BOOK REVIEWS

Natural Gas and Geopolitics From 1970 to 2040, by D. G. Victor, A. M. Jaffe, and M.H. Hayes (Cambridge University Press, 2006, ISBN 0-521-86503-4, 508 pages, Hardcover $110)

Natural gas consumption has grown significantly over the past several decades. With high oil prices and a constantly developing natural gas infrastructure, it becomes important to examine the history and the future of natural gas markets. The book *Natural Gas and Geopolitics from 1970 to 1940*, written by David G. Victor, Amy M. Jaffe, Mark H. Hayes and their research team addresses this exact issue. By looking at the historical evolution of natural gas markets, different natural gas related projects around the world, and at the markets' future development, the authors analyze how political, economic and security factors lead to global growth of natural gas demand.

The book is divided into four major sections: introduction, historical case studies, international gas trade economics and implications. In the first section, the authors give a general overview of the natural gas market; covering historical origins and the growth of natural gas consumption worldwide. The second section is more analytical, examining seven actual natural gas projects around the world -- the Transmed and Maghreb projects between Europe and North Africa, the Liquid Natural Gas (LNG) project from Indonesia, the natural gas pipeline (NG pipe) going from Russia to Poland and Germany, NG pipes in the Southern Cone, Gas Trade in Central Asia, the LNG project from Qatar and the LNG project from Trinidad & Tobago.

They describe the process of how and by what criteria the cases were chosen. Each case follows a similar structure. The authors present the background of the project, discuss the project's financing, and then analyze the degree of government involvement in the project, the energy policy of the countries involved and the different types of risks each project faced, such as political, transit, supply risk. They also analyze the possibility of alternative projects in each region and why they were not developed. When the authors compare and contrast the cases, they discuss the similarities and differences of government involvement in the projects, security of supply, the investment climate and the potential risks the projects faced throughout the process.

After their extensive analysis, the authors then conclude which key factors are necessary to become a major player in the natural gas markets and what combinations of factors the countries or companies have to possess in order to achieve such dominance. For example, they conclude that energy policy and the investment climate play essential roles in the success of a project. The summary chapter of this section is especially insightful because the authors demonstrate how that no two international projects are the same, and that it is critical to the success of the project to consider many different dimensions - from cost to geopolitics to economics.

The third section, International Gas Trade Economics, uses an economic approach to the analysis of natural gas markets. This section is much more complex and data-oriented than the previous two. The first chapter of this section introduces a Baker Institute World Gas Trade Model (BIWGTM). This special dynamic general equilibrium model incorporates geologic data with economic theory to examine how the natural gas market is influenced by political and economic factors. The model is also used to forecast the possible evolution of the markets for the next thirty years. The authors refer to this model as the base case model because, even though it assumes different rates of return on different investment categories, it uses uniform rates of return across countries. After running the model, the authors then summarize their findings. They discuss the potential future of natural gas prices and demand, and whether the natural gas markets will converge. They also discuss which countries and regions may serve as linking mechanisms between the markets, and the resulting global impact. For example, they make an interesting conclusion regarding Russia, and how it may become an important player by connecting European and Asian markets through its pipeline infrastructure.

The authors also run a case which incorporates "risk-adjusted" rates of return that vary across countries. Then analyze the results and discuss how countries are impacted by these returns. One of the points they make is that "since higher required returns delay new investments but do not affect the use of existing infrastructure, supply is reduced most in countries with high required returns and little infrastructure in place." After the analysis of the reference case, the authors examine three possible scenarios: the elimination of the pipeline network from Russia to northeastern Asia, higher Chinese demand growth, and, finally, quicker adoption of alternative technology by assuming natural gas availability at a lower price.

The authors discuss the possibility of natural gas cartelization. They conclude that it is highly unlikely that this will happen any time soon for many reasons, one of them being that there are numerous natural gas producers and they do not always share the same interests.

In the final section, the authors conclude by summarizing and condensing the main ideas of the book into four key points: the emergence of an integrated global gas market, new market structures and the changing roles for governments, global gas and security of supply and the risks of the greater gas vision.

Overall, the book is well structured, easy to follow and the ideas the authors try to convey are well explained. It should also be mentioned that throughout the book the authors go through an extensive use of numerous maps, graphs, charts and tables to help the reader better understand the discussed topics. Because the issues discussed in the book are highly analytical and specific, it is geared more toward academicians and people in the industry as well as those with some exposure to this area of study, rather than the layperson. This book would be ideal for somebody who already has some understanding of the natural gas markets and global economy and some degree of modeling, and would like to enhance his or her knowledge on this specific topic.

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The Age of Oil: The Mythology, History, and Future of the World's Most Controversial Resource, by Leonardo Maugeri. (Westport: Greenwood Publishing Group, 2006) 360 pages, hardcover, $49.95. ISBN 0-275-99008-7

The Age of Oil (AGL), by Leonardo Maugeri, is a history-spanning study about oil. After many years in the energy field as an economist and oil industry analyst for the Italian energy giant–ENI, Maugeri has written extensively against the peak-oil proponents, arguing that, with new technology and underestimated reserves, we are far from exhausting our fossil fuels. In marked contrast to the "panic-crisis" books of late, this work strikes an optimistic chord on the state of world-oil supplies. Although not as magisterial as Daniel Yergin's *The Prize*, AGL gives a satisfactory oil-history timeline, backed by penetrating analyses. AGL weaves a technical, historical, political, and analytical tapestry to offer a cogent picture of current pertinent energy issues. AGL is worthy of review on its own merits, so this review does not compare it with other oil-industry surveys.

Unlike the resource pessimists, Maugeri asserts that due to the uncertainty about the level of world reserves, any attempt to quantify supply is futile [Preface xiv]. Not only does he argue soundly, but he solidifies his position by insights gleaned from long experience in the industry. While some of his conclusions may be rejected, his research is not to be disputed.

Chapter one examines two pivotal figures of the early oil industry–"Colonel" Edwin Drake, whose title was self-bestowed, and John D. Rockefeller. These two were shaped by the chaos of the early oil exploration. Drake was destroyed by the chaos, while Rockefeller sought to control the forces unleashed by this new energy source. The Colonel, victimized by the oil market that he had helped found in Western Pennsylvania, died penniless. John D. Rockefeller, Maugeri explains, rejected out-of-hand Adam Smith's concept of the invisible hand correcting the market imbalances. Looking from Smith's abstraction to the Darwinian struggle taking place around him, Rockefeller, Maugeri explains, decided to tame this wild beast [p.7]. As Maugeri contends, Rockefeller's ambiguous heritage is still with us today, reflected in the perpetual showdown between free marketers and those who believe in producer cooperation. The early struggle was simply a different mask of the perpetual tragedy of the commons, which so offended and frightened Rockefeller.

While John D. Rockefeller's vision of limited competition was contrary to the dominant views of economists then and now, several economists of his time argued that, because unrestricted trade was the opposite of unrestricted good, the state should intervene in the otherwise unregulated workings of major industrial sectors that were driven solely by self-interest.[1] Following prior writers on oil, Maugeri fails to present, with analytical detail, those theories that favored monopolies and thus granted credence to Rockefeller's business stratagems.

Maugeri shows how the early American property law of capture encouraged wasteful drilling practices that destroyed early finds [p.5]. He notes that Rockefeller and his Standard Oil left upstream control in the hands of wildcatters (independent drillers) but controlled downstream sectors, principally, refining and marketing, as a cure of the glut/shortage cycle [p.7]. Maugeri also considers the other major players at the time and examines the establishment of Shell and the Russian oil industry. Maugeri points out that the birth of the oil industry was a pivotal time that showcased many actors and initiated a whirlwind of global change.

Still early in this work, Maugeri describes how petroleum evolved from a private-sector enterprise into a commodity that attracted governmental concern. The key move was when the young Winston Churchill, as Britain's First Lord of the Admiralty, persuaded the British Navy in 1911 to switch from coal to oil. Maugeri points out that this was to have wide ranging foreign-policy effects. Britain had no domestic oil production at the time. Maugeri argues that the shift motivated the British Middle-East adventure, the effects of which endure [p.24].

The author examines some of the most swashbuckling characters imaginable, such as Mr. "Five Percent," Calouste Gulbenkian. He is viewed the father of the Iraqi oil industry and the initiator of the "Red Line Agreement," which effectively molded an anticompetitive aggregate of interests and partitioned the Middle East into zones of control for the major oil companies. Maugeri argues that this gambit had unintended ramifications for the majors and for the British government because it forced many independents into the frontier areas (such as Saudi Arabia), which the majors believed had little oil worth developing [p.33].

Maugeri posits, and I concur, that the strict prorationing and overt control of the developing world's oil reserves spawned a backlash that started with Mexico's oil nationalization, spread to other parts of the world, and encouraged oil-producing nations continually to ratchet up their demands [p.48-50]. Midway through AGL, he alludes to the 1930s as a period of extreme and rapid transformation. The primitive era of "wildcatters," who sought physically to sniff out un-

1. Some of the natural resource proponents included economists Henry Carter Adams in his "The Relation of the State to Industrial Action" and Thomas Henry Farrer, the permanent Secretary of the Board of Trade in England. Historian Sanford D. Gordon, who surveyed most of the economic books written prior to the Sherman Act, concluded that most economists viewed trusts in the oil sector as protection against what was then termed "ruinous competition," which was seen as the greater threat. *See* Sanford D. Gordon, "Attitudes toward Trusts Prior to the Sherman Act," *Southern Economic Journal*, 1963, p. 158.

derground oil deposits or to employ the occult in their prospecting activities was replaced by an epoch of sophisticated technology [p.41-43]. The new technologies, not only reduced the ranks of prospectors, but also produced an array of new sciences, including the stratigraphic method (science of the inner earth). These relied on exhaustively studied drilling records, production logs, and standardized drilling procedures. The era also introduced a "secondary recovery" process by injecting natural gas into the oil reservoir to enhance pressure when the initial pressure diminished. The industry received another boost by thermal cracking, which replaced primitive refining methods with 'cracking' heavier oil molecules into lighter ones and increased recovery from a single barrel.

Maugeri states that increased oil supply came center-stage due to renewed Soviet production, promoted by an aggressive price-cutting strategy, and large Latin-American and Middle-Eastern discoveries. The large amounts of oil caused a glut, which oil companies and the US governmental bureaucracy (state and federal) viewed as dangerous to domestic oil production. Maugeri characterizes this period as a "reactionary" time that culminated with the deployment of the National Guard into Texas Oil fields to quell over-production [p.47]. Since unrestrained production caused crude-oil prices to fall to only a few cents a barrel, the government developed quota schemes, such as the ill-fated National Industrial Recovery Act (NIRA), which the Supreme Court rejected in 1935. Maugeri explains that this federal defeat did not stop states from moving to hold back production, nor stop the federal government from collaborating with the states through duties on imported crude and refined oil products [p.47]. Maugeri argues persuasively that that all these actions had the intended effect of increasing oil prices by the end of World War II.

Almost midway through AGL, Maugeri examines the US entanglement in the Middle East, starting with the birth of the American-Saudi partnership. He argues that the US, not only abdicated diplomacy to American-based oil companies, but also offered them a free hand in Saudi Arabia. He contends that this early ambivalence, along with American support for Israel, spawned schizophrenia in American-Arab relations [p.59-60].

Maugeri reports an Iranian drama with the rise of the nationalist Mohammed Mossadegh, whose quest to nationalize BP's holding purportedly led to a British/American backed coup, hatched in the American embassy in Tehran. Maugeri considers the American involvement in this coup as an injustice seared into the heads of ordinary Iranians, perhaps fueling that fateful storming of the American embassy that marked the Carter administration's dénouement.

Maugeri contends that American policy was a confusing spectacle. Often, the US supported the multinationals as a policy arm on the international scene but took antitrust action against the industry on the domestic scene. Washington's obsession with Soviet penetration in Arab lands precipitated actions that concurrently antagonized many governments in the region and the oil companies [p.87]. These inept governmental policies induced the creation of an international oil cartel that Rockefeller could only have dreamt about, OPEC.

Maugeri sees oil and Arab nationalism as a marriage of necessity rather than romance. In showcasing the key personalities of the 1960s and 1970s, Maugeri contends that Arab nationalism sprung from the ideological underpinning of resource-nationalism. He indicates that conflict over control of oil concerned the prerogatives of ownership, title, extraction technology, and the physical location of the resources [p.94]. He moves adroitly from the inception of Arab nationalism through the two oil shocks in the seventies to the latter counter-shock of the glut of the 1980s. Maugeri points out, although that the domino effect may not have been the most apt metaphor to describe the Southeast Asia of the 1960s, it provides a useful concept for Middle-East politics. Qaddafi started supplier-nation assertiveness, which then emboldened other OPEC members to demand ever-increasing royalties from persistently escalating prices.

Maugeri states that, during the second OPEC oil embargo, the amount of petroleum withheld from the market was negligible – only about five percent but that the fear of scarcity drove the largest wealth transfer in modern history [p.113]. He notes that a selective embargo is unworkable because the petroleum market is too vast and oil too easily transported. He concludes that the OPEC revolution was the culmination of events that did not materially alter the fundamental structure of the industry's oligopolistic control, perhaps the blowback from Rockefeller's dream. He explains lucidly the process that occurred behind the second oil-shock in the late 1970s and 1980s. He sees a three-part development–the Iranian Revolution, Iran-Iraq war, and the US inability to show leadership; he argues that each enhanced market instability.

Maugeri explains the counter-shock as being the irrational exuberance of oil producers, who failed to take a sober view of global oil demand. He sees the main factor behind the glut, however, as Saudi overproduction to punish so-called OPEC free riders and enforce discipline on overproducing OPEC members. He observes that the US government, despite contrary assertions, dislikes extremely low petroleum prices, which can put the domestic oil producers out of business. In that vein, Maugeri observed that Vice President Bush Senior traveled to Saudi Arabia to argue against overproduction [p.140].

Maugeri next treats the end of the 20th century, starting from the 1st Gulf war to the current Iraqi war. The scene is not bright; it is populated with self-interested politicians, half-mad rabble-rousers, and a confused populace. He here only recounts recent events that most energy specialists know well. Maugeri concludes that a historical cycle is repeating itself, as when President Bush dramatically opened the 2006 State of the Union address by accusing America of being "addicted to oil." Maugeri points out half-smiling that this presidential denunciation is from a self-proclaimed oilman supported by oil interests [p.197].

Part Two (Chapters Sixteen to Twenty-one) of AGL is a separate affair, in which Maugeri states that, to understand the future of "black gold," we must understand the secrets of its existence [p.207]. He disputes claims that the world is running out of oil and, with convincing facts, points out that the proponents of peak oil have been crying doomsday for at least half a century, proclaiming that the world is running out of oil, only to revise predictions in the face of significant amount of oil coming online [p.202].

The last chapter, i.e. Twenty-one, is of particular interest in that it covers Arabs and Islam and argues against the feasibility of energy security. Maugeri uses a Freud-inspired term to describe an industrialized nation's fear of being cut off from oil supplies as a "castration syndrome," which is matched in tempo by the resource-nationalism sweeping much of the producing world [p.259]. Maugeri contends that these symptoms evolve from certain psychological assumptions. These periodically drag the participants very close to open war, with the developed world attempting to keep access open to supplies, and the producing nations seeking to leverage their resources.

Maugeri rejects the fear of a radical Islamic regime coming to power and initiating Islamic-led oil embargoes, which, he states, have no precedent. He offers the view that an Islamic-led market would operate much like any other rational economic player; witness that the "revolutionary" Islamic republic of Iran reliably supplies the West [p.263]. He notes that truly to develop alternative energy sources, the market must be driven by market principles, not bureaucracy. Rejecting easy solutions, particularly with the West's involvement in Arab lands, Maugeri counsels that the West engage in impartial dealings with these newly formed Arab states, not one warped by underestimation of their power, nor overestimation of the threat they pose.

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