

Investment and Natural Gas Markets

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Given my background as a financial markets economist, I will take a different angle on the discussion of project finance from that taken by the other three speakers in this session on the financing of natural gas projects. I will focus on a macroeconomic view of investment and markets – a view from 30,000 feet so to speak. That is, I will make some brief observations on investment in physical capital in the natural gas industry and its relationship with energy markets, particularly those for liquefied natural gas (LNG) and pipeline natural gas.

First, let me provide some background by looking at oil markets and recent investment levels. Energy markets have been a focus for the press, business, policy makers and global financial markets since crude oil prices started rising beyond their long-term range in early 2004. This follows a period, 1985 to 2004, of relatively contained energy prices, however, in a market with some fairly unique features on the supply side.

Global financial market participants have recently been speculating on whether the rise in oil prices will lead predominantly to a slowdown in global growth, or a rise in global inflation. Financial market participants are clearly of the opinion that the recent run-up in oil prices has been largely stimulated by unexpected increases in demand, especially gains in demand from China coinciding with the recovery of the US economy. This contrasts with the oil crises of the 1970's which were driven by supply side shocks. The experience of the 1970's has contributed to a global, or at least OECD, approach to oil market stability that is oriented toward buffering transitory supply disturbances. It appears that over the period in which oil prices have been relatively low, the investment required to convert crude oil reserves in the ground to productive capacity has fallen short

¹ I am participating in the APGAS Forum as an individual, and the comments in this paper do not in any way represent the views of the Reserve Bank of New Zealand.

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of the levels required to match these unexpected recent gains in demand. Consequently, crude oil producers and oil refiners have experienced difficulty in meeting recent demand levels.

One may speculate that a contributing factor in this apparent under-investment may be the supply-side market structure in crude oil leading to inaccurate price signals for investment decision-making. Another element is likely to have been a lack of timely and accurate information on the potential demand growth for energy, particularly oil, in Asia. For example, oil prices have traditionally been sensitive to weekly US oil inventory data, but with the rise of a major crude consumption centre in Asia, markets have had less information on which to base assessments of near and long-term future crude demand. In a well informed and functioning market, this information, if available, will be incorporated in spot and forward prices for the commodity.

As we have seen with oil, once supply and demand become unbalanced, prices can move to new levels swiftly. The apparent under-investment in oil production is now reflected in commodity market prices, as long-term oil futures prices have increased to record levels, commensurate with short-term oil prices, illustrating market perceptions that higher oil prices will persist in the medium-term.

However, recent signs of under-investment in oil must be tempered by noting the broader context. According to the International Energy Agency, the world has witnessed under-investment in the energy sector at large. Investment levels appear less than sufficient to meet the needs of both replacing current capacity and growing demand. One may also speculate this is the case in many other industries, particularly those related to hard commodities. In general, prior to their present strong upward trend that began in 2002, real commodity prices had been broadly declining since the early 1980's. Indeed, one of the reasons put forward for the low level of global long-term interest rates is a glut of savings, particularly corporate savings - which could well have been encouraged, in part, by this broad downward trend in real commodity prices leading to lower investment levels.

By speaking on oil markets, I mean to make the point that market prices and the information they contain are a very important signal for investment. Looking toward the longer-term, transparency efficiency, liquidity and depth of natural gas markets will be extremely important in this regard.

The key point is that knowing "where the market is" is important both for balancing short-term supply and demand, and for making appropriate (longer-term) investment decisions.

Turning to natural gas prices, these too have been high and volatile in recent times, mainly in the US. There are three separate and fairly autonomous markets for natural gas: the US, Europe and Asia. However, as we have heard from several delegates at this forum, there is 1) a growing international trade in natural gas, 2) a growing short-term market for LNG, and 3) overall there are pressures and trends emerging for international

trade in LNG to become more flexible. For example the figures discussed suggest a global spot or short-term trade in LNG on an upward trajectory and approaching 10 percent of total international trade.

A significant global trade in natural gas is developing, which will go some way to eliminating international gas price differentials by providing arbitrage opportunities across the three major consuming (or importing) regions. But so far, this international trade has been insufficient to prompt any noticeable equalisation in gas prices across global markets. There is no “global price” for LNG (or natural gas in general). Clearly, the price differentials between major markets suggest a lack of sufficient arbitrage over international markets at this stage. Trade volume data for natural gas supports the proposition that, at this stage, international markets in natural gas are relatively under-developed. World imports, as a percentage of total world natural gas consumption, remain low at around 24 percent. In comparison, the figure for oil is around 60 percent, suggesting that there is a substantial gap to close for the globalisation of gas markets, equalisation of global natural gas prices, and the price dampening effect of international trade to occur.

Transactions in the LNG industry have been almost exclusively based on long-term contracts, which have provided some certainty for the large investment undertakings required. However the trend appears to be toward an increasing preference by buyers to greater flexibility in contracting arrangements, in part driven by 1) growth in the number of LNG market participants, both importers and exporters, and 2) restructuring and reform in national energy markets around the globe. This is particularly evident in discussion at this Forum surrounding destination clauses, tenor, price re-openings and take-or-pay aspects. With a growing number of natural gas market participants, including suppliers, shippers and receivers of LNG, the trends of increasing flexibility in commercial trade arrangements and a growing spot or short-term market are certain to remain an important feature of the regional and global natural gas markets for many years to come.

In recent times, investment decisions have reflected the trend to increased flexibility and a more prominent short-term market. LNG tankers are now being built without being dedicated to specific long-term contracts. Prior commitment to a specific long-term LNG transaction was the standard and exclusive practice in the past. Corporations are investing in liquefaction plant developments in many parts of the world, and some of this anticipated new LNG production capacity is also not supported by long-term contacts. These investment decisions are nascent but powerful signals of increasing flexibility and globalisation in the LNG trade.

That being said, a consistent view expressed in fora like APGAS that include importers and exporters is that long-term contracts will remain the mainstay of international LNG transactions for the foreseeable future. But greater flexibility in long-term contracts and the emerging short-term market certainly means that trade in LNG is becoming more complex and dynamic as time goes on. And so is the task of lenders to the industry, who

may need to take more of a portfolio approach to new projects that use a more complex and varied set of both short- and long-term contracts, in combination with spot trade.

Recent academic research suggests that increasing flexibility in contracts and the emergence of a substantial spot market will impact on the financing of LNG liquefaction and receiving projects, and transport capacity. The emerging spot market and a trend to greater flexibility in long-run contracts will bring a different set of risks for those providing funds for LNG investment (generically referred to as lenders here) than have been traditionally faced. Lenders will need to evolve new ways of dealing with these risks. However, the development of markets will also offer new ways of ameliorating some of the current risks.

For example, lenders generally have been willing to accept a level of price risk, but not volume risk. With the emergence of a short-term market, lenders may rethink their aversion to volume risk, and the premium lenders attach to volume risk (clearly very high at the moment) may indeed be far lower reflecting the additional options for trading spot LNG with multiple parties.

However, with more flexible prices that are determined by the supply and demand for natural gas or LNG, rather than by a link to the prices of other fuels, price risks will become a greater concern and source of risk for LNG project lenders. This is within an environment where a greater proportion of volume is uncommitted to long-term contracts, or long-term contracts have greater flexibility on price re-openings. As short-term markets evolve, instruments based on spot transactions, such as swaps, futures and options are likely to proliferate and go some way to providing buyers and sellers means with which to hedge these price risks. Although it would seem that this situation will require substantial evolution in natural gas markets, and could be some time off.

With more flexible markets, prices are likely to become increasingly decoupled from crude oil as deterministic pricing formulae are relaxed and gas prices reflect the supply and demand for gas, providing lenders and investors with a more accurate indication of the tightness or looseness of natural gas markets at any point in time. Futures or forward prices will provide information on longer-term views of the underlying natural gas market, and options prices will show the probabilistic distribution of market price expectations. Of course, a correlation with crude prices is likely to remain under even the most flexible vision of LNG prices, reflecting global trends in energy demand and substitution relationships between oil and natural gas. However, relative prices between energy sources are one of the most powerful signals for the switching of fuels and relative investment in different energy production facilities, and given the favourable outlook for gas that is painted in demand forecasts, stifling variation of relative prices may retard the long-term development of natural gas, particularly investment levels. In the short-term however, a strong link with oil prices provides industry participants and lenders with a means to hedge price risk in existent markets that are deep and liquid.

Political risks for lenders are also evolving with generally more flexible energy markets. While traditional political risks can be thought of as revolving around unfavourable fiscal

and monetary regimes, and associated factors, liberalisation and changes in regulatory measures for domestic energy markets in consuming economies may now constitute more likely and higher impact risks for project financiers. Looming changes in national energy market structures will likely prompt importers to seek greater flexibility in their trade arrangements.

Looking forward, the increased availability of LNG around the globe should lead to greater security, flexibility and efficiency in the allocation of energy resources worldwide, clearly positive for global economic growth in years to come. Certainly, the demand picture outlined by participants at this Forum is favourable. But as for many industries, realising these visions requires significant investment. Numerous large LNG projects and proposals are in development around the globe, but not all envisioned potential future investments will go ahead. As noted by a participant yesterday, some investment proposals will falter for market-based reasons, prices, costs and trade impediments, some for structural and regulatory reasons, and some for technological reasons.

What is the role for bodies such as APEC? As is always the case for national governments and supranational bodies, the range of possible alternatives goes from a very free market non-interventionist stance to direct participation in the market place. The reality will be somewhere between these extremes.

One potentially fruitful avenue for a body such as APEC may be to undertake initiatives that provide the preconditions necessary for greater liquidity and depth in the regional short-term LNG market, and further its linkage with global markets for LNG and natural gas in general. In short, provide the conditions necessary for a well functioning market price mechanism in gas markets that sends appropriate signals to balance both short-term supply and demand, and guide the evaluation of long-term profit opportunities that underpin investment decisions. Some key themes evident through this Forum include enhancing timely and accurate information flows in the markets to promote transparency. One way of operationalising this would be for APEC to publish a monthly survey of suitably aggregated regional cross border trade flows in natural gas (or even both oil and gas) – including variables such as import and export volumes, inventory levels, indices of median, high and low prices paid, and a consensus of near and long-term demand and price forecasts.

APEC may also provide a platform through which harmonisation of national regulation can occur in a way that does not impinge on security, standards or questions of sovereignty, and providing a greater shared understanding of different approaches to regulation. Participants have spoken at length about objectives-based regulation and industry self-regulation. I would like to throw another term in the mix - light-handed regulation - regulation that aims to create the appropriate incentives for market discipline and firm-level self discipline to occur. Given the safety and standards record of the LNG industry to date, this seems an appropriate approach. But for this type of regulation to be effective, markets must be flexible and allow choice.

Developing and enhancing cross border trade in natural gas and creating a more favourable investment climate is a challenge. However, product market reforms and the development of a truly flexible and deep regional, and further, global trade in LNG will be key drivers for improving conditions faced by both project proponents and investors.

While I have spoken primarily on capital investment in LNG infrastructure, looking further into the future, market prices are also the key signals for profitable long-term investment in research and development that has the potential to vastly expand the international trade in natural gas. We have heard delegates speak of gas to liquids, gas hydrates, fuel cell and distributed generation technology using natural gas. To finish with a quote from the world's best-known central banker, US Federal Reserve Chairman Greenspan, these price signals "*stimulate the research and development that will unlock new approaches to energy production and use that we can now only scarcely envision.*"

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