

Oil - natural resource and financial asset

Deputy Governor Jarle Berge. Norwegian Petroleum Society, Oslo, 25 April 2002

There are three issues I would like to look at today. First, I would like to focus on the composition of our national wealth and discuss its management. The emphasis here must, of course, be on the fact that Norway's financial wealth was once petroleum, and that a substantial component of that wealth still consists of petroleum yet to be extracted. I intend to approach the subject from the point of view of wealth management in general, and many of the special, technical and environmental factors associated with oil as an asset will be ignored. Second, I will be looking at the experience of other countries that have substantial, non-renewable natural resources. How have they managed their wealth, and what can we learn from them? The last issue I want to examine is how we have approached wealth management so far and our use of the revenues generated by this wealth.

Wealth management - striking a balance between return and risk

In the national accounts, two asset items are related to petroleum: recoverable reserves that have not yet been extracted, and produced reserves that have been sold and saved in the Petroleum Fund. Both involve large sums of money and contribute to our national wealth, which provides the basis for the country's potential consumption in the long run. Consequently, it is crucial that our national wealth is managed in a sound manner, so that the return will be high and the risks acceptable. However, these two components are relatively small parts of the larger picture.

The dominant asset item is the discounted value of our own labour. Although we are indeed an oil-producing nation, oil does not mean that much for our prosperity. By focusing on asset figures, we eliminate the image created as a result of asset withdrawals being recorded as income in the national accounts. Our livelihood essentially depends, and will continue to depend in the future, on our ability to produce goods and services efficiently through our labour, and to use our creativity and innovation to become ever more efficient.

But this must not prevent us from taking a sensible approach to making the most of the other components. What are we interested in, what are the factors included in our assessments? Return, of course - and risk. By risk I am referring to how much rates of return vary over time.

From the perspective of national wealth, the contribution from the various asset and liability components of the expected return and risk should ideally be evaluated as a whole. The government should at least seek to manage its shares of the national wealth so as to achieve a favourable balance between return and risk. Chart 1 suggests that the largest conversion in our national wealth in the next thirty years will be from oil as recoverable reserves to oil as financial wealth. Is this a sensible approach from the point of view of return and risk? Hotelling's rule¹ states that the real price of a non-renewable resource over time should tend to rise at a rate equivalent to the real interest rate. In that case, the return on recoverable oil reserves should be comparable to the return on oil as financial wealth.

Consequently, in terms of return, there should be no real reason to convert oil into financial wealth more quickly than required to satisfy the desired use of the return/wealth.

However, experience has shown that the rise in the real price of oil has for a long time been lower than the real yield on US bonds (which may be an indication of the more theoretical real yield). The chart shows developments from 1986 to the present. The return on oil is clearly lower than the return on bonds.

Even if we had invested in oil 50 years ago and sold today, the return would have been lower than if we had invested in bonds, although there would have been a few years in the 1970s and the beginning of the 1980s when we could have sold oil at a profit.

If we look at the period from 1986 and compare developments in nominal oil prices with the return on a fund that shadowed the Petroleum Fund's investment strategy - a global portfolio containing bonds and equities in a 60-40 distribution - we see that the fund would have yielded a far higher annual return.

What about the risk, how is it affected by a conversion from oil to financial wealth?

History gives us a clear, though perhaps rather surprising, message. A conversion from oil to financial wealth increases the return and at the same time reduces the risk. This is because wealth below the seabed (to put it simply) only consists of one asset, petroleum, while broadly invested financial wealth is highly diversified in many instruments whose return fluctuates at different rates. In addition, a great deal can be done in a financial portfolio to manoeuvre towards a "good" trade-off between return and risk. If financial investments are less diversified, involving equities only, risk drops to a minimum for a portfolio where petroleum accounts for a small portion. However, the return continues to rise as the equity portion increases.

The current distribution between financial wealth (the Petroleum Fund) and petroleum is about 20-80.

If we venture to base our assessment on historical relationships, it is fairly clear that we have, relatively speaking, too much oil in our portfolio and that the current conversion to financial wealth is to our advantage. We have no guarantee, of course, that history will repeat itself, but relying on the opposite requires considerable courage. There is more reason to argue in favour of trying to accelerate the pace of this conversion. In principle, there are several ways this might be done:

- The central government has sold recoverable oil reserves by selling off its shares in SDFI. Further sales are possible in principle, but it is uncertain whether the values of the government's petroleum wealth could then be fully realized. Buyers may have more knowledge about the holding than the seller. Uncertainty related to the future tax system may also contribute to pushing down the price.
- By increasing the depletion rate, the oil reserves could be transferred to the diversified portfolio in the Government Petroleum Fund more quickly. I have no clear picture of whether this is technically possible. Furthermore, a major producer such as Norway would have to assess the effects on prices of a sharp increase in the depletion rate.

- In theory, oil price risk could also be hedged in the market by selling some of the oil for future delivery at a price agreed upon now. For major producers, it is unlikely that the market for such commodity instruments is sufficiently developed to manage the large volumes and long maturities that would be necessary to make this measure worthwhile.

From the point of view of wealth management, my review so far would seem to indicate that having wealth is a benefit and that the larger it is, the better, but that more of it should have been invested in the form of financial wealth and less in oil. Other things being equal, it would be better to have more oil as financial wealth and less as recoverable reserves. But we will arrive at this destination eventually.

But is an abundance of natural resources really an advantage?

A quick glance at the countries in which oil or other non-renewable natural resources form a large portion of the industrial base raises the question of whether petroleum and similar resources actually are a blessing.

Developing countries whose most important export is oil have generally recorded considerably lower growth than other developing countries. Norway's growth is in line with that of other industrial countries.

A number of studies² of the relationship between long-term economic growth and access to natural resources do in fact show that countries with an abundance of natural resources tend to have lower economic growth. Why?

In principle, an abundance of natural resources is an advantage for a country's economy. The production of petroleum and extraction of other natural resources yields a profit that exceeds the normal return on invested capital, ie 'economic rent'. If this flow of profit were permanent and stable, managing it might be relatively simple. However, non-renewable resources such as petroleum may present a considerable challenge because the flow of profit is uncertain and volatile, and because it does not last forever.

Acting as though this cashflow was of a stable volume and would last for ever is the greatest pitfall. It may affect our ability to make use of the most important resources we have: our capacity for work and our creativity.

The term "Dutch disease" refers to the negative effects that using economic rent from natural resources had for the Netherlands. The substantial revenues that the Netherlands obtained from gas resources from the end of the 1960s financed a sharp growth in government expenditure. This led to a decline in competitiveness and a loss of jobs in the internationally exposed sector. These developments went too far, and large current account deficits and deteriorating government finances made it necessary to tighten policy, with the result that unemployment rose sharply in the first half of the 1980s.

The Netherlands is not the first example of a nation that suddenly has access to valuable natural resources and fails to manage them. We find a very clear example in Spain as far back as the 17th century. The colonisation of South and Central America gave this country access to a wealth of natural resources, and to gold. Spain chose to spend a large portion of

the windfalls on luxury and war. The attitude to working that this led to did not make it easy for these countries to get back on their feet again when the gold came to an end. The historian David Landes describes these events in his book "The Wealth and Poverty of Nations".

Why have many countries failed to make good use of windfalls? There may be a number of reasons.

An economic policy explanation is that an abundance of resources leads to an extreme focus by various groups, who seek to acquire maximum profits from the natural resource. The contest for this profit is often referred to as "rent-seeking behaviour". Countries that are rich in resources may be more prone to extreme rent-seeking behaviour than economies with limited resources. The competition between the various fractions may lead to an inefficient depletion of natural resources and unwise use of revenues. Entrepreneurship, talent and energy in both the business sector and political life are used to secure a share of these revenues instead of on more productive activities in both the public and the private sector. For the individual enterprise or group, this activity may appear rational - a 10 per cent chance of drawing the winning lottery ticket may be preferable to relying on the ordinary return on capital in normal business activities. For the country, this may be disastrous.

A sociological explanation is that windfalls reduce the incentive for innovation and work. We feel that we have become wealthy, and want to enjoy it.

A possible economic explanation is that the existence of a large, broad-based sector that is exposed to competition from abroad promotes learning and development. In countries with abundant natural resources, this sector may be scaled back, while sheltered sectors expand. The intensity of competition in the economy may decline, and the capacity and willingness to innovate may suffer.

We must be very cautious about drawing definitive conclusions based on historical comparisons. We intend to manage our wealth better from the outset. Nevertheless, two factors that are crucial to our success should perhaps be underscored:

First: The decision-making forms and political and economic processes must provide an effective safeguard against a situation where special interest groups acquire a disproportionate amount of control and share of the petroleum wealth, or acquire protection when petroleum revenues are high. Second: It is important for the growth potential of the economy that we maintain a broad sector in the mainland economy that works under intensive competition, so that we preserve and develop incentives for knowledge acquisition and innovation.

Allow me to illustrate this with a brief example: If the impression that we as oil-owners are now so rich that we can relax a little should lead to a reduction in annual productivity growth of less than a quarter of a percentage point, ie a reduction in the underlying growth in the economy (GDP) from the current level of about 2 per cent to 1¾ per cent, our source of revenues would be reduced by more than the total return on our petroleum wealth, whether in the form of financial or natural assets.

Before the challenges posed by a large supply of non-renewable natural resources can be met successfully, two facts must probably be acknowledged:

- that the resources in question represent wealth, and should be managed accordingly
- that the return on this wealth may fluctuate substantially, and that this should be taken into account when deciding how the return should be used.

A number of countries with abundant natural resources have sought to keep the extraction of the resources separate from the use of sales revenues by establishing special funds. Some of these funds have been established as stabilisation funds to stabilise income fluctuations, some as savings funds for future generations, and some for both purposes.

The IMF conducted a study³ to determine whether such funds have functioned according to their objective. Basically, they have not. The intentions have perhaps existed, but the implementation has been too difficult.

The funds have often functioned poorly because they are not sufficiently integrated with the government budget or because the rules for allocations and withdrawals have been circumvented or changed. It probably doesn't help very much to establish a fund if there is no clear will and ability to conduct a sound economic policy, including areas that are not directly affected by the fund. According to the IMF study, fiscal policy should be set in a long-run context, focusing on maintaining a sustainable non-oil budget balance, restraining spending growth when oil prices rise and transparently presenting all issues surrounding fiscal policy and any fund constructions. Given this, a fund can be a useful mechanism. The IMF study states that the Norwegian Government Petroleum Fund can be considered a successful institutional arrangement- precisely because Norway has typically, even before the establishment of the Petroleum Fund, implemented sound and highly transparent fiscal and macroeconomic policies.

What has been our approach?

The state's cash flow from petroleum activities is transferred to the Petroleum Fund. The Fund invests in a broadly diversified portfolio of foreign bonds and equities. According to the new fiscal rule, the estimated real return on the Fund's investments, stipulated at four per cent, is transferred to the budget and is used in the domestic economy. This will generate an expansionary impetus of about 0.4 per cent of Gross Domestic Product to the Norwegian economy each year for many years ahead.

At times, some observers have questioned the investment of all of the Petroleum Fund's capital abroad. In this discussion it is important to distinguish between the use of petroleum revenues and the management of the Petroleum Fund. With regard to the first issue, it should be pointed out that since petroleum production started at the beginning of the 1970s more than half of the government's petroleum revenues have been used domestically. In other words, we have already used a large portion of this wealth. In the years ahead, it is the intention to increase the use of petroleum revenues in line with the new fiscal rule. An excessive increase in the use of petroleum revenues domestically, or an erratic use of them, would lead to imbalances in the economy, both in the short and longer term.

Some have argued that if part of the Fund's capital was invested in Norway it would help to develop the Norwegian capital market. The Central Bank Governor discussed this issue in his annual address last year, and I will cite some of the relevant points. First, we should bear in mind that today there is a high degree of capital mobility between Norway and other countries. The Norwegian capital market is part of a Nordic market, which in turn is being increasingly integrated into a global market.

This market means that the government's choices as investor and companies' choices as seekers of capital can be separated. The government can choose the composition, the required return and the risk profile of its financial investments without taking into account the funding requirements of Norwegian companies. By the same token, Norwegian companies can choose their debt and equity structure independent of the government's financial investments. The distribution of the government's financial investments and companies' funding choices should not be based on the notion that we are living in a barter economy. Indeed, one of the main attractions of markets is that a double coincidence of wants is not required.

The international capital market can also be used by Norwegian enterprises, directly or indirectly through Norwegian financial institutions. It cannot really be said that there is a shortage of capital in Norway. Private saving in the mainland economy has been high in recent years. The same applies to business fixed investment. Any capital market failings are thus not reflected in low investment and saving. As a result of developments at the end of the 1990s, equities and funds account for a growing share of households' total financial assets. The equity ratio of enterprises increased in the 1990s, particularly with regard to new equity raised in the market.

Capital markets are an efficient tool for channelling funds from savers to investors. The Norwegian credit and capital markets nevertheless probably have some weaknesses, with thin securities markets and a narrow circle of investors and owners compared with some countries. This is partly because we are a small country. We can do very little about that. But it is also probably due to the taxation of various assets, substantial central government ownership of enterprises and perhaps in the way in which we finance pensions. This we can do something about.

The new fiscal rule and the construction of the Petroleum Fund ensure that future generations will also benefit from our petroleum wealth and, at the same time, prevent sizeable fluctuations in oil prices from translating into booms and busts in the Norwegian economy.

The rule that only the return on the Petroleum Fund shall be used implies that the wealth shall not be eroded. The Petroleum Fund will increase as long as the central government has a positive cash flow from petroleum activities, and when the conversion from petroleum to financial wealth has been completed, we shall still not withdraw more than the level required to maintain the real value of this wealth, in principle forever.

The model promotes stabilization by only using the return on that portion of petroleum wealth that is transformed into financial assets, so that the use is protected against large fluctuations in oil prices. In addition, the use of revenues is to be based on a stipulated, but

realistic, long-term real return of four per cent, thereby shielding us from annual variations in the actual return.

If we adhere to this, and remember that it is the return on human capital that is basically our most important resource, the conclusions of future historians may then be that we managed our talents well, both the pecuniary and the intellectual.

Footnotes

1. H. Hotelling (1931), "The economics of exhaustible resources", . Journal of Political Economy, 39, 2.
2. See for example Jeffrey D. Sachs, Andrew M. Warner:"Natural resource abundance and economic growth: leading issues in economic development". Oxford University Press, 2000 and NBER Working Paper no. 5398 (1995).
3. "Stabilization and savings funds for non-renewable resources - experience and fiscal policy implications", IMF Occasional Paper no. 205, IMF, Washington D.C., 2001. See also "Oil funds: problems posing as solutions?", article in the IMF's quarterly journal "Finance and Development", December 2001, vol. 38, no. 4 and "Review of the experience with oil stabilization and savings funds in selected countries", Working Paper 00/112, IMF.