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Financing major petrochemical projects in a time of rising costs

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In 1997, Chase and GIB financed the first private sector petrochemical plant in the Kingdom of Saudi Arabia, a US$400m debt facility for Saudi Chevron's aromatics complex. The issues facing investors in similarly scoped projects today are relatively few thanks to the diffusion of the experience gained from that transaction. Financing a private sector mega-project in the Persian Gulf in 2006, however, will require a vastly different structure on all component parts, from ownership/governance to marketing/offtake – especially if more than US$2bn of limited recourse debt is required.

Shifting industry dynamics – shifting financing requirements

Recent US$10/mmbtu natural gas prices in the US, US$50/bbl crude oil price forecasts, continued growth in China's manufacturing sector, excess liquidity in several Middle Eastern markets and favourable energy and investment policies in key countries are all contributing to a shift in the petrochemical industry's production base to the Persian Gulf and North Africa. Consequently, prices for everything from structural steel and titanium components to field labour and insurance premia are at their peaks. But these unit price escalations are far overshadowed by the growth in the scopes of the projects being built or developed.

Driven partially in response to forecasted customer demands for quantities and low costs, many projects being developed in the Gulf Cooperation Council (GCC) states and Iran are becoming so large and complex that one must question the 'strategic value' the owners are placing on the undertaking in order to arrive at an NPV that justifies a positive NTP (notice to proceed). This is especially striking when one compares the expected equity returns against the returns available in the region's stock markets.

As in the past, the rationale seems to be based largely on the low-cost feedstock argument. But the sustainable viability of any given mega-project in the region's petrochemical sector will be influenced significantly by its cost of capital and its terms of finance.

Financing such complex ventures as their costs exceed US$2bn and even US$5bn – especially where limited recourse debt is desired or, as is often the case in private-sector ventures, necessary – will be possible only to the extent the transaction satisfies a similarly complex creditor group that contains multiple international financial institutions (IFIs) and local and international lenders, including Islamic investors.

For a project whose scope is customer-focused and whose management team is aptly experienced, today's high construction costs will not necessarily depress the investment opportunity's attractiveness below the sponsors' opportunity cost of capital. They could very well provide justification for delaying or staging less critical parts of the project and re-deploying the saved capital elsewhere in the meantime, like in the stock markets depending on one's risk profile. Such well-defined projects, even at US$5bn, can be financed on a limited recourse basis using carefully balanced, albeit large, tranches of traditional debt, provided more creditors adopt flexible, yet appropriate, terms and conditions, especially the export credit agencies with little experience with Shari'ah-compliant structures.

Capital intensity in petrochemicals

Rising global demand, especially in emerging markets, has driven a sharp increase in commodity prices over the past couple of years and increased the cost of materials for projects around the world. However, the problem of higher costs is especially critical for petrochemical plants, even for those being built in the countries with advantaged feedstock costs.

The capital intensity in the petrochemical industry is higher than in most other commodity industries such as mining. More important than the absolute measure of unit capital costs is the comparison of these costs with the unit operating costs and the operating margin a given commodity investment can generate. As may be seen in Figure 1, the unit capital cost for a base petrochemical project with low-cost feedstock is about 100% of cash operating costs. This suggests it is not enough to rely on cheap feedstock for long-term competitive advantage; it is also necessary to minimise a project's cost of capital.

Figure 1 also illustrates that a petrochemical project's margin can be squeezed by prices in the trough of a cycle. (For this analysis – a cracker with derivative plants – the output is a weighted basket of polyolefins.) The volatility of petrochemical prices, and margins, creates conditions such that operating margins can fall below the level required to generate expected returns to owners and creditors alike. This phenomenon is observed to a lesser extent in the pulp and paper industry and to a lesser extent still in the copper mining industry. It is, however, a common occurrence in petrochemicals and serves to demonstrate the need for greater flexibility in the financing structure of these projects.

This flexibility can take the form of covenants that permit a series of periodic deferrals of principal. For example, from 2001 to 2003 Asian prices for high density polyethylene averaged $570/mt, well below the historic average. Eighteen to 24 month troughs are part of the industry dynamic and a project's financing must be structured to accommodate this stress. The debt terms should permit the deferral of three or four semi-annual repayments to allow the sponsors to focus on the critical issues of cost engineering and operating efficiency during this difficult period.

Price volatility has an upside as well, providing the *quid pro quo* for mandatory prepayments. Cash sweeps can recover deferred principal during the cycle's peak years. Flexibility that reflects the dynamics of the business, not lower leverage, is the answer. This principle is well understood by a number of commercial banks active in the region. However, given the large number of petrochemical deals under development, more flexible structures must become accepted by more lenders, particularly the Export Credit Agencies (ECAs) and other IFIs that will be critical to the financing of all private mega-projects.

Competition among projects

In addition to the overall capital intensity of a given petrochemical project, the large concentration of new projects in the Persian Gulf region (estimates as high as 20,000 kta of ethylene capacity abound) is putting pressure on the cost of materials in the region. Commodities such as rebar and concrete and specialised items like heavy lift cranes and titanium heat exchangers are in very tight supply. The increased demand for engineers and contractors has tightened the labour market. The EPC firms are finally in an advantageous position after many lean years and they are taking full advantage. Unless creditors adopt more flexible structures, sponsors will have to accede higher equity levels and/or reduced scopes until capital costs retreat.

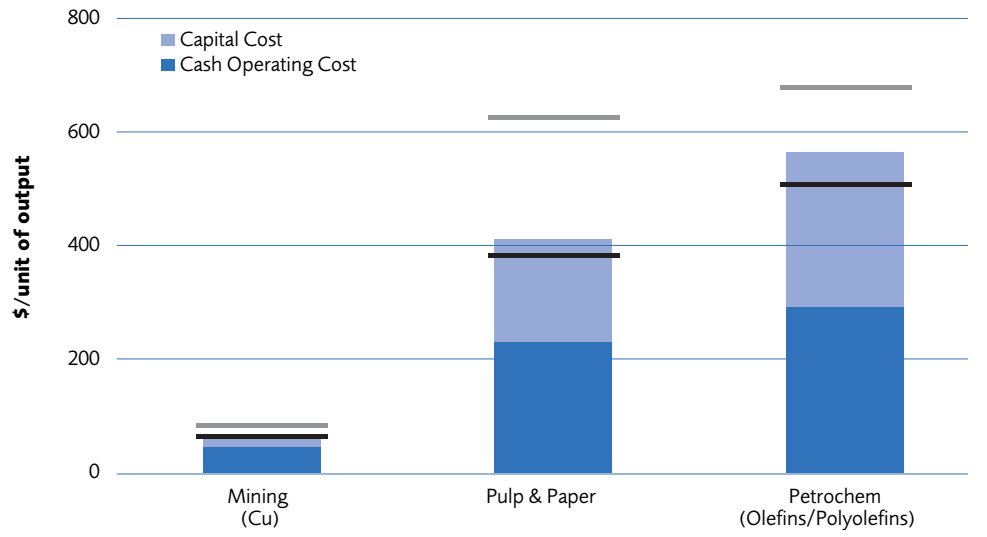
Scope creep

Steel prices, while still expensive relative to historic prices, are down from their high at the end of last year and the costs of many other materials have eased as well. Despite these slight cost decreases, price tags on projects, especially in the Arabian Gulf, continue to rise. While tightness in the labour and equipment markets has been a factor, a large portion of the increases can be attributed to 'scope creep'. This is neither inherently good nor automatically bad, but when considered in the context of the higher risks, the opportunity cost of capital and the availability of financing on flexible terms, it should cause equity and debt investors to re-consider the ultimate customers of these additional products and re-design the project to achieve success, if possible.

Behind some of the scope creep one can find the same dynamics responsible for driving the initial investments themselves: private investment initiatives being promoted by several of the region's governments, including access to competitively priced feedstocks.

Sponsors may also be expanding their scopes in an attempt to capitalise on the capital markets' seeming

Figure 1: Operating and capital costs vs. market prices



Note: Copper in cents/unit of output.

willingness to finance integrated projects, similar to what is being seen in another of the region's booming industries, liquefied natural gas (LNG). The QatarGas II project, for example, runs from wellhead to liquefaction to regasification. In the case of petrochemicals, many projects are moving further downstream from the base unit operations (be they crackers or reformers) to the production of intermediate and specialty chemicals. In theory, the low-cost feedstocks can be passed through to higher margin applications. Unfortunately, the technology risk and, most importantly, the increased marketing and customer support elements are not enhanced by large scale and, therefore, the project must offer more to potential investors than a low-feedstock story in order to complete the financing.

Liquidity in local capital markets

At a recent petrochemical conference, a leading strategic consultant stated confidently that, '...and with all the local banks and their petrodollars, financing is not a problem'. Clearly, this would be true for a SABIC or ARAMCO venture, but the same cannot be said for a private sector initiative in which ARAMCO is just the feedstock supplier.

The industry shift toward the Persian Gulf and the low-cost feedstock offered there, combined with the market sentiments being fueled by the excess liquidity in the region's economies, are giving rise to projects with exceedingly complex scopes. Exuberance fueled by liquidity must, however, be balanced by an intense scrutiny of the economic and competitive merits of the undertaking.

Continued high oil prices have produced huge windfalls in the exporting countries. On top of this, there has been a growing trend towards seeking domestic investments first, and larger amounts of the earnings on oil revenues are staying home. The Saudi Arabian stock exchange is up over 80% this year and new offerings on many of the region's exchanges are often heavily oversubscribed. The same is true in the very active private placement markets. This oil-fired liquidity is not limited to the equity markets and, as such, there has rarely been a better time to be a borrower.

Sponsors depending largely on this liquidity need to be wary. Petrochemical projects are competing not only among themselves for funding, but also with projects across the entire energy sector. In addition to the US$40bn dollars that the area's petrochemical projects will be seeking between now and 2010[1], US$115bn could be required for the region's oil sector, US$80bn for the gas sector and US$85bn for the power sector[2].

In addition, most countries in the region lack developed bond markets and have only limited capacity for mid- to long-term debt. Local and regional banks, while much more sophisticated then they were 10 years

ago, currently lack the staffing levels and expertise necessary to deploy efficiently their volume of available funds into the wide variety of complex transactions under development. The sheer volume of transactions – and the limited number of providers of capital – will do much to dampen the liquidity effect in the region, especially for private sector initiatives.

Financing in a time of rising costs

A major petrochemical project with low feedstock costs can be made much more robust by implementing an analogously low-cost financing structure.

The key to financing successfully a petrochemical project in the current environment is in understanding that the strategy needed to finance a US$1bn ethane cracker is very different from that needed for a US$5bn petrochemical complex. Capital raising is not a linear process and involves significant scale-up risks.

On the debt side, one of the major challenges associated with financing a private mega-project is in fixing – early on – the key terms of the project's debt capital layer with a finite group of initial credit providers, the foundation lenders. This group, representing half or more of the total debt, could plausibly be led by two or three agency or quasi-sovereign entities. Sponsors would have to negotiate with 20 or 30 banks to achieve the same degree of financial certainty, considering their hold levels.

On the equity side, a major challenge for projects of this scale is in selecting the appropriate partners. The scopes, certainly at today's costs, generally require two or three foreign sponsors and it is important that all stakeholders work harmoniously within a single complex structure.

Turning to the banks, it must be noted that several factors may dissuade sponsors from including them in the foundation lender group. The first factor is credit limits. Credit officers are very careful to limit the amount of exposure they have to a particular region, country, sector or individual project. With the multi-sector investment boom currently underway in the region, and the concentration of petrochemical investments in Saudi Arabia in particular, these limits may make it difficult for a bank to obtain a sufficiently large exposure authorisation for a private sector project to warrant including them in the group.

Furthermore, with many of the commercial banks being compelled to extend very large credits to projects sponsored by state-controlled entities, private sector sponsors should expect these lenders to charge higher margins and fees to compensate for the pricing extracted by the less-private projects. This inherent conflict of interest with the sponsors' objectives is yet another reason to establish a foundation group with few, if any, commercial banks.

Islamic finance is growing very rapidly in importance. But for a private mega-project, sponsors would be well advised not to expect the same treatment that the Dolphin project received with its US$1bn Islamic tranche.

The most effective creditors to include in the foundation group for a mega-project are agencies and/or official institutions. In the case of Saudi Arabia, the PIF and SIDF have both the capital for and the experience with petrochemical projects. ECAs and most IFIs generally have credit limits, however, several do not, including the Japan Bank for International Cooperation (JBIC) and the US Ex-Im Bank.

This characteristic becomes even more important when the huge scale and rising costs of today's petrochemical projects are considered. The debt commitment that can be obtained in a single ECA tranche can go a long way towards reducing the complexity of the financing and increasing liquidity in the other tranches. JBIC, for example, has been instrumental in providing debt capacity to Rabigh in the form of a US$2.5bn direct loan. However, an ECA financing is not without its own complexity. These institutions have requirements as regards exports from their home countries and environmental standards, among other things. Multiple ECAs must be efficiently blended together, which requires knowledge of the institutions themselves and relationships with the people inside the institutions.

As regards the equity component of the capital structure, the scope and cost of today's mega-projects are requiring reconsideration of the historical joint venture compositions.

Ownership of petrochemical complexes in the Gulf region is no longer solely the province of the oil majors and large chemical conglomerates. A couple of recent transactions serve to illustrate this point; the acquisition of Basell by Access Industries and INEOS' purchase of Innovene from BP. While state-sponsored firms will remain major forces in the area, there is mounting evidence that well-capitalised, non-traditional (even

financial) players will become important members of the industry. One must look beyond the legal domicile of the buyers in the aforementioned purchases to see that the entrepreneurial drive behind them is originating in countries beyond the US and UK. As more money flows into 'alternative investment' funds, this trend will likely continue and propagate the shift in the industry's ownership structure.

This expansion away from the historical, legacy owners should be welcomed, especially in the context of the mega-projects and how they will be financed. It could become beneficial, and perhaps even necessary, to add a second or even a third foreign equity partner to a joint venture that, five years ago, might have been composed of one local and one international investor.

These partners can be instrumental in supplying management expertise, transferring technology and providing access to distribution and marketing channels. In the case of an integrated petrochemical complex, these attributes can be even more important in the efficient operation of the downstream areas. In addition to their technical qualifications, equity partners from multiple geographies can open the doors to multiple debt capital markets too.

Conclusion

Between the shifting macroeconomic changes driving the petrochemical industry's shift to the MENA region and the encouraging investment policies of the recourse-rich countries there, one finds a furious competition for hard and soft assets needed to build the world-scale complexes. The convergence of their schedules, in parallel with even larger investments in the production, refining and power sectors, has driven project costs to peak levels. Liquidity in the capital markets had encouraged developers to push scopes to unprecedented limits. But private sector sponsors are not going to enjoy the full effects of that liquidity,

especially while public sector entities pursue their own multi-billion dollar projects. Sponsors and creditors alike must recognise that the cost of capital can erode materially the feedstock cost advantages of a MENA location, especially if their debt capital raising strategy is centered on the perceived liquidity of commercial banks.

Notes:

[1] Al-Morished, Mutlaq H., VP Corporate Finance, SABIC, in a speech on March 30, 2005.

[2] International Energy Agency, World Energy Outlook 2005.

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