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AN ANALYTICAL APPROACH FOR VALUING COMMODITY PRICE FORECASTS

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Considerable effort has been expended in developing commodity price models and assessing their accuracy. Less has been said on whether such models and the associated price forecasts provide any value to profit-seeking agents. As some analysts have argued, consumers purchase price forecasts for the potential profit they may garner from using them, not for their accuracy. Methodologies to value price forecasts are therefore of interest to both producers and consumers of the information.

This paper seeks to add to the forecast valuation literature by deriving a decision-analytic model to value commodity price forecasts in the presence of a futures market. This specific question has been addressed previously in Adam et al. (1996). There, a complex simulation framework is used to value forecast improvements under different price distributions. The emphasis is placed on estimating the *relative* value of mean and variance forecasts. The approach taken in this paper proposes an alternate decision-analytic framework. The proposed methodology posits a profit-seeking physical producer who compares a futures hedge against a spot market transaction for the sale of future production. A price forecast of the future spot price is available at the time of the decision. The price forecast predicts whether the future spot price will be greater or less than the futures price currently offered for the future transaction date, and the decision-maker uses this information to estimate expected profits for each option.

This approach offers significant insight as to why certain forecasts are better than others, and it is analytically rich in terms of explaining how each of the decision variables affects forecast value. At a practical level for forecasters, it focuses attention on key forecast quality metrics and can guide investment in new forecasting technology. The method is applied to a data set and used to value a simple price forecasting model for crude oil. The paper proceeds as follows. Section 2 develops the price forecast valuation methodology. Section 3 provides an analytical discussion and evaluates a set of stylized data and a set of real data on the crude oil market, and Section 4 concludes.

The research effort described in this paper is Part One of a three part effort. Part Two will derive and assess the value of forecasts to a futures market speculator. Part Three will examine the role of risk preferences in forecast valuation for both the physical producer and speculator.