New models of commodity prices help to manage risk

Commodities include a wide range of goods that are bought and sold on international exchanges. There are several different categories of commodities and we can loosely arrange them into three groups. Energy supplies such as oil, electricity, and gas. Metals like steel, aluminium, gold, silver, and ores and the third group includes agricultural products like coffee, cacao, hogs, wheat, potatoes and fertilizers. The markets for commodities have a variety of peculiar features which distinguish them from markets in financial assets. Their prices fluctuate over the course of time in different ways from stocks and shares and although they are partly driven by speculation about future prices, they are also affected by changes in fundamental conditions of supply and demand. For example, the case of oil where US shale gas and oil have sent world prices plummeting. The growth in world demand for coffee – the “Starbucks phenomenon” has driven up prices and caused producing countries to expand supply, raise incomes, and has induced technical progress in emerging economies.

Commodities trading differs from trading in financial assets because commodities are physical goods. Transport and storage are typically costly and some commodities, such as electricity are almost impossible to store. Livestock present particularly complex issues. Because of these peculiar features, the study of commodities markets has developed as a specialised field.

Producers face risks of prices falling over the production period and the size of their harvest is also liable to variations due to circumstances such as adverse weather conditions or an outbreak of disease. Forward markets (for example, coffee for delivery in twelve months is traded now at a known price – the forward price) in commodities are a long-established method of giving some protection to producers and users against price fluctuations. In recent years more elaborate contracts for managing risks have been developed, including options, insurance contracts, and other derivatives based on commodity prices.
Professor Geman, Birkbeck College has researched the whole spectrum of commodities, from crude oil and electricity to metals and agriculturals. Two key impacts of her work have been illustrated through the following improvements:

Professor Geman’s discoveries are used to determine the appropriate weights placed on different commodities in the UBS-Bloomberg commodities price index, making it a more reliable source of information for banks and other financial firms who deal with commodities traders. For example, in past decades, lending officers in banks making loans to commodities traders may have relied on very limited information about the risks associated with such loans and had to assemble many disparate statistics. The value of the index is that it now provides the lending officer with a convenient, readily available summary of the state of commodities markets as a whole. The lender can reduce the risk of approving loans to commodities markets by buying or selling derivatives based on the value of the index.

Professor Geman’s results are used to construct leading indicators of volatility spikes in agricultural prices for developing countries, published by the European Commission. They enable market participants to anticipate future changes in the riskiness of their business and take actions to mitigate them. The level and volatility of agricultural commodity prices can create enormous problems for governments of developing countries. For example, a fall in coffee prices hits growers of coffee directly by reducing their incomes. Coffee exporting countries are hit by balance of payments deficits, as the value of coffee exports falls, and consequent currency fluctuations affect the value of external debts and
cost of servicing them. It may undermine the stability of banks and other local financial institutions. Tax revenues are likely to be reduced, adding to public debt problems.

In summary, the commodities market has traditionally been volatile and difficult to manage. The robust growth of emerging market economies such as Brazil, Russia, India, and China in the 1990s, "propelled commodity markets into a supercycle". The size and diversity of commodity markets expanded internationally. In 2012, as emerging-market economies slowed down, commodity prices declined. However, energy and metals' real prices remained well above their long-term averages. The ability to manage and contain risk in these markets remains an important priority and is essential to the continued growth of commodities trading.

Reference:

Title: Agricultural Finance: From Crops to Land, Water and Infrastructure