



BOOK REVIEWS

Over a Barrel, by MAMDOUH G. SALAMEH (Haslemere: self-published, 2004). ISBN 0-9515968 1-0.

Over a Barrel: Breaking the Middle East Oil Cartel, by RAYMOND J. LEARSY (Nashville: Nelson Current, 2005). 274 pages. ISBN 1-5955-5036-4.

It is not too much of a coincidence that two books on energy would share a title, given the frequent colloquial usage of the phrase “over a barrel”. However, other than that, these two books have little in common, with the exception of a small substantive overlap (where the authors disagree). Mamdouh Salameh is a long-time IAEE member who regularly presents at our conferences, while Raymond Learsy is a commodity trader. The approach taken by the two books reflects their respective backgrounds.

Salameh’s book is self-published, which is odd, given the many books on energy which have appeared in recent years by authors much less experienced or knowledgeable than him. Possibly, his heavy use of tables and graphs deterred commercial publishers (a bad sign for many of us). That does not detract from the book other than the fact that it appears to have been delayed in appearance (or review), as evidenced by the quote “Prices have already risen by 200% from \$10/b to \$30/b since March 1999. They are unlikely to rise to or above \$50/b.” (p. 59) With this, he joins the long list of forecasters, this reviewer included, who did not anticipate the recent extreme price moves.

The primary point of the book is that OPEC’s market share and power will be growing in the medium and long-term future, as demand appears likely to continue robust growth and most non-OPEC areas face difficulties that will prevent more than moderate improvements in supply. He gives a good deal of credence to the discredited arguments of the “peak oil” advocates, but throughout he hedges all of his statements much more carefully than they do: *if* OPEC reserves are unreliable; *there may* be financial constraints, and so forth.

Many of his arguments display common sense, more than is often found in the media these days, such as that N. America is unlikely to achieve energy independence and politicians should stop stating that as a goal. But he doesn’t mention the history of the debate or the repeated failure of the oil market to prove much more resilient than predicted by the doomsayers who have dominated the discussion for most of a quarter-century.

The one major error involves data interpretation. He notes (chapter 13) that discoveries have been only a fraction of production from 1992-2003, but this assumes that estimates of discoveries are immutable, which is untrue, since

later revisions see them growing substantially over decades. More recently, his data source for this subject, IHS Energy, has commented that reserve additions in the last decade have replaced half of production, and revisions have replaced an approximately similar amount, so that reserves have not been declining.

Learsy begins with a description of resource abundance, then moves on to question how OPEC can achieve the power it has and the influence over Western—particularly the US—governments. With regard to pessimism about oil supply, he notes the large abundance of OPEC reserves and downplays the arguments of peak oil theorists, but in discussing supply, he does seem to confuse reserves and production capacity, which is much more relevant to markets.

But the market analysis in the central part of the book consists largely of a recounting of price moves and OPEC behavior and policy statements, always condemning the organization as criminal and consumers as their victims. The problem is that even when OPEC increases production, they is seen as predatory, and statements in favor of lower prices are dismissed as propaganda while those praising high prices are taken as evidence of the organization's true intent.

Interestingly, as a commodities trader, Learsy completely dismisses the idea of a fear or security premium on oil, even as he describes various threats to supply. In part, he argues that price movements appear irrational at times, which many would agree with, and he goes further to provide a lengthy exposition of oil price trends, replete with quotes from OPEC officials and various consultants. But this view is weakened quite a bit when he questions the price increase that occurred in early 2003, after the Venezuelan strike took over 100 million barrels off the market and the invasion of Iraq was clearly imminent. He derides the "fear-premium" as "a wholly self-serving, OPEC-touted rationale for excessive pricing that, this time, was supposedly induced by the prospect of a prolonged absence of Iraqi oil," (p. 177) and considers the idea that OPEC oil was in short supply an illusion.

He also relies heavily on observation and skeptical comments to bolster arguments that are otherwise not necessarily proven. For example, he says "Does anyone really believe that [OPEC] have not added to their capacity in a quarter of a century?" (p. 31) and elsewhere expresses surprise when Minister Naimi announces plans to increase capacity because "the Saudis had made no mention of such large-scale expansion over the previous months." (p. 193)

The overview of the market is used to refute the notion that OPEC and its members deserve the influence they have, and the author clearly has a strong political agenda. Probably the best indication of the author's political leaning is the statement that, "Wahhabism is an extremist Sunni sect that urges the faithful to commit acts of violence against non-believers." (p. 63) This should come as a surprise to the many foreigners (including myself) who've worked in or visited Saudi Arabia and escaped without injury.

But his primary policy concern is the perceived Saudi influence over US policy, partly due to the oil and partly their 'recycling' of petrodollars into the US economy and Washington lobbyists. To deal with that, he embraces the report by

Amory Lovins, “Winning the Oil Endgame,” which argues that conservation and cellulosic ethanol can reduce US oil imports dramatically. Of course, as most energy economists have learned, Lovins’ view of economic efficiency is rather slanted,¹ and his optimism about the desirability of new technologies has often proved excessive, to be diplomatic.

Overall, these two books represent comprehensive statements of particular points of view, in the one case, that OPEC power will increase sharply in coming years, in the other, that OPEC power is exaggerated and used for ill. As such, they have some value, but they do represent advocacy over thorough analysis, largely ignoring alternative points of view and not questioning even some of the more dubious claims of those whose work they rely on to bolster their arguments.

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Electricity Market Reform: An International Perspective, edited by FEREDON P. SIOSHANSI AND WOLFGANG PFAFFENBERGER. (Amsterdam: Elsevier Science, 2006) 656 pages. ISBN-13: 978-0-08045-030-8.

International electricity market reform began a quarter-century ago, and now is a good time to take stock. This collection takes the rather standard route of compiling various analyses of reforms by academics and industry experts, each focusing on a particular region – the usual suspects – with little comparative analysis between or among the studies. But one place where this book does stand out is in the introduction by Professor Paul Joskow.

Joskow proposes what he calls a “textbook architecture for restructuring and competition” with many variations, and supplements his ten structural components with a variety of lessons drawn from the papers in this book and elsewhere. I think we can get the most out of his architecture and the book by organizing regulatory and policy advice on restructured electricity markets into three categories: the preconditions for electricity market reform; design of wholesale electricity markets; and investment policies for both generation and transmission.

Strong political commitment to reform is one precondition, as Joskow notes, so that as problems arise they are addressed in ways that are consistent with the market approach. The real or perceived failure of reforms typically comes to light with extremely high electricity prices, and the immediate political pressure is to reduce prices through regulatory mandates that either undercut or downright ignore the nascent markets. Then the problem worsens in a vicious circle of regulatory uncertainty, an unfriendly investment client, and counterproductive policies. The cases treated in the book of California, Chile, and Ontario are three

1. Joskow, Paul, and Donald Marron, “What Does a Negawatt Really Cost? Evidence from Utility Conservation Programs” *The Energy Journal*, vol. 13, no. 4, 1993.

illustrations of this point that immediately come to mind. This is not to suggest that reforms are always motivated by crises, and many other examples of evolving market designs are discussed in this book, including in Australia, continental Europe, and Britain.

Another important precondition is that policymakers have a sufficient understanding of the engineering and economics of electric power systems. The complexities of bulk power system operations and associated markets make can lead to naïve and harmful reforms that are difficult to thwart, further exacerbating the problems these reforms were trying to fix. It's important not to lose sight of the fact that the case for electricity markets is primarily an economic one – as discussed in a chapter by the editors – aimed at improving the industry's efficiency, which does not necessarily mean lower prices.

All too often, policymakers pursue market reforms to lower near-term electricity prices, not to increase industry efficiency. In addition, they typically have several other policy goals that are not always consistent with efficient market reforms. For instance, making the assumption that electricity market reforms should be measured against the bar of increasing social welfare, with which I agree, enables analysts to bring to bear the power of economics and operations research to perform their work. But using an economic or operations research framework risks missing some important aspects of the actual policy context, further complicating communications between analysts and policymakers, and again leading in some cases to poorly crafted reforms.

Once conditions are ripe for wholesale electricity markets, policy guidance turns to their design—the second category I suggested above. Here, I think this book does not make as clear as it should that there is a theoretically sound and empirically tested market design that accounts for the peculiarities of electricity; the one exception is the chapter that compares independent system operators (ISOs) in the United States. Because this book's discussion on successful wholesale market design is limited, it unintentionally leaves the impression that there is more uncertainty regarding what works than there should be.

In the Northeast United States, we've seen the successful implementation of a standard design of day-ahead and real-time markets based on security-constrained unit commitment and dispatch, locational marginal prices that embody the costs of transmission constraints, and with an Independent System Operator (ISO) administering the markets and operating the region's grid. This model is being adopted and implemented in other parts of the country. Still, there are important open issues; these include, among others: whether to have and how to design installed capacity markets; how to expand demand participation in the wholesale markets; how to address market power issues, particularly those related to generation units needed for reliability; and how to develop markets for ancillary services.

After establishing the preconditions for electricity markets and designing them, the generation and transmission investment problem – the third category—needs to be addressed. It is widely known and accepted that markets alone, even those with locational marginal prices, are unlikely to result in optimal transmission

investment, and therefore some type of regulatory process is necessary. The solution to the transmission investment problem and its implications for generation investment is much less clearer than the solution for wholesale spot market problem, and the danger always exists with electricity markets that the reform, once put into practice, may be worse than the problem it was meant to solve. One interesting approach to the transmission expansion problem is Argentina's, which the book's preface notes is a public contest method in which transmission expansions are proposed and financed by the users while construction is put out to bid. Unfortunately, the coverage of Argentina in the case studies is superficial.

Since this book is organized by region rather than topic, it is sometimes difficult to compare the various solutions and experiences that are discussed. There are three parts besides Joskow's, however, that are crosscutting. One is the preface by Professor Stephen Littlechild, which covers much of the same ground as does Joskow. The preface has what, in my view, is an unfortunate title: "The Market versus Regulation." Certainly, electricity reforms have raised important questions about which responsibilities are left to the market and which are left to regulated processes, with the transmission expansion decision being a good example. There are important areas of reform, however, where regulation and markets do not "compete" to provide the necessary service; instead, regulation establishes a market, such as for installed capacity, while the market provides the desired service and sets the price. Other crosscutting chapters, one mentioned previously, compare the independent system operators (ISOs) in the United States, and one on U.S. retail power markets.

Editors of future compendiums should consider organizing them in a way that allows for comparisons of the particular features of electricity market reforms across countries, not just within a country. The policy guidance this book offers would have been well served in this way. Nevertheless, this book makes its mark by explicitly linking specific policy guidance to worldwide experiences with electricity market reform.

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Russian Oil Supply: Performance and Prospects, by JOHN D. GRACE (Oxford: Oxford Institute for Energy Studies, 2005). 256 pages, cloth, \$85; ISBN-10: 0-19-730030-8.

With crude-oil flows rivaling those of Saudi Arabia and crude-oil prices trading at levels well above \$60.00 US per barrel (WTI), the Russian Federation is, once again, poised to become one of the major players on global energy markets.

At the same time conflicting reports from the Kremlin and Western media sources caution that the future direction that Russia's new role might assume is far from certain. In his book *Russian Oil Supply: Performance and Prospects*, James Grace gives us a unique perspective from which to view the complex and often confusing world of Russian foreign- and domestic-oil policy.

Perhaps the most important contribution of this book is an in depth analysis of Russia's physical-supply capacity. Grace provides the reader with an eloquent exposition of the evolution of the Russian crude-oil industry from its modest beginnings in Baku and the Apsheron Peninsula to Vladimir Putin, and the now infamous Khodorovsky affair. Foreign involvement, from the Nobel Brothers and the local refinement of crude oil to kerosene to the NEP of the Lenin years, is treated in careful, and colorful detail.

Whether cause or effect, the rise and fall of Russian crude-oil flows often followed that of its leaders. The demise of the Romanov dynasty was accompanied by the signs of depletion of Russia's two largest supergiant oil fields. Discoveries in Kazakhstan, Turkmenistan, the Caucasus, and eventually Western Siberia foreshadowed the unprecedented successes of the Soviet Union. The collapse of production from the largest Siberian oil field—Samatlor—accompanied the collapse of the Soviet Union. Perhaps not surprisingly, the year 1988 marked the last year of peak production from the USSR and the final year of the Soviet government itself.

Grace highlights the key role of the Russian Federation's first independent government, the Yeltsin administration, in the determination of current and future crude-oil flows. While the regime itself did not survive, it was successful in liberating the Russian crude-oil industry from a complete dependence on state budgets and five-year planning targets to a slightly more competitive industry that would be forced to rely on crude-oil supplies to domestic and foreign markets. "It is this institutional innovation that will play the largest role in determining future supplies and the least likely to be reversed." [p. 3]

The concise summary of the peak, collapse, and recuperation of the Russian oil supplies is followed by a detailed and informed analysis of the organization and performance of the contemporary crude-oil industry. Specifically, Grace uses the chapter on industry performance to follow the complex maze of regulation and deregulation that has accompanied the transition from a command economy to 'free enterprise'.

"The passage of the Russian oil industry to its present structure has been, as Winston Churchill once famously said of Russia itself, a 'riddle wrapped in a mystery inside an enigma.' The route was torturously complex and many of the details are still unknown outside a small circle." [p. 105]

Needless to say, all of the Russian upstream petroleum companies can trace their beginnings to the legendary Soviet Ministry of Oil. Reminders of this institution can still be found in all existing organizations. By 1995, all of the Soviet-era production associations had been transformed in one way or another. While 20 remained in state hands, 13 had been listed as private companies or their

subsidiaries. Notable among these are Lukoil, Yukos, Surgutneftegaz, Slavneft, Sidanco, Komineft, Eastern Oil, and Onako.

Less than ten years later, by 2004, the list of major players in the Russian upstream petroleum industry had been reduced significantly. Indeed, in the opinion of Grace, only five major players remain today—Lukoil, Yukos, Sibneft, Surgutneftegaz, and TNK-BP. These five, a number of independents, the regional majors such as Tatneft and Bashneft, and a small number of Joint Ventures and Production Sharing Agreements (PSA's) were responsible for the bulk of Russian crude oil supplies in 2003—over 7 MMB/d. The remainder, some 600,000 b/d can be attributed to the state oil concerns, Gazprom and Rosneft. The reserves and prospects for these companies are listed in detail in Chapter 5.

The dissolution of the USSR and creation of a number of major oil companies is one of the major forces preventing the teleological evolution of Russian crude-oil supplies. Indeed, in Grace's words, "Barriers to entry for independent oil companies are a big reason why there is still, twelve years after Russian independence, a vast Soviet dowry of discovered, but undeveloped fields. Most of the Russian majors (with the exception of Surgutneftegaz) are over-endowed with physical oil assets relative to management capabilities and even to their greatly expanded access to cash. That is, they stand astride far more fields and physical oil than they have capital and management resources to develop. Without a second tier of companies to buy these assets from them they will languish." [p. 162.]

Despite these difficulties, the forecast for crude-oil supplies is cautiously optimistic. As of 2004, the Russian crude-oil industry had been successful in its attempts to rejuvenate the industry, and production had been rising steadily for the past 6 years. With only slight disruption, these trends have continued to today. Contemporary estimates place Russian crude—oil reserves at levels as high as 68.2 billion barrels (proved) and 80 billion barrels of undiscovered resources. With new-field production from promising new-field developments such as the Lukoil- Timan-Pechora project, Sakhalin I, and the Shell-Siber energy project, Russian crude-oil flows could easily be sustained at levels as high as 9-10 MMb/d through the year 2010. An increase of over 10 MMb/d, might be reached, given favorable political and economic conditions, but is unlikely to be sustained. In short, a rate of production over the 10 MMb/d mark is likely to be followed by an increase in future decline rates, reminiscent in some respects of the rapid decline rates witnessed by the Soviet Union in the late 1980's.

To stem the potential for premature and rapid decline, Grace suggests that a more sustainable course might be charted for the development of the Russian upstream petroleum industry. Specifically:

1. Setting taxes and policies on export and licensing to guide output between 9 and 10 MMb/d through 2010.
2. Developing a stable technological foundation for production.
3. Encouraging the entrance of small- and medium-sized oil companies to develop hundreds of discovered but undeveloped small- and medium-size oil fields.

4. The removal of price controls and movement towards a world parity price.
5. Trading environmental liabilities (oil-related environmental disaster) originated in the Soviet era and now falling on the shoulders of private companies—back to the state.

While the future direction of Russian energy policy is by no means certain, the encouragement of small- and medium-size oil companies will require much more than a favorable climate for foreign direct investment. World-oil prices in the \$50-\$60 US per barrel range provide clear economic incentives for even the most recalcitrant of market entrants. Still, the economic and political incentives are unclear. Unlike major oil companies, who have sufficient resources to weather temporary storms, the long-term success of smaller independents is threatened by the existence of a tough, revenue-based domestic- and foreign-tax regime. Such firms cannot survive without legislative assistance, and the creation of stable petroleum legislation and an independent judiciary remains a far and distant goal.

In the words of Grace, “[This] Lack of clarity may have been intentional. If ‘majority-Russian’ and ‘strategic assets’ are left vague, the policy becomes even more potent in defining narrow spaces in which foreign investment will be allowed. As an independent judiciary is still absent, interpretation can be individualized, giving high-level appointees authority to pass on proposals, based on either national or much narrower interests.” [p. 232.]

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Beyond Oil and Gas: The Methanol Economy, by GEORGE A. OLAH, ALAIN GOEPPERT, G.K. SURYA PRAKASH. (Wiley-VCH, 2005). ISBN: 3-527-31275-7, Hardcover, 304 pages, March, 2006, \$32.50.

A substantive book on energy futures is always welcome. This book is indeed substantive. It probes deep into the science and engineering of methanol production. It is a careful treatise by brilliant scientists. Professor Olah is a 1994 Noble Prize winner in Chemistry for his work on hydrocarbon chemistry in superacids.

If you seek a textbook or a technical assessment of methanol, this is the book for you. It is well documented, analytical, and full of useful graphs and tables. It is well written and gets the facts right on methanol. It explains technical phenomena in an accessible manner. As scientists, they make a noble effort to stretch themselves, providing serviceable overviews of oil, natural gas, coal and unconventional fossil sources, as well as renewable energy. They review the history of nuclear energy and biofuels, and devote a full chapter to hydrogen. They provide a valuable contribution.

They are not, however, convincing that methanol really is the fuel of the future.

While they provide a strong technical analysis, they barely address economics, virtually ignore policy and politics, and completely ignore consumers. They gloss over the failed history of alternative fuels. They barely touch upon California's decade long effort to introduce methanol as a transportation fuel. They miss the substantial commitment by the first Bush presidency to methanol – including the President's June 1989 Clean Air Act proposal to introduce methanol cars on a massive scale to reduce air pollution. And they devote only a paragraph to the failure of MTBE, a methanol derivative that was blended into most gasoline in the U.S. until just a few years ago. It leaked into drinking water and lakes, causing an environmental backlash and public relations nightmare. If MTBE failed, despite economical and technical success and gaining strong government and oil industry support, what does that say about the prospects for the more toxic methanol?

The key question is: Why methanol? Like ethanol, the fuel *du jour*, methanol could be produced from renewable sources. However, it provides little or no benefit when used in a modern combustion engine. Thus, its possible future lies with specially-designed direct methanol fuel cells. Such fuel cells will be less efficient than hydrogen fuel cells, and would therefore emit more CO₂. But hydrogen has its own problems, as the authors carefully document. Just maybe, methanol will finally succeed some day. This book gives us the technical background to understand the issues.

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