1 above). Fund assets grew particularly rapidly when the oil price increased sharply during the early 2000s. Today, the fund is one of the biggest sovereign wealth funds worldwide with total assets of approximately US\$ 400 billion, equivalent to 111 percent of Norway's 2009 GDP (Figure 3).

Figure 3. Norway's Government Pension Fund – Global: inflows and assets, 2006 to 2009 (US\$ billion)



Source: Norwegian Ministry of Finance website; own calculations

Allocations to the fund (as well as possible future withdrawals) are fully integrated with the annual central government budget process. The underlying rules that ensure the sustainability of public finances center on the non-oil deficit (revenues unrelated to the oil and gas sector minus the corresponding expenditures). In principle, annual non-oil deficits are meant to be financed from the capital income of the resource fund alone. The fund aims for a 4 percent real rate of return in the long run, based on a strategy of maximizing financial returns with moderate risk. Therefore, fiscal guidelines established in 2001 set this level as a limit for the government's "structural" non-oil deficit.

Although these guidelines do not formally bind the government or parliament, they provide an anchor for the budget process and have been observed consistently. Non-oil deficits above the expected real return on fund assets are acceptable during recessions, as long as they are offset by deficits below the limit when GDP grows fast. Thus the non-oil deficit was very small in 2007 and 2008, while it rose to 4 percent of GDP in 2009. As long as the "4% rule" is followed and the fund realizes a 4% rate of return, the real capital stock will be preserved so that recurrent capital income will be available for present as well as future generations (Bacon & Tordo 2006; Alaska Permanent Fund Corporation (APFC) 2006; Auty (2006); Eriksen 2006; Velculescu 2008).

As the Norwegian pension system faces significant long-term challenges due to an ageing population (Jafarov and Leigh 2007), the notion of restraining current consumption to save for the future has gained enough popular support for decision makers to resist the temptation to increase current expenditures or lower taxes. It is notable that there are no formal legal protections, such as a constitutional provision, to preserve the real value of fund assets. This is in sharp contrast, for example, to the Alaska Permanent Fund that was set up with the intention to take control over a share of the resource revenues away from politicians and save resource wealth as a basis of future capital income (see Box 1).

Box 1: Alaska Permanent Fund

The Alaska Permanent Fund (APF) was established in 1976 through an amendment of the Alaska state constitution. By August 2009, its total assets had grown to almost US\$ 33 billion. The fund is divided into two parts (APFC 2009):

- The reserved part (principal) accumulates savings; unless the state constitution is changed, these assets cannot ever be used to finance government expenditures. The principal receives all the fund's revenues from the oil sector, which consist of a fixed proportion of at least 25 percent of all mineral lease rentals, royalties, royalty sales proceeds, federal mineral revenue-sharing payments and bonuses received by the state. In addition, the principal receives allocations from the fund's unreserved part (see below) for inflation proofing, as well as any assets allocated to the principal through special legislative appropriation. The fund does not receive state property or income tax payments from oil companies; its effective share of state oil-related revenue is close to 10 percent.
- The unreserved part (earnings reserve) receives the capital income from the fund's assets. It is technically part of the State of Alaska's General Fund so that the Alaska legislature is free to decide on its use. However, by state law, approximately one half of the capital income of the fund, averaged over the preceding five years, is paid out as an annual dividend to Alaska residents. Most of the rest is allocated to the principal for inflation proofing; however, there is no firm rule for how much is to be set aside. Whatever is not paid out remains in the earnings reserve.

The annual dividend is paid to all state residents, including children, who have lived in Alaska during the preceding calendar year. Over the last ten years, the dividend has ranged from US\$ 846 to more than US\$ 2000 per citizen; from 1982 until 2008, a total of US\$ 16.7 billion was paid out (APFC 2009). These annual payments have created strong popular support for the idea of saving some current resource revenues to sustain future consumption.

Fund assets are managed by the Alaska Permanent Fund Corporation (APFC), a quasi-independent state entity that is designed to be insulated from short-term political influence but remains accountable to the Alaska state legislature. Transparency is enhanced through detailed annual and monthly reports on the fund's financial status and performance.

While the investment strategy is primarily designed to protect the real value of the principal, it aims for a 5 percent real rate of return in the long run. Over the last 24 years up to 2008, the actual annual average rate return, adjusted by US consumer price inflation, was even higher at 6.7 percent. Assets are widely diversified; in 2009, 38 percent were invested in stocks, 22 percent in bonds, 12 percent in real estate, and 6 percent each in private equity and "absolute return strategies" (fund-of-funds, etc.). There are no ethical guidelines or political or social objectives limiting the choices of asset managers; the only legitimate concerns are risk and return.

The investment strategy of the Government Pension Fund – Global generally aims at diversifying risk while simultaneously producing a high rate of return in the long run, subject to the observance of ethical guidelines. Responsibility for the management of the fund lies with Norway's central bank, which uses the services of external fund managers for a small part of the portfolio. All assets are invested abroad because investments in Norway would result in additional demand for local goods and services and further intensify the detrimental Dutch Disease effects that have been observed in the Norwegian economy.

With total assets of approximately US\$ 400 billion (Figure 3), the Government Pension Fund – Global would exert a discernable influence on market developments if its assets were concentrated in particular countries or asset classes. However, for political reasons alone, a role as a strategic investor would be problematic for a sovereign fund as it might become entangled in politically charged conflicts in foreign countries. Therefore, the GPF-G aims to be a passive investor, with very widely diversified assets. It seeks to participate in the growth of the world economy without actively striving for higher-than-normal returns. Even when the fund incurred a loss of 23 percent on investments in 2008 as a result of the financial crisis, the Ministry of Finance argued that there was no need for a change in investment strategy (Norges Bank 2009; Norway – Ministry of Finance 2009). This position was validated in 2009 when the recovery of global equity markets generated a 26 percent return on investments (Norway – Ministry of Finance 2010).

The Finance Ministry sets benchmarks for the composition of total assets by classes (equities: 60 percent; fixed income: 35 percent; real estate: 5 percent) and regions (continents; Norway – Ministry of Finance, 2010, 20). Thereby it simultaneously defines a performance benchmark, given the performance of the corresponding indices. Within a framework of active management, the Central Bank as operational manager may deviate from the benchmarks within certain limits and is accountable for any excess profits (or losses) relative to benchmark performance. At the same time, the fund should not own more than 10 percent of any individual company. As a result, in 2010, it owned shares in almost 8,300 companies in more than 50 countries, equivalent to 1 percent of international equity markets.

A unique feature of the GPF-G is the application of ethical guidelines that are premised on the assumption that in the long run high returns can only be achieved in

a context of sustainable development, in the financial, environmental and social sense (Norway – Ministry of Finance, 2005). The guidelines provide, first, for the fund to actively exercise its ownership rights in the areas of good corporate governance (equal treatment of shareholders, shareholder influence, board accountability), environmental concerns (climate change, water management), and social responsibility, especially children's rights. Ownership rights are exercised by Norway's central bank as the operations manager for the fund, based on the United Nations' Global Compact and the OECD Guidelines for Corporate Governance and for Multinational Enterprises.

Secondly, the fund applies negative screening to exclude from its investment universe on a product-by-product basis any companies that produce weapons that through their normal use violate fundamental humanitarian principles, produce tobacco, or sell weapons to countries that grossly violate human rights (currently, Burma). Third, companies may be excluded on an individual basis if their actions (or omissions) raise a high risk that the Norwegian people, as co-owner, would contribute to serious or systematic human rights violations, forced labor, the worst forms of child labor and other forms of child exploitation, severe environmental damages, gross corruption, or other particularly serious violations of fundamental ethical norms. Decisions with respect to negative screening or exclusion are taken by the Ministry of Finance, based on recommendations by a Council on Ethics.

The transparency of the operations of the GPF–G is enhanced by the full documentation of the activities of the fund on the websites of the finance ministry and central bank and extensive reports by the finance ministry to the parliament. Documentation includes all votes cast by the central bank while exercising the fund's ownership rights.

4. The National Resource Fund of Kazakhstan

The National Fund of the Republic of Kazakhstan (NRFK) was established in 2001 by presidential decree as a special account of the Government of Kazakhstan with the National Bank. Since then, the fund has grown to around US\$ 25 billion, approximately one fifth of annual GDP.²

² Kalyuzhnova (2006) provides an early detailed analysis of the institutional framework and performance of the resource funds in Kazakhstan and Azerbaijan.

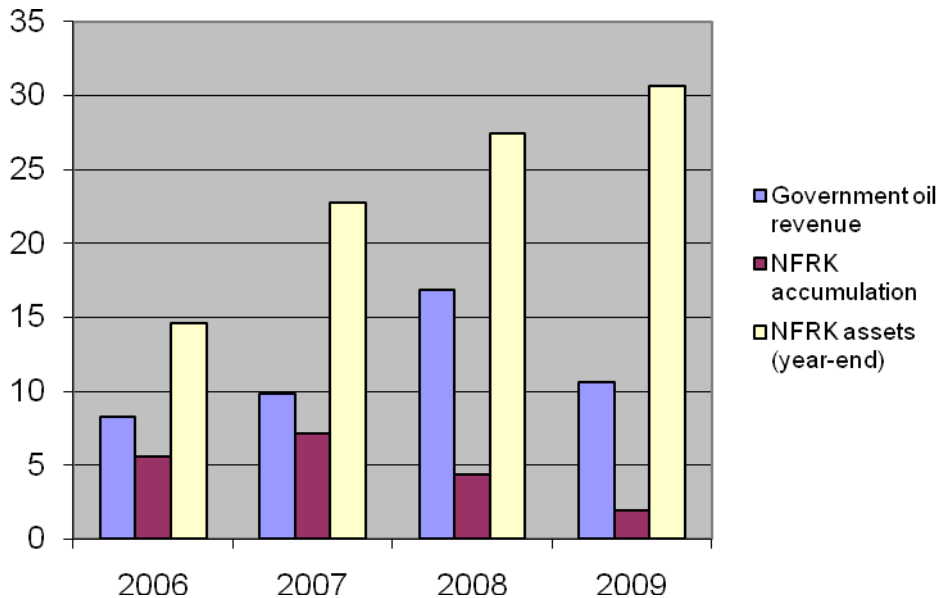
The rules governing revenues and current expenditures of the fund have been changed several times (Makhmutova and Steiner 2005). Notably, before 2007, there existed a strict separation between the savings and the stabilization part of the fund. Although the rules have since been modified, the underlying attempt to withhold control over a portion of oil-related revenues from parliament is instructive. A reference level for the world market oil price was established and oil-related revenue accruing to Kazakhstan calculated on this basis. Of this hypothetical revenue, 10 percent was allocated to the NFRK savings portfolio – irrespective of the actual oil price and oil-related revenue. If the actual price was higher than the reference price, excess revenues would go to the stabilization part of the NFRK; if the actual price was lower, the stabilization part could be drawn down to make up for the shortfall, as long as funds were available.

While this system provided for a conceptually clear distinction between stabilization and saving, its implementation depended crucially on the assumed reference price for oil. An overly conservative estimate would have obliged parliament to maintain government expenditures (including for poverty reduction and development) at an inappropriately low level; transfers to the savings part of the fund would also have been low, whereas transfers to the stabilization part would have been unnecessarily high. An overly optimistic estimate would have led to excessive government spending, large transfers to the savings part of the fund, and over-reliance on the stabilization fund to finance the shortfall of actual relative to projected revenues. Because of uncertainty over the long-term price trend for oil (cf. Section 0 above), it turned out that the sharp distinction between the stabilization and savings functions could not be operationalized in a satisfactory manner.

Therefore, since mid-2006, all government revenue from the oil sector is transferred to the NFRK, after being accounted for in the state budget (Sartbayev and Izbasarov 2007). This includes tax revenues from oil companies, royalties, revenue from production sharing agreements (PSAs), privatization receipts, and capital income on NFRK assets. The NFRK makes “guaranteed” transfers to the state budget to pay for development-related expenditures (capital spending, health, and education) as well as “targeted” transfers of a more ad-hoc nature. Among the latter, a total of US\$ 10 billion was transferred in 2008 and 2009 for government expenditures to combat the financial crisis and recession (refinancing for the banking system and a fiscal

stimulus). These extra expenditures largely explain that NFRK assets rose only modestly from 2007 to 2008 although revenues were substantial (Figure 4).³

Figure 4. National Fund of the Republic of Kazakhstan (NFRK): inflows and assets, 2006-2008 (US\$ billion)



Source: IMF Country Reports; own calculations

This arrangement implies that the stabilization function of the fund is limited to providing a stable source of finance for certain key expenditures, plus cash injections into the budget in a major emergency on a discretionary basis as decided by the president. It is thus conceivable that the budget is in deficit and financed through costly borrowing, while at the same time the NFRK is accumulating foreign assets in safe investments that earn only modest returns.

From an economic point of view, it would be rational in this situation to use NFRK assets to finance the budget deficit. However, the operational rules for the NFRK, which is *de facto* solely controlled by the president, are set up precisely to limit the parliament's access to resource-related revenues. This approach to the governance of public finances may be difficult to reconcile with core principles of parliamentary democracy. At the same time, it is worth noting that the existing arrangements did achieve their intended objective of generating long-term savings; asset accumulation in the oil fund started quite early in the new oil boom (in 2001) and progressed

³ Kalyuzhnova (2010) discusses recent developments at the NFRK in detail.

rapidly. Furthermore, in the exceptional situation generated by the recent global financial crisis, substantial resources from the NFRK were made available in 2008 and 2009 to finance the necessary bank restructuring and help to stabilize the economy (IMF 2010a).

Reflecting the distinct liquidity needs implied by the fund's roles (financing current development expenditures vs. accumulating long-term savings), the NFRK maintains stabilization and savings portfolios with different investment strategies. Approximately 10 percent of NFRK assets are held in the stabilization portfolio of mostly short-term assets like money market instruments, ensuring that ongoing transfers to the government budget can be financed. By contrast, assets in the savings portfolio are invested with a longer time horizon. Fixed income instruments make up 75 percent of the savings portfolio, with the remainder consisting mostly of equity. Assets are held in several major currencies (Sartbayev and Izbasarov 2007).

The NFRK provides little information on its operations to the public. Monthly tables on the Finance Ministry website list inflows and outflows of the NFRK only by major categories. There is no published annual report or other documentation of investment strategy or performance. While Kazakhstan is a candidate for membership in the Extractive Industries Transparency Initiative (EITI), full disclosure of government revenue was not achieved because not all oil companies participated (Coalition of Kazakh Nongovernmental Organizations "Oil Revenues - Under Public Oversight!", 2008). So far, Kazakhstan has also not actively participated in the International Forum of Sovereign Wealth Funds (SWF) that promotes the "Santiago Principles" (IWG 2008) to increase the transparency and accountability of SWF operations.

In recent years, there has been a tug-of-war between the Government of Kazakhstan and the international oil companies over the government's desire to renegotiate its share of total resource rents in certain major contracts, most prominently for the Kashagan field (Muttitt 2007). Most contracts for exploration and exploitation date back to the 1990s when the government had little experience negotiating complex legal issues; with hindsight, many deals may well appear lop-sided to Kazakhstan's disadvantage. At the same time, investment in Kazakhstan in the 1990s was understandably thought to involve greater political risk than at present, justifying a higher risk premium for the oil companies. Since the government cannot formally force a renegotiation (contracts typically contain grandfather clauses that insulate oil

companies from most changes in national laws and other regulations), the strict application of environmental regulations and damage claims over delays to the start of production become bargaining chips in negotiations with oil companies.

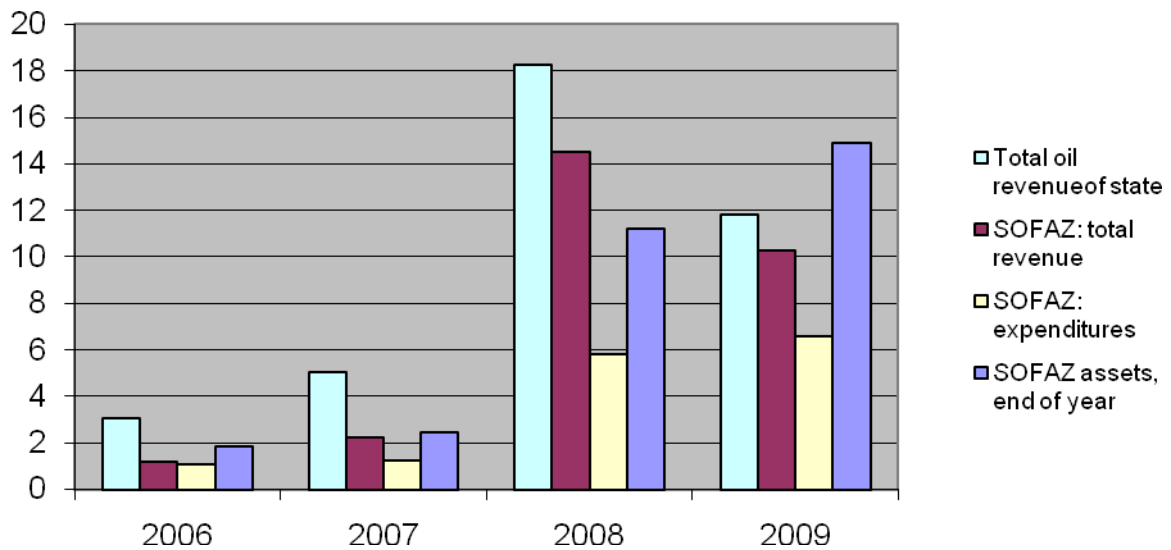
Ultimately, the government was able to improve its position both in the case of the Kashagan field and in the Karachaganak dispute (Nuttall 2010). Although resource rents are difficult to measure directly, the ratio of government oil revenue to registered oil exports provides an indication of the relative shares of governments vs. oil companies across countries. Norway, which is often considered the global benchmark for a high government share, reached a ratio of 46 percent in 2008, compared to Kazakhstan's 24 percent. These numbers are not directly comparable because cost structures of oil production differ and Norway and Kazakhstan are at different points in their life cycles as oil producers. Nevertheless, these numbers suggest that oil companies investing in Kazakhstan will still receive a large risk premium as compensation for entering a challenging region, in terms of political risk as much as physical geography.

5. The State Oil Fund of Azerbaijan

The State Oil Fund of Azerbaijan (SOFAZ) was established by presidential decree in 1999 as an extra-budgetary fund under presidential control. Its assets grew slowly to little more than US\$ 2 billion until 2007, but shot up to more than US\$ 11 billion in 2008 (Figure 5). This increase was caused by a higher oil price as well as the peculiar time profile of government oil revenues under the production sharing agreement for the Azeri-Chirag-Guneshli (ACG) offshore fields. The government share of profit oil from these fields increased from 25 percent to 80 percent in 2008 after the initial investment outlays had been recovered by the oil companies (EIU 2008; Bagirov 2007).

The fund receives all government oil revenue except the profit taxes paid by the national oil company (SOCAR) and foreign oil companies; profit taxes go directly to the state budget. Thus SOFAZ receives government revenue from production sharing agreements (including both the government's and SOCAR's shares), bonus payments, acreage fees, dividends, revenue from the transit of hydrocarbons over the country's territory and capital income from fund investments. In 2006 and 2007, SOFAZ receipts amounted to 39 percent and 46 percent of government oil revenue, respectively (Figure 5); in 2008, this share went up to 83 percent.

Figure 5. State Oil Fund of Azerbaijan: inflows, outflows, and assets, 2006-2008 (US\$ billion)



Source: SOFAZ Annual Reports; IMF Country Reports; own calculations.

Fund expenditures consist mainly of transfers to the national budget. Other expenditures have included the financing of Azerbaijan share in the Baku-Tbilisi-Ceyhan oil pipeline and similar infrastructure projects as well as housing for refugees from Armenian-occupied areas within Azerbaijan (SOFAZ 2010: 25). Expenditures are restrained only by presidential decrees, which could be overridden at any time by a countermanding decree. Budgeted expenditures of SOFAZ are not to exceed budgeted revenues, effectively preserving the nominal value of assets from year to year. Furthermore, once government oil revenues have reached their peak (presumably, in 2009 or 2010), SOFAZ assets should grow annually by at least 25 percent of the SOFAZ revenues for that year. In fact, this target has already been met in each calendar year since 2004 (Bacon and Tordo 2006). Broadly, authorities aim for a non-oil deficit that is compatible with macroeconomic stability; however, there is no agreed definition of the sustainable non-oil deficit.

The investment strategy of SOFAZ has been conservative, with the main goal of risk minimization and diversification. Most assets are managed by SOFAZ itself and are invested into fixed income instruments, including bank deposits, money market funds, securities, including sovereign debt securities, bonds, and mortgage securities. Debtors include governments, financial institutions and state agencies of countries with long-term (sovereign debt) ratings of at least A (S&P, Fitch) or A2 (Moody's); commercial banks and other financial institutions that have long-term

credit ratings of at least A (S&P, Fitch) or A2 (Moody's); and international organization such as the World Bank, the European Bank for Reconstruction and Development, and the Asian Development Bank. Assets managed externally (around 2 percent of the total at end-2008) may be invested also into equities with a credit rating of not less than AA- (S&P, Fitch) and Aa3 (Moody's). The rate of return, not considering exchange rate fluctuations, averaged just under 4 percent from 2006 to 2009 (SOFAZ 2010).

In both Azerbaijan and Kazakhstan, oil funds' investment strategies emphasize government bonds and other fixed income securities, in contrast to Norway's much greater use of equities. However, as long as fund assets are modest, compared with the volume of global financial markets, and the potential for risk diversification is limited, it seems reasonable for both countries to invest in very low-risk assets and thus to protect the real value of their assets even in the short to medium term.

SOFAZ, as well as the oil industry in Azerbaijan generally, have become more transparent in recent years. Annual and quarterly reports on SOFAZ operations are published on the SOFAZ website (www.oilfund.az). Azerbaijan was the first country to be validated as compliant with the requirements of the Extractive Industries Transparency Initiative (EITI; <http://eititransparency.org>). At the same time, SOFAZ governance remains highly concentrated on the president of Azerbaijan, with only limited formal checks and balances to SOFAZ operations (annual audits, parliamentary approval of expenditure decisions, supervisory board; Bacon and Tordo 2006).

6. Conclusions

Our review of resource funds in Norway, Alaska, Kazakhstan, and Azerbaijan has found an almost bewildering array of objectives, institutional arrangements, and operational rules. In large measure, this is due to the fact that a single policy instrument – the resource fund – is expected to serve several, partly contradictory policy objectives. On the one hand, there are the combined (and compatible) objectives of stabilizing the government's resource-related revenues and saving resource rents to sustain future consumption after the resource is depleted. On the other hand, there is the notion that resource funds can help to deal with the twin temptations that myopic and self-interested politicians too often succumb to: (i) to

save too little resource revenue and spend too much in the short run; (ii) to spend resource rents in their own private interests, rather than in the public interest.

The examples of Norway and Alaska illustrate two extreme positions. The Government Pension Fund – Global in Norway (Section 0) performs the stabilization and savings functions effectively. However, its key operating rule – to keep the non-oil deficit below the expected real return on oil fund assets (the “4% rule”) – has no legal standing that could not be reversed by a simple majority of parliament. Apparently, this rule derives its strength from (i) mainstream politicians and civil servants maintaining a long time horizon and (ii) clever political marketing that pitches the resource fund to the electorate as the future source of people’s old-age pensions; this latter assertion is correct only in so far as old-age pensions will be one contributing factor to the future non-oil deficit that will be financed with capital income from the fund.

It probably helps, too, that the economic rationale of the 4 % rule is relatively easy to grasp and can be communicated effectively to a relatively sophisticated public. It should also help that Norwegians are on average sufficiently well-off to look beyond their present material standard of living towards their old age. Popular support does not seem to be hurt by the fact that, technically speaking, the 4% rule restricts current spending more than would be consistent with welfare maximization over time: the permissible non-oil deficit rises over time until the oil reserves are depleted, i.e. until fund assets reach their peak. This is normally inconsistent with a social utility function that values current consumption as least as highly as future consumption. However, a simple rule was chosen that makes broad economic sense and whose implementation could easily be verified – in preference to other conceivable rules that might technically reflect individuals’ time preferences better, but would be more difficult to communicate.

In contrast to Norway’s Government Pension Fund – Global, the Alaskan oil fund covers only a small portion of the state government’s total oil-related revenues – effectively, little more than one tenth. Control over this revenue flow is removed from the state parliament through a constitutional provision. Funds are saved and real capital gains are distributed directly to the residents of Alaska as a “dividend”, subject to federal and state income taxes. While popular with voters, this arrangement does not even touch most resource rents accruing to the government. There is no

stabilization function except in the sense that Alaskan household have a small, reasonably stable, extra source of income.

The oil funds in both Kazakhstan and Azerbaijan strengthen presidential control over oil-related revenues to the detriment of parliaments. At the same time, there are no legal provisions that limit the discretionary power of presidents regarding the use of oil revenues. In Kazakhstan, “guaranteed” transfers from the oil fund to the budget pay for development-related expenditures that could broadly be described as physical and human capital formation. In addition, there have been exceptional, “targeted” transfers such as the recent US\$ 10 billion infusion into the government budget to pay for financial sector stabilization and a fiscal stimulus. This last transfer made economic sense and the provision that permits such transfers may be viewed as a stabilization mechanism of last resort. Nevertheless, it is hardly good fiscal practice to split expenditures into some categories that are financed from oil-related revenues and, by implication, are controlled by the president; and other categories under the primary responsibility of parliament, including with respect to their financing from non-oil revenues.

In Azerbaijan, a presidential decree calls for oil fund assets to grow in nominal terms by at least 25 percent of annual oil fund revenues, which in turn will constitute the lion’s share of the government’s oil-related revenues from now on. At the same time, the government budget relies largely on transfers from the oil fund to finance current expenditures, in addition to the government’s own oil-related revenues (profit tax from oil companies). Furthermore, there are the expenditures by the oil fund itself which include both capital investments (particularly oil and gas transport) and social expenditures (such as accommodation for internally displaced persons). While the oil fund as such operates quite transparently, the budget process as a whole, with current expenditures funded by the government budget as well as the oil fund, is unnecessarily complex.

The net effect of the arrangements in Kazakhstan and Azerbaijan has probably been to strengthen presidential control over the spending of oil-related revenues, over and above the influence that the presidents wield over the budget process in any case. At the same time, observers appear to agree that the use of oil revenues in Azerbaijan and Kazakhstan has been broadly prudent so far, as shown by the build-up of oil fund assets in both countries (Figures 4 and 5). In Kazakhstan at least, it may be

argued that a president with a firm grip on power is likely to adopt a longer time horizon in his fiscal decisions than members of parliament who face re-election regularly. If, in addition, the president expects to be succeeded in office by a member of his family, that may lengthen his time horizon further.

In sum, resource funds in Kazakhstan and Azerbaijan (as elsewhere) are no magic bullet when it comes to dealing with the twin temptations of spending too much resource revenue too soon, and spending resource rents less than carefully. The price to pay for partially shifting control over resource rents from parliaments to (possibly less myopic) presidents has been a muddled fiscal relationship between the funds and the government budgets. The arrangement in Kazakhstan is also marked by the absence of a genuine stabilization mechanism for fluctuations in the non-oil deficit.

At the same time, the institutional framework of the funds (an extra-budgetary fund in Azerbaijan and a separate government account with the central bank in Kazakhstan) generates an enhanced visibility and constitutes a good starting point for efforts to make fiscal operations, and the use of resource revenues in particular, more transparent. Progress on transparency has been faster in Azerbaijan, which fully complies with the Extractive Industries Transparency Initiative and plays an active role in the International Forum of Sovereign Wealth Funds that promotes the “Santiago Principles” (IWG 2008) of transparency and accountability. Kazakhstan has not so far been involved in the International Forum although its candidacy for the EITI initiative may indicate an interest in promoting transparency (<http://eiti.org/Kazakhstan>; accessed September 17, 2010). Ultimately, greater transparency may hold the best hope of gradually putting in place a system of checks and balances that will limit discretionary control over the use of resource revenues by small groups of decision-makers. Transparency may also enhance popular confidence and a sense of ownership in the resource fund and generate popular support for a strategy to save substantial resource revenues to sustain government expenditures in the long run.

References

Akerlof, G.A. and Shiller, R.J. (2009). *Animal Spirits: How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism*. Princeton University Press.

Alaska Permanent Fund Corporation (APFC 2009). Annual Report 2009. Download: http://www.apfc.org/amiReportsArchive/2009_AR.pdf

Auty, R.M. (2006). Optimistic and pessimistic energy rent deployment scenarios for Azerbaijan and Kazakhstan. Chapter 4 in: Auty, R.M. and de Soysa, I. (eds), *Energy, Wealth and Governance in the Caucasus and Central Asia. Lessons not learned*. London and New York (Routledge), pp. 57-76.

Bacon, R. and Tordo, S. (2006). Experiences with Oil Funds: Institutional and Financial Aspects. In *The World Bank Energy Sector Management Assistance Programme, Report No. 6, 2006*. World Bank.

Bagirov, S. (2007). Azerbaijani Oil: Revenues, Expenses, and Risks. Extractive Industries Transparency Initiative - Azerbaijan. Download: http://www.eiti-az.org/ts_gen/eng/news/2007/nae-14.htm

Coalition of Kazakh Nongovernmental Organizations "Oil Revenues - Under Public Oversight!" (2008). *EITI (Extractive Industries Transparency Initiative) in Kazakhstan, June 2007- February 2008. Report of the Coalition of Kazakh Nongovernmental Organizations "Oil Revenues - Under Public Oversight!" on the implementation progress of EITI in Kazakhstan*. Download: http://www.publicoversight.kz/files/coalition_report_eng.pdf.

Davis, J., Ossowski, R., Daniel, J., and Barnett, S. (2001). *Stabilization and Savings Funds for Nonrenewable Resources Experience and Fiscal Policy Implications*. Washington D.C. (International Monetary Fund).

Economist Intelligence Unit (EIU 2008). *Country Report Azerbaijan*. September.

Eriksen, T. (2006). *The Norwegian Petroleum Sector and the Government Pension Fund – Global*. Ministry of Finance, Norway. Mimeo. Download: http://www.regjeringen.no/upload/FIN/Statens%20pensjonsfond/The_Norwegian_Petroleum_Sector_te.pdf.

Hartwick, J.M. (1977). Intergenerational equity and the investing of rents from exhaustible resources. *American Economic Review*, 67(5): 972–74.

International Monetary Fund (IMF 2007). *Republic of Azerbaijan: 2007 Article IV Consultation—Staff Report*. Washington, D.C. Download: <http://www.imf.org/external/pubs/ft/scr/2007/cr07191.pdf>

International Monetary Fund (IMF 2010). *Republic of Azerbaijan: 2010 Article IV Consultation—Staff Report*. Washington, D.C. Download: <http://www.imf.org/external/pubs/cat/longres.cfm?sk=23847.0>

International Monetary Fund (IMF 2010a). *Republic of Kazakhstan: Staff Report for the 2010 Article IV Consultation*. Washington, D.C. Download: <http://www.imf.org/external/pubs/cat/longres.cfm?sk=24098.0>

International Working Group of Sovereign Wealth Fund (IWG 2008). *Sovereign Wealth Funds: Generally Accepted Principles and Practices. "Santiago Principles"*. Download: <http://www.iwg-swf.org/pubs/eng/santiagoprinciples.pdf>

- Jafarov, E. and Leigh, D. (2007). Alternative Fiscal Rules for Norway. IMF Working Paper 07/241, International Monetary Fund. Download: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1087158.
- Kalyuzhnova, Y. (2006). Overcoming the Curse of Hydrocarbon: Goals and Governance in the Oil Funds of Kazakhstan and Azerbaijan. *Comparative Economic Studies* 48: 583-613.
- Kalyuzhnova, Y. (2010). *The National Fund of the Republic of Kazakhstan (NFRK): From stress-test to global future*. Public Finance Monitoring Center (mimeo)
- Lohmus, P. (2005). Fiscal Management of Kazakhstan's Oil Wealth. In *Republic of Kazakhstan: Selected Issues. IMF Country Report No. 05/240*. International Monetary Fund (IMF). Download: <http://www.imf.org/external/pubs/cat/longres.cfm?sk=18419.0>
- Makhmutova, M. and Steiner, R. (2005). *Oil Revenue Savings Funds: Experience of Alaska and Kazakhstan*. Public Policy Research Center.
- Muttitt, G. (2007). *Hellfire Economics - Multinational companies and the contract dispute over Kashagan, the world's largest undeveloped oilfield*. Friends of the Earth Europe (Europe / Belgium) and others. Download: http://www.foeeurope.org/publications/2007/FoEE_Hellfire_Economics_Dec2007.pdf
- Norges Bank (2009). Quarterly Report, Government Pension Fund – Global, Second quarter 2009.
- Norway - Ministry of Finance (2005). Ethical guidelines for the government pension fund – global. Download: <http://www.regjeringen.no/en/dep/fin/Selected-topics/the-government-pension-fund/ethical-guidelines-for-the-government-pe/the-ethical-guidelines.html?id=434894>.
- Norway - Ministry of Finance (2009). *Report No. 20 (2008–2009) to the Storting On the Management of the Government Pension Fund in 2008*. Download: http://www.regjeringen.no/pages/2185603/PDFS/STM200820090020000EN_PDFS.pdf.
- Norway - Ministry of Finance (2010). *Report No. 10 (2009–2010) to the Storting On the Management of the Government Pension Fund in 2009*. Download: http://www.regjeringen.no/pages/2500165/PDFS/STM200920100010000EN_PDFS.pdf
- Nuttall, C. (2010). Analysis: Kazakhstan reasserts control over big energy projects. Silk Road Intelligencer, 18 August 2010. Download: <http://silkroadintelligencer.com/2010/08/18/kazakhstan-reasserts-control-over-big-energy-projects/>
- Sartbayev, M. and Izbasarov, A. (2007). Managing oil wealth in a transition economy: Kazakhstan's oil fund. In Johnson-Calari, J. and Rietveld, M. (eds), *Sovereign Wealth Management*, pp. 247–256. Central Bank Publications.
- State Oil Fund of Azerbaijan (SOFAZ 2010). *SOFAZ Annual Report 2009*. Download: <http://www.oilfund.az/pub/uploads/5YR64qGt.pdf>
- Velculescu, D. (2008). Norway's oil fund shows the way for wealth funds. *IMF Survey Magazine*, July 9. Download: <http://www.imf.org/external/pubs/ft/survey/so/2008/POL070908A.htm>