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Commodity Prices, Financial Markets, and Development – Effects of the Financialisation of Commodity Markets and Necessary Policy Reforms[i]

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Given the far-reaching implications of commodity prices for developing countries an understanding of the factors behind recent commodity price developments is crucial. ÖFSE research shows that besides structural changes in fundamental supply and demand conditions, the increasing presence of financial investors on commodity derivative markets has impacted on price dynamics and the microstructure of these markets. This questions to what extent these markets still fulfill their fundamental roles, i.e. price discovery and price risk management, in particular for smaller commercial traders. Policy reforms are required to reduce excessive speculation and ensure the fundamental roles of commodity derivative markets.

The current commodity price boom in combination with high price volatility is historically unprecedented even in the volatile price history of commodities. After nearly three decades of low commodity prices, many commodities have experienced a price boom since the early-2000s reaching peaks in mid-2008, mid-2011 and the second half of 2012. The consequences of these developments were dramatic. As many developing countries import basic commodities such as food and fuel, prices have direct effects on food and energy security, poverty and economic development and stability. Many developing countries are also dependent on the export of a few commodities. They benefit from rising revenues when commodity prices are high, but they are also affected by increased price volatility, which leads to major difficulties in managing their economies.

The questions which factors caused these commodity price developments and which measures can be taken to prevent similar price surges and volatilities in the future have become central in international and domestic policy debates. There are several factors influencing commodity prices, including fundamental supply and demand factors and macroeconomic developments. However, in the last years fundamentals did not seem to explain the severity of price movements, particularly after 2007. Hence, more attention has been given to the role of financial investors such as banks, institutional investors and hedge funds that have increased in importance on commodity derivate markets, a phenomenon which has been labeled as the financialisation of commodity markets. Their potential impact on commodity prices and the question of necessary regulations of commodity derivative markets have been controversially debated.

Major changes in commodity markets

Commodity prices are determined by *fundamental supply and demand conditions* and by macroeconomic developments which have experienced important structural changes in the last decade. The factors most widely cited are: (i) the rapid growth in demand for commodities from emerging countries, (ii) alternative uses of agriculture commodities for energy production (biofuels), (iii) a reduction in supply due to supply constraints and low productivity related to low investments in the previous two decades, (iv) weather-related supply shocks also due to climate change, (v) low interest rates and the depreciating US Dollar.

Simultaneously to these fundamental and macroeconomic developments, trading activities on *commodity derivative markets* have undergone major changes related to the increasing presence of financial investors. Commodities are traded on commodity spot markets where physical commodities are traded by actual producers and consumers and on derivative markets where derivative contracts are traded that give holders the right („options") or the obligation („futures") to trade a physical commodity in the future at a given price. Commodity derivatives can be traded on regulated exchanges (also called futures markets) or bilaterally and unregulated over the counter (OTC). Usually, traders on derivative markets do not physically receive commodities as contracts are either written this way (cash settled contracts) or contracts are cancelled out by purchasing the opposite contract close to expiry date. The profit or loss of the traders arises from the price difference when the contract is made and the market price when the derivatives are due. Although there exist around fifty major commodity exchanges, trading is concentrated in the US (particularly Chicago and New York) and Europe (particularly London). Besides these markets, particularly China and India have gained in importance in recent years with their emergence as significant commodity consumers and producers (Staritz 2012).

Commodity futures markets provide two important functions for physical commodity traders: First, the price discovery function as trading on futures markets enables the open-market discovery of commodity prices. Spot markets

of commodities are often geographically dispersed because commodities are bulky and costly to transport and the prices in these markets can vary substantially. Centralized futures markets are accepted as the best indicator for overall supply and demand conditions across spot markets and are generally used as a benchmark in contracts between physical traders. Second, commodity futures markets offer an insurance function as those markets enable spot market participants to hedge against the risk of price fluctuations. In the 1950s and 1960s instruments such as buffer stocks and export quota in the context of International Commodity Agreements (ICAs) and national commodity boards had prominent roles in dealing with commodity price risks. These institutions were largely dismantled in the 1980s and 1990s and commodity derivative markets have become a main mechanism to manage these risks (Nissanke 2011).

Traditional actors on commodity derivative markets are commercial traders, i.e. producers, consumers and traders of physical commodities that use these markets for price discovery and hedging, and non-commercial traders, referred to as speculators. Non-commercials do not have an underlying physical commodity position but take over the price exposure from hedgers and hope to profit from changes in futures prices. These speculators provide an essential function as they accept price risks in exchange for providing liquidity by actively trading in futures. Until recently, speculators on commodity future markets were dominated by experts of physical markets whose activities were closely linked to the fundamental supply and demand dynamics in the underlying physical markets (Masters/White 2008).

In the context of deregulation of commodity derivate trading and the search for new investment opportunities after the dot-com crisis in 2000/01 and the global financial crisis in 2008/09, a third category of actors – *financial investors* – has become important on commodity future markets. This category comprises in particular banks, institutional investors and hedge funds that invest into commodities as an asset class – similar to stocks, bonds and real estate assets (UNCTAD 2011). The trading volumes on commodity futures exchanges and OTC markets, notably from financial investors have substantially increased and a range of new commodity investment products, in particular commodity index funds and exchange traded funds (ETFs), have been developed to facilitate investment in commodities. Funds from financial investors in commodity futures markets have increased from US$13 billion in 2003 to US$430 billion in early 2013 (Barclays Capital 2013). The average share of total open positions held by non-commercial traders in the 18 most important commodity futures markets increased from 23% in 1998 to 69% in 2008 (Masters/White 2008).

The US Commodity Traders Futures Commission (CFTC) classifies traders in five categories: commercial traders, swap dealers, money managers, other reportables and non-reportables. Financial investors are typically subdivided in swap dealers (which to a large part represent index investors in agriculture markets) and money managers. Swap dealers/index investors are mostly institutional investors such as pension funds, sovereign wealth funds, public and private foundations and life insurance companies that pursue a longer-term and passive investment strategy, using commodity indices or ETFs. They bet on increasing prices, investing in long futures contracts of a range of commodities, irrespective of specific commodity market conditions. They may push commodity prices up given their large price-insensitive involvement on one side of the market. Money managers, such as hedge funds, commodity trading advisors (CTAs), proprietary trading desks of banks or investment firms, and institutional investors, pursue shorter-term, more active and both long and short trading strategies betting on increasing and declining prices. Even though a range of traditional CTAs also employ fundamentally based or mixed trading strategies, money managers' strategies are largely based on computerized technical trading that try to exploit price trends rather than fundamental-related information. The class of money managers also includes high frequency traders (HFT) which establish and liquidate positions very quickly, typically within nanoseconds. These trading strategies might accelerate commodity price swings and volatility.

Results from recent ÖFSE research

In the context of the research project „Financial Markets and the Commodity Price Boom", ÖFSE conducted research on the question whether and to which extent financial investors and the financialisation of commodity markets have affected commodity prices and have changed the functioning and fundamental roles of commodity derivative markets. The research involved quantitative econometric as well as qualitative interview-based approaches (see Ederer/Heumesser/Staritz 2013 and Heumesser/Staritz 2013). The analysis has been performed for five commodities: coffee, cotton, wheat, crude oil and aluminium. Results of both approaches have generally supported the financialisation hypothesis which states that the increasing role of financial investors in commodity derivative markets has, in addition to fundamental and macroeconomic factors, had effects on commodity prices and market structure. This research also questions to which extent commodity derivative markets still fulfill their economic roles of price discovery and hedging price risks for in particular small commercial traders.

Quantitative analysis

Empirical studies on the effect of financial investors on commodity prices have focused on index investors. They come to different results but the majority cannot confirm a broadly consistent effect of index investors on commodity prices. In our analysis, we assess the effect of financial investors on commodity prices for the period June 2006 to October 2012 within a multivariate vector autoregressive model (VAR) framework. As a variable for financialisation we use net long positions, taking into account that trading strategies can push prices up and down. In contrast to most studies, we take into account the potential effect of financialisation in addition to fundamental and macroeconomic factors (including global commodity production and exports, global industrial demand, the US real exchange and interest rate, a stock market index and the oil price) on commodity prices. Further, we investigate not only the effect of index investors but also that of money managers and their more active and short-term, largely technical and trend following trading strategies. This is particularly important given their increasing prominence in recent years.

Results indicate that there is a significant impact of money managers' net long positions on commodity prices for all commodities (except one type of crude oil) and show that between 10 and 50% of the variation in prices can be explained by net long positions of money managers. However, we cannot confirm an effect of swap dealers'/index investors' positions on commodity prices. Overall, our results suggest that the controversially discussed hypothesis of financialisation of commodity derivatives markets can be supported. In our results, the main channel of influence of financialisation on commodity prices in recent years seems to be the diverse group of money managers, rather than the group of index investors. However the results have to be interpreted with caution, in particular as classes of traders are not homogenous and the relationships between different types of traders are complex so that lead-lag relations between a certain class of traders' net positions and commodity prices may be difficult to discern.

Qualitative analysis

Market microstructure research focuses on the different behavioral patterns of heterogeneous actors with different information, motives and trading strategies and their interactions, as well as the impacts on price formation and market structure. Our analysis builds on semi-structured interviews with different types of market participants and stakeholders[ii] and on a range of non-scientific documents (e.g. financial press and traders' or stakeholders' blog entries). Results show that financial investors have played an increasing and often dominating role in commodity derivative markets since the early 2000s. This has changed the nature and microstructure of these markets. The most important trends can be summarized as (i) strongly increasing trading volumes and open interest positions with an increasing share of financial investors; (ii) largely extended trading hours related to electronic trading and technological improvements, increased speed and complexity; (iii) increasing variety of investment products and strategies with a trend from passive to active strategies; (iv) lack of transparency on and oversimplification of classes of traders and trading strategies given the multiple roles of financial investors and large commercial traders; and (v) intensifying interconnectedness between financial and commodity markets.

The crucial question is how these trends have impacted on commodity price developments, market structure and particularly on commercial traders that use these markets for price discovery and hedging. First, it has to be stated that the classification of traders and interactions among traders with different motives are complex given their multiple and interrelated role. On the one hand, financial investors, particularly investment banks and hedge funds, have become involved in trading physical commodities. Commercial traders, on the other hand, are very heterogeneous and range from small producers and cooperatives to large multinational commodity companies, trading houses or supermarkets to governments with different trading strategies. Large multilateral commodity companies and trading houses are not only involved in hedging but increasingly also in arbitrage and speculative trading activities, using similar trading systems as investment banks and hedge funds or establishing separate financial services units or hedge funds. Further, there are complex interactions among traders; in particular if certain trader classes and trading strategies dominate, other traders must respond to their behaviour as „leaning against the market" can be expensive.

Concerning price developments, the majority of our interviewees state that long term price trends are largely based on fundamental supply and demand conditions. However, trading strategies of financial investors with little interest in fundamentals are widely believed to increase the likelihood of excessive commodity price fluctuations in the short term. In particular money managers have been pointed out as having a potentially distorting effect on short term price developments. The impact of index investors is assessed more controversially. Also the increasing importance of macro data and financial market information in trading decisions particularly by money managers has been pointed out, supporting an increasing co-movement between financial and commodity markets. Hence, the effectiveness of the price discovery function of commodity derivative markets for storage, production, investment and consumption decisions can at least be questioned in the context of insecurity about the price formation process and to what extent prices are largely determined by fundamental supply and demand conditions particularly in the short term.

The interview results indicate that commercial traders typically take into account the presence and strategies of financial investors in their own trading behavior. They adapt their strategies to what index investors and money managers are doing and may postpone their trading if hedge funds are expected to trade or index funds to roll their positions as otherwise they may position themselves „against the market". In this respect trading has become more complex as it requires monitoring the trading strategies of other actors. The impact of financial investors on commercial traders is however quite different for large commodity companies or trading houses from impacts on smaller commercial traders, associations, producers and their brokers. Larger commercial traders interviewed tend not to be too concerned with the increasing presence of financial investors; some traders even stated that they can profit from their trading behaviour, in particular the largely passive and price-insensitive trading behaviour of index investors. For smaller commercial traders that do not have the resources and capacities to interact actively with derivative markets, the situation seems to be very different. For them hedging has always been a difficult instrument, particularly related to access to information, high transaction and financial costs, high technical barriers and limited access to finance. The recent changes in the functioning of derivative markets seem to have increased the complexity, costs and risks of hedging. Smaller commercial traders interviewed have particularly complained about the increasing short terminism of trading and the related short term volatility of commodity prices which increases financial requirements and risks.

Which policies are needed?

Overall, our results indicate that the financialisation of commodity derivative markets gives reason to question the fun-

damental functions of commodity derivative markets. In light of this, policy reforms are justified to limit the dominance of financial investors in commodity derivative (and physical) markets and hence reduce excessive speculation and ensure that commodity derivate markets fulfill their fundamental roles. Important regulatory initiatives concerning commodity derivative markets have been under way at the G20 level, in the US in the context of the Dodd Frank Act and in the EU where reforms are currently debated in particular in the context of the revision of the Markets in Financial Instruments Directive (MiFID). The focus of these reforms has been on improving transparency, regulating OTC trade, installing position limits and strengthening regulatory authorities and international cooperation. However, these regulations have limitations, in particular in the form of important exemptions concerning position limits where the coverage of OTC trade is not ensured and commercial traders that are exempted from many requirements, which is particularly problematic given the increasingly difficult distinction between genuine hedging and speculative activities (see Staritz/Küblböck 2013).

Regulations that would more substantially reduce the dominance of financial investors and ensure the dominance of fundamentally based trading strategies have only marginally been addressed. They would include price stabilization instruments such as a multi-tier financial transaction tax (FTT) to stabilize prices in phases of high volatility and discriminate against very short term trading strategies[iii] and restrictions on certain trading strategies such as index-replication, technical trading and HFT in the form of stricter position limits. Further, position limits for individual and groups of traders for all commodity derivative transactions with exemptions only for genuine hedging activities of commercial traders, taking into account the multiple roles of large commercial traders and financial investors would be required. Prerequisites for effective regulation is a pro-active, flexible and dynamic approach that reflects on the risks of failure and adapts regulations if necessary given the changing dynamics and complexities of markets, as well as sufficient resources for regulatory and supervisory authorities.

Besides regulations on commodity derivative markets, also broader regulations of financial markets and bank supervision would be necessary. Reforms beyond financial markets to stabilize commodity prices and reduce vulnerability would include strategic stocks of physical inventories, global and national counter-cyclical financing facilities, and broader agricultural and industrial development strategies (Nissanke 2011). As for particularly smaller commercial traders in developing countries commodity derivative markets tend to be a less effective way to cope with commodity price risks, other arrangements to cope with commodity price instability would be needed. They could include local grain banks, warehouse receipt systems, insurance systems, or the reintroduction of marketing boards.

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ii We interviewed 15 commercial traders, 10 financial investors, 3 brokers, 3 representatives of commodity exchanges, 16 commodity market and 2 financial market experts in London, New York, Washington, Vienna and over telephone between October 2012 and March 2013.

iii A FTT could be adaptable to different market conditions. Under normal tranquil conditions the tax rate would be very small (around 0.001 to 0.1 %), but if market volatility becomes excessive a much higher tax rate of 50 to 80 % would automatically kick in acting as a circuit breaker (Nissanke 2011).

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