



Quantitative Tools to Understand and Forecast Commodity Markets

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Ahmed El Ghini
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About OCP Policy Center

The OCP Policy Center is a Moroccan policy-oriented think tank striving to promote knowledge sharing and to contribute to an enriched reflection on key economic and international relations issues. By offering a southern perspective on major regional and global strategic challenges facing developing and emerging countries, the OCP Policy Center aims to provide a meaningful policy-making contribution through its four research programs: Agriculture, Environment and Food Security, Economic and Social Development, Commodity Economics and Finance, Geopolitics and International Relations. On this basis, we are actively engaged in public policy analysis and consultation while promoting international cooperation for the development of countries in the southern hemisphere. In this regard, the OCP Policy Center aims to be an incubator of ideas and a source of forward thinking for proposed actions on public policies within emerging economies, and more broadly for all stakeholders engaged in the national and regional growth and development process. For this purpose, the Think Tank relies on independent research and a solid network of internal and external leading research fellows.

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About The African Institute of Risk-Management

The African Institute of Risk-Management – IARM is not-for-profit association with a collaborative project between different academic communities at the international level, between professional and academics, and between Africa and the African diaspora. The main goal of the institute is the creation of synergies between financial professionals and academia. In all major financial centers there is a natural proximity between financial institutions (banks, insurance companies, fund managers, hedge funds), stock exchanges and universities. This proximity contributes to the creation and animation of a vital talent pool which contributes to the competitiveness of the financial system. The creation of the IARM was initiated by a group of experts from the Moroccan diaspora living in France and academics from the International University of Rabat (UIR). The ambition of the IARM is to become an active meeting place which stimulates the interactions between researchers and economic actors. A scientific committee of international renown is set up to advice the Management Committee on strategic issues, the scientific policy of the Institute and for managing and monitoring scientific

research projects. Potential members of the IARM are individuals, or entities strongly motivated in contributing to the development of research in finance and insurance in Africa, by promoting interactions between academic researchers and professionals.

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About The Faculty of Law, Economics and Social Sciences-Souissi in Rabat

Created in 1993, the Faculty of law, Economics and Social Sciences at Souissi Site belongs to the Mohammed V University in Rabat. A higher education institution, it develops teaching and research programs covering many areas of law, economics as well as social sciences. To this end, it fulfills the following mandates: Fundamental and professional training at different levels (Bachelor, Master, specialized Master, Doctorate); Continued education through professionally appropriate and adapted University certificates and Diplomas (both private and public sector); Enhancing and promoting scientific research; Promoting scientific, cultural and sport activities; Establishing partnerships and cooperation agreements with different national and international institutions to implement joint projects. The faculty hosts two Chairs in collaboration with international organizations: UNESCO Chair on “Women and their Rights” and WTO Chair.

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Foreword

Understanding the commodity markets development and dynamics is of first-order importance for the global economy, since they seem to impact the determination of a significant portion of incomes and welfare of both commodity-consuming and commodity-producing nations. Indeed, for many economies, especially developing countries, commodities remain an important source of export earnings, and commodity price volatility has a major impact on their overall macroeconomic performance. Consequently, the relevance of studying how we can improve and expand our knowledge of commodity markets (of crucial importance for both economists and decision makers) has spurred the publication of a vast range of literature, using a large variety of quantitative approaches. Those approaches have employed a broad spectrum of methodologies, from structural to non-structural models.

The application of structural models (supply-demand model) to commodity markets has been parallel to the development of the first econometric models, notably with the “Cowles Commission” works. These models are soundly based in microeconomic theory, and include a variety of modeling tools such as optimization and linear programming. The usefulness of these models lies in the fact that they can trace the interaction between endogenous market variables such as supply and demand and exogenous variables such as industrial production, they can explain market behavior and performance. Non-structural modeling used in the recent analysis of commodity markets has rather been largely occupied with the explanation of the temporal or time series behavior of prices. Most of this work has dealt with tests and models that have investigated linear and nonlinear price fluctuations based on mean reversion and variance measures. In addition, the fact that the structure of the commodity markets is generally oligopolistic requires the use of industrial and microeconomic modelling tools (such as game theory) that are able to deal with strategic choices of the market players.

Within this framework, an international workshop was held on September 28, 2016, at the OCP Policy Center in Rabat to discuss the wide development and application of commodity markets and industries models. The present Book, which represent a collaboration between The Faculty of Law, Economics and Social Sciences (Souissi) of

Mohammed V University in Rabat, the African Institute of Risk-Management and OCP Policy Center, collects the revised and updated versions of the five papers that were presented at the workshop.

We also wish to thank all the experts who took part in the workshop and contributed to this publication. We are especially grateful to Mr. Abdellah Mouttaqi, Office National des Hydrocarbures et des Mines, Mr. Franck Sebban, I-Fihn Consulting & Institut Africain de Risque Management, France, as well as Prof. Rachid Doukkali, Professor at IAV Hassan II and Senior Non-Resident Fellow at OCP Policy Center, Morocco.

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