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Book Review Contributed by Austin Bell

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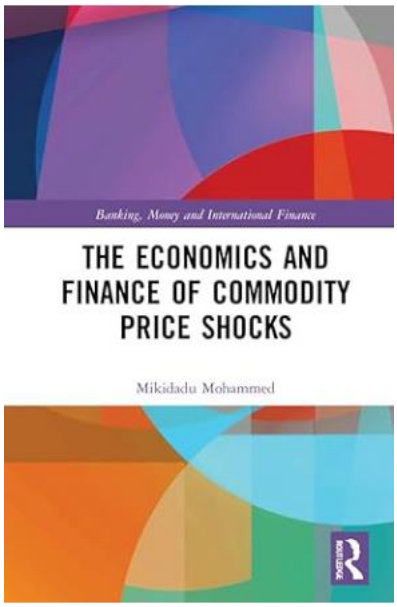

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Commodity price shocks are sudden and unexpected positive or negative changes in the price of a commodity or group of commodities (Mohammed 2021). These events generally challenge small developing economies by adversely impacting their macroeconomic stability and instigating volatile economic growth patterns. Commodity price shocks are especially relevant considering the recent volatility in the soft commodity and petroleum markets. The impact of these events is heavily felt in Barbados and broadly within the Caribbean due to the region's dependence on imports to meet its population's needs. Therefore, enhancing the modelling and forecasting capabilities of regional policymakers is expected to bolster the region's ability to respond effectively to these shocks.

Mikidadu Mohammed's book, "The Economics and Finance of Commodity Price Shocks," is an informative attempt to present an overview of commodity price shocks and their modelling techniques. The author aimed to achieve three primary objectives with this book: to provide readers with modelling techniques that enable them to assess and evaluate shocks, to evaluate the forecasting capabilities of existing modelling techniques, and to review the broad range of commodity case uses for these techniques. He successfully achieves these goals in a concise and accessible manner despite discussing a relatively complex subject area.

Mohammed commences by providing some background on the evolution of global commodity price shocks. He demonstrates how these shocks have typically occurred during periods of economic openness and global trade. Therefore, it is no surprise that the modern global economy, defined by its interdependence and heavy international trade, has seen an increase in the occurrence and intensity of these shocks. Consequently, the increased regularity of these shocks threatens to impede the growth of commodity-dependent nations. The author utilises this issue as motivation for the development of this book.

The book discusses the various key theories related to commodity price shocks. It presents the evolution of short-term commodity price analytical frameworks and introduces three empirical frameworks to discuss and analyse commodity price shocks. The analytical frameworks presented consider various shock factors, including supply shocks, speculative shocks (speculators and storage), demand shocks, weather shocks, and exchange rate shocks, among others. Additionally, it demonstrates that the effects associated with these shocks vary based on the commodity being assessed.

The analytical framework discussion surrounds the intertemporal commodity price framework, the Gustafson–Muth framework, and the Deaton–Laroque framework. The intertemporal commodity price framework focuses on supply as well as demand, both assessed over time as the drivers of commodity shocks. It utilises consumption and production trends to evaluate and predict the volatility of commodity prices whilst assuming myopic supply and demand behaviour.

The Gustafson–Muth framework deviates from the myopic assumption of supply and demand and suggests that stock-holding firms are risk-neutral and seek to make profits. The Deaton–Laroque framework builds on the Gustafson–Muth framework by introducing a competitive speculator who holds commodities in search of profit-making opportunities in future periods. These speculators utilise a combination of interest rates, storage costs, and the market's expectations of future prices to determine their willingness to hold goods for future periods.

Building on the theories of commodity price shocks, the author presents three empirical models employed in the estimation and analysis of commodity price shocks. The first of these models, the Deaton–Laroque generalised methods of moments (GMM), is contrasted against the second, the Cashin–McDermott–Scott framework. The Deaton-Laroque GMM stems from a seminal paper by the method's namesakes in which the authors analyse 13 commodities and employ the aforementioned technique to demonstrate that the rational expectations competitive storage model has the explanatory capability for volatility and skewness in commodity prices (Deaton and Laroque 1992). The main takeaway from the study is that commodity prices are typified by short booms, usually instigated by low inventory, followed by sharp busts, surrounded by extended periods of inactivity.

In contrast, the Cashin–McDermott–Scott framework utilises the commodity price cycle-dating algorithm, which was used in their 2002 paper to analyse the price cycles of 36 commodity prices to identify and assess booms and slumps (Cashin and McDermott 2001). The author also presents a series of intriguing studies that utilise and expand on these models to conduct more in-depth evaluations of commodity prices.

The third empirical model, the structural vector autoregressive (SVAR) modelling approach, is discussed in detail. The author places particular emphasis on this model as it forms part of the two-step SVAR-ARDL estimation technique in the later part of the book. The SVAR approach allows users to analyse multiple commodity price shocks within a single framework and understand their interrelated effects on each other (Mohammed 2021). The reader is provided with a step-by-step explanation of how the SVAR model is applied in the assessment of commodity prices, its practical applications, and the ideal model specifications based on the user's intended purpose. Additionally,

an extensive review of the primary identification techniques employed in SVAR modelling is provided to the reader.

In addition to a range of techniques for estimating commodity price shocks, Mohammed introduces additional methods for gauging the impacts of these shocks. He presents autoregressive distributed lag models (ARDL)[1] or panel autoregressive distributed lag models (panel ARDL) as innovative alternatives to the macroeconomic staple that is ordinary least squares (OLS). The author proposes the utilisation of the ARDL modelling approach in collaboration with the vector autoregressive (VAR) modelling approach to analyse the macroeconomic effects of price shocks. His two-step approach involves utilising SVARs to identify underlying shocks and then employing ARDLs to examine the effects of these shocks. The author applies this method along with alternative macroeconomic regression procedures in the analysis of real-world scenarios. The focus of these cases is primarily on larger nations. However, some of this analysis can be replicated in the region, data permitting. Additionally, due to the influence that these larger economies have on commodity prices in small island states like those in the Caribbean, regional economists can gain valuable insights into identifying and assessing the drivers of these shocks. This facilitates the development of better forecasts and allows for more proactive responses from policymakers and state-owned entities in the region.

The final significant set of economic tools provided by Mohammed relates to the major approaches to forecasting commodity prices and an analysis of recently developed forecasting techniques. The book presents five forecasting approaches: the efficient market hypothesis, the smooth growth approach, the autoregressive moving average (ARMA) and VAR models, large-scale econometric models, and the author's autoregressive real economic activity forecasting model (AR4-REA). The efficient market approach uses the efficient market hypothesis as its foundation. This modelling approach typically uses futures prices or current spot prices as a benchmark to forecast commodity prices since these prices should reflect all publicly available information. This technique essentially views commodity prices as a random walk and proceeds with this assumption in the forecasting of future prices. The following approach, the smooth growth approach, is based on the Hotelling scarcity rent theory, where individuals weigh the trade-off between using a scarce resource today or in the future. The smooth growth forecasting model generally predicts that prices will grow steadily over time, and therefore, it may not be ideal for predicting shocks.

The ARMA and VAR models, both widely used in forecasting, are presented together and contrasted against each other. The ARMA model utilises historical time series data to make predictions and is

[1] ARDL is a regression estimation technique for time series data that utilises lagged values of the dependent and explanatory variables to demonstrate their effect over time.

typically used for predicting agricultural and energy commodity prices (Mohammed 2021). The author accentuates its predictive accuracy but points out its inability to broadly account for a range of factors, which is possible with VAR models. Additionally, an analysis of the accuracy of several major large-scale econometric models is presented to readers, along with newer developments and techniques in the area. This allows the author to expound on the models he found most accurate and the specific circumstances in which they are best suited.

The author completes this section by presenting his novel forecasting technique, the AR4-REA model. The model is a simple AR4-REA augmented model that utilises one quarter ahead forecast. It forecasts real commodity prices by accounting for changes in global economic activity. The authors utilise Killian's real economic activity (REA) index as a proxy for commodity demand associated with unexpected fluctuations in global real economic activity. The technique is driven by the observed impact of global economic activity on commodity prices. He indicates that commodity prices tend to follow the busts and booms of the global business cycle. Hence, he attempts to account for this factor.

Mohammed details his forecasting process throughout the course of this chapter. He begins by estimating the model's coefficients utilising the full set of observations and then estimating the static forecast with a series of one-step-ahead forecasts. The technique then requires the entire time series to estimate the first forecast period and then utilises the preceding period to forecast the subsequent periods.

The author assesses the model by comparing his technique's performance to a benchmark AR4 model regressed against futures prices. The comparison demonstrates his model's accuracy as it outperformed the benchmark's price forecast for tantalum, sugar, and the Euro-dollar whilst underperforming its gold and oil forecast. Despite this, the author makes it clear that these models are fallible and lack a perfect record of accuracy. However, it is only by acknowledging and addressing these limitations that the accuracy of these models improves.

This book delves into a subject that has not received extensive attention from many authors and provides readers with a valuable introduction to, or revision of, the fundamental concepts associated with commodity price shocks and commodity prices. Nevertheless, the book would benefit from a more thorough explanation of the theoretical models and their evolution within its context. The explanations provided fall short of fully explaining the models' development and the significance of their evolution as explanatory tools. In the author's quest for brevity, he fails to paint a complete picture of admittedly complex concepts. Despite this, he does an admirable job of providing users with a gateway to facilitate a deeper understanding of the topic area. The introduction of key

concepts and seminal studies empowers readers to embark on further research and attain a more profound understanding beyond the book's presented concepts. Additionally, the detailed step-by-step guide of the technical concepts within the book will likely prove beneficial to readers due to the general complexity of these concepts. In addition, the practical applications provided will benefit economists analysing and forecasting commodity price trends in trade-dependent regions like the Caribbean.

Cumulatively, these factors suggest that this book is better suited to a more experienced economist seeking an introduction to a new commodity price modelling technique or a review of existing analytical or theoretical frameworks. However, it should also be noted that the concepts discussed in this book will likely prove beneficial to more junior economists with an econometric background or those seeking an introduction to commodity price analysis and forecasting.

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