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Management in Commodity Markets

*From Shipping
to Agriculturals and Energy*

EDITED BY
HÉLYETTE GEMAN

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Risk Management
in Commodity Markets:

From Shipping to Agriculturals and Energy

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Hélyette Geman



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Preface

There has been lately a gigantic interest worldwide in the commodities space, energy in particular, as evidenced by the number of press editorials that are published on the subject. Commodity prices have been experiencing an unprecedented rise in the last few years and there is no sign, at the date of writing (July 2008), that we may revert to the levels of 2005 or 2006, not to mention those prevailing in the early 2000s which seem to belong to prehistory. Uranium prices went from \$7 per pound in 2003 to \$90, then \$100 in early 2008, with 442 nuclear reactors in the world needing 180 million pounds of uranium, a number that is much larger than the current production. The LNG (Liquid Natural Gas) market is boiling at minus 160 Celsius degrees; Korean shipyards are delivering new carriers with increased capacity and, interestingly, some of the LNG tankers start being used as floating storage (hence, embedding a valuable optionality). Demand for metals, energy and cereals from Brazil and Russia, two of the fastest-growing economies, is undoubtedly pushing prices up, together with the one coming from the heavily populated India and China. As an example, between 2001 and 2005, China's demand for copper, aluminium and iron respectively increased by 78 %, 85 % and 92 %. As part of the expansion of the commodities universe, azuki beans, which used to be ignored in many parts of the world, are now a component of a number of commodity indexes into which gigantic amounts of money have poured lately. Energy prices, e.g., crude oil and coal, have witnessed an amazing increase these last two years, with a greater public awareness of "Peak Oil" or at least, the exhaustible nature of fossil energy. The West Texas Intermediate (WTI) crude oil, that had undergone a respite in price increase during the year 2006, resumed in 2007 its irresistible ascent to go over the symbolic threshold of \$100 per barrel in early 2008. It went above \$140/bbl in June and July, resulting in prices multiplied by more than 500 percent in less than four years, with – among other reasons – supply disruptions in Nigeria, a structural decline in production in Mexico and other countries.

Call options on crude oil with strikes of \$100 or more were the subject of great attention when they appeared in New York in summer 2006. By May 2008, there were 21,000 outstanding contracts for the NYMEX December 2008 call options with a strike of \$200/bbl. Their volume has more than quadrupled since the beginning of 2008, signalling that a number of market participants are betting that crude oil prices would hit \$200 before the end of 2008, a possibility first mentioned by the US bank Goldman Sachs, a major player in the oil market. As another sign of changing times, US heating oil futures trading was interrupted

for a short while on the electronic platform CME Globex, after prices struck the fluctuation limit of 25 cents, or 6.82 percent. This “limit up” move triggered the halt in the electronic trading of all energy contracts, including WTI crude oil and RBOB gasoline. This was the first shutdown since electronic trading began in 2006 and created confusion and concern among traders.

Since commodities are essentially denominated in dollars, the weakness of the “numéraire” currency has often been cited as a major explanation for the rise of commodity prices. Still, in constant dollars, average crude oil prices rose by 124 percent over the period 2002 – 2006; and the recent increase has been even steeper. At the beginning of April 2008, the secretary of the Organization of Petroleum Exporting Countries, which pumps 40 % of the oil world supplies, rejected requests for an increase in the cartel’s crude output, saying that non-fundamental factors were to blame for current high prices. In fact, OPEC maintained its output at 29.67 million barrels per day at its last meeting in March 2008 and warned that there would be little OPEC could do if prices hit \$200. With a forward looking perspective, the entire WTI crude forward curve has been trading over the level of \$105 since the beginning of April 2008, with the long dated contract for December 2016 trading above \$110, indicating a market consensus over \$100 for a while.

The same tight market conditions across the spectrum of the three commodity classes – energy, metals and Agriculturals – are also unlikely to drastically improve in the near future, with land itself becoming rare and water insufficient, disruptions occurring in South African mines because of electricity shortages, geopolitical issues in a number of countries producing commodities and a world surge in demand. We can observe that these elements illuminate a property that did not used to be true, namely that the three commodity sub-asset classes are increasingly *correlated*, a property that we can certainly view as novel in the commodity markets. Hence, energy companies and agrifood business now need, like bankers and portfolio managers, to follow what is happening in the space of all commodities while deciding on the acquisition of new physical assets such as power plants, gas storage facilities, aluminium smelters or grain elevators. This is illustrated by the example of the private equity fund KKR acquiring the biggest utility in Texas.

One should remember that the history of commodities has been filled with booms, busts, seasonal volatility, weather events, geopolitical tensions and occasional attempts to “corner” the market, features that were reasonably acting as a deterrent for new entrants. Moreover, the physical constraints of delivery and storage make spot commodity trading difficult or impossible; transactions on commodity futures Exchanges can only be performed through a broker who is a member of the Exchange (hence, the gigantic success of the recently introduced ETFs (Exchange-Traded Futures), that are accessible to individual investors. All participating agents must keep in mind, however, that volatility swings reflect not only supply and demand concerns, but also the fact that these markets are sometimes dominated by large players, are often opaque, always directed by the long lead-time between a production decision and its actual viability. Trading volumes have also widely fluctuated over time: during the high inflation era of the 1970s, commodity futures trading exploded and the real estate sector boomed since bonds and stocks were generating a real return close to zero over a decade. The end of the 1970s commodity boom can be identified with the crash in 1980 of precious metals prices, when the famous squeeze of the silver market by the Hunt Brothers (who were holding at some point an estimated 50 percent of the global deliverable supply of silver) failed. Afterwards, there was a long period of nearly 20 years of stagnation in commodity prices, that some experts attribute to supply fundamentals and lower inflation.

Over the decades, commodities have essentially captured the attention of famous economists such as Keynes, Kaldor or Working and industrial organization researchers. They have generally been under-studied and certainly under-represented in finance literature. This book aims at filling part of this vacuum, and I express my gratitude to the experts, academics and practitioners, who agreed to contribute a chapter. Through the various chapters, a number of economic, geopolitical and modelling issues, all fascinating, were analyzed in a superb way.

Hélyette Geman

About the Editor

HÉLYETTE GEMAN

Hélyette GEMAN is a Professor of Finance at Birkbeck, University of London and ESSEC Graduate Business School. She is a graduate of l'Ecole Normale Supérieure in mathematics, holds a Masters degree in theoretical physics and a PhD in mathematics from the University Pierre et Marie Curie and a PhD in Finance from the University Pantheon Sorbonne.

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Contents

Preface	xi
About the Editor	xv
About the Contributors	xvii
1 Structural Models of Commodity Prices	1
<i>Craig Pirrong, University of Houston</i>	
1.1 Introduction	1
1.2 A Commodity Taxonomy	1
1.3 Fundamental Models for Storable Commodities	2
1.4 Non-Storable Commodities	6
1.5 Summary	7
1.6 References	7
2 Forward Curve Modelling in Commodity Markets	9
<i>Svetlana Borovkova, Universiteit Amsterdam, and Hélyette Geman, University of London and ESSEC</i>	
2.1 Introduction	9
2.2 Forward Curve Models for Non-Seasonal Commodities	14
2.3 The Seasonal Forward Curve Model and its Extensions	17
2.4 Principal Component Analysis of a Forward Curve	24
2.5 Forward Curve Indicators	26
2.6 Conclusions	31
2.7 References	31
3 Integrating Physical and Financial Risk Management in Supply Management	33
<i>Paul R. Kleindorfer, University of Pennsylvania and INSEAD</i>	
3.1 Introduction	33

3.2	A Primer On Previous Supply Management Contracting Literature	35
3.3	A Modelling Framework and a Simple Illustrative Case	37
3.4	Recent Contributions to the Optimal Contracting Literature	44
3.5	Some Open Research Questions and Implications for Practice	46
3.6	References	49
4	The Design of New Derivative Markets	51
	<i>Giovanni Barone-Adesi, The Swiss Finance Institute and The University of Lugano</i>	
4.1	Introduction	51
4.2	Determinants of Success of New Derivative Markets	52
4.3	Price Discovery	53
4.4	Trading, Clearing, and Margining	54
4.5	Market Integrity	55
4.6	Market Recovery	56
4.7	Market Oversight	56
4.8	Case Studies	57
4.9	Conclusion	58
4.10	References	58
5	Risk Premia of Electricity Futures: A Dynamic Equilibrium Model	61
	<i>Wolfgang Bühler, University of Mannheim, and Jens Müller-Merbach, BHF-Bank Aktiengesellschaft</i>	
5.1	Introduction	61
5.2	The Dynamic Equilibrium Model	62
5.3	Comparative Statics	64
5.4	Empirical Study	73
5.5	Conclusion	77
5.6	References	80
6	Measuring Correlation Risk for Energy Derivatives	81
	<i>Roza Galeeva, Jiri Hoogland, and Alexander Eydeland, CMG, Morgan Stanley</i>	
6.1	Introduction	81
6.2	Correlation	81
6.3	Perturbing the Correlation Matrix	82
6.4	Correlation VaR	85
6.5	Some Examples	85
6.6	Discussion and Conclusions	88
6.7	References	89