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MANAGEMENT OF RESOURCE REVENUES:

Economic principles and Caspian experiences ¹

Revised 24 February 2011

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¹ This position paper was written for the Central and West Asia Department of the Asian Development Bank for the Central Asia Regional Economic and Cooperation (CAREC) research program under contract number S17507 – TA REG 6409. Much of sections 2, 3 and 4 is based on Collier et al. (2010).

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1. Introduction

Natural resources are critically important to many of the countries of Central Asia.² The region has large endowments of hydrocarbons and minerals, and natural resource exports account for up to 80% of countries' exports. Their importance is amplified by the other key geographical feature of the region – its remoteness. This makes it difficult for countries to develop substantial exports in other sectors, hence increasing their dependence on natural resources. This paper outlines key issues that arise in the management of resource revenues, and then relates them to the experience of two countries in the region; Azerbaijan and Kazakhstan.

The historical record of managing resource revenues has been extensively researched; the consensus is that while resource revenues have a positive effect on economic growth in countries with good governance, their effect in countries with poor governance has, on average, been negative (e.g. van der Ploeg 2011). Cross-country evidence suggests that countries are less prone to the resource curse (Sachs and Warner, 1997) and turn the windfall revenue into a boon if they have good institutions (Mehlum, Moene and Torvik, 2006), are open to international trade (Arezki and van der Ploeg 2008), or have well-developed financial systems (van der Ploeg and Poelhekke, 2009). Collier and Goderis (2007, 2008) use global data from 1960 onwards and find that, for the first few years following an increase in the price of commodity exports, non-resource output does indeed increase relative to what it would otherwise have been. However, within two decades the typical resource-extracting economy is producing less than it would have done in the absence of the boom.

We set out issues to do with sustainable resource management, and review the experience of two countries in the Central Asian Regional Cooperation, CAREC. We focus on four broad issues. The first is the choice between consumption and investment of resource revenues and the choice of the best time-profile for consumption (section 2). The second issue is the choice of whether to acquire assets in sovereign wealth or in domestic capital (section 3). The third issue concerns the set of instruments open to government for meeting its spending and saving objectives (section 4). We then (section 5) turn to the interactions between public sector consumption and investment behaviour and private sector actions. These issues are all highly relevant to developments in the CAREC region. We illustrate them by comparing the experience of Azerbaijan and Kazakhstan. The responses of both

² CAREC is the Central Asian Regional Cooperation and comprises Afghanistan, Azerbaijan, China (Xinjiang Uygur Autonomous Region), Kazakhstan, Kyrgyz Republic, Mongolia, Tajikistan, Uzbekistan.

public and private sectors in these countries were quite different, and provide illuminating examples of what can be got right, and wrong, during resource booms.

2. Investment and sustainable consumption

If a country is going to use its resource wealth to generate a sustainable long run income flow, how much resource revenue should it save, and what sort of assets should be acquired? A familiar starting point for the analysis of this question is the '*Permanent Income Hypothesis*' (PIH) which says that all generations are given an equal increase in consumption equal to the annuity value of the resource revenue and commencing as soon as the resource is discovered. If it takes time for revenue flows to build up then early consumption is financed by borrowing. Once revenue flows come on stream, assets are built up, and the stock of assets grow to be large enough that, once resources are depleted, the interest on the assets finances the permanent increase in consumption. This is good custodianship, since resource wealth is preserved; assets in the ground are converted into other forms of asset that are maintained forever, consumption is the interest on this asset stock, and the value of wealth is preserved. It may be attractive from the standpoint of equity, since all generations get the same 'permanent consumption' from this flow. However, in a growing economy this policy is not equitable as it benefits future rich generations as much as it does the current poor one. A more conservative strategy is that countries consume *only* the interest on the assets that have been built up from resource revenues: *bird-in-hand consumption* (BIH) (Bjerkholt, 2002; Barnett and Ossowski, 2003). Consumption only builds up slowly, reaching a maximum value when resource stocks are close to being exhausted (and a large stock of corresponding assets has been accumulated). It yields a large increment in consumption to future generations, but the cost is that these benefits are pushed far into the future. The BIH strategy ignores wealth until it has been extracted and converted into financial assets, and is a highly conservative strategy. Furthermore, the incremental assets should be held in foreign assets (a Sovereign Wealth Fund, SWF), because additional investment in the domestic economy would increase the capital-labour ratio, pushing the return in the domestic economy below that on world markets.

While these strategies may be appropriate for a high income country which is abundantly endowed with capital, a different approach is needed for developing or middle-income countries. Such countries may be capital scarce and are likely to have domestic interest rate above the world rate with access to world capital markets restricted, perhaps by

the country's credit rating. There is then the potential of making high-return domestic investments and putting the economy on a growth path that involves capital deepening with the rate of return converging to the world rate and, accompanying this, wages, consumption and income on upwards trajectories. Immediate consumption for the current relatively poor generation is optimal, but so too is investment to put consumption on a steeply rising path.

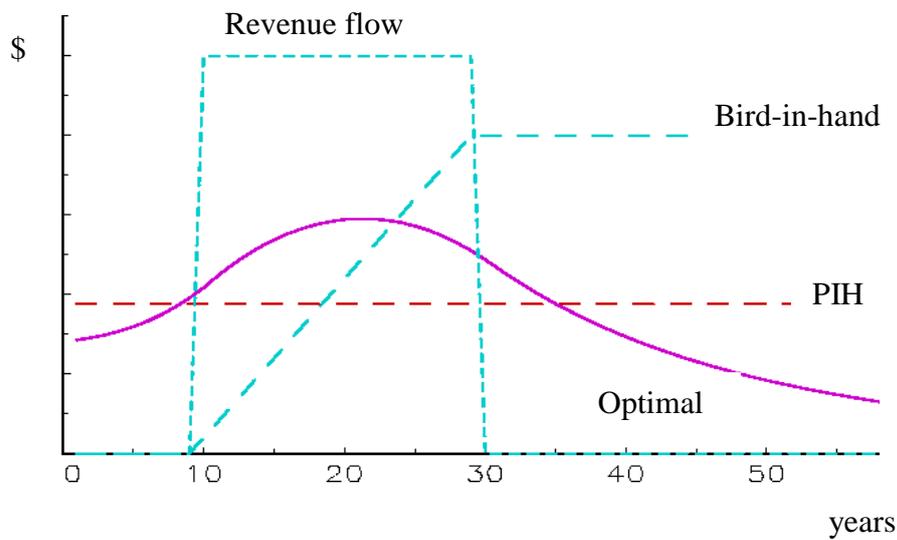
The trade-off between these arguments can be derived by thinking about the optimal inter-temporal profile of consumption. This depends on views about the value of consumption accruing at different times and to different generations, and about the rate of return that can be obtained by postponing consumption and investing in assets of different types. Efficiency requires that revenue should be consumed today if the social rate of discount SDR is greater than the return on investment r , and otherwise invested in the highest return activity. Many authors have argued that the rate of pure time preference (ρ) should be very low, since there is no ethical reason to attach less importance to future generations than the present. While this suggests a low SDR , we expect future generations to be richer than us. Equity then suggests that revenues should be used to increase consumption of the current, relatively poor generation. This factors into the SDR by combining expected growth of consumption, \dot{C}/C , with society's attitude towards inequality summarised by parameter σ (the elasticity of marginal utility of consumption) which measures the value of marginal consumption to poor people relative to richer. Combining these terms, the social discount rate is $SDR = \rho + \dot{C}/\sigma C$. The parameter σ is often taken to be around unity (or perhaps somewhat less), so this social discount rate might range from around 10% in a fast growing economy to 2-3% in a mature or slow growing country. Combining the investment and consumption sides, the efficiency condition (or Ramsey equation) says that the optimal time profile of consumption should satisfy $r = \rho + \dot{C}/\sigma C$. This provides the foundation for prescriptions about the profiles of consumption and investment from a resource windfall.

Figures 1(a) and 1(b) show the time profiles of incremental consumption and incremental national asset accumulation under different rules for consuming/saving a temporary anticipated windfall of revenue. We assume revenue flows for a 20 year period, anticipated to start in 10 years time and to end in 30 years time. Under the PIH the increment to consumption is constant, and equal to the interest that would be earned at a fixed world interest rate on the present value of the revenue, evaluated at discovery date $t = 0$. To smooth consumption the country borrows for the first 10 years, then starts to pay back this debt when resource revenues come in, and finally builds up a savings fund. The size of the savings fund

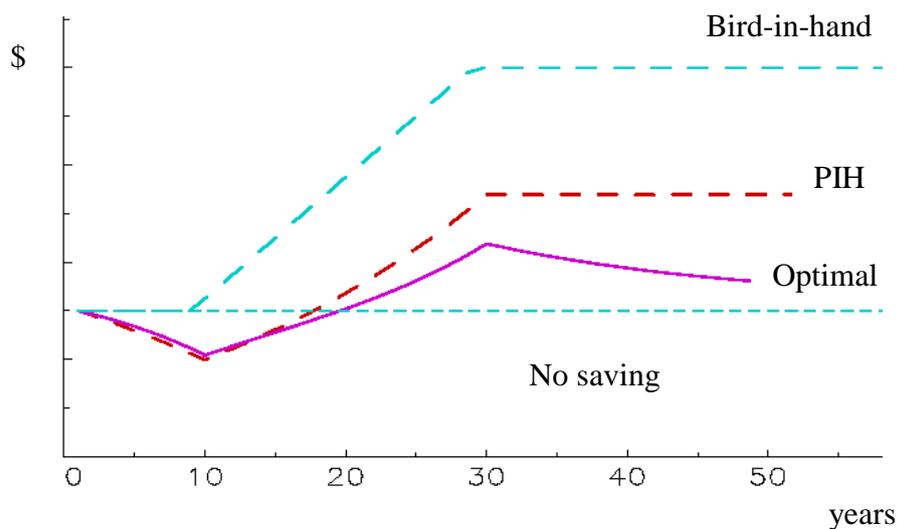
are such that interest payments on the fund (once resource revenue has come to an end) exactly finance the consumption increment. The BIH yields constant consumption once revenue flows have ceased, but leads to a slow build up of consumption. This strategy yields a large increment in the consumption of future generations, but the cost is that consumption benefits are pushed far into the future – say, overtaking PIH only in year 20.

Figure 1: What to do with windfall revenue under alternative rules

(a) Profiles of incremental consumption



(b) Profiles of incremental asset holdings



The capital scarce country is labelled ‘optimal’. The full analysis underlying this curve recognises that investment can take place in foreign assets (or debt reduction); public

infrastructure; and private capital stock (van der Ploeg and Venables, 2011). There is a substantial jump in consumption at the date of discovery. However, this jump is not as large as with the PIH due to the presence of high-return investment opportunities, both in the domestic economy and in paying back foreign debt. Once resource revenue starts to flow, there is a large increase in investment, this taking the form of both lower public debt and an increase in public infrastructure investment. This makes private investment more attractive, so there is an increase in the private capital stock and consequent increase in income and wages. This allows rapid growth in the consumption increment (see Figure 1(a)) while enabling direct public transfers to consumption to fall sharply. Looking beyond the point at which the resource flow stops, we see that the consumption and asset increments are both positive, but converge to zero. The consumption decision therefore does not involve establishing a savings fund to support a permanent increase in consumption. Instead, the resource wealth is used to bring forward the development of the economy. The asset story is given in Figure 1(b). The curve is the increment to net national asset holdings. Initial consumption is funded by borrowing (as in the PIH, but at a slightly lower level), which is then run down as assets are accumulated during the period of revenue flow. At the end of the period of revenue flow the incremental assets are gradually run down as the economy continues on its growth path.

3. Domestic and foreign assets; saving and stabilization

The optimal path for a developing country is based on the possibility of making *domestic* investments which yield a high return and thereby put the country on a path of rising consumption. In broad terms, there are three reasons for thinking that concentration on domestic investments is appropriate. First, a prominent feature of many middle and low-income countries with natural resources is a pattern of underinvestment in public and publically provided goods, prominently in education, infrastructure. Second, improving provision of these goods is crucial for triggering the private sector investments that will ultimately create prosperity. The leverage associated with making such investments is very high. Third, the full social benefits of domestic investment are likely to exceed those of foreign investments, because they flow through the channels of job creation, rising productivity and higher wages. While these arguments make the case for long run investment in the domestic economy, there is also a case for short and medium run investment in foreign assets to stabilise the impact of revenue volatility on the domestic economy.

Coping with revenue volatility

Volatility of revenue is a prime reason why developing economies with poor financial systems have miserable growth performance (van der Ploeg and Poelhekke, 2009). How should resource-rich countries cope with their notorious volatility? Some of these are predictable, due to geology and depletion of resources. Much of the volatility is external, associated with global price volatility and is profoundly unpredictable, as illustrated by the recent collapse in global commodity prices. Hamilton (2008) points out the high estimated variance of oil price changes. Price crashes not only directly lower existing revenues, but also reduce prospecting and investment in extraction. Revenues can be hedged through future contracts, forward markets, commodity swaps and other financial instruments. To date few resource-rich countries (e.g., Mexico) have tried reducing exposure to commodity-price risk by these instruments.

In the absence of substantial hedging options, which other economic variables should fluctuate in response to fluctuating revenues, and which should be stabilised? There are three main options. Consumption in the domestic economy can fluctuate, passing the impact on directly to local consumers. Or domestic investment can be varied. Or the economy's net foreign asset position can fluctuate, smoothing the domestic economy. Much of the actual fluctuation in resource revenues has, in the past, fallen on consumption. Households find it costly because habits form and utility suffers if they cannot be maintained. Governments find it costly because they have entered into political commitments, such as hiring public sector employees, which cannot readily be reversed. The second option is that domestic investment fluctuates. This too is costly, although perhaps less costly than fluctuating consumption. Variations in the flow of investment are consistent with a considerable degree of stability in productive capacity and output, and quite a high level of volatility of investment is a characteristic of many developed as well as developing economies.

The third, and most attractive, option is that the economy's net foreign asset position fluctuates, dampening the impact on the domestic economic. This can be done by borrowing or lending in international capital markets. The borrowing rate of many developing countries exceeds its lending rate and, more radically, when commodity prices decline, which is when countries would need to borrow, they become less creditworthy, and may be shut out of capital markets altogether. This suggests that it would be efficient to become a lender, by building up a Sovereign Liquidity Fund (SLF) to receive funds when commodity prices are high and be run down when commodity prices are low. How large should such a fund become? The fund would need to be larger the greater the degree of prudence of the policy

makers, the greater the volatility of the revenue flow, and the larger the difference between the marginal cost of borrowing and the marginal return to lending (or, more generally, the distribution of marginal utilities of the resource revenue). The standard approach to this question requires knowledge of the preferences towards prudence, of the marginal costs and benefits, and of the stochastic process driving the volatility. Recent work by Gelb and Grasmann (2008) looks at the size of fund that might be required not to fully smooth domestic spending, but to maximise a benefit function in which there are diminishing returns to spending. They find that it is optimal to save a full 80% of the (incremental) revenues associated with a short (5 year) resource boom. This is much larger than is suggested by applying the theory of precautionary saving in situations where there is no limit to how much the government can spend efficiently.

This quantification makes clear the opportunity cost of building a SLF to smooth fluctuations. Essentially, the strategy of substantially stabilising the domestic economy by accumulating a SLF may require such a large fund that it runs into the same problems as an offshore SWF. Funds are not made available for domestic investment and consumption, and benefits are pushed too far into the future. Countries should thus combine a strategy of using an SLF with one in which as much flexibility as possible is built into the investment process, so that some of the impact of revenue volatility can be absorbed by bringing forward or postponing investment projects.

4. Spending channels

Broadly speaking, there are four channels through which the government can allocate resource revenues. (i) They can be distributed to the private sector through citizen dividends or through the tax/ benefit system. (ii) They can be retained as a government financial asset but lent on to the domestic private sector, either by government lending (e.g., development banks or mortgage lending) or by reducing existing public debt. (iii) They can be used to increase public spending, either on public consumption or the construction of public assets. And finally, (iv), they can be retained as a government financial asset and lent to foreigners, by foreign reserve accumulation or establishing a SLF or SWF. These alternatives vary in three fundamental ways. Who gets ultimate ownership of the resource revenue and hence control of the macro level time path of spending from this revenue? Who gets control of the micro level spending detail – the choice of project? How do the alternatives map into the balance between consumption and investment?

i) Transfers to the private sector; taxes and citizen dividends

The first alternative is distribution to the private sector, through lower taxes or transfers. In this case, the government retains no ownership of the resource wealth and consequently has no macro-economic control over spending, once the transfer is made. This also decentralises the micro-economic detail of spending to private citizens, rather than seeking to implement projects through government ministries. An extreme case is that *all* resource revenues be handed to private individuals through citizen dividends and, if government needs to raise funds for public expenditure, it does so by taxing back some of the dividend. Some areas have limited citizen dividend schemes (such as Alaska and Alberta) and in many resource-rich regions taxes are somewhat lower than they otherwise would have been. The main advantage is that, in countries with bad governance, it is important to get funds out of the reach of government as rapidly as possible as has been argued for the case of Nigeria (Sala-i-Martin and Subramanian, 2003). This argument, though correct, is of doubtful relevance – since the countries with the worst governance are unlikely to implement such a scheme, and those most likely to implement it, have least need of it. The issues can be set in somewhat wider terms, via the argument that building state accountability requires taxation. Some authors argue that bargaining over tax is the basis of the social contract between the state and its citizens and a key building block in the development of democracy (Brautigam et al., 2008). According to this argument, government should only be able to spend the funds itself if it has taxed them back from the private individuals to whom the revenue has already been given.

The second advantage of transfers to the private sector is to do with the micro-economic detail of spending. Private individuals are much better at identifying investment projects than government officials, and have sharper incentives to implement them well and make sure they succeed. Underdeveloped credit markets mean that many high-return investments do not get undertaken, and putting cash in the hands of individuals may remove credit constraints and cause such investments to be made. There are, however, some counter-arguments. One is to do with the fundamental problem of the inter-generational distribution of the benefits. Will private choices lead to the optimal time profile of consumption versus investment that we discussed above? Individuals currently alive may give too little weight to future generations, and therefore invest too little. This may be exacerbated if people overestimate the size and duration of the revenues. Society therefore has an obligation to increase savings rates by direct government action, and should not accept the pure outcome of individual choice. The argument has particular force for the proceeds of a resource windfall,

which the current generation has no particular claim to 'own' any more than does any other generation. Furthermore, the timing of individual spending decisions might contribute to short-run booms and loss of macro-economic stability, since private individuals do not internalise the effects of their decisions on prices and the level of activity.

Even if individuals save at a sufficiently high level, they do not necessarily do so by undertaking their own investment projects. Efficiency thus requires an effective system of financial intermediation which both rewards depositors and identifies investors who can best use the funds. Without such a system, the argument that the private sector has better information and incentives than the public sector is eroded. Of course, cutting in the other direction, substantial cash transfers to citizens are a powerful force to promote development of a wider and deeper financial system.

The arguments above were couched in terms of a 'citizen dividend' or pure transfer. In practise, any transfer to the private sector is likely to take place through adjustment of tax, subsidy or social protection schemes, and each of these has to be evaluated on its own merit. Evidence suggests that for each \$1 hydro-carbon resource revenue accruing to government, domestic tax revenue is reduced by around 20 cents (Bornhorst, et al. 2008). Resource revenues provide an opportunity for reducing distorting taxation that may have a negative impact on economic activity, but it also provides the opportunity for maintaining highly inefficient subsidy programmes. For example, fuel subsidies may look politically attractive in an oil-rich country, but are no less distorting simply because the country is oil rich. Social protection schemes have many advantages, particularly in so far as they are associated with private sector accumulation in either human capital (e.g. transfer programmes conditional on school attendance) or physical capital (e.g. by allowing farm assets to be retained during an economic downturn or drought).

The balance of these arguments is country and expenditure channel specific, but some broad conclusions can be drawn. It is important that some fraction of revenues gets into citizens hands quite early on. As we argued above, it is important to raise consumption, and it is also likely that these flows would finance some very high return investments. Risk of large scale theft of revenues is diminished and, perhaps most importantly, it establishes the principle that the resource belongs to citizens, and is being used for the benefit of citizens as a whole, rather than for a small elite. But while these are arguments for the transfer of some fraction of revenue to individuals, it is not an argument for the transfer of all of it. Private individuals' choices alone will not lead to an efficient profile of consumption or spending, and there are pressing needs for direct investment in public, or publically funded, assets.

ii) Public lending and debt reduction.

The second alternative is for the government to retain the revenue as an asset, but to lend it on to the domestic private sector to spend or invest. In this way the government retains control of the macro-aggregate, but decentralises the micro-economic detail to the private sector. This could be new government lending or the reduction of domestic debt. New government lending could take the form of lending resource revenues on through institutions such as development banks. Unfortunately, the historical record of such banks has been quite poor, although on a modest scale it may be worthwhile for resource-rich countries to revisit and rethink this option. One possible suggestion is lending for residential construction.

Alternatively, government could reduce the stock of its domestic debt and reduce the supply of government bonds. This should reduce domestic interest rates and induce asset holders to acquire other assets. Ideally this would be domestic assets, although the extent to which this occurs depends on investment opportunities in the domestic economy. One important mechanism may be that a reduction in government debt deprives commercial banks of the easy option of simply lending to government, and thereby induces them to be more proactive in seeking out other lending opportunities.

iii) Scaling up public spending

The third alternative is public spending. It centralises control, both at the macro level, and the micro level of project design and implementation. This too will typically be some mixture of current and capital spending, the latter part adding to the public capital stock (e.g. infrastructure) and becoming a government asset or possibly adding to the human capital stock if it is spending on education or health care. Many developing countries have critical shortages of public infrastructure and of investments in health, education, and other public services. Resource revenues can be used to finance such projects, but experience has often been poor. One problem arises due to limited technical capacity and information. Ideally, the government has a stock of spending plans, each of them subject to rigorous ex-ante appraisal – a social cost-benefit analysis. However, assembling a set of prioritised spending plans and subjecting them to such analyses is hard. Furthermore, misaligned incentives may cause decision takers to act in a manner that is socially sub-optimal. One extreme of this is corruption – incentives to steal or divert revenues. Another example is rent seeking, occurring when effort is devoted to activities that may be legal but are socially unproductive.

In a country with well-developed patronage systems, the government may be interested in investing primarily in their homelands while the opposition is interested in projects in their home regions. In that case, it can be shown that the incumbent over-borrows and over-invests in its pet projects in order to tie the hands of potential successors who wish to invest in their own pet projects. These political distortions are greater the larger the probability of being removed from office, the more partisan investment projects, and the bigger the illiquidity of the investment projects (Beetsma and van der Ploeg, 2008). Effectively, governments prefer to put the windfall revenues in illiquid partisan investment projects rather than to save them in a liquid SWF. The past has witnessed many white elephant projects, since it is the inefficiency of such projects that makes them politically appealing as credible devices of redistribution (Robinson and Torvik, 2005), which should of course be avoided. Misaligned incentives also come simply from ‘market failures’; if people are unable to transact at prices that are equal or close to social marginal valuations, then decisions will be suboptimal.

These issues are particularly severe in the context of resource windfalls. Administrative systems lack the information and capability to scale-up expenditures rapidly, and this leads to inefficient spending programmes. This argument obviously reinforces the case made for smoothing expenditure and suggests that any initial jump in spending should be small, waiting until capacity to spend efficiently is developed. Further, there is often a lack of transparency surrounding resource revenues and this relaxes the disincentives to misappropriate funds. Increasing transparency and accountability limits the opportunities for theft of funds. It is therefore (second-best) optimal for governments to use expenditures in ways that are hard to loot, such as immobile capital investments or distribution to citizens.

These concerns can be crystallised into the need for two distinct hurdles: honesty and efficiency. In a well-functioning system honesty and efficiency are enforced in multiple ways. Some work *ex ante* and are about how decisions get authorised, while others work *ex post* and are about evaluation. Enforcement is partly through top-down authority, partly through bottom-up pressure from citizens and their representatives, partly through peer groups, and partly through norms internalised by the public sector workforce. The quality of public spending depends on all these mechanisms, the balance between them depending on the needs and opportunities of each situation. A key political challenge posed by a bonanza in resource revenues is to upgrade these mechanisms as rapidly and as visibly as possible.

Both a sharp increase in the world price of commodity exports and the discovery of natural resources are high-profile public events. There is now plenty of incremental money

free from the bureaucratic necessity of maintaining existing budgets and so the return to political lobbying sharply increases. Once lobbies have won spending increases, these tend to be locked in by bureaucratic defences against change. Realising this, lobbies have an incentive to devote resources even in excess of the current increase in revenues. This generates the lobbying equivalent of the economics of a gold rush: lobbies rush to stake claims to future income streams from the assignment of rents. Lobbying is subject to free-riding and so favours those components of public spending that confer large benefits on small groups. It can take a variety of dysfunctional forms, from financing election campaigns that create political obligations, through strike threats by public sector unions, to bribery of decision takers. In general, such an increase in political pressure squeezes the use of public money for those purposes which benefit everyone. The most generalised benefit is clearly to save the windfall in financial assets and so this will attract the least political support, but more generally lobbying will tend to reduce the return on incremental spending.

If citizens come to believe that the windfall will be captured by such special interests, they might themselves pressure for second-best alternatives that at least provide some benefits that are more widely distributed and highly observable. Again, savings will not be favoured since it is not observable. However, some observable and widely diffused benefits might be poor uses of the windfall, such as subsidised petrol or raising the national minimum wage. Hence, the quantum increase is both an opportunity for increasing the return on public spending, since it relaxes the bureaucratic constraint, and a problem, since it generates a surge in lobbying which is likely to reduce the quality of spending. The challenge for the government is publicly to face down the lobbying surge. One approach is to establish explicit and transparent new decision processes for natural resource revenues linked to a clear vision of long-term development. While this runs counter to the ideal fiscal principle of a fully integrated budget in which all revenues are pooled, it might have superior informational properties. By spotlighting the new spending, it makes scrutiny easier and signals to citizens that the windfall will not be captured by special interests.

iv) Foreign reserve accumulation, wealth funds and liquidity funds.

The final option is that already discussed in section 3, that the funds essentially by-pass the domestic economy and go straight into foreign assets. As we argued above, this is inappropriate for a capital scarce economy, except as a strategy to smooth fluctuations in resource revenues

5. Private investment and the non-resource economy

Resource revenue will translate into sustainable economic growth only if it increases private sector investment in other sectors of the economy. The returns to making such investments can be raised by complementary private investment in human capital and infrastructure. But operating against the success of the private sector is the possibility that resource-financed spending appreciates the real exchange rate, causing the Dutch disease

Spending resource revenues in the domestic economy (either on consumption or investment) raises demand for the goods and services being purchased. A major concern is that the economy's aggregate response to such a spending boom runs into diminishing returns, reducing the value of spending. The basic argument is that steep supply curves – particularly for non-tradable goods and factors – mean that spending translates into higher prices and crowds out alternative activities, rather than drawing more resources into use.

An easy case is when this does *not* occur is the Keynesian model of undergraduate textbooks. All supply curves in the economy are perfectly elastic and extra demand can be met without changing any relative prices or 'crowding out' alternative activities. An increase in demand draws underemployed resources into use and raises income. Due to multiplier effects, the final increase in income is larger than the increase in demand. Income will continue to rise until the increase in income (ΔY) equals the extra foreign exchange supplied by the windfall (ΔR) divided by the marginal propensity to import m , that is $\Delta Y = \Delta R / m$.

Developing countries typically have un- (or under-)employed resources. Can they hope for real income growth several times larger than the resource revenue, in line with this model? In practice, supply curves are not horizontal, neither at the aggregate nor at the sector level. Hence, supply responses are dampened as prices rise and other activities are crowded out by resource-funded spending. Often, the first sector in which supply problems show up is the construction sector. Resource-funded infrastructure investment might coincide with private sector resource-related investment (e.g. office construction) leading to a construction boom and a rapid increase in the price of non-traded inputs. As a consequence, the purchasing power of public expenditure is reduced and this brake on infrastructure investment creates other bottlenecks in the economy – in road capacity and traffic congestion for example. Sector effects aggregate into economy-wide changes in relative prices including higher wages and a higher price of domestic output as a whole relative to the price of foreign goods. This shows up as a real appreciation of the currency, and is the basis for the Dutch disease and crowding out of non-resource exports. Are these effects a matter of concern for

government and a basis for policy intervention? After all, a steep supply curve may just be a fact of economic life and does not of itself constitute a market failure.

One frequent cause of concern is that the activities crowded out are particularly valuable. The Dutch disease argument is that private sector exports are crowded out by resource-funded spending *and* that these activities are of particularly high marginal social value. The basis for this may be external economies of scale arising from learning by doing or from pecuniary externalities that support the development of fast growing clusters of activity (e.g., van Wijnbergen, 1984; Sachs and Warner, 1997). In that case, a temporary decline of the potential growth engine of the economy – the traded sector – will lead to a fall in the rate of economic growth and thus to a loss in output. However, if domestic spending of resource revenues is concentrated on public investment that is complementary to these private sector activities – such as improvement of productive infrastructure or labour skills – then these adverse effects are mitigated.

A second point is to do with the factors that determine the shape of supply curves, both of individual sectors and in the aggregate. The fact is that supply curves are often steeper than they need be due to inefficiencies in the supplying sectors. What are the factors that hinder drawing new resources into a growing sector? They include regulatory or other barriers to setting up new firms, but also delays and costs in importing equipment, labour market regulations that make it difficult to hire labour and the legacy of previous under-investment in, for example, labour skills. This standard list of factors determines the investment climate, but their importance is amplified in the context of a coming spending boom.

Ricardian consumers and intertemporal choices

The interaction between the public and private sectors goes beyond the current spending channels outlined above. Other aspects of government policy shape private sector behaviour, and so too does private sector anticipation of future government policy. An example of this is the case of ‘Ricardian’ individuals who are aware of the effect of resource revenues on public sector debt and hence future government policies. If such individuals observe the government to be saving resource revenues (e.g., following a bird-in-hand strategy) they will anticipate that interest on the accumulated assets will pay for lower taxes in future. As a consequence they will increase their current consumption, possibly by borrowing to be repaid from their lower future tax burden. Government prudence is thus undermined by private sector profligacy. This should alert us to the complex interaction between the public and private sectors, and the danger of assuming a too big degree of government control.

6. A tale of two booms

We now turn to seeing how some of these arguments have played out in the recent economic history of two Central Asian economies that have experienced resource booms, Azerbaijan and Kazakhstan.

6.1. Azerbaijan:

Azerbaijan is the largest and most affluent of the three states in the Caucasus and is one of the five littoral states of the Caspian Sea. It has 0.5% of world proven oil reserves (7 billion barrels in 2009), similar to Oman (5.6 billion barrels) or Sudan (6.7 billion barrels) (BP, 2010). Azerbaijan's oil production accounts for about 32% of the 2.8 million barrels per day currently produced in the Caspian region compared with 57% for Kazakhstan, 4% for Uzbekistan and 7% for Turkmenistan. Although Azerbaijan's oil output is small in world terms, oil income has an important impact on its economy. At current production levels and absent any new discoveries, Azerbaijan has a reserve-to-production (R/P) ratio of only 18.6 years, considerably lower than the world average of 45.7 years. The IMF estimates that oil production will peak around 2014, followed by a relatively short plateau and will thereafter decline rapidly unless new discoveries are made. Oil and gas related fiscal revenues will, as a result, also follow a hump-shaped profile. Azerbaijan thus faces the challenge of sustained development of the non-oil sector and adjustment to the post-oil era.

During the Soviet times, Azerbaijan's oil industry was heavily utilised. By the time of independence, most oil fields lacked adequate investment and modern technology and were reaching maturity. Further exploitation of existing fields and exploitation and development of new ones required substantial capital, which was not available domestically and the government had to seek ways of attracting international capital. Oil production was the major contribution of Azerbaijan to inter-republican trade during the Soviet era, and was still the only viable source of export revenue at the time of independence.

Following its independence Azerbaijan re-organised in 1992 its oil industry by merging two state entities, previously responsible for oil exploitation and transportation, into a single state company SOCAR. SOCAR maintains control over the oil exploitation in the country with the president of SOCAR acting as minister and directly reporting to the president. Azerbaijan opened its oil industry to international capital in 1994 by establishing production-sharing agreements (PSA) with foreign investors. PSAs prevail over any existing or future laws whose provisions are in conflict with the contract signed under the PSA. This

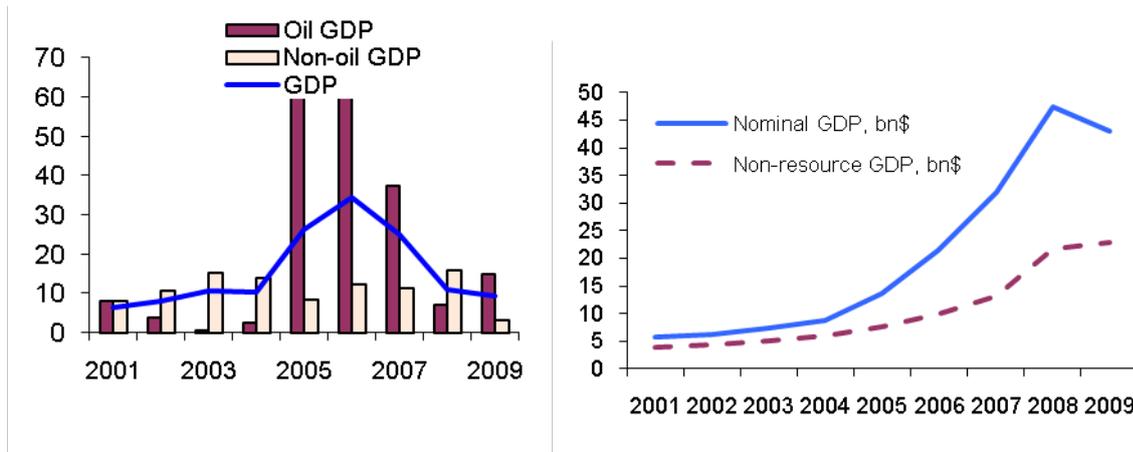
ensures that investors' rights are not subject to any political risk of changes or modification without prior consent by the investor (Bayulgen, 2005) and have succeeded in boosting oil and gas investment and production in Azerbaijan. Hence, the energy development strategy chosen by the political elite of Azerbaijan following independence focused on retaining state control over its energy sector (through SOCAR) with direct involvement of international oil companies into exploitation and development of its oil fields regulated through PSAs³. Economic problems of the early transition period in Azerbaijan were compounded by the consequences of the Nagorno-Karabakh conflict, which presented significant challenges for the ruling elite in the years following independence⁴. The conflict put additional pressure on the oil industry to generate revenues to resettle refugees. This explains why the government had to create the best possible terms for foreign investors, by opting for PSAs to facilitate jump-start investments into its oil and gas fields. Overall, the economic life in the post-Soviet era has evolved around anticipation of "big" oil money coming into country.

Impact of oil on Azerbaijan's economy

Rapid development of the oil sector and oil-related industries resulted in remarkably high growth rates. In real terms the Azeri economy grew on average by 16% per year during 2001-2009 with impressive growth rates of about 25% in 2005 and 2007 and 35% in 2006. Exceptionally high growth in 2005-2007 was driven by very strong expansion of the oil sector, which grew on average at 54% p.a. during this period. The non-oil real GDP grew on average by 11% per year during 2001-2009. As a result of these developments, nominal GDP has grown more than eight times to US \$47.5 billion in 2008 from US\$ 5.7 billion in 2001, see Figure 6.1.1.

³ The choice of initial energy development strategies by political elite is based on domestic constraints: (a) availability of alternative sources of export revenue and (b) the level of political contestation (Jones Luong and Weinthal, 2001). Interactions of these domestic factors determine four possible energy strategies which state leaders can choose: (1) nationalise (or retain state ownership) with indirect international involvement; (2) nationalise (or retain state ownership) with direct international involvement; (3) privatise with indirect international involvement; (4) privatise with direct international involvement. According to their rankings, Azerbaijan, with low degree of access to alternative sources of revenues and low level of political contestation would choose the second energy development strategy, namely retain state ownership of energy resources with direct international involvement.

⁴ The conflict refers to dispute over territorial ownership of Nagorno-Karabakh, a small region in south-western Azerbaijan with majority ethnic Armenian. The dispute grew into armed conflict during February 1988-May 1994. As a result of the conflict, about 12 percent of Azerbaijan's 8.3 million people became refugees and internally displaced persons, and Azerbaijan lost roughly 16 percent of its former territory.

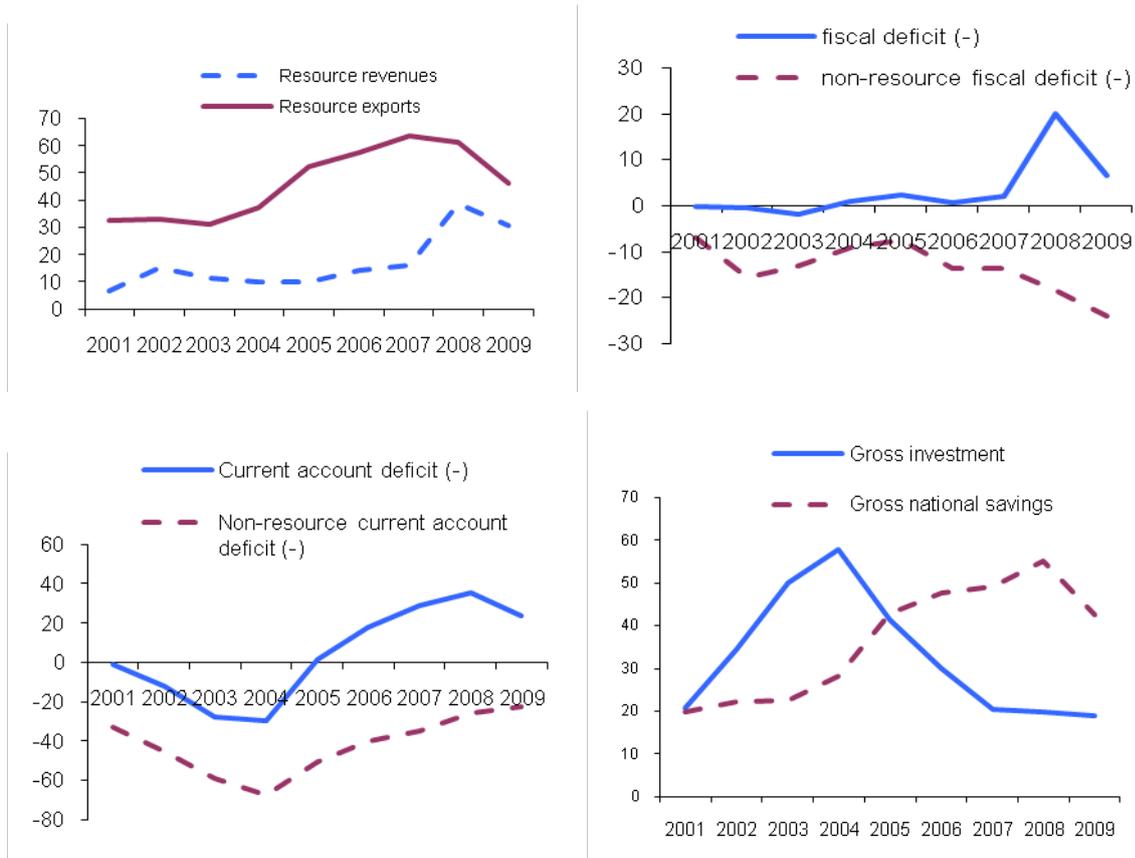
Figure 6.1.1: Azerbaijan - nominal GDP and annual growth in real GDP

Source: IMF (2005a), (2005b), (2008b)

Figures 6.1.2 summarises the key macro-economic balances in the economy, and the role of natural resources in these balances. The top left panel indicates that resource exports rose from around 30% of GDP to more than 50% following the rapid growth of the sector in 2005-06. Resource revenues accruing to government also surged, reaching around 25% of GDP. The rapid development of the oil sector was possible due to booming inflows of foreign investment into the oil industry. In particular, oil sector private investment accounted for about 80% of total private investment into the economy during 2001-2004, while private investment represented about 92% of gross investment into the economy during the same period. The bottom right panel shows that gross investment peaked at about 60% of GDP in 2004 and has been on a downward trend since then. This pattern was mainly driven by moderation in private investment to the oil sector in the second half of 2000s; oil sector private investment declined to 17.6% of GDP in 2005 from 38.5% of GDP year earlier, and continued to drop thereafter, by reaching 2% of GDP in 2009. During the same period, (net) FDI had fallen to 3.5% of GDP in 2005 compared with 27% year earlier, and has become negative at almost 15% of GDP in 2009 (see Figure 6.1.3). Public investment, in contrast, has been rising and reached 13.2% in 2008 compared with 0.2% in 2003.

The bottom left panel of figure 6.1.2 indicates a current account deficit during the first half of the decade, the counterpart to capital inflows to the oil sector. In the second half of the decade there has been a substantial current account surplus. As indicated in the bottom right panel, this is due to a high level of national saving (around 40%) of GDP, and quite low level of investment, at just 20% of GDP. This has led to significant accumulation of foreign reserves and oil fund assets.

**Figure 6.1.2 Azerbaijan - oil revenues, deficits, current account, saving and investment
% GDP**



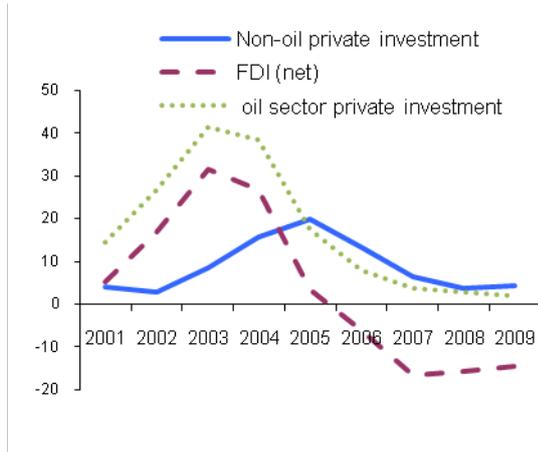
Notes: (1) non-resource fiscal deficit is defined as the difference between fiscal deficit and government resource revenues; (2) non-resource current account is defined as the difference between current account deficit and resource exports.

Source: IMF (2005a), (2005b), (2008b)

The oil production boom experienced by Azerbaijan in 2005-2008 was accompanied by a substantial increase in government revenues. The share of oil revenues in total revenues to the budget increased to 75% in 2008, up from 54% in 2007, and 36% in 2001. Azerbaijan's non-oil tax revenues also increased, with non-oil tax revenues as a share of non-oil GDP reaching 33.5% in 2007 compared with 22% reported in 2003. The boost in non-oil revenues was mostly due to rising income, consumption and corporate profits, which constitute the base of VAT and income taxes. There was a massive fiscal expansion in 2005-2008, leading to an increase in the non-oil fiscal deficit to 13.6% of GDP in 2007 (Figure 6.1.2 upper right panel) As public sector oil revenues rose to 14.2% of GDP in 2006 from 9.8% in 2005, so the deterioration of the non-resource fiscal deficit was even more dramatic, widening to 18.4% of

GDP in 2008 and 24% in 2009. Widening of non-oil fiscal deficit was caused by surge in public spending, which has been boosted following the country's growing oil revenues.

Figure 6.1.3. FDI, oil private investment, non-oil private investment, % GDP



Source: IMF country reports

Oil revenues have been regarded by the Azerbaijani government as an opportunity to lay the foundation for sustained economic growth and social development. The main priority of the government has been provision of assistance to poor and poverty alleviation. Prior to the large inflow of the oil money into the economy, in early 2000s, the Azerbaijan government provided energy at relatively low costs below world prices to protect the welfare of consumers (especially the poor) from excessive price changes. Selling energy products at prices below their world market levels have resulted in sizable energy subsidies provided through SOCAR, the national energy company. Total fiscal and quasi-fiscal subsidies were estimated to be 22% of GDP in 2000 and about 10% in 2003, with about 5.5 % of GDP (or 7.9% of non-oil GDP) taking the form of explicit subsidies to state owned enterprises (Table 6.1.1). In 2002 the government launched a programme to eliminate inefficiency arising from underpricing of domestic energy products and to improve the quality of utility services. An increase of domestic energy prices to the levels of world market prices, and increase utility tariffs to cost recovery levels, however, has suggested a need for development of relevant cash transfer scheme to reduce the impact of these reforms in the utilities on the poor.

Overall, since 2003, the government has been more active by pursuing various social programmes, to improve living standards and alleviate poverty, which have been accompanied by reduction in provision of fiscal subsidies to the state owned enterprises. More specifically, government increased the level of minimum wages in the country, increased

wages in the public sector and raised pensions, and established the country's targeted social assistance scheme. Public expenditure on wages, salaries and transfers has increased from 15.4% of non-oil GDP in 2002 to 22.5% in 2009, while total budgetary primary expenditure rose from 23.9% to 41.6% of non-oil GDP over the same period. The targeted social assistance program covered 20% of households in 2007. These social development initiatives of the government have resulted in a significant drop in poverty. The number of people living below the national poverty line decreased to 24% in 2005, from 68% in 1995. Recent estimates suggest that poverty fell further to 19.6% in 2006 (World Bank, 2009).

Table 6.1.1. Selected fiscal indicators, % of non-oil GDP

	2002	2003	2004	2005	2006	2007	2008	2009
Primary current expenditure	23.9	24.0	24.9	28.2	34.9	35.4	38.9	41.6
wage & salaries	6.1	6.3	7.2	8.3	8.6	8.7	9.0	10.0
transfers	9.3	8.8	8.6	9.1	10.2	10.4	10.8	12.5
SOCAR energy subsidies	7.7	7.9	6.5	4.2	4.7	1.3	0	0
Investment expend. & net lending	6.9	8.6	6.0	8.0	19.6	22.2	28.8	23.9

Note: 2009 data is preliminary

Source: IMF, country reports

In addition to social programmes and other transfers, government has, since 2005, initiated significant domestic investment programmes, many addressing critical infrastructure problems. Prior to the oil boom, low levels of investment into infrastructure significantly deteriorated the quality of infrastructure services. About 56% of the main roads are still in poor conditions, whereas about 30% of main roads require immediate renovation (World Bank, 2009). The quality of infrastructure hampered the development of the non-oil economy and the government prioritized the investment into network utilities (power, gas, water) and roads and highways. Investment into roads and highways is an important part of the country's diversification programme, which is expected to promote regional trade.

Although the government has been increasing capital investment since 2003, since 2006, it has become particularly active and has tripled the level of public investment by using increased oil revenues. Investment expenditure and net lending more than doubled, as a share of non-oil GDP, to 19.6% of non-GDP in 2006 from 8.0% of non-oil GDP a year ago.

Expansion in capital expenditure continued in subsequent years, with the level of investment expenditure reaching almost 30% of non-oil GDP in 2008 (Table 6.1.1).

Although the oil boom has created unique opportunities for economic and social development, its temporary nature and high non-oil fiscal deficits associated with large increases in public expenditure pose significant challenges going forward. The economy also experienced lower non-oil private investment and reduction in net FDI. The pursuit of development objectives by using oil revenues are also reflected in the oil revenue management strategy, examination of which provides grounds for analysis of whether resource revenues were harnessed for the sustained growth. We discuss and compare the recent experience of Azerbaijan in managing oil revenues to that of Kazakhstan, another Caspian state which experienced large inflow of resource revenues, in section 6.3.

6.2. Kazakhstan: ⁵

Although Kazakhstan has abundant mineral resources it is mostly well known for its substantial hydrocarbon reserves. In terms of oil reserves, it is second only to Russia among former Soviet states and similar in size to Libya and Nigeria. BP (2010) estimates Kazakhstan's proved oil reserves at 3% of proven world reserves (39.8 billion barrels in 2008). At current production levels (1.5 million barrels per day in 2009), Kazakhstan is the 18th largest oil producer in the world and the second largest in the region after Russia. The country's reserve-to-production (R/P) ratio is 64.9 years, less than that of the Middle East (84.8 years), but significantly greater than the world average (45.7 years) or Russia's (20.3 years). Kazakhstan has proven gas reserves of 1.82 trillion cubic metres in 2008, comparable to Kuwait. Current gas production is low (29.8 billion cubic metres in 2008), giving an R/P ratio of 56.6 years. Kazakhstan's oil deposits are concentrated in the western part of the country, mostly near and under the Caspian Sea.

During the Soviet times, Kazakhstan oil reserves remained mostly undeveloped, in sharp contrast with dwindling reserves in Azerbaijan. Although the oil production had begun to climb in late 1970s, it was still very low at 569 thousand barrels per day (less than 1% of total world production) in 1991. In 2009, almost after two decades since independence Kazakhstan tripled its production to 1,682 thousand barrels per day (2% of total world production). Domestic oil production is expected to double from current levels toward 2020, when the production from the Kashagan oil field achieves its peak.

⁵ Parts of this section are based on Esanov and Kuralbayeva (2010).

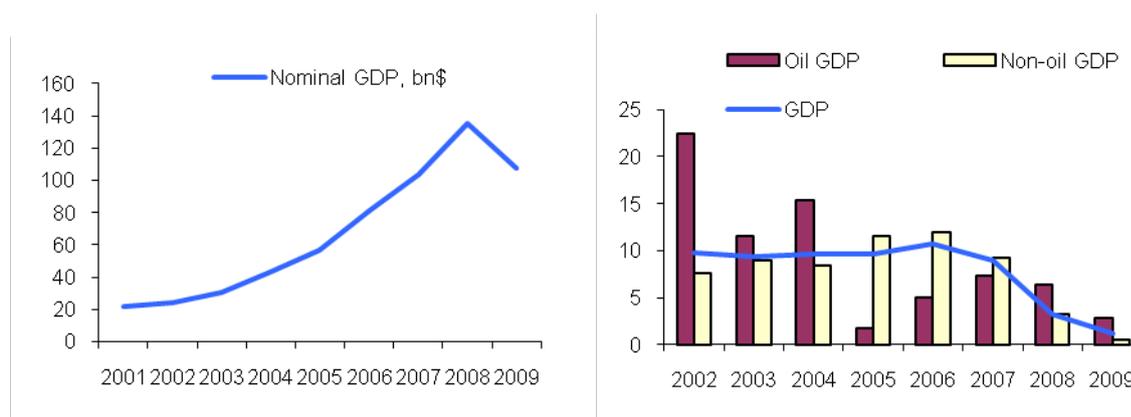
After gaining independence in 1991, Kazakhstan, perhaps more than any other country in the former Soviet Union, turned to foreign companies to seek assistance with restructuring the management and providing capital for enterprises in the resource sectors, and in particular in the oil industry. In extraordinary short period of time, mostly in 1995-1997, the government of Kazakhstan privatized the oil sector by transferring much of the stake in enterprises of the resource sector to foreign companies. Sweeping privatization of the main enterprises in the petroleum sector and the immediate opening-up of oil fields to foreign investors occurred due to particular domestic conditions in the country at the time of independence ⁶.

As a result of this development strategy the current market structure of the Kazakh oil industry is dominated by a few international consortia, with two largest TengizChevrOil and Karachaganak accounting for about 40% of total oil production in the economy. Overall, about 60-70% of oil production is undertaken through joint venture agreements and about 20% of oil produced by the national oil company, KazMunaiGaz.

Impact of oil and gas on the Kazakhstan economy

During 2000-2007 the economy has grown an average rate of 10.1% per year while nominal GDP surged from US\$22.1billion in 2001 to US\$103.8billion in 2007, second only to Russia in the CIS countries, see Figures 6.2.1. The robust growth during 2000-2007 has been driven by high commodity prices and supported by successful structural reforms implemented in the country since independence in 1991. On the back of high capital expenditure into the oil sector (mostly from FDI), oil production has been rising in the country, albeit modestly compared with Azerbaijan's production as we will discuss in more detail in section 6.3.

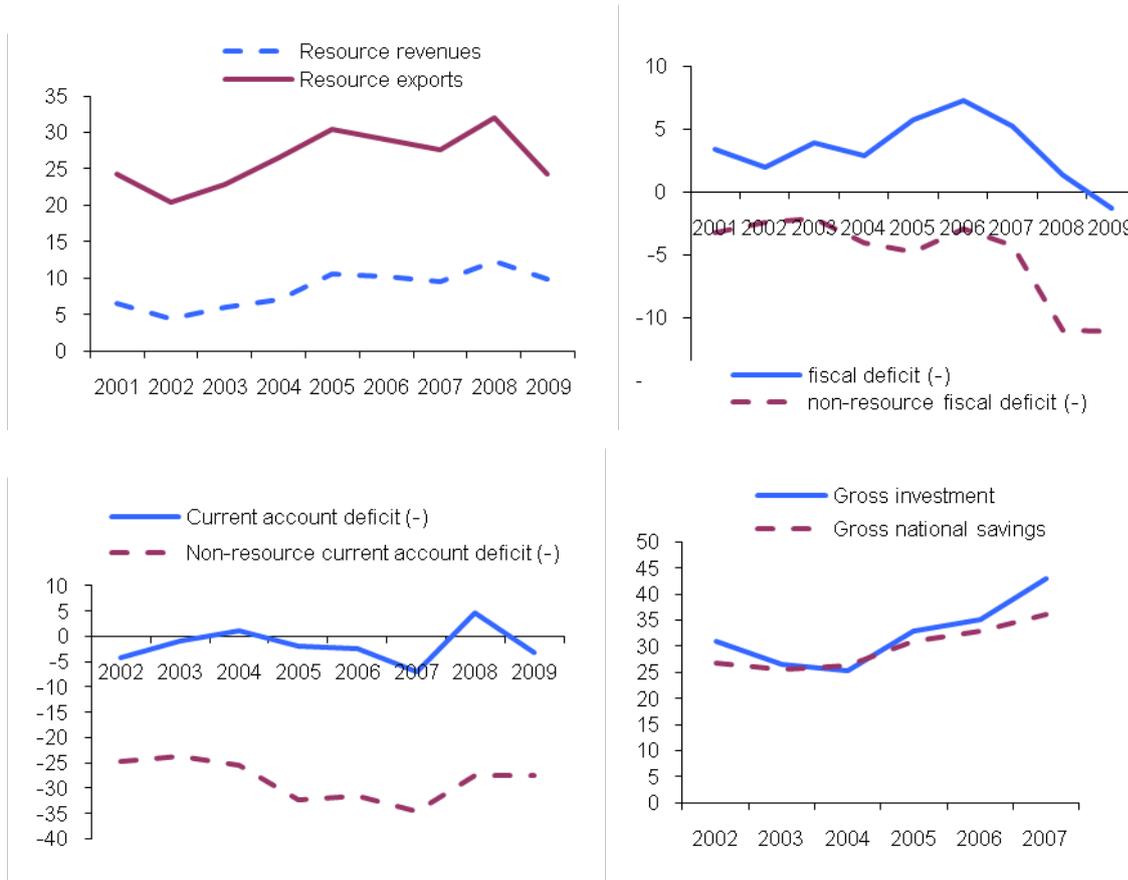
⁶ In particular, the industrial structure inherited from the Soviet period, absence alternative to natural resources sources of export revenues, lack of managerial and technical expertise at the local level. For details see Esanov and Kuralbayeva (2010), Jones Luong and Weinthal (2004), Peck (1999, 2004)

Figure 6.2.1: Kazakhstan - nominal GDP and real annual GDP growth (%)

Source: IMF (2008d), (2005e)

Natural resources are a smaller fraction of the entire economy than they are in Azerbaijan, with resource exports amounting to 25% of GDP and resource revenues accruing to government about 8% of GDP (Figure 6.2.2, top left). Despite the magnitude of these resource exports, Kazakhstan ran a current account deficit for virtually the entire decade. The deficit averaged 2.5% of GDP during 2002-2007 rising to 6.9% of GDP (Figure 6.2.2, bottom left). The reason is that a positive trade balance was more than offset by a negative service balance and a negative investment income balance (witness \$10 billion losses on foreign direct investments in 2007). Interest paid on external borrowing by the private sector had also become significant and reached \$3.9 billion in 2007. The corresponding capital account surplus was supported by direct investment inflow in the first half of 2000s and later in 2006 and 2007 by external borrowing by Kazakh banks on a massive scale. Given the record high commodity prices in 2008, the current account deficit of 6.9% of GDP in 2007 turned into surplus of 4.6% of GDP in 2008. The external position however deteriorated again in 2009 due to the decline in exports and lower commodity prices on international markets. Notwithstanding the fall in imports from weaker domestic demand, the current account shifted into a deficit of 3% of GDP in 2009.

Other panels of Figure 6.2.2 indicate that, in the second half of the decade, the saving rate in Kazakhstan was markedly lower than in Azerbaijan, while the domestic investment rate was higher. Public finances were in surplus until the crisis hit, as we will explore below.

Figure 6.2.2: Kazakhstan - oil revenues, deficits, current account, saving and investment

Source: IMF (2008d), (2005e)

Financial sector and economic development in Kazakhstan

The financial and construction sectors were the main contributors to the expansion of the non-oil sector in the country in late 2000s. The rapid expansion of the financial sector and construction in the economy was driven by high levels of foreign borrowing. Strong economic growth and the robust fiscal position underpinned by high commodity prices encouraged lending by foreign investors. A sharp increase in external borrowing by banks peaked in the second half of 2007, amounting to \$46 bn (about 44% of GDP). Banks have used external borrowing to fund aggressive credit expansion in the economy. Stock of domestic credit to the private sector more than doubled in two years, amounting to 59 per cent of GDP at the end-2007, up from 35.2 per cent of GDP at end-2005. As long as credit was cheap, this significantly contributed to the real estate boom in Almaty and Astana, two main cities in the country, and to the high exposure of Kazakh banks to construction and retail sectors.

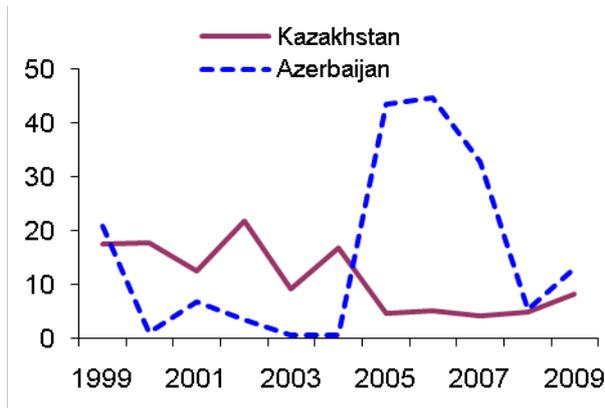
Shortcomings in the regulatory and supervisory framework have further compounded the excessive borrowing by Kazakhstani banks. Various measures adopted by the authorities to mitigate vulnerabilities in the banking sector had only a partial impact, as some shortcomings in the regulatory environment had not been addressed (IMF, 2006; IMF, 2007). The fallout from the US sub-prime crisis in the second half of 2007 exposed the weaknesses of the banking system, dried up the access to the foreign funds and led to an abrupt halt in credit growth and a burst of the property bubble. As the banking sector problems worsened, threatening to deepen a likely recession in the economy, the government of Kazakhstan was forced to step in and embark on a set of anti-crisis measures. The total value of the anti-crisis program of the government was estimated at \$20bn (15% of GDP) in 2008. The strong fiscal position of the government, ample resources and low external debt, has provided the government some flexibility to prevent the credit crunch from deepening further. The government had drawn heavily on the oil fund assets to finance about half value of its stimulus package. The government intervention has helped to calm down domestic financial markets and to prevent deep recession in the country. However this has been achieved with significant fiscal costs.

6.3 Oil revenue management: diverging experiences of Azerbaijan and Kazakhstan

Oil sector production and revenue generation

The promotion of the oil sector was an important objective of both governments, but the government authorities in Azerbaijan have put emphasis on maximization of short-term oil production. Relative to hydrocarbon reserves, Azerbaijan attracted more than twice the FDI inflow to petroleum industry than Kazakhstan⁷. This led to a five-fold increase in oil production in Azerbaijan between 1998 and 2009, compared to three-fold increase in Kazakhstan see Figure 6.3.1.

⁷ An annual average net inflow of FDI into the hydrocarbon sector in Azerbaijan amounted to about US\$0.059 per barrel of hydrocarbon reserves compared to US\$0.023 per barrel in Kazakhstan between 2000 and 2005 (Jojarth, 2007; EBRD, 2007)

Figure 6.3.1: Growth of oil production, annual percentage change

Source: BP (2010)

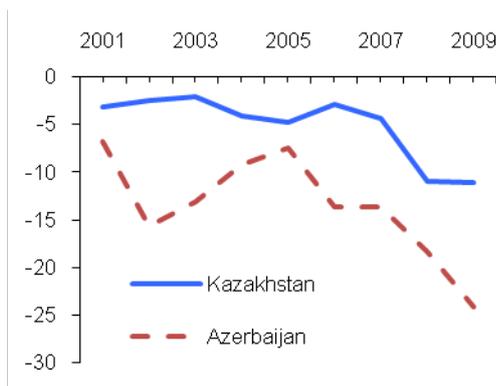
Government resource revenues depend on volumes of output, prices and the fiscal regime. While the government of Azerbaijan has put a lot of emphasis on the expansion of oil production, Kazakhstan's government has imposed more progressive fiscal terms, which suggest that Kazakhstani government's take from unit barrel of oil produced in the country might exceed that of Azerbaijan's. Recent empirical studies confirm this point (Jorath, 2007; Wood Mackenzie, 2007). Wood Mackenzie (2007), for example, concludes that fiscal changes introduced by Kazakh authorities since 2001 had been the one of the most impactful across the global oil industry. Out of the surveyed 29 oil producing countries, Kazakhstan recorded the 5th largest increase in state take in the percentage of pre-take net present value from its 2002 terms to its 2007 terms. In contrast Azerbaijan has been noted as the country with the highest degree of fiscal stability after Saudi Arabia.

Resource revenue spending

The governments of both Caspian states have experienced a significant increase in resource revenues, but have made very different expenditure and saving decisions. Before analysing such differences, it is important to note that at the onset of the oil boom in 2001, Kazakhstan's level of development exceeded that of Azerbaijan in many respects. Per capita income was two times larger in Kazakhstan (US\$1,491.7) than in Azerbaijan (\$704.6) in 2001. The percentage of people living below the national poverty lines was 28.4% in Kazakhstan and 49% in Azerbaijani (UN). That is why is not surprising that Azerbaijan increased public expenditure to a much greater extent than Kazakhstan to reach its development objectives. Oil revenues (especially in early 2000s) in Azerbaijan had financed increases in wages, contributed to reduction in poverty levels and rising living standards. The more ambitious

spending pattern in Azerbaijan than in Kazakhstan can be seen from the performance of the non-oil fiscal balance, see Figure 6.3.2. The non-resource fiscal balance is defined as fiscal balance minus resource revenues. Although the fiscal deficit declined from 2002 to 2005, it surged in 2006 to 13.6% of GDP and increased sharply in 2007-2009, years when Azerbaijan experienced largest inflows of resource revenues. So, the non-oil fiscal deficit stood at 24% of GDP in 2009. In contrast to Azerbaijan, Kazakhstan maintained a tighter non-resource balance, with an average deficit of 3.4 % of GDP during 2001-2007. Its non-fiscal deficit widened significantly only in 2008 and 2009, when it grew to 11% of GDP up from 4.3% of GDP in 2007. While the deterioration in non-oil fiscal balance in Azerbaijan was caused by massive expansion of public expenditure on public wages, and salaries and infrastructure in late 2000s, in Kazakhstan high bail-out costs of the private sector were behind the increase in the non-fiscal deficit, as government had to finance its anti-crisis initiatives.

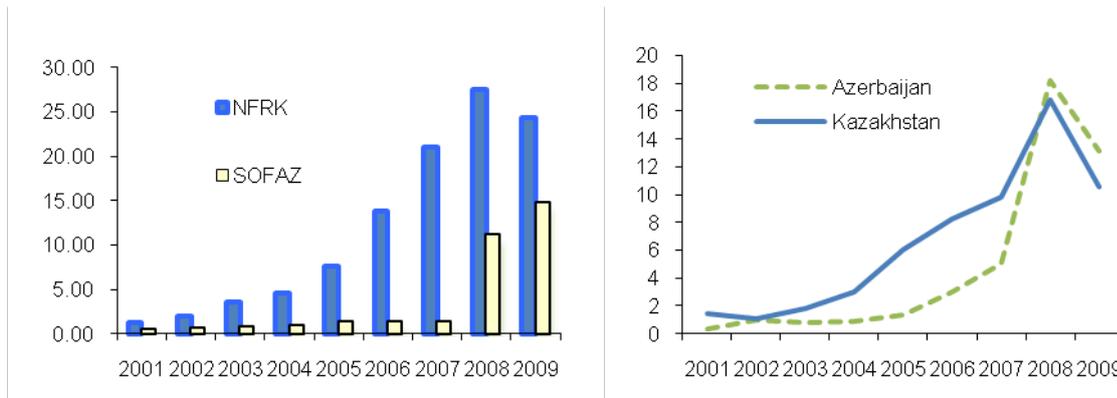
Figure 6.3.2: Non-resource fiscal balance: Kazakhstan and Azerbaijan % GDP



Source: IMF, country reports

Public saving – Oil funds: SOFAZ and NFRK

Differences in spending patterns of the two Caspian states are reflected in different saving decisions. The main vehicle for saving oil revenues in both countries has become sovereign wealth funds. And as we will see below, differences in institutional design and objectives of the State Oil Fund of Azerbaijan (SOFAZ) and the National Fund of the Republic of Kazakhstan (NFRK) have led to different outcomes in terms of oil revenue management and asset accumulation of the funds. To analyze the differences in the saving patterns between Azerbaijan and Kazakhstan we use two approaches, which are illustrated in Figures 6.3.3 and 6.3.4.

Figure 6.3.3 Oil fund's assets and resource revenues, US\$ bn

Note: oil fund's stock, end of period

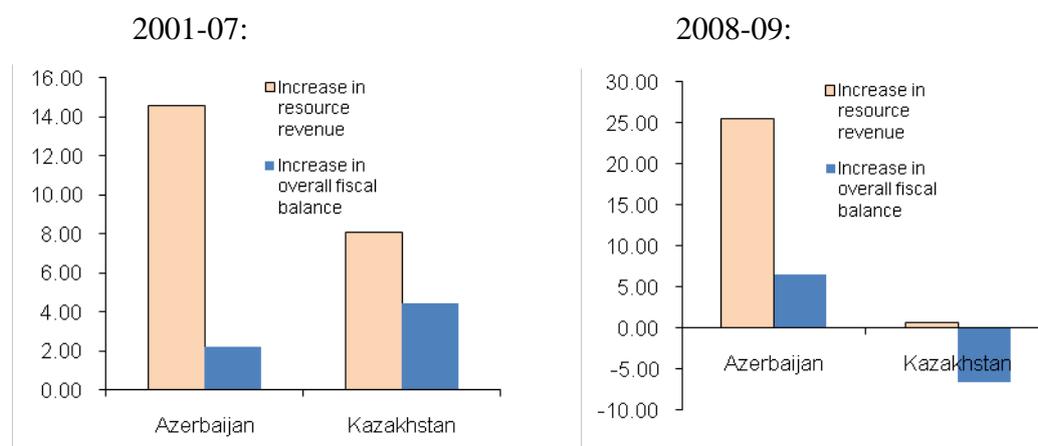
Source: Annual reports, SOFAZ; Ministry of Finance of the Republic of Kazakhstan, IMF, country reports

First, as in Figure 6.3.3, we calculate the total amount of resource revenues generated by each country and the stock of assets accumulated in the oil funds. By the end of 2007 Azerbaijan generated \$12.4bn resource revenues (cumulated since 2001), and given in the right-hand panel), and accumulated \$1.47bn in the oil fund, suggesting that about 11% of oil revenues being saved in the SOFAZ. Kazakhstan during the same period generated about \$31.6bn resource revenues and saved about 66% of it in the oil fund, with the oil fund reaching a value of \$21bn by end of 2007. However, on the back of exceptionally high commodity prices prevailed most of 2008, the Azerbaijani government generated more revenues and increased its saving in external assets in 2008 and 2009. The stock of the SOFAZ's assets increased by \$13.4bn by end of 2009 from end of 2007, with \$31.4 bn resource revenues generated during the same period, suggesting that 43% of oil revenues have been saved in foreign assets. Kazakhstan, however, spent most of its oil revenues for anti-crisis measures and experienced increase in the stock of the oil fund by \$3.4bn by end of 2009 from end of 2007, with \$27.4bn resource revenues generated during the same period, so that Kazakhstan managed to save only 12% of its revenues.

Figure 6.3.4 illustrates the second approach. We measure the foreign saving out of resource revenues as the ratio of the increase in the fiscal balance to the increase in fiscal oil revenue. Figure 6.3.4 displays the increase in budget resource revenues and change in the fiscal balance between 2007 and 2001 and between 2009 and 2007 in Azerbaijan and Kazakhstan. Fiscal balance and resource revenues are both measured in terms of 2007 GDP.

Between 2001 and 2007, Kazakhstan demonstrated strong fiscal position and its overall surplus rose to almost 5% of GDP in 2007. On average, Kazakhstan saved 55% of the increased oil revenues accruing to the budget. In contrast, Azerbaijan saved only 15% during the same period. In 2008 and 2009, Kazakhstan, however, dissaved and spent not only increased oil revenues accruing to the budget, but also draw on oil fund assets to fund its stimulus initiatives. Azerbaijan, on the other hand, managed to save 25% of oil revenues accruing to the budget in 2009.

Figure 6.3.4 Budget resource revenues and overall fiscal balance: percent of 2007 GDP



Source: IMF, country reports

There are important differences in the organisation and objectives of the countries' funds. SOFAZ was established in 1999, while the NFRK was established two years later in 2001. The primary objective of SOFAZ is to save oil revenues to future generations, and further objectives are to contribute to the development of the non-oil sector of the economy and to ensure macroeconomic stability by preventing excessive spending. The NFRK was established with the objectives of insulating the economy from oil price volatility (stabilization function) and saving some part of oil revenue for future generations.

Given these objectives, there are differences in the fund's revenue rules. In Kazakhstan, according to new methodology introduced in mid-2006, all payments from the pre-identified extractive sector companies are treated as revenues of the oil fund, and thus go first to the oil fund. In Azerbaijan, in contrast, oil sector revenues are classified as either state budget revenues or the oil fund revenues. For example, tax payments by the national oil company SOCAR from Soviet-era oil fields are treated as budget revenues, while the profit share of the government under the PSAs are classified as oil fund revenues. Revenue directed

to SOFAZ and withdrawals are not contingent on the natural price or revenue levels. This means that SOFAZ was primarily created as saving fund.

Differences in withdrawal rules of these funds have implications for their ability to impose fiscal discipline and to save oil revenues. In Kazakhstan, in particular, the oil fund contributes to stabilization of budget revenues, with certain amount – so called guaranteed transfers – being transferred annually to the budget in accordance with the pre-determined guidelines. The total size of funds annually directed from the oil fund to the budget has been calculated on the basis of the formula, which is combination of the Bird-in-Hand rule and the Permanent Income Hypothesis (PIH). However, last year the President Nazarbayev announced that from 2010 onwards, the annual transfer into the budget from the oil fund will be fixed at the amount of \$8bn, and will be used mostly for industrial development purposes. By fixing the amount of transfers to the budget, Kazakhstan plans to increase the assets of the sovereign wealth fund to \$90bn by 2020.

In contrast to expenditure fiscal rule set up in Kazakhstan's oil fund, SOFAZ's framework does not assume any rule which could limit expenditure from the oil fund. Transfers from the SOFAZ are determined through a discretionary process within the overall budget framework. Although oil money ought to be used to finance some of the development projects within the country, discretionary transfer of oil money from the fund can be guided by judgement of politicians and their preferences rather than by the needs of the real economy. For this reason, discretionary decision-making has been quite often associated with budget outcomes which vary with shifts in political or economic conditions (Schick, 2003). The comparison of the foreign saving pattern in both Caspian states to date suggest that relative to Azerbaijan, the fiscal rule set up of the oil fund in Kazakhstan has helped to improve the management of oil revenues and to increase the proportion of resource revenues saved abroad. Fiscal rule in Kazakhstan seems limited the tendency of politicians to overspend in response to shifts in their sentiments or preferences.

In Azerbaijan, the oil fund has also had another important objective: to diversify the economy through financing some infrastructure projects needed to develop non-oil sector. This could further compromise the ability of SOFAZ to effectively restrain the spending of the country's petroleum revenues. To date, as part of the diversification objective, Azerbaijan's oil fund money has been used to finance various social and human development projects. Specifically, oil fund's resources have been used to resettle and improve social conditions of refugees and internally displaced persons driven from their homeland in the Nagorno-Karabakh area. The oil fund resources allocated for these activities accounted for

3.4% of the fund's total expenditures in 2008, with total of AZN 523 million (US\$ 653 ml, or 1.5% of 2008 GDP) being dispersed to over 2001-2008 period. In Kazakhstan, the oil fund does not have diversification and development as an explicit objective and thus oil fund money has never been directly transferred to finance various social and infrastructure projects. Some fraction of oil revenues transferred to the budget from the oil fund – guaranteed transfers – has supported the development of the non-oil economy only indirectly as they have been circulated to the non-oil economy primarily through state-owned development institutions.

6.4 Lessons from the Caspian states

Azerbaijan:

The strategy of the government of Azerbaijan was to use oil revenues for development a market economy, based on a sustainable non-oil sector. Since independence in 1991 prospects for economic growth and social development in the country have been closely tied with development of the oil industry. However, the dwindling oil production from Soviet-era oil fields could not provide grounds for oil-based development policy. Accordingly, the main objective of Azeri government was promotion of the oil industry, by creating best possible conditions to attract foreign investment into hydrocarbon sector for development of new oil fields. The government has put an emphasis on the short-term maximisation of oil revenues from the oil industry by maximising oil production.

To support development of non-oil economy and to put the economy on sustainable path, the government has initiated a sizable public sector investment programs, has increased wages and transfers to the population. Public investments have directed mostly at the core infrastructure projects: utilities, roads and highways. The government's development programs have brought sizable gains. The drop in poverty has been remarkable. A significant improvement in provision and quality of electricity supply throughout the country has been achieved, by helping to improve living standards of households.

By launching ambitious public investment program the government anticipated that established infrastructure will enhance productivity of the private sector and will encourage building capacity in the non-oil economy. The government also expected that the private sector will take over as the driver of the economic growth in the country and will lead the development process. Despite these efforts of the governments, the experience of the last two years suggests that the diversification initiatives of the government are in jeopardy. Economic

expectations and patterns of public spending have evolved in a way which likely cannot be sustainable and timely adjustment is necessary if diversification is to be achieved. The non-oil private investment has been on decline in recent years and remains very low. The saving out of oil revenues in foreign assets has been low and increased sharply only in the last two years. Given that the top priority of the government in institutional and policy reforms has been directed to the social sectors, particularly social policy and assistance to the poor, a lesser attention has been given to the expenditure management. Despite the creation of the oil fund, there has been lack of institutional procedures which could limit expenditure by budgetary agencies and absence of a sharp vision of medium-term planning. As discussed above, the absence of explicit fiscal rule which governs the transfers from the oil fund to the budget does not contribute to sound spending out of oil revenues. However, the recent adverse developments raised issues regarding desirability of implementation such rules to improve management of oil revenues in the country.

Kazakhstan: the Ricardian curse?

As our analysis shows, the government of Kazakhstan demonstrated considerable prudence in managing its natural resource wealth by saving the bulk of oil revenues in foreign assets. A parallel development has been reduction in sovereign external debt, fall in currency mismatches and improvements in the liquidity position of the government. The incumbent authorities have sought to insulate the domestic economy from a large part of resource revenue inflows by accumulating a greater portion of oil revenues in overseas funds and investing the rest into the economy in a targeted and controlled manner through state-owned institutions. In addition, during this period the government maintained good macroeconomic performance. Yet, the private sector's response to the oil boom went beyond what could have been anticipated by the government. The private sector's expectations got intertwined with the government revenue management policy in a complex way, resulting in massive external borrowing by the banking sector. As a result, government prudence has been undermined by the private sector profligacy leading to the costly bail out of the banking sector and putting at risk the country's growth potential.

Excessive reliance of the Kazakh banks on external funding highlights the fact that most of the oil money appears to have ended up outside the banking system and thus lent little support to banking asset growth and investment of the private sector into the non-oil economy. Only in recent years, the government announced significant tax cuts for the non-oil sector, suggesting that the non-extracting sector savings in taxes would be spread in the

economy, supporting the banking sector of the country in the future. The investment of most public oil revenues in overseas funds also raises the issue of the optimal size of the Oil Fund.

The experience of Kazakhstan also demonstrates that the government's prudence in handling resource revenues might be insufficient if the appropriate regulatory framework, which controls consumption/investment balance of the private sector, is missing. The strains of the banking sector in Kazakhstan exposed due to the fallout of the global financial crisis highlights weaknesses of the business model that pushed itself over the edge by excessively relying on cheap and easy money. Rather than following more time-consuming strategy of the building up its deposit base, the private sector took advantage of fast, easy and cheap money and brought its consumption forward. This was partly the result of financial deregulation, and also perhaps partly the result of the behaviour of Ricardian individuals who anticipated their future shares in resource revenues and adjusted their consumption accordingly. Such behaviour of the private sector, however, was not optimal from the social perspective, resulting in a 'Ricardian' curse of the resource windfall.

6. Concluding comments

High levels of revenue from natural resources face countries with difficult choices. There is political pressure to let much of the revenue go into immediate consumption, while it is both more efficient and more equitable for consumption to be placed on a steady and sustainable upwards trajectory. There is a need to invest in the domestic economy if jobs are to be created and citizens are to become more than rentiers living on resource or financial wealth. But it is difficult to identify and implement high return domestic investments, particularly in the middle of boom where oil sector investment is high and relative prices may be distorted away from their long run values. And there is a need to manage the effects of the boom on the private sector, and in particular manage expectations without which the private sector might respond through consumption rather than investment.

Azerbaijan and Kazakhstan provide good, although very different, illustrations of these difficulties. Azerbaijan appears to have succumbed to the temptation to consume too much too soon, although it has now taken steps that have led to a large increase in saving, this taking the form both of foreign assets through SOFAZ and domestic capital investments by government. However, private sector investment remains low, and raising this is a priority. Kazakhstan demonstrated considerable prudence in building up foreign assets in its oil fund, but demonstrates the difficulty (or perhaps impossibility) of insulating the domestic

economy from a large part of resource revenues. Other government policies combined with booming expectations to induce a private sector borrowing and spending boom that undid government prudence. The experience once again highlights the importance of getting an appropriate (investment led) private sector response.

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