ASPO-Australia

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Financial Risks and Oil Vulnerability

The ASPO-Australia Finance Sector Working Group believes the rising cost of oil will initially have both positive and negative consequences, but ultimately become a powerful constraint on the economy, fuelling inflation, increasing national indebtedness and rendering many activities marginal or uneconomic

Working Party Conclusions:

1. Australia's depleting oil fields and low discovery rate will raise oil imports
2. Rising volumes and/or prices will further weaken a deteriorating trade balance.
3. Higher global oil prices increase risk for lower socio-economic groups, many industries and companies
4. Our capital markets demonstrate little interest in remedying this situation.
5. Funds and financial advisers may not be fulfilling their investigative duty of care in preparing investors for oil scarcity.

Energy volume and energy density

- It is a common cliché to speak of Australia as "energy rich". In the broad sense this is true. We have very substantial reserves of thermal coal, natural gas in the north west of Australia and gas associated with the great coal measures of the east. Estimates put our off-shore gas fields, largely the Carnarvon and Browse Basins, at 120-150 TCF. Coal seam gas reserves may be 40 to 50 times greater, but infrastructure cost, de-watering and many technical issues limit practical recovery of large volumes.

- The issue behind all forms of energy is delivery – not only of the energy potential itself but production of heat, movement or chemical products where and when required.

  High energy liquids are very different from other hydrocarbons. Petrol, diesel and kerosene pack twice the punch per unit of volume than, for example, low energy fuels like methanol. These liquids are versatile, easily distributed and flexible to use. Bio-diesel and synthetic diesels from gas-to-liquids projects offer small but growing opportunities in transportation. A continuation of higher energy prices is required to make these converted diesel fuels – and methanol – but not all transportation can be converted to use them. Coal can also be reformed to provide liquid fuels but the cost per unit of energy delivered is high.

Continuing oil dependence

Apart from some marginal changes, we are likely to remain heavily oil dependent well into the period when oil is scarce globally. Constraints include the cost of the transition to alternative fuels in term of design and replacement, but also the physical reality of cropping. Daniel Kammen (1), a proponent biofuels accepts that it would take an area two and a half times the size of California to produce enough ethanol to fuel the US car fleet. Kammen assumes a radical improvement in vehicle economy in making this calculation.

In Australian terms the prospects for biofuel substitution of scale are limited by our endemic constraints: water, salt and propensity for drought. While we have no doubt that viable ethanol production will grow and become an important part of the energy mix, any assumption of a wholesale switch from oil to bio-fuels is likely to be disappointed. For more details see the ASPO-Australia Biofuels Working Group submission to this Senate inquiry

Other alternatives such as solar, wind, geothermal and nuclear power generation may also provide relief in coming decades, but again transition costs will be weighed against the price per unit of energy provided by oil and its *existing amortised infrastructure*. It will many years or perhaps never before the enormous energy potential of uranium 235 will be harnessed to provide power for a hydrogen economy in this country

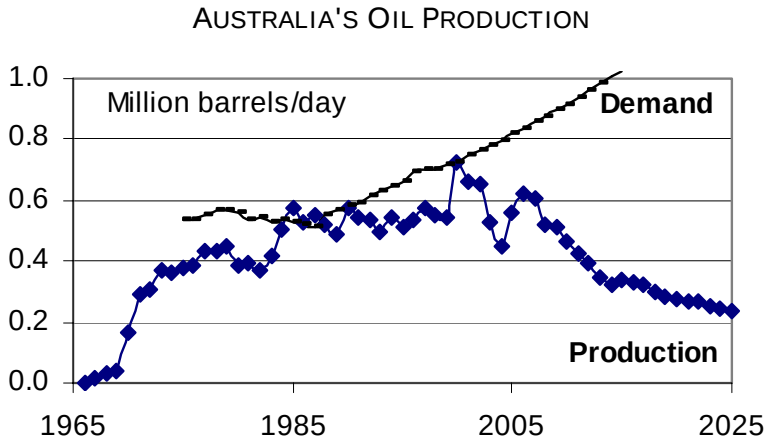
For these reasons it is prudent or more realistic to assume a slow, unwilling transition from heavy oil dependency to lower dependency.

There is much publicity about hybrid cars, but numbers are still very small compared to national vehicle numbers and the time required to phase out vehicles designed for a period of apparently abundant oil supplies. Even as more fuel efficient vehicles appear, the global volume of vehicles rises. China now produces 5.3 million vehicles a year, double the 2001 rate. One in five of Beijing's residents own a car and China plans to lift its car population to 140 million by 2020. (2). Emerging Europe has adopted the automotive industry as well. Slovenia is aiming to produce one million a year within five years. In the United States numbers are back near record highs after a pause in sales mid-year. Hybrid models are selling strongly there, but still form only a little over 1% of annual production. Hirsch (3) et al, (2005), illustrate the decades-long lead-time needed to change the vehicle fleet to more fuel efficient vehicles. BTRE) (4) states that half the cars being bought now will still be on the road in 20 years time.

Consequences of oil dependency

As has been recognised by President Bush, US dependency on imported oil is unsustainable. Imports contributed almost half the increase in the US trade deficit over the last five years. Imports of 13 million barrels of oil per day, some 15% of global production of 84mbpd, cost the US $270 billion per annum. This means 40% of the US trade deficit is imported oil.

Australia will be in a similar position within 10 years and possibly earlier. Decline rates in the Gippsland and Cooper-Eromanga Basin have been rapid since 2002. Bass Strait now produces less than one fifth of peak production rate in 1986. Put more graphically one oil tanker leaves Melbourne every fortnight compared to 3-4 a week in the mid eighties.



Australian crude oil and condensate production and demand to 2004, and forecasts by Geoscience Australia

Other signs are disturbing. When Delhi Petroleum sold out of its central Australian oil and gas interests they were re-packaged and listed as a debt in the form of the *Australian Onshore Energy Fund*. Concerns about cash-flows from the field led to a price collapse in mid-February. This security is now trading at almost half its issue price. Sellers may have over-reacted to passing problems, but to would-be investors this is discouraging and no recommendation to invest in mature oil/gas fields. At a time when exploration should be intensifying - if economic theory is a guide - Australian companies are tending to focus on off-shore exploration.

We see, for example, BHP Petroleum replacing the depleting Bass Strait oil flows with interests like its share in the deep-water Gulf of Mexico "Mad Dog" field. BHP's production from Bass Strait is 45,000 barrels per day and 30,000 bpd are drawn from the North West Shelf, but its share of production from "Mad Dog" is 15,000 bpd. In other words the home base is either mature or depleting rapidly while interests in the Gulf of Mexico and various smaller interests across the world are not particularly large. Woodside and Santos are both following the lead of some 50 small Australian companies seeking the much higher gas prices in the United States. Often the large local operators sell their interests in the full knowledge that any hydrocarbon discoveries they forego will not be large in their own terms.

The phenomenon of often miniscule Australian gas explorers searching for "unconventional" gas in the United States in the high plateaus of the mid-West or the Appalachians is remarkable for its enterprise, but the message is fundamentally pessimistic: these efforts are mostly directed away from Australia and largely depend on a narrow base of private equity. Superannuation funds typically do not support domestic oil or mineral exploration on the assumption that the risks are too great.

This contradiction speaks for itself: on the one hand they seek to avoid specific risk, but by requiring discovery risk to be carried by others, they appear to be ignoring an economy-wide constraint on growth.

This is not to say that future oil discoveries in Australia will necessarily be small. BHP, Santos and Woodside continue to actively explore in the North West with one pending target (Jacala) possibly containing up to one billion barrels. Smaller companies point to various under-explored regions such as the Amadeus Basin, south west Queensland and the Otway Basin, but this is a function of larger companies vacating the field. What may be significant for small operators, will be of minor relevance to larger corporations. This is not just an Australian concern. Dr John Doran (5), CEO of Roc Oil speaks of his company's activities in the off-shore Perth Basin with dry irony: "Our Cliff Head project rates in the top 40 of global discoveries …by any standard this is a worry."

Oil import blow-out

It follows that the oil component of our balance of trade will inevitably deteriorate as imported volumes rise and, as seems highly probable, as oil prices rise over the next decade. In the last two years oil imports have risen from a $9.6 billion to $18 billion. Another doubling is likely. While we can congratulate ourselves that coal exports have risen by a larger dollar amount, the previous point about energy density prevails: bulky, lower density and ample coal *is now falling in price* while *volume* of less prevalent, high energy content oil will inevitably grow, regardless of price. Even more obvious is the **perverse national policy of encouraging exports of cheap gas while importing expensive oil.** On an energy equivalence basis this makes no sense. One barrel of oil earns about $A80 while the equivalent amount of gas energy (6,000 cubic feet) earns us A$18.

Bio-fuel substitution will temper oil imports, but helpful as bio-fuel blends will be, diesel fuel is a very big item. Due to Australian distances on-farm and between cities, diesel volumes are only 25% less than petrol volumes. Currently inter-state haulers are applying a 10% surcharge, but are absorbing part of the cost. They will not absorb these costs forever.

Macro and Micro issues

From a macro perspective Australia has joined the ranks of substantial oil importers in the twenty first year of an accelerating two decade decline in our balance of payments. To the extent that we are hostage to US interest rates, the cost of carrying debt continues to expand. To protect the $US and restrain imports, US rates are likely to remain in the present uptrend. Ironically perhaps, the low rates of the last five years have propelled US housing starts. As these are largely outer urban estates, this has ensured that future US commuters have longer trips and so add to the rising trend of US oil imports.

The risk US policy makers face is that these tendencies will eventually persuade trade surplus countries – Saudi Arabia, China, Taiwan, Korea etc -to diversify their dollar investments away from the US. So far this has not happened, but if the US $ loses its status as the global fiat currency, FX instability increases and the US moves into a downward spiral of rising indebtedness, in large part the result of swelling dependency on imported oil.

Inflationary and spending effects will be more complex. Households at the top income levels will cope easily with price increases such as $50 extra per tank. This is one less bottle of good wine. For mid to lower income earners, particularly outer urban dwellers, spending patterns will change. For many this will represent 6-7% extra in after tax dollars per week as well as the rising costs of food and some services. The latest Coles Myer interim profit result reflects some deterioration in demand due, it appears, to the 100% rise in the oil price over the last three years.

From a micro perspective the spectrum of risk is broad. Risks range from the obvious additional cost of transported goods to the risk that investors take when investing in companies that rely on discretionary spending and indirect and direct hydrocarbon in-puts as transport and packaging – effects being felt by Australian companies.

It is doubtful whether many superannuation funds and investment advisers are sufficiently aware of the risks they run in not adjusting portfolio selection for the likelihood of expensive oil. While investment advice is not required to be “ideal, perfect or best”, advice must be “appropriate” and the subject matter of the advice must be “investigated”. While these terms are vague, even nebulous, they do compel positive duties akin to fiduciary duties of care. Hindsight may well find company directors in the same position. As the warnings about possible oil price increases have been well documented – and now apparently endorsed to some degree by the Bush Administration –those in fiduciary or quasi-fiduciary roles are exposed to the charge that some investigation and plain logic should have forewarned them to the risks. The position of mining company directors who failed to treat cash-flow as profit without acknowledging the wasting of their asset is not dissimilar.

This is not to suggest that all is negative for investors or the economy. A resurgence of public transport will have positive effects for many companies now focussed on servicing that sector, but this will require greatly expanded infrastructure and rolling stock to meet demand. Now that governments eschew borrowing, funds for such infrastructure may not flow quickly.

Rural Australia is particularly exposed. Many farming activities will become sub-economic as fuel prices increase as harvesting and planting costs accelerate in an already heavily hydrocarbon dependent industry.

Miners have experienced a very sharp increase in costs over the last 18 months – partly tyres and labour, but also fuel. Price rises have been higher than the 30-40% increase in costs, but as prices change, costs are likely to stay high.

Toll road operators may need to change perspective. Traffic volumes announced by one large toll road operator recently were up across the globe, but it is reasonable to predict that for certain income groups there is a thresh-hold point beyond which rising fuel costs, combined with rising tolls will

lead to changed commuter behaviour. These toll-way investments are structured over long periods and if commuter behaviour changes, assumptions about present value will be invalid.

One large organisation seems to have confidence that there will be little or no change in commuter behaviour. In 2004-05, in its ninth year of operation, toll income of $143m was $32m less than it paid in fees to its manager.

Risk evaluation and assessment

This example can be taken as prime instance of lack of longer term risk assessment in most business and public sector organisations. Typically corporate Australia takes a prudent approach to business risk in location of key infrastructure, system redundancy and general concerns about threats of flood, fire, terrorism etc. "Displans" (disaster plans) are commonplace in corporate life, but when it comes to the possible consequences of expensive oil, the assumption appears to be that no risk *assessment* is required at all. "Cheap oil in perpetuity" seems to be a given.

From the demand perspective at least such a view runs counter to common sense and everyday observation. We see greater oil dependence in outer-urban housing development, re-location of "bulky" goods outlets and sports centres to fringe city locations, shopping malls are predicated on access by motorised vehicles, salary fringe benefits often axiomatically include vehicles and even fuel in the package etc

In other words "western life style" in the broadest sense of urban design and social expectations means that petroleum demand is tending to rise while policies that may lessen demand tend to be cancelled out by policies that implicitly extend demand eg toll-roads v urban-infill.

Externally we see the same trends magnified as China and India develop extensive free-way systems (China's 30,000 kilometres is second only in scale to the USA's freeway system) and use the automotive industry as a means of creating employment. Rising incomes and expectations are not only lifting car sales rapidly but other hydrocarbon use. China's seven state airlines doubled passenger numbers over the last five years. Outbound travel from China rose over 16% in 2004 to 16 million. China's high national and individual savings rates will tend to ensure that its ability to bid for expensive oil will rise rather than fall.

Access

Supply is not merely a question of money spent on geological tools like 3D seismic or much improved recovery techniques such as horizontal drilling. It is also a question of access. Many oil-endowed nations are reconsidering their royalty or production sharing policies. Bolivia is the latest example of a many countries that recognise eventual depletion. President Morales is preparing to change the rules. Bolivian oil will become a state asset. Woodside's Mauritanian concessions are under renegotiation following a regime change. President Chavez has declared that Venezuela's gas will only be available for the United States *after* satisfying South American demand. As the US imports 15% of its natural gas demand from Canada, this is indeed unfortunate for American gas consumers. As of February 2005, the EIA's Country Brief for Canada put its known gas reserves at 8.6 years. (6). (Canada's Energy Board puts the 'discovered' category at 39 TCF or 5.6 years with 62 TCF in the probable/possible category (ie 9.3 extra years).

In the case of Nigeria a decade of sabotage and kidnapping failed to significantly interrupt supply from the Niger delta, but as of late February 20% of Nigeria's oil stopped flowing. The Delta Emancipation Movement demanded environmental compensation of $1.5 billion and national oil sovereignty. Shell declared 'force majeure' over a volume roughly equivalent to Australia's daily oil output.

Such events inevitably they raise the risk profile for oil development. Higher royalties and/or a lower production share for the risk taker axiomatically require a higher hurdle-rate for investment. This all feeds into higher oil prices.

Considerations such as these lay behind the comments of the then Chairman of world's largest oil services company Halliburton. In 1999, Mr Richard Cheney spoke to the London Institute of Petroleum about the "pesky" problem of the oil industry – production is depletion.

His mathematics suggested that "50m barrels per day of new production" (7) would be required by 2010. This calculation was made when demand was 15% lower than it is at present. As Saudi Arabia's oil out-put is roughly one 10 million barrels per day, Mr Cheney's requirement was roughly five new Saudi Arabian size oil provinces in short time. In his opinion the source of this oil was the Middle East.

The chance of these barrels arriving must be regarded as one of the larger speculations in human history. It was not aided by news this month that the Kuwait Oil Company no longer stood by its previous reserve figure of 99 billion barrels of oil reserves. KOC restated its remaining reserves at 49 billion barrels. Without considering other possible over-statements of OPEC reserves, Kuwait's lower reserve figure means roughly 5% of the world's reserves vanished in early February. In turn this meant supply would last 1.6 years less at the current annual consumption rate of 30.8 billion barrels pa.

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