



**Commodity Derivatives:
Financialization and Regulatory Reform**

Peter Gibbon

DIIS Working Paper 2013:12

PETER GIBBON

PhD, Senior Researcher, DIIS

DIIS Working Papers make available DIIS researchers' and DIIS project partners' work in progress towards proper publishing. They may include important documentation which is not necessarily published elsewhere. DIIS Working Papers are published under the responsibility of the author alone. DIIS Working Papers should not be quoted without the express permission of the author.

This paper has been produced as part of a wider DIIS research programme on the Political Economy of Financial Regulation, directed by Jakob Vestergaard.

DIIS WORKING PAPER 2013:12

© The author and DIIS, Copenhagen 2013
Danish Institute for International Studies, DIIS
Østbanegade 117, DK-2100, Copenhagen, Denmark
Ph: +45 32 69 87 87
Fax: +45 32 69 87 00
E-mail: diis@diis.dk
Web: www.diis.dk

Cover Design: Carsten Schiøler
Layout: Allan Lind Jørgensen
Printed in Denmark by Vesterkopi AS

ISBN: 978-87-7605-603-2 (print)
ISBN: 978-87-7605-604-9 (pdf)

Price: DKK 25.00 (VAT included)
DIIS publications can be downloaded
free of charge from www.diis.dk

CONTENTS

| | |
|-------------------------------------------------------------------------|----|
| Abstract | 4 |
| Introduction | 5 |
| Main instruments and characteristics | 5 |
| The financialization of commodity derivatives | 8 |
| Financialization and commodity price inflation | 9 |
| Financialization and inter-asset class correlations | 12 |
| Post-financial crisis regulatory initiatives | 13 |
| Introduction | 13 |
| US regulation prior to 2008 | 13 |
| US regulation in the wake of the financial crisis | 15 |
| Challenges to US regulation | 16 |
| EU regulation | 17 |
| Assessing the post-financial crisis regulation of commodity derivatives | 19 |
| De-financialization, or new forms of financialization? | 20 |
| The changing regulatory horizon | 21 |
| Conclusion | 23 |
| Appendix. Method for calculating shares of open interest in figures 2-7 | 24 |
| References | 28 |

ABSTRACT

Commodity derivatives have been traded for well over a century, often stimulating calls for stricter regulation during periods of major commodity price inflation or deflation. The 2000s, when a sharp rise in commodity prices coincided with a spectacular rise in participation in derivatives markets by financial investors or speculators, were no exception. The coincidence of these events with the crash of 2008 led to the inclusion of commodity derivative regulation within the broader framework of new US and EU financial sector regulation. The paper reviews this sequence of events and their interconnections as well as the reforms themselves. Subsequently, it follows the trajectories both of derivative market financialization and regulatory reform up to mid-2013, showing a post-crash stabilization of market involvement by financial interests and the emergence of certain new regulatory directions.

INTRODUCTION

Commodity futures were created around 150 years ago as instruments for agricultural producers, traders and end-users to offset the risk of changes in prices in physical markets between the planting and marketing of crops. Since this time the number and range of commodity derivatives has increased dramatically, as have their linkages with other financial markets, instruments and actors. At regular intervals, when major upward or downward changes occurred in prices in physical markets, civil society groups and politicians have shone the regulatory spotlight on the world of derivatives trading (Jacks 2007). At such times the manipulation of derivatives prices and/or ‘excessive’ speculative trading in derivatives by actors from outside actual production and trading spheres have been held to cause movements in physical prices in excess of or unrelated to changes in underlying physical supply and demand.

Such claims arose again after 2005 when agricultural and metal commodity prices began a run-up peaking in 2008-09¹ in the context of the financial crisis, one of whose triggers was developments in derivatives markets and the latter’s by now systemic links with the wider financial system. On this occasion, demands for the greater regulation of commodity derivatives trading proved more insistent than at any time since the 1930s, due particularly to their adoption by influential inter-governmental forums such as the G20. This is reflected in the incorporation of commodity derivative market reform in the Dodd Frank financial

¹ The IMF Commodity Price Index more than quadrupled between early 2002 and mid-2008. Over the same period the UNCTAD Non-fuel Commodity Index tripled in nominal terms and increased by around 50 percent in real terms.

market reform legislation in the US, as well as in the two major pieces of post-crisis EU financial market reform, the European Market Infrastructure Regulation (EMIR) and the Markets in Financial Instruments Directive (MiFID II).

After providing a brief introduction to the main types of commodity derivative, this survey turns to the special feature of the most recent questioning of the functioning of commodity derivative markets, namely their apparently increasing domination by financial sector firms, their strategies and the effects of these strategies (‘financialization’). It then summarizes and assesses the new generation of emerging regulation aimed at mitigating these impacts before reviewing the evidence for the possibility, raised by some commentators, that a spontaneous ‘de-financialization’ of commodity derivatives markets may be underway independently of regulatory initiatives. Finally it briefly considers some new regulatory directions emerging in 2013.

MAIN INSTRUMENTS AND CHARACTERISTICS

Commodity derivatives markets are probably best introduced by describing their main instruments, in particular their more mainstream instruments, of which there are three: *futures*, *options* and *swaps*.

Commodity futures are contracts to buy/sell a given volume and grade of a given commodity at a given price on a given future delivery date. That is, they are a type of forward contract. Their special features are that (i) the volumes, grades and delivery dates and delivery places of the commodity in question are standardized and (ii) that

the contract itself is designed to be traded on an exchange. That is, there is no necessity either for the buyer/seller to devise a unique contract themselves or for the contract to be closed out by physical delivery, as opposed to being exchanged prior to the delivery date for another contract or contracts (against a cash adjustment). On US exchanges there are currently 28 active contracts being traded for different commodities. For grains these date from the second half of the nineteenth century; contracts for other commodities have been added over time. A critical characteristic of commodity futures is that their price, or more specifically their price on a given day of the contract for the nearest delivery month, is normally the reference price quoted in the physical market.

It is important to note that, although futures markets originated with commodity futures, these now represent only a minority of all exchange-traded futures contracts – around 14% globally in 2012 according to the international industry organization (Table 1). More than half of all futures contracts globally are for equities (either individual equities or equity indexes). The latter are instances of *financial futures*, which only date from the 1970s. They have a similar standardized form as commodity derivatives but apply to given financial variables; beside equities/equity indexes, the most common are specific interest rates and exchange rates.²

The most important variant of the standardized exchange-traded futures contract is the *Option*, again with an ‘underlying’ commodity or financial variable. Options were

introduced in the late 1970s.³ They allow the purchaser/seller to accept OR decline settlement by exercising a ‘call option’ (for purchasers) or ‘put option’ (for sellers) at an agreed price at any time up to an agreed date. Because of the flexibility they confer, purchases of such contracts command a premium over futures contracts. The number of option contracts traded on exchanges globally has for some time outnumbered the number of futures contracts traded.

Futures and options are traded mostly by Futures Commission Merchants (FCMs) on behalf of clients. According to the latest data available for US exchanges, the leading five FCMs accounted jointly for 52.4 percent of total funds deployed in these markets in 2011. These five were Newedge USA LLC, Goldman Sachs, Deutsche Bank Securities Inc., JP Morgan Securities LLC and Citigroup Global Markets Inc. (FIA 2012).

Globally there were around 50 exchanges trading futures and options in 2001; today there are around 84, although 50-60 percent of all futures and options globally are still traded on US or European exchanges. Table 1 describes the development of futures and options markets globally over this period.

Swaps are tailored and off-exchange (or ‘over the counter’ [OTC]) bilateral agreements between two financial entities (of which one is almost invariably a bank)⁴ to exchange two variables such as cash flows from a floating interest rate for cash flows from a fixed one; or returns from a given volume of futures contracts weighted to match the composition of a

² Easily the most traded financial future in the US and EU is the Three Month Eurodollar exchange rate contract.

³ Commodity options were specifically outlawed for a long period because they were thought to be particularly subject to fraud.

⁴ According to Suppan (2011) four US banks were counterparties to 96 percent of all US OTC swaps as of December 31, 2009. The EU market was slightly less concentrated although still dominated by five players.

commodity index (see below) in exchange for returns from a given volume of US Treasury Bonds over a specific period. In this case the swap seller (who is *de facto* short his 'own' rate/index) charges a fee and will hedge the swap by another swap or by going long at a futures exchange. The OTC swap trade also dates from 1970s. Besides their non-standardized character and their being traded off-exchange, swaps also differ from futures contracts by applying typically to larger unit volumes, being subject to less frequent re-sale and typically having longer maturities than the few months covered by most futures contracts.⁵

Commodity swaps represent a much smaller proportion of swaps than do commodity futures and options of all futures and options. Table 2 describes this tendency, as well as providing a breakdown of commodity swaps by type of instrument, using data from the Bank of International Settlements (BIS). Unfortunately BIS data do not

break out separate data for commodity index swaps.

The notional value⁶ of all trade in swaps exceeds by several times the notional value of all futures and options contracts. Moreover, the difference between these values increased greatly in the 2000s (from a multiple of 3-4 to one of 6 or more). Together with its lack of regulation and the fulcrum role played in it by banks, this gives the OTC swap market systemic importance within the financial system, as well as being perceived as inherently more risky. For these reasons, apparently confirmed by the systemic impacts of AIG's swaps-related collapse in 2008, the swaps market has been more at the centre of regulatory reform since 2008 than those for futures and options.

Other instruments are mostly hybrids of the above (e.g., 'swaptions'), or between one of the above and other types of financial instrument (e.g., equities or bonds).

Table 1. Exchange-traded commodity futures and options volume, 2001-12 (million contracts)

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|-------------------------------------------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| <i>N reporting exchanges</i> | n/a | n/a | n/a | n/a | n/a | 54 | 54 | 69 | 70 | 78 | 81 | 84 |
| A <i>Agriculture</i> | 156 | 199 | 261 | 302 | n/a | 489 | 646 | 889 | 928 | 1306 | 991 | 1271 |
| B <i>Energy</i> | 167 | 209 | 218 | 243 | n/a | 386 | 496 | 580 | 655 | 724 | 814 | 906 |
| C <i>Non-precious Metals</i> | 70 | 72 | 90 | 105 | n/a | 116 | 151 | 176 | 462 | 644 | 435 | 554 |
| D <i>Precious Metals</i> | 39 | 51 | 64 | 61 | n/a | 102 | 105 | 151 | 157 | 175 | 341 | 319 |
| E <i>All futures and options</i> | 4281 | 6217 | 8113 | 8866 | 9973 | 11862 | 15186 | 17700 | 17678 | 22295 | 24972 | 21170 |
| <i>Combined share of A+B+C+D in E (%)</i> | 10.1 | 8.5 | 7.8 | 8.1 | n/a | 9.2 | 9.2 | 10.1 | 12.5 | 12.8 | 10.3 | 14.4 |

Source: www.futuresindustry.org/volume_futures&options.asp, 2012 and archives.

⁵ Futures contracts' are theoretically available for periods of up to 18 months, but contracts for longer than 9-12 months are rare in practice.

⁶ The realizable value from exercising the right to settle the given contract, as opposed to the amount of money deposited to obtain this right.

Table 2. OTC derivative market activity, 2001-12 (notional value in US\$ billions, December 31)

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|----------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| <i>Total commodity contracts</i> | 598 | 923 | 1366 | 1433 | 5434 | 7116 | 8456 | 4364 | 2944 | 2922 | 3091 | 2588 |
| A <i>Gold forwards/swaps/options</i> | 231 | 315 | 304 | 369 | 334 | 640 | 595 | 332 | 423 | | | |
| <i>Precious metals forwards/swaps</i> | | | | | | | | | | 320 | 371 | 358 |
| <i>Precious metals options</i> | | | | | | | | | | 199 | 282 | 285 |
| <i>All other commodities, forwards/swaps</i> | 217 | 402 | 420 | 558 | 1909 | 2813 | 5085 | 2471 | 1675 | 1691 | 1680 | 1300 |
| <i>All other commodities, options</i> | 150 | 206 | 642 | 516 | 3191 | 3663 | 2776 | 1561 | 846 | 712 | 758 | 645 |
| B <i>Total OTC contracts</i> | 111178 | 141679 | 197167 | 251823 | 297670 | 414290 | 595341 | 547983 | 594553 | 601046 | 647777 | 632579 |
| <i>Share of A in B (%)</i> | 0.53 | 0.65 | 0.69 | 0.57 | 1.83 | 1.72 | 1.42 | 0.80 | 0.50 | 0.49 | 0.48 | 0.41 |

Source: Bank of International Settlements, Semi-Annual Reports.

THE FINANCIALIZATION OF COMMODITY DERIVATIVES

In the literature, the phrase ‘the financialization of commodity derivatives’ has been used by commentators to refer variously to one or more of the following:

- (i) Growth in futures market share of market participants that are essentially financial firms, including hedge funds, mutual funds and pension funds. ‘Managed’ commodity assets increased in value from less than US\$10 billion at the end of the 1990s to around US\$450 billion by April 2011 (Bicchetti and Maystre 2012).
- (ii) The emergence and growth of futures market share of new vehicles for speculation, in most cases designed by in-

vestment banks, including Commodity Index Funds,⁷ Exchange Traded Funds and Commodity Collateralized Obligations/Commodity Linked Notes/Exchange Traded Notes.⁸

⁷ Commodity Index Funds emerged with these indexes themselves in the 1980s but were not popular among investors until the 2000s. They passively track published commodity price indexes by buying (directly or ‘synthetically’ via a swap) a portfolio of long futures matching the composition of the given index. The composition of the portfolio is maintained by buying new contracts when existing ones expire. Profit is realized if the price of new contracts is lower than that of expiring ones. The fee structure is ‘uniquely profitable for banks’ (Berg 2011).

⁸ ETFs are traded on stock exchanges (at a fee and usually by banks) and are designed to allow ‘retail’ customers to buy into long positions on exchanges by the share price tracking an index. Some ETFs target individual or groups of commodities rather than indexes. A CCO or CLN is similar to an ETF but takes the form of a bond whose payoff is linked to the price of a single commodity, a commodity future, an index or a basket of futures contracts. An ETN is an exchange-tradable version of these bonds.

- (iii) The emergence of new speculative strategies that are neutral with regard to supply-demand conditions in physical commodity markets, the most notable of these being passive ‘long only’ strategies that continuously renew ‘nearby’⁹ positions across a bundle of contracts whose composition replicates their weighting in a commodity price benchmark, most frequently the Standard & Poors Goldman Sachs Commodity Index (GSCI).
- (iv) Following on from the above, unprecedented levels of futures market volume growth unrelated to changes in the size of physical markets – worldwide, the exchange-based commodity derivative trade increased by over 300 percent between 2001 and 2007, while the OTC trade increased by 1400 percent (Tables 1 and 2, Figures 2-7).
- (v) Expansion of the role of investment banks beyond that of intermediaries in futures markets to direct participants, not only in derivative markets (through own account trading) but also in physical ones.

In each case, financialization is stated to have emerged around 2001-3 and to have significantly accelerated from 2004-5.

Financialization and commodity price inflation

The factual content of these developments has not been disputed by a single commentator. Where disputes have arisen, these concern the impacts of financialization or some aspect of it on

commodity prices, and more specifically whether or to what degree the price spikes and price volatility of 2004-09 can be attributed to them. Claims concerning this issue have been central to policy debates since 2006 over the (re-)regulation of commodity derivative markets. A second area of disagreement, emerging more recently, concerns the impact of financialization on the relationship between commodity prices and the prices of other types of financial asset. This disagreement is of more indirect policy relevance, its main (but so far largely unexplored) implication being for assessment of the resilience of commodity derivative market financialization.

Prior to briefly summarizing the debate on the possible impacts of financialization on prices, it is worth noting that – somewhat unprecedentedly – some prominent professional economists can be found supporting (to different degrees) the ‘financial speculation causes price changes’ thesis. This is perhaps surprising since, at least in mainstream economics, the efficient market hypothesis is virtually an article of faith, and ‘speculation’, where it is acknowledged at all, is typically deemed to play the positive role of increasing market liquidity, thereby allowing more opportunities for hedging and more efficient price discovery.¹⁰

¹⁰ Amongst prominent economists advancing the financialization thesis are Meghnad Desai (2008) and Guillermo Calvo (2008), while remarkably it can also be found in certain publications of inter-governmental organizations that are usually identified with economic orthodoxy, for example in OECD (2008). The thesis has also been advanced by some prominent investors, notably George Soros. Its highest-profile opponent is Paul Krugman, although it should be noted that his more recent counter-arguments (Krugman 2011) attribute oil price inflation to speculation in *physical* markets.

⁹ A nearby contract is one with an expiry date falling in the next month.

Figure 1. The economic literature on financialization and commodity prices

| | | | |
|-----------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Length/type of correlation | <i>Longer-term (2005-12)</i> Henderson et al. 2012, Basak and Pavlova 2013 | <i>Short-term and/or commodity-specific</i> IMF 2006, Gilbert 2010, UNCTAD 2009, 2011, Hamilton and Wu 2009, Stoll and Whalley 2010, Singleton 2013 | <i>Systematically absent</i> Buyuksahin and Harris 2009, Korniotis 2009, Irwin and Sanders 2010, Hamilton and Wu 2012 |
| Correlation only or causal contribution | <i>Correlation only</i> IMF 2006, Hamilton and Wu 2009, Stoll and Whalley 2010 | <i>Causal contribution or ‘amplification’ of existing trends</i> Gilbert 2010, UNCTAD 2009, 2011, Henderson et al. 2012, Basak and Pavlova 2013, Singleton 2013 | |
| Main causal mechanism | | <i>Imperfect information effects</i> Singleton 2013 | <i>‘Weight of money’</i> Gilbert 2010, Henderson et al. 2012, UNCTAD 2009, 2011, Basak and Pavlova (with spillover effects) |

Figure 1 summarizes the debate over financialization and price inflation.¹¹ This discussion was initially dominated by assertions of the orthodox position that no systematic relationship between financialization and accelerated price inflation could be demonstrated and that therefore ‘supply-demand fundamentals’ in the physical market must explain price changes. The principal ‘fundamental’ referred to was rising Asian, especially Chinese, demand. By 2013, however, a growing number of contributions claimed to demonstrate a relationship between financialization and price changes. A majority of these do

not dismiss the supply–demand change argument, but argue that the magnitude of price inflation is not explicable on this basis alone.

Two main causal mechanisms linking financialization to price changes are proposed. The first is that the behaviour of financial investors following, for example, passive long-only strategies affects the behaviour of all market participants, since it is typically misunderstood by non-financial market participants as incorporating important new information about supply and demand. The second, ‘weight of money’ explanation is that position changes that are large relative to the size of a total market, such as those associated with financial interests, will have a temporary or perhaps more persistent price impact if short-term price elasticity for the commodity in question is low and markets can therefore continue to clear at higher prices. Thus, according to Gilbert (2010), the impacts are likely to be greatest in relatively thin mar-

¹¹ Two points of clarification should be noted in reading the Figure. First, the longer-term and non-commodity-specific correlation found in Henderson et al. applies only to single commodity-related Commodity Linked Notes (CLNs). Other commodity derivative instruments developed as part of financialization are either not tested for by the authors or (in the case of CLNs linked to baskets of commodities) are found not to impact on prices. Secondly, the short-term and/or commodity-specific correlations found in IMF 2006, Stoll and Whalley 2010 and Hamilton and Wu 2009 represent exceptions to these authors’ more general findings of non-correlation.

kets. Most proponents of the link between financialization and price changes refer to both these mechanisms, and Figure 1 simply indicates where their main emphasis lies.

Two methodological issues recurrent in the literature should be mentioned. One concerns indicators. A majority of the studies reviewed rely upon public data from the US Commodity Futures Trading Commission (CFTC) reporting the volumes of futures and options contracts accounted for by different categories of trader identified by CFTC. Unfortunately until very recently exchanges and regulatory bodies outside the US have not issued any comparably disaggregated data, and in some cases, such as the London Metal Exchange (LME), issued no data whatever.¹² However, the categorization applied by CFTC from 1962 until the second half of the 2000s identified only two types of trader, ‘commercial’ and ‘non-commercial’. The first type was initially designed to refer only to market participants who were also active in the physical market, but later it came to incorporate all traders who engaged in hedging, whether or not they participated directly in that market.

Following criticism that the commercial/non-commercial distinction had become descriptively and analytically useless, CFTC’s categorization was revised around 2009 to delimit three new or redefined types of trader: first, market participants with positions in the physical market (‘Producers/Merchants/Processors/Users’); secondly, ‘swap dealers’, that is, dealers, almost always banks, taking positions in futures markets to cover swaps

entered into with private clients; and thirdly, ‘managed money’, that is, ‘commodity trading advisors’ or ‘commodity pool operators’, essentially advisors or managers working for different types of funds seeking exposure to commodities.

Around the same time, CFTC began to issue a separate data set on the positions of what it called ‘Index investors’, a category strongly overlapping with that of swap dealer. These new categorizations have been applied retrospectively to data issued by CFTC, but only as far back as mid-2006 (or December 2007 in the case of ‘index investors’). All this means that the positions taken by financialized market participants are difficult to break out unambiguously or consistently over time. The different studies listed in Figure 1 therefore variously measure the impacts of trading by ‘non-commercials’, swap dealers and index investors, meaning that their results are not strictly comparable. Note also that there do not appear to be any studies using the category of ‘managed money’ as an indicator of financialization.

The other methodological issue concerns methods for determining whether a causal relationship exists between prices and changes in the positions of different types of financialized market participant. The commonest estimation method used in the literature is tests for so-called Granger causality, that is, the lagged predictive impact of one concurrent time series on another, where the lagged predictive impact is used as a proxy for causality. Clearly, the interval incorporated in the lag will influence the result of the estimation. Different studies apply lags of different durations, while some commentators have argued that, given the prevalence of so-called high-frequency trading, it is inappropriate to use a lag of any duration longer than a single trading day. As in

¹² As late as 2012 the LME’s then CEO, Martin Abbott, described commitment of traders reporting as ‘rubbish’. A recent *Financial Times* story (October 6, 2013) indicated that LME – now under new ownership – was considering publication of such reports from 2014.

the case of the indicator chosen for financialized market participants, differences in lagging intervals mean that apparently comparable results may simply reflect the methodological choices of their authors.

That said, if any trend in the development of the literature is detectable, it is that contributions rejecting the role of financialization in price formation out of hand have become fewer over time.

Financialization and inter-asset class correlations

The literature identifies two triggers for the wall of money that hit futures and options markets in the 2000s, one general and the other more particular. The general trigger was a broad movement by investors into a range of asset classes hitherto defined as risky, provoked by the easy availability of credit and by low interest rates – that is, the cost of investment in risky assets was lowered, while the incentives for doing so increased. The assets included not only or even primarily commodity derivatives but derivatives of all kinds, for example, those securitizing sub-prime mortgage debt. The particular trigger for investment in commodity derivatives was their identification as a type of investment (or ‘asset class’) to which specific and considerable advantages applied in a 2004 paper by Gorton and Rouwenhorst. The paper was to be widely touted as definitive by financial market gurus.

According to Gorton and Rouwenhorst, the most important advantage of commodity derivative investments was that futures prices were uncorrelated or even negatively correlated with those of equities and bonds. Thus, they offered an ideal means of balancing portfolios. Secondly, the authors claimed that, over the period from 1959 to the beginning of the 2000s, investment in a basket of com-

modity futures offered a return comparable to an investment of a similar size in equities. Thirdly, since commodity price inflation contributed a major share to consumer price inflation more broadly, commodity investment also offered an excellent hedge against inflation. Since the basket of commodity futures used in the authors’ calculations took the form of a weighted index, then arguably the paper also provided an implicit recommendation of index funds as the ideal vehicle for commodity futures investment.

Over the following few years the validity of Gorton and Rouwenhorst’s second and third postulated advantages was widely challenged in the professional investment literature (see, e.g., Erb and Harvey 2005, Kat 2006, Smith 2006 and Butcher 2009). From around 2008 their argument for a secular tendency of non- or negative correlation between commodity prices and the prices of equities and bonds was severely undermined by developments in the real world. Here correlations (with coefficients of >0.4) suddenly emerged between the prices of commodities, equities and a range of other types of asset, thus undermining the argument for commodity derivative portfolio diversification benefits.

A number of economic studies since 2010 have attributed the reversal of asset price correlations to the financialization of commodity derivatives, mostly but not exclusively operationalized in terms of index investment (Silvennoinen and Thorp 2009, Tang and Xiong 2010, Basu and Gavin 2011, Bicchetti and Maystre 2012, Buyuksahin and Robe 2013).¹³ The finding of a link between reversal and financialization was initially opposed by some economists, notably

¹³ Interestingly, Buyuksahin and Robe (2013) resurrect Working’s (1960) concept of ‘excess speculation’ as its measure of financialization, one that for historical reasons is forced to rely on the CFTC category of ‘non-commercial trader’ as a proxy for ‘financial investor’.

Stoll and Whalley 2010, but the more recent literature on this issue is close to unanimous over the existence of such a link.

According to the proponents of this argument, financialization had this effect because it occurred simultaneously across different financial markets and hence facilitated the transmission of systemic shocks between these markets more quickly and directly than in the past (see particularly Silvennoinen and Thorp 2009). A less explicit but potentially rather interesting argument in Tang and Xiong 2010 and Basu and Gavin 2011 is that the historical non- or negative correlation of commodity derivative prices and other prices reflected an absence of cross-correlation of the prices of individual commodities. Index investment, by generating a common pattern of investment across a basket of previously unrelated commodity future markets, led to cross-commodity price correlation, thus prompting a convergence with other asset prices.

It might be thought that these contributions would ignite a far-reaching discussion of market-led de-financialization, but beyond presentation of some data on the relative retreat of index investment after 2008 in the papers referred to, to date this has not been the case. I will return to this topic in a later section.

POST-FINANCIAL CRISIS REGULATORY INITIATIVES

Introduction

Historically, the most important source of the public regulation and monitoring of futures exchanges has been the US government (particularly Democratic Party governments), driven by farmer and consumer interests. Until the financial crisis, futures exchanges

in other jurisdictions, except for some developing countries, were mostly subject only to light forms of self-regulation and little or no public monitoring. Regulation of commodity derivative markets in the EU was of market participants – in terms of capital requirements, organizational requirements and requirements to follow conduct-of-business rules, and even here with wide exemptions – rather than of markets.

US regulation prior to 2008

Public regulation and monitoring in the US dates from 1922 and had two historical objectives: control of market manipulation/fraud, and control of ‘excessive’ price volatility. Pursuit of the first objective has been continuous; pursuit of the second has been episodic. Strongest under Roosevelt and Truman, after 1980 it was reduced. This period coincided with the creation of CFTC as an independent regulatory body favouring a ‘lighter touch’ form of regulation than its predecessor as supervisor, the US Department of Agriculture. CFTC also favoured a noticeably ‘lighter touch’ regulation on commodity derivatives than the US Treasury and Securities and Exchange Commission (SEC) favoured for other financial markets. As in the case of financial sector deregulation generally in the US, the most substantial loosening occurred under the Clinton administration, spearheaded by Larry Summers and embodied in the Commodity Futures Modernization Act of 2000.

The main historical US regulatory instruments applied to control price volatility were position limits, price limits/trade suspension, and margin controls. Position limits are ceilings applied by a regulator or an exchange to the number of contracts that a single participant may hold open. Usually this limit has

been calculated in terms of a given share of deliverable supply, the objective being to restrict the influence on the market of a given participant or group of participants (specifically, speculators). Generally, those participants in the futures market who also traded in the physical market were exempted from position limits since all the positions they took in futures markets were deemed to be for *bona fide* hedging purposes rather than for speculation.

A 'lighter touch' form of position limits is 'position accountability'. An exchange may designate a ceiling for positions but, rather than using it as a hard limit, simply require that market participants hitting it offer an explanation for doing so to the exchange. Providing the explanation is deemed satisfactory by the exchange, no further action is taken. Price limits refer to a ceiling in the change in contract price permitted by an exchange over a given period (usually a day), where hitting the ceiling leads to the suspension of trade for the balance of the period.

'Margin' refers to the deposit that a market participant must make with the exchange to acquire control of a given number of contracts, as well as to the difference between the price of the contract at its time of acquisition and its price at the end of the trading day. The former is known as the 'initial' margin and is a one-off payment. Market participants are then required to settle in cash at the end of each trading day any 'margin call' arising from a negative change in the price of the contracts they possess. Historically 'initial' margins have rarely exceeded around seven percent of the notional value of an acquired position. Margin controls refer to requirements that some (types of) or all participants deposit a larger fraction than this of the notional value of a position on acquisition.

From the 1920s through to the end of the 1970s, the main regulatory instrument applied was position limits. At the same time, all exchanges applied price limits as self-regulatory measures. Margin controls were rarely used.

From the late 1970s to 2008, effective application of position and to a lesser extent price limits was increasingly limited by

- (i) The failure to maintain a definition of 'commercial' traders in terms of traders participating in the physical market, rather than any trader who engaged in hedging (see above), resulting in the exemption of a wide swathe of market participants from position limits. From 1987, regulations designated any position 'taken in pursuit of risk management' as *bona fide* hedging, explicitly including swap trades (from 1991) and the positions taken by some ETFs (from 2006) (see Berkovitz 2009 for details).
- (ii) OTC markets being explicitly deemed by the Commodity Futures Modernization Act to be outside regulatory purview.¹⁴
- (iii) A failure to set Federal position limits for exchange-traded commodity contracts established after 1960. The contracts established before this time were mostly those for grains. After 1960, when a new contract was initiated, the US regulator initially required the exchange that was home to it to set its own position limits for it. However, from 1992, except for pre-1960 contracts, exchanges could choose to use a system of 'position accountability' instead.

¹⁴ In a signed explanation accompanying publication of the Act, Larry Summers and Alan Greenspan wrote that OTC regulation would 'discourage innovation and growth of these markets and damage US leadership...by driving transactions offshore' (Library of Congress 2000).

- (v) Upward adjustment of position accountability thresholds and price limits applied on exchanges.¹⁵

Besides an increasingly prevalent presumption in favour of self-regulation rather than Federal control over markets, there were certain practical arguments for at least some of these changes. Empirical evidence for the effectiveness of position limits in reducing 'excessive' volatility and/or speculation is inconsistent.

As noted, there is much less experience of deploying margin controls, as recently advocated, for example, in Desai's intervention (op. cit.). Here, the main traditional counter-argument has been that such controls are undesirable since they are more likely to test the resources of smaller rather than of larger market participants. A sliding scale of margin, based on the number of contracts purchased in a monthly period, should, however, obviate this objection and furthermore could be used specifically to target high-frequency and index traders following algorithmic and monthly roll strategies respectively. But, as will be seen, it does not appear to have been considered.

US regulation in the wake of the financial crisis

The crisis provoked a seemingly far-reaching re-regulation of the US financial sector through the so-called Dodd Frank Act, signed into law in 2010. Actually Dodd Frank

represents a 'middle ground' position, emanating from the US Treasury Department and the Democratic leadership in Congress, between some genuinely radical proposals circulating in the Democratic Party prior to 2009¹⁶ and the 'industry' view that tightened self-regulation was the best response to the crisis. Arguably, moreover, parts of the Dodd Frank agenda were pushing against an open door. For example, Blas (2008) reported that, following the collapse of Lehman Brothers, a voluntary increase (from 10 to 50 percent) occurred in the share of OTC deals going through public exchanges and clearing houses in response to rising perceptions of counterparty swap risk. Standardization of OTC deals has been supported by the development of a 'master contract', revised in 2009 with a view to improving contract tradability, by the International Swaps and Derivatives Association (Ismail Erturk, personal communication).

Dodd Frank basically lays down principles, in greater detail in some cases than others. In the field of derivatives, detailed regulations implementing the principles were then supposed to be devised by CFTC (for exchange-traded derivatives) and SEC (for OTC swaps) in line with Dodd Frank principles.

The main elements of Dodd Frank are that henceforth:

- (i) OTC swaps 'taking a standard form',¹⁷ when traded by financial entities with portfolios with a notional value of >\$8 billion, will have to be cleared through centralized clearing houses and subject

¹⁵ When the first oil contract was inaugurated in 1983, the spot month position limit applied by the New York Mercantile Exchange was 15 percent of deliverable supply. This was increased in real terms in 1997 to around 22.5 percent. Price limits were abandoned from the 1980s for financial futures but were increased for softs, e.g. for cotton from \$0.02/lb in the 1980s to \$0.04c/lb in 2008. See Tudor Jones (2010).

¹⁶ More radical proposals circulated involved setting low position limits without exemptions and outlawing commodity index funds, passive trading strategies and non-standardized OTC swaps.

¹⁷ Most commentators estimate that this covers ca. 70-80 percent of swaps.

to reporting and margin requirements. In the latter case, SEC has announced a margin requirement equivalent to 15 percent of the notional value of the acquired position. ‘Non-financial entities’ hedging risk will be exempted from the central clearing requirement, but will be subject to a requirement for central notification. It is as yet unclear whether they will also be exempted from the margin requirement. Margin will also be required for non-cleared (i.e., non-standard) swaps.

- (ii) Banks shall spin off their commodity swap activities to independent entities excluded from Federal Reserve Insurance arrangements and not engage in derivatives trading not directly related to the trading they do for customers (the so-called ‘Volcker rule’).
- (iii) Federal position limits shall be extended to all exchange-traded commodity contracts,¹⁸ and the aggregation of individual positions on a commodity for position limit purposes shall occur across all exchanges and trading venues, including non-US exchanges and swap venues. Eligibility for hedgers’ exemptions from position limits shall be narrowed to entities with positions exclusively in cash-settled contracts.
- (iv) Spot month position limits shall normally be set at 25 percent of estimated deliverable supply.
- (v) These US rules shall also apply to activities on foreign exchanges and other trading venues by ‘US persons’, foreign-registered subsidiaries of US firms and foreign firms whose activities are likely to impact on the US economy, except where foreign

exchanges set rules that are deemed to be identical to US ones.

- (vi) Additional Presidential authority was granted for CFTC to increase margin requirements for oil futures and options contracts in early 2012.

In the process of drawing up regulations, CFTC has made some proposals on more detailed issues that fall short of the strictest interpretations authorized by the Dodd-Frank text. For example, CFTC used a more restrictive definition of deliverable supply in proposing precise position limits than that authorized in Dodd Frank. Furthermore, in relation to calculating where traders’ positions fell in relation to position limits, CFTC proposed that netting be used rather than aggregation.¹⁹ On OTC swaps, provisions aimed at increasing competition by requiring that parties entering swaps obtained five quotes in advance for the swap in question were also diluted to a requirement that they obtain two (later rising to three).²⁰ Exactly how and when the Volcker rule will be applied is still unclear.

Challenges to US regulation

‘Industry organizations’ and their political supporters have maintained an unrelenting barrage of opposition to most of the main provisions of Dodd Frank on commodity derivatives, as well as to the preservation of CFTC’s regulatory capacity. As regards Dodd

¹⁹ Netting means defining positions in terms of net long or short positions rather than the sum of long and short positions held by a trader. See Cohen (2011) and Greenberger (2011) for fuller and more detailed lists of CFTC interpretations of Dodd Frank.

²⁰ By way of an exception some observers claim that, in implementing Dodd Frank on OTC swaps, CFTC has applied a more far reaching definition of ‘standardized’ than was intended (see *Financial Times*, 26 September 2013).

¹⁸ For agro-commodities, this means nineteen contracts, rather than the nine contracts covered prior to 2010.

Frank, they have in particular sought to overturn the provisions on OTC swap margins and position limits for exchange-traded futures and options. Further, they have sought to introduce exemptions from the new rules or to expand their proposed range.

As regards CFTC's regulatory capacity, they have sought to limit its effectiveness by cutting funding to the organization. Furthermore they have lobbied strongly for industry-friendly figures to be appointed as replacements for the existing heads of both CFTC and SEC, both of whom are stepping down in 2013. As Bart Chilton (CFTC Commissioner, Democrat and incarnation of the middle ground) has stated: '(on commodity derivatives) we are faced by a DC Quadrikill: first, kill the Bill; second, defund CFTC; third, regulate the Bill; fourth, litigate it' (quoted by Bloomberg, 9 May 2012).²¹

The most important challenges to date have been the attempts in the Washington DC circuit courts to overturn the provisions on position limits and OTC swap margin controls. The latter, in the shape of a case brought by Bloomberg, was rejected by the court in June 2013. But the former, in the shape of a case brought by the industry associations, was upheld in September 2012. In this case the court accepted the arguments that there was a lack of evidence that market manipulation lay behind the price development of 2004-09 and that therefore there was no need to impose federal position limits for post-1960 contracts; the court further found that in any event CFTC should have carried out a cost-benefit analysis of position limits before their imposition. According to those bringing the case, the major cost of position

limits will be in terms of reduced market liquidity. In its decision the court referred the rule back to CFTC for re-consideration.

In April 2013 CFTC appealed against the court's decision, arguing that its setting of position limits reflected a clear legislative intent in Dodd Frank to deal with the possibility of market manipulation, and that this took precedence over any need for it to present evidence that actual market manipulation justified their imposition. The result of this appeal is still pending at time of writing.

EU regulation

As noted earlier, derivative market regulation in the EU was historically lighter than in the US. For example, position limits on market participants have been notably absent both at the level of national regulation and in the rules applied by exchanges. US derivative market pro-regulation lobbies were normally focused on agro-commodities and led by farmers' organizations. At least after 1945 and especially after the birth of the European Union, administered prices were a central pillar of European agricultural policy. This meant that derivatives markets were marginal to price formation for food commodities and that they therefore had a lower political profile.

Rather than representing a clearly endogenous response to the events of 2008, as in the US, EU regulation in the area followed *inter alia* pressure to intervene from international fora, in particular the G20 and the International Organization of Securities Commissions. Hardly surprisingly in this context, the running was made largely by the European Commission, which modeled its approach broadly on Dodd Frank. The Commission drafted a new regulation, the European Market Instruments Regulation (EMIR) dealing

²¹ Clapp and Helleiner's (2012) RIPE paper on Dodd Frank and commodities seems unduly optimistic in this context. Pagliari's (2010) paper provides a more balanced assessment.

in part with OTC swaps, and revised an existing directive, the Markets in Financial Instruments Directive (MiFID II) dealing in part with exchange-traded commodity derivatives.

As with all EU legislation, Commission proposals were then forwarded to the European Parliament and the European Council. These have both proposed amendments to the Commissions' drafts. The current position is that, following approval by EU ambassadors in June 2013 of new drafts leaving certain issues unresolved, the Commission, the Council and the Parliament are engaged in a 'trialogue' to produce a final wording. This is not expected before 2014, and implementation is unlikely to commence before 2015-16.

What is not disputed in respect of EMIR is that all OTC swaps will have to be reported to a central data repository and that those OTC swaps 'taking a standard form' and traded by entities (financial or non-financial) with portfolios notionally worth >€3 billion will have to be cleared through clearing houses and become subject to margin controls. As in the US, margin requirements for OTC swaps will be higher than for futures and options. Moreover, it appears that swap margin requirements in the EU will be higher than those that will be required in the US. As in the US there will also be margin requirements for uncleared swaps.

There will be exemptions from the central clearing requirement for traders 'objectively measured to be reducing risks relating to commercial or treasury financing activity', but not for non-financial entities *per se* as under Dodd Frank and as pushed for by the European Peoples Parties (Christian Democrat) bloc in the Parliament.

As for MiFID II, the imposition of position controls for derivative contracts is undisputed, but different proposals are still circulating concerning who should set them and

whether they should take the form of limits or only accountability requirements.

The EU Parliament's 2012 position was that (a) for agricultural commodity derivatives, there should be binding pan-EU position limits set centrally; (b) that for non-agricultural derivatives, exchanges and other trading venues should operate hard position limits under the guidance of national 'competent authorities'. Conformity to position limits should be measured by their netting on a given contract across all types of trading venue. Position limits will not apply to market participants involved in physical commodity trading, where trading in commodity derivatives represents an ancillary activity, although position management will apply to these participants.

Later Council texts proposed instead to give national regulators the sole authority to establish and apply hard position limits (based on criteria set by the newly created European Securities Markets Authority or ESMA). Exchanges and trading venues meanwhile should be required only to apply position management. In the Council's proposal, there is some vagueness over the latitude that national authorities will have in setting position limits. When set, position limits will have to be objectively justifiable and to take into account the liquidity of a specific market. However, the proposal allows for national authorities to set position limits in variance with ESMA criteria, albeit in 'exceptional cases'. This proposal has been questioned in terms of the possibilities it opens up for regulatory arbitrage within the EU.

MiFID II also includes a requirement that all trading venues design commodity derivative contracts in ways that encourages greater efficiency between spot and futures prices, for example, by having contracts closely mir-

ror real delivery points and qualities in their specifications than in the past.

In all drafts, all trading venues must publish reports on the aggregate positions held by different categories of trader. The data that it is proposed to collect under EMIR is wider and more detailed than the data for which reporting will be required under Dodd Frank.

As under Dodd Frank, banks will be prohibited from most kinds of proprietary trading on their own account.

Challenges to the EU's new regulatory turn on commodity derivatives have had a lower profile in nature than in the US. Presumably the industry opponents of position limits are waiting to see the outcome of CFTC's appeal in the US before deciding whether to mount a concerted public attack on them.

Assessing the post-financial crisis regulation of commodity derivatives

Assessments offered in the literature of the post-financial crisis regulation of commodity derivatives have been largely technical. This reflects the fact, consistent with the proposals' political origin, that they are less severe than originally expected. Not only have proposals to ban certain kinds of investment vehicle and strategies outright from market participation been marginalized, so too have more widely canvassed ones, such as imposing dramatically higher initial margins for exchange-traded futures and options. Moreover, and as already noted, in regard to OTC swaps the regulatory turn appears to be directed mainly at institutionalizing a response to risk that is already evident in the market. The main area of macro-level discussion concerns whether centralized OTC clearing will introduce new systemic risks.

According to Manmohan Singh (2012) of the IMF's Research Department, 'Mov-

ing (OTC) counterparty risk from banks to (clearing houses) simply creates a new set of concentrated risk nodes in the financial system, which are likely to be sources of instability in a new crisis'. This will occur since, because the margins deposited by market participants will have to be placed in segregated accounts, clearing houses will have the ability and perhaps even the need to securitize them in some way in order to cover individual defaults. This is likely to create a renewed boom in collateral transformation, with all its attendant risks.

Moving to meso- and micro-level issues, the literature agrees that the main impacts are likely to be a steady migration of standardized OTC swaps to futures markets, where margin costs will be lower; the emergence of arbitrage opportunities in the emergent OTC clearing house sector, as more exchanges start their own clearing houses and as these elaborate their detailed requirements regarding what, for example, will be accepted as collateral for initial margin; and a general increase in trading firms' data reporting-related costs.

The potential impacts of position limits have been discussed mainly in terms of impacts of a so-called liquidity kind – market volume by another name – as well as on the distribution of market share between market participants. Precise predictions in these areas are, however, notable for their absence, as is (rather remarkably) any discussion of the likely impacts of position limits in terms of commodity price volatility and price inflation.

As will be seen in a moment, discussion of the likely impact of the post-2008 regulatory initiatives had by 2013 been overtaken by proposals for a new generation of regulation aimed either at new targets or at new activities by old targets.

DE-FINANCIALIZATION, OR NEW FORMS OF FINANCIALIZATION?

By 2012-13 discussion had emerged of whether commodity derivative markets were becoming subject to de-financialization. The first indicator cited was a steep decline in absolute and relative terms of OTC commodity derivative swap volume/value. The notional value of commodity swaps fell by 69 percent between 2007 and 2012, while their share by value of all OTC swaps fell from 1.83 percent in 2005 to 0.41 percent in 2012 (Table 2). The second was reports of a number of investment banks downsizing or eliminating their commodity derivative trading operations, or at least parts of them. Bloomberg (8 February and 12 February 2013) reported cuts in commodity trader numbers at Deutsche Bank and Barclays, while the *Financial Times* has reported cuts in or closures of commodity derivative desks at Credit Agricole, UBS and Morgan Stanley (20 June 2013). Both Barclays and Morgan Stanley have announced that they have stopped or are stopping all trading in agricultural derivatives (Bloomberg 12 February 2013, *Financial Times* 20 June 2013). More recently, JP Morgan Chase has put its commodity trading division up for sale (Reuters 29 July 2013).

One factor precipitating these developments is said to have been the winding-down of commodity price inflation since 2009 and the apparent stabilization of prices since the end of 2010 at levels around 20-25 percent below their 'supercycle' peak (IMF 2013). – Another, as discussed above, is the emergence of positive correlations between the prices of commodities and other assets, diminishing their attractiveness for portfolio balancing. Reduced price volatility in particular is credited with declining OTC commodity swaps, as demand for price hedging has decreased. Because

OTC swap fees are high, this has had a significant impact on bank profits.²² Meanwhile the end of the price supercycle and increasing inter-asset class correlations are credited with provoking a withdrawal of \$4.6 billion from Commodity Index funds in 2011 and of a further \$5.2 billion in 2012 (*Financial Times* 17 February 2013, citing a report by Barclays Capital). As regards the investment banks, a further factor is the impact of new regulatory capital requirements on allocations of funds to areas of activity deemed to be risky.

That said, it is far from clear that any generalized tendency towards the definancialization of commodities is underway, as opposed to corrections in respect of specific instruments or markets. Indeed, given the supposed influence of the non- or negative correlation of prices across asset classes on inspiring the wave of financialization from 2001 onward, one might have expected far more evidence of de-financialization than is cited above. In any event, this evidence should be considered in a wider context: while OTC commodity derivative swaps are declining, the share of commodity futures and options in all exchange-traded futures and options continues to rise (Table 1), while a more detailed consideration of six specific exchange-traded commodity derivative contracts (Figures 2-7) shows no discernible overall pattern of decline either in open interest levels or in the volume of open interest attributable to Commodity Index traders,²³ or, for that matter, in

²² According to the consulting company Coalition, cited in the *Financial Times* 5 August 2013, bank profits from commodity derivatives fell from \$14.1 billion in 2008 to \$7.3 billion in 2011 and \$6.0 billion in 2012.

²³ The reported declines in investment in Commodity Indexes since 2010 are tiny relative to total investment in these funds (\$256 billion in 2012, *Financial Times* 17 February 2013) and to aggregate financial investment in commodities generally – see Bicchetti and Maystre's figure for 2011 cited earlier in the paper.

that attributable to ‘managed money’. What is probably happening is a slowing of new investment rather than reversal of aggregate investment in commodity derivatives by financial actors, as well as some redirection of this investment between different types of commodity derivative instrument and market.

Amongst the commodity derivative instruments that are commanding an increasing level of interest are Exchange Traded Funds and ‘active’ as opposed to passive Commodity Index funds. These have in common a focus on both long- and short-side betting and selectivity between commodity contracts, either by focusing on a single commodity or sub-group of commodities (particularly energy, precious metals or industrial metals) or by active continuous ‘rebalancing’ between commodities. Another important feature of some Exchange Trade Funds is a link to the physical market. These links may be through a fund trading and/or storing physical commodities to exploit its derivative positions or through the fund actively trading in derivatives on the basis of the knowledge that fund managers obtain directly from the physical market. These in some respects resemble more traditional speculative strategies common for much of the nineteenth and twentieth centuries, that is, prior to the recent wave of financialization.

THE CHANGING REGULATORY HORIZON

The trend toward more active forms of speculation has brought two groups of market participant with whom it is associated under the regulatory spotlight, or back under this spotlight in the case of one of these groups. These groups are the investment banks and large physical commodity trading houses.

A number of investment banks began trading in physical commodities from around 2003 or, in some cases where they were doing so before this, extended such involvement from around this time. In a handful of cases, such as Goldman Sachs, the involvement with physicals extended to production (in their case, coal), but mostly it was confined to trading. One reason for banks becoming involved in physicals was to insure against revocations of exemptions from position limits in derivative markets. More importantly it allowed banks to arbitrage price differences between the physical and derivative market. Some of the banks involved have been accused, including by regulators, of seeking to amplify these opportunities by manipulating the physical market.²⁴

Besides trading physical commodities alongside commodity derivatives, Goldman Sachs and Morgan Stanley owned and traded power plants and oil-storage facilities from the 1980s and 1990s and were permitted to continue doing so when they became regulated financial holding companies in 2008. Citigroup, Barclays, JP Morgan Chase and others were also granted permits to own physical infrastructure for commodity trade by the US Federal Reserve between 2003 and 2008, although management of these facilities was supposed to be operationally separate from their trading operations. According to most commentators, this straddling became more widespread after 2008. In 2013 the banks’ argument for maintaining these permits was that such activities ‘help improve services to customers by understanding prices in thinly traded markets’ (Meyer and Braithwaite

²⁴ For example, in October 2012 Barclays and four of its traders were fined \$453 million by the US Federal Energy Regulatory Commission for manipulation of the US electricity market (Blas 2012b). The fine was confirmed by the Commission in June 2013 (www.bbc.co.uk/news, 14 June 2013).

2013).²⁵ In July 2013 the Federal Reserve signaled that it was revisiting these permits, citing a fear that straddling imparted potential systemic risks to the financial system, for example, from the potential consequences of a major oil spillage involving a bank-owned entity. In reality the Federal Reserve's move followed growing complaints from large end-users of certain commodities that classic forms of market manipulation ('cornering') were on the increase. At the time of writing, CFTC was separately examining the ownership of metals warehouses by Goldman Sachs and JP Morgan Chase, stating that, despite their technical separation from trading operations, the latter's policies may be used to influence market prices (for details of how, see Kaminska, 2013). This particular investigation, which involves subpoenaing corporate documentation, also extends to two very large commodity traders with warehousing operations, Glencore and Trafigura (Meyer and Terazono 2013). LME is named as a co-defendant in some of the cases.

Meanwhile the Basel-based Financial Stability Board (FSB) considered in 2012-13 whether to count large physical commodity trading houses (which are without exception also major participants in derivatives markets) either as shadow banks or as 'systematically important non-bank financial institutions' or both, and as such subject them to greater regulation (Blas 2012a). This followed the disclosure of long-term lending to independent companies by Glencore worth \$3 billion, and the recent trend for the largest trading houses to operate hedge funds or index funds or both, either alone or in partnership with investment banks. For example, Cargill runs the Black River Asset Management hedge fund, Trafigura runs the

Galena Asset Management hedge fund, Vitol runs the Vitol Capital Management hedge fund and Glencore runs the Credit Suisse Glencore Active Index Strategy fund. In the event the FSB decided there was insufficient evidence to consider trading houses as shadow banks, but left the door open for future revision of this stance.

Imposition of substantial information disclosure requirements on large trading houses concerning their physical trading activities is meanwhile proposed in a July 2013 publication by the Centre for European Policy Studies (Valiante 2013). Increasing regulatory attention to trading houses reflects widespread impressions amongst commentators that (i) their market share in exchange-based and OTC derivatives markets has increased substantially, as that of passive funds has plateaued – although the data in Figures 2-7 on the 'PMPU' volume share in selected markets do not clearly support this; and (ii) their share in the physical market has likewise increased substantially, either on the basis of 'natural' market concentration, as some of their rivals have gone under, and/or through buying up physical production companies. As commodity prices rose during the 2000s, it became common for trading houses in a wide variety of commodity sectors to integrate backwards into production of the crops or minerals they traded. More recently the phenomenon has emerged of trading houses buying into production in sectors other than their main trading ones. In 2013 the oil trader Glencore acquired Xstrata, one of the world's largest metal miners; also the traditional grains and cotton trader Cargill has been identified as a likely purchaser of any oil, coal, natural gas and power production and storage facilities that banks may have to relinquish (*Financial Times*, 9 August 2013).

Clearer definition and application of the Volcker rule, as well as restricting the ex-

²⁵ This explanation seems to embody a claim for indirect conformity with the Volcker rule (see above).

emptions from position limits in derivatives markets that such participation might confer, should logically become the next chapter in US financial market regulation. The languishing of the Volcker rule is probably the biggest disappointment of Dodd Frank (non-) implementation to date. Nevertheless, regulators do appear to be pressurizing the banks to step back from physical commodity markets.

In the short to medium term it seems unlikely that large trading houses will be subject to regulatory restrictions, if only because they are not primarily financial entities. On the other hand, a wide range of observers in addition to their traditional opponents amongst NGOs have expressed misgivings about both their increasing horizontal and vertical integration and the secrecy of their operations. Almost all the big trading houses are privately owned and based in jurisdictions with low disclosure requirements. Thus, at least initially, some regulatory impetus in their regard can be expected, probably concerning greater corporate transparency.

CONCLUSION

Clearly, a major and unprecedented transformation of commodity derivative markets took place in the 2000s. These markets grew spectacularly in size and came to be dominated by new categories of financial investor. They were also characterized by the emergence and institutionalization of new speculative strategies (particularly index investment), which probably played a role in amplifying the decade's price inflation and volatility, particularly in more thinly traded markets.

Both a significant component of the new investment and the most common of the new strategies followed by investors were

inspired by a conviction that commodity derivative prices had no, or even a negative relationship to those of other assets such as stocks and bonds. It is likely that the resulting popularity of index investment helped reverse this tendency from 2008 on, together with heightened perceptions of risk across several asset classes in the wake of the collapse of Lehman Brothers and the rescue of other players such as AIG.

Nonetheless, disinvestment from commodity derivative markets by financial interests has not been sustained. Just as commodity prices have been subject to some stabilization after the falls of 2008-10, so too have the derivative market shares of the participants whose profiles were rising in the 2000s. Rather than consistent disinvestment, the main trends have been consolidation, the adoption of new and more selective strategies and greater horizontal and vertical integration across markets and functions by some of the leading players. One result is that the lines of division between physical and derivative market participation are becoming increasingly blurred.

Post-2008 regulatory initiatives on commodity derivatives have so far mainly aimed at restricting the share of the market for single contracts that any participant can hold and forcing off-exchange or 'Over the Counter' (OTC) trading into clearing houses where participants must deposit margin before they can trade. While mandatory swap clearing has been criticized for its potential creation of a new node of systemic risk, it has nevertheless been rolled out relatively smoothly in both the US and EU. Market share restrictions, on the other hand, have been successfully challenged by the industry in a US court (with an appeal by the regulator pending), against the background of widespread challenges to their utility. Sur-

prisingly little regulatory attention has been given to increasing the cost of trading in derivatives on exchanges as a complement or alternative to market share restrictions, even though this is an important component of OTC swap market reform. A sliding scale margin, working in the same way as a progressive tax by applying increased charges to large and frequently changing trades, perhaps merits greater attention than it has been given.

Traditionally the main market participants have lost through the front door of regulation, only to regain advantage through the side doors of exemptions and arbitraging the rules of private exchanges. This may well prove to be the case with the new generation of regulation too. While a few principles for granting exemptions have been established both in the US and EU, particularly in the EU final wordings remain some distance away, as is finalization of the rule books that exchanges and clearing houses will use to implement the new regulations.

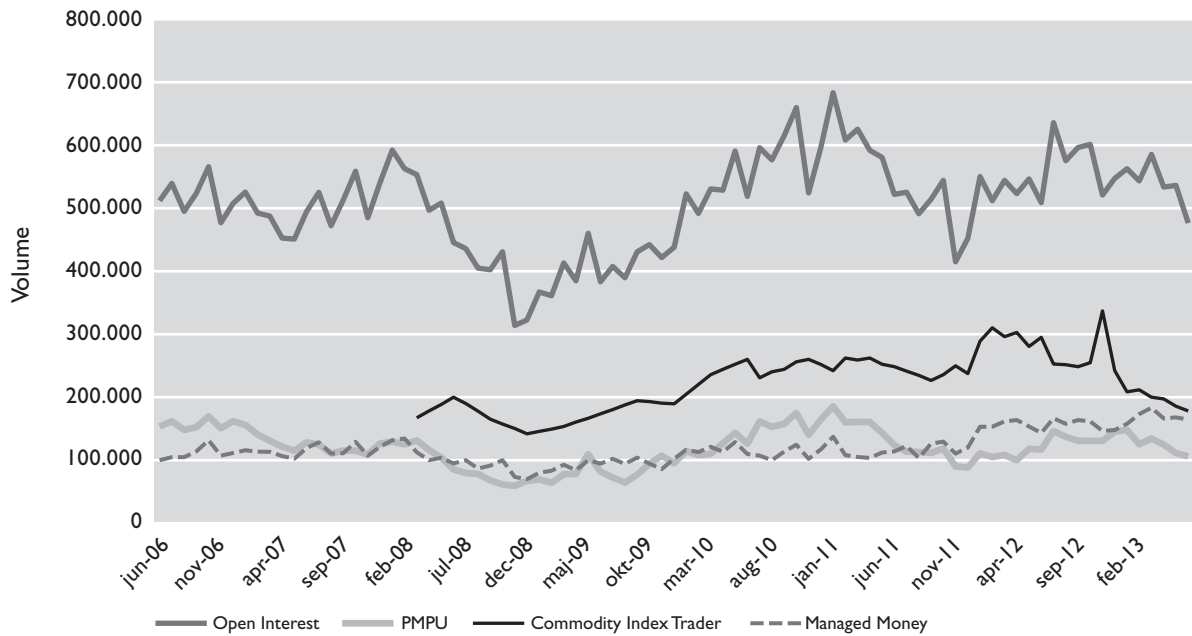
US regulators are meanwhile again seeking to rein in some of the exemptions granted to investment banks under earlier rounds of (de-)regulation with regard to linked participation in derivative and physical markets for commodities, without, however, referring directly to the Volcker rule. This is part of a cautious but general movement of the regulatory spotlight on both sides of the Atlantic toward the physical market, a spotlight being shone on large physical traders as well as on banks. Hitherto subject to only the lightest conceivable rules, physical traders present a special regulatory challenge, and any proposals going beyond ones for basic transparency are likely to take some years to mature.

APPENDIX. METHOD FOR CALCULATING SHARES OF OPEN INTEREST IN FIGURES 2-7

Figures 2-7 are based on the monthly observations from the CFTC open-interest reports nearest to each month end. In line with previous studies (e.g., Newman 2009) and on the basis of guidelines suggested in the Explanatory Notes to CFTC Commitment of Traders Reports, the volumes of open interest of different categories of trader described in Figures 2-7 have been calculated as follows: for the categories of Commodity Index Traders and ‘Producers/Merchants/Processors/Users’ the sum of their long and short positions has been divided by two. For ‘managed money’, which holds ‘spreading’²⁶ as well as long and short positions, the sum of their long and short positions has been divided by two and then added to their ‘spreading’ positions.

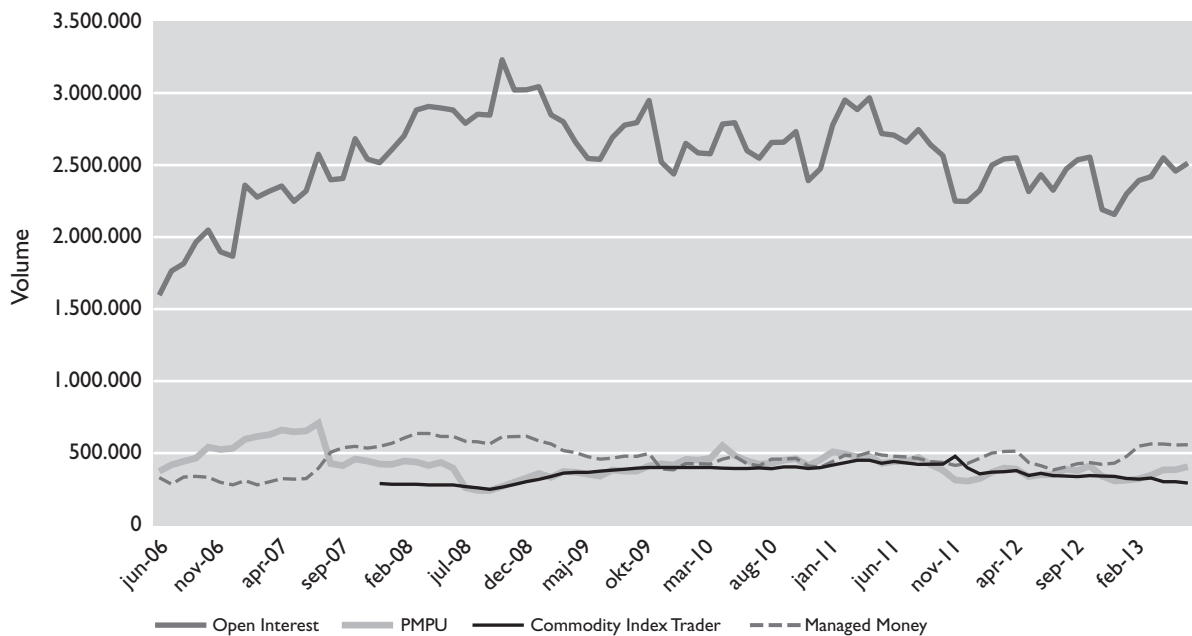
²⁶ ‘Spreading’ positions are positions where a long and a short contract held by the same market participant cancel each other out.

Figure 2. *Wheat - Futures and Options Combined*



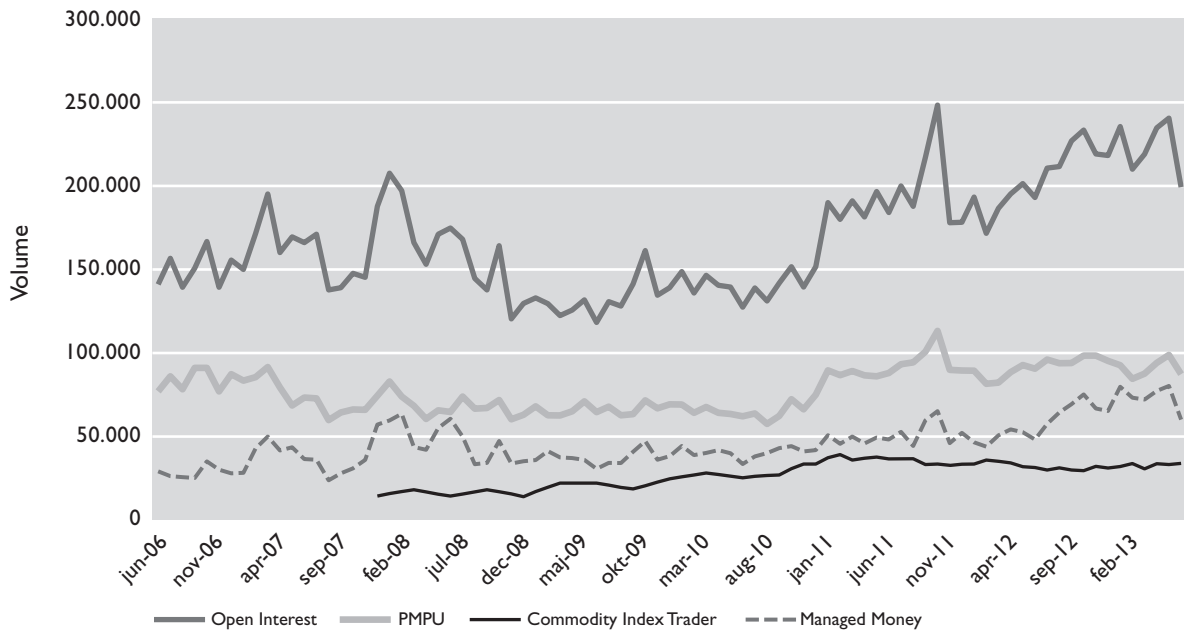
Sources: CFTC Historical Compressed Futures-and-Options Combined Reports 2006-12 and 2013; and CFTC Index Investment Data 2007-13. Key: Refers to Chicago Board of Trade *Wheat* contract; PMPU = 'Producer/Merchant/Processor/User'. For method of calculation see appendix.

Figure 3. *Crude Oil - Futures and Options Combined*



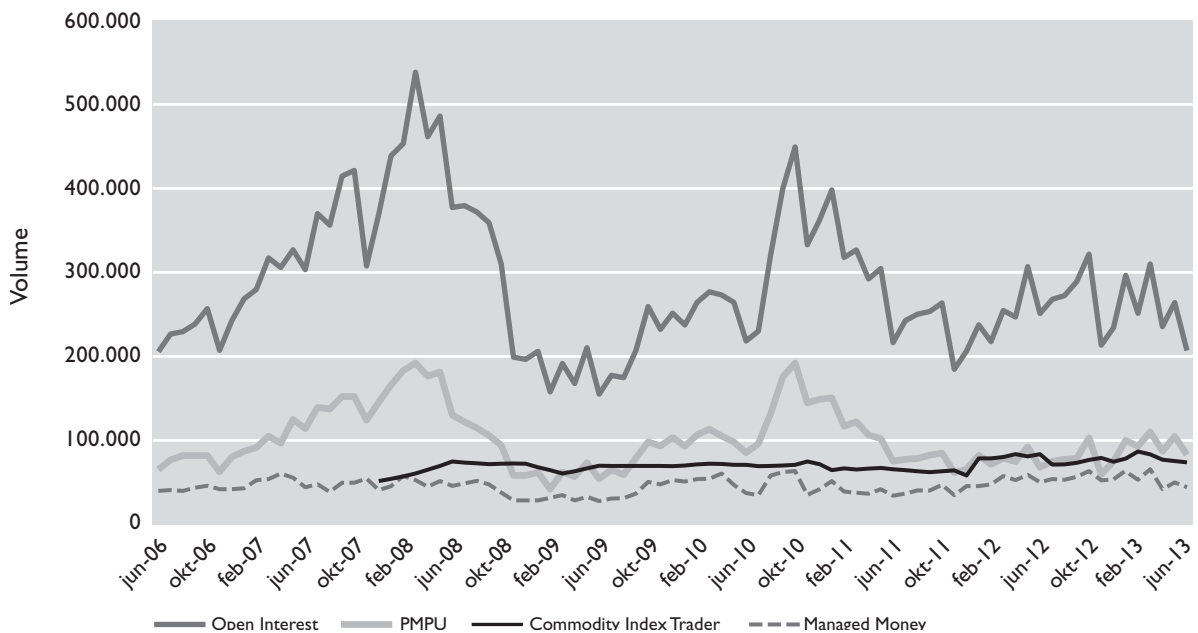
Sources: CFTC Historical Compressed Futures-and-Options Combined Reports 2006-12 and 2013; and CFTC Index Investment Data 2007-13. Key: Refers to New York Mercantile Exchange *Crude Oil Light Sweet (WTI)* contract; PMPU = 'Producer/Merchant/Processor/User'. For method of calculation see appendix.

Figure 4. *Cocoa* - Futures and Options Combined



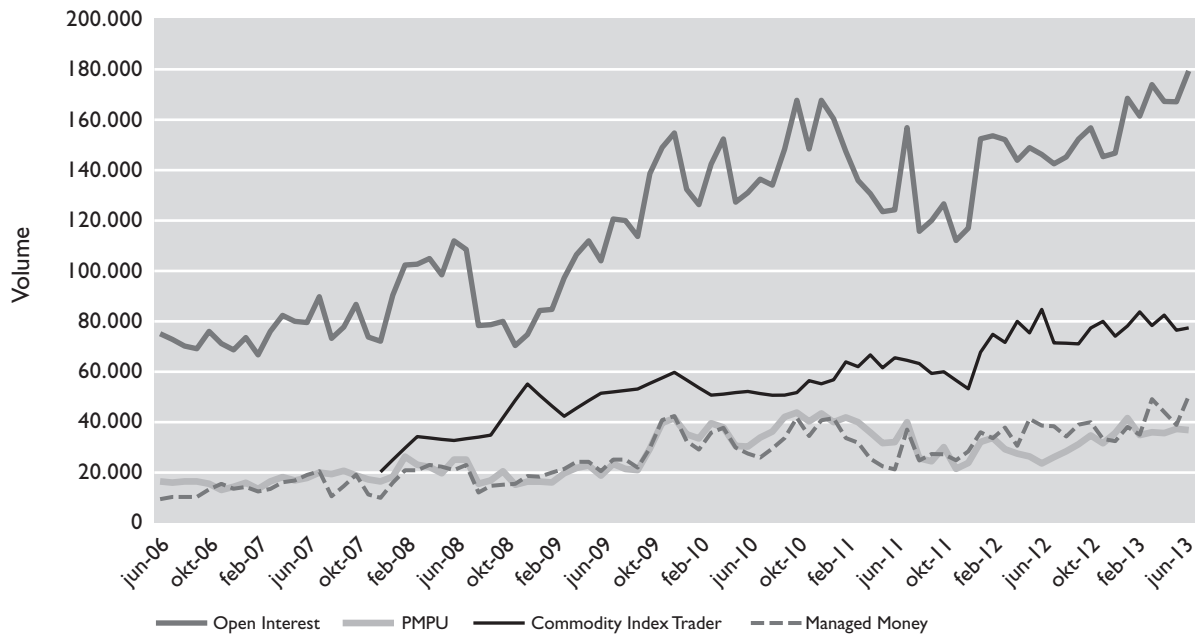
Sources: CFTC Historical Compressed Futures-and-Options Combined Reports 2006-12 and 2013; and CFTC Index Investment Data 2007-13. Key: Refers to ICE Futures *Cocoa* contract; PMPU = 'Producer/Merchant/Processor/User'. For method of calculation see appendix.

Figure 5. *Cotton* - Futures and Options Combined



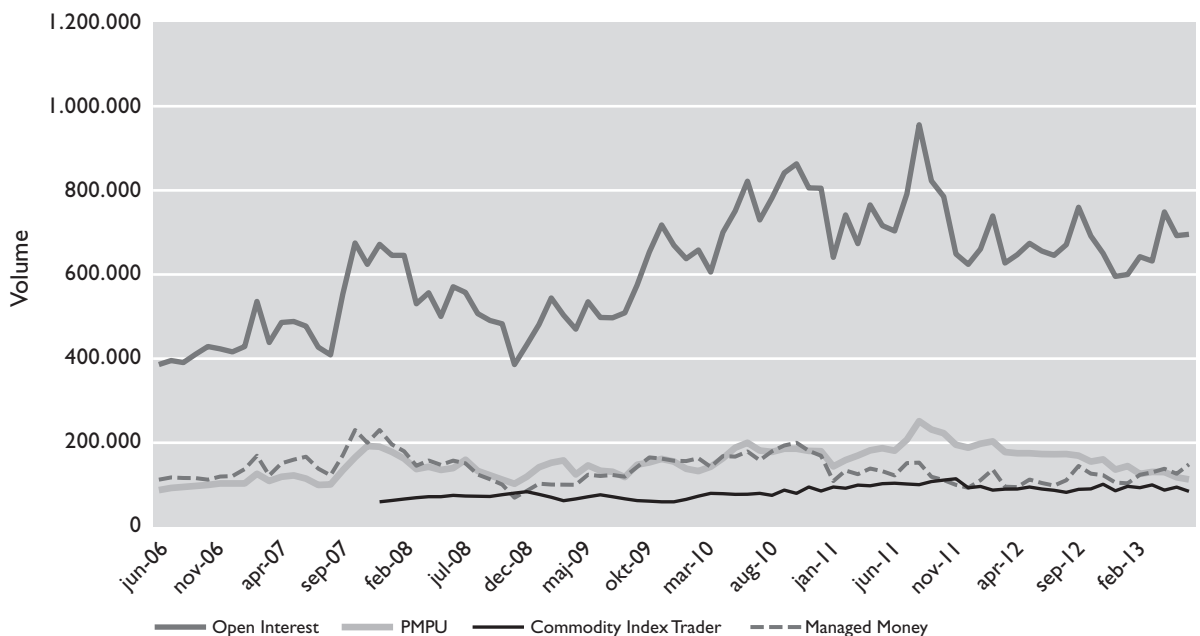
Sources: CFTC Historical Compressed Futures-and-Options Combined Reports 2006-12 and 2013; and CFTC Index Investment Data 2007-13. Key: Refers to ICE Futures *Cotton* No. 2 contract; PMPU = 'Producer/Merchant/Processor/User'. For method of calculation see appendix.

Figure 6. *Copper* - Futures and Options Combined



Sources: CFTC Historical Compressed Futures-and-Options Combined Reports 2006-12 and 2013; and CFTC Index Investment Data 2007-13. Key: Refers to Commodity Exchange Inc. *Copper* Grade #1 contract; PMPU = 'Producer/Merchant/Processor/User'. For method of calculation see appendix.

Figure 7. *Gold* - Futures and Options Combined



Sources: CFTC Historical Compressed Futures-and-Options Combined Reports 2006-12 and 2013; and CFTC Index Investment Data 2007-13. Key: Refers to Commodity Exchange Inc. *Gold* contract; PMPU = 'Producer/Merchant/Processor/User'. For method of calculation see appendix.

REFERENCES

- Bank of International Settlements, *Semi-Annual Reports*. Basel.
- Basak, S. and Pavlova, A. (2013). *A model of financialization of commodities*. London School of Economics.
- Basu, P. and Gavin, W. (2011). What explains the growth in commodity derivatives? *Federal Bank of St. Louis Review*, 93(1), 37-48.
- BBC. www.bbc.co.uk/news/
- Berg, A. (2011). The global grain contract: towards a new food security instrument. In Prakash, A. (ed.), *Safeguarding food security in volatile global markets*, pp. 447-458. FAO, Rome.
- Berkovitz, D. (2009). Background on position limits and the hedge exemption, January 14. At www.cftc.gov/PressRoom/SpeechesTestimony/proposedrule011410_berkovitz
- Bicchetti, D. and Maystre, N. (2012). The synchronized and long-lasting structural change on commodity markets: evidence from high frequency data. Munich Personal RePEc Archive Paper No. 37486. At <http://mpra.ub.uni-muenchen.de/37486/>
- Blas, J. (2008). Traders rush OTC deals on to commodities exchanges. *Financial Times*, 13 October.
- Blas, J. (2012a). Has Glencore become 'too big to fail?' *Financial Times*, 9 October.
- Blas, J. (2012b). Barclay's case shakes the energy market. *Financial Times*, 1 November.
- Bloomberg, www.bloomberg.com
- Butcher, T. (2009). Harder assets: do commodities (still) have a place in your portfolio? At <http://www.wealthmanagerweb.com/Issues/2009/May2009/> Accessed 26 October 2012.
- Buyuksahin, B. and Harris, J. (2009). *The role of speculators in the crude oil futures market*. CFTC, Washington.
- Buyuksahin, B. and Robe, M. (2013). Speculators, commodities and cross-market linkages. IMF seminar paper at www.imf.org/external/np/seminars/emg/2012/commodity/pdf/robe2.pdf
- Calvo, G. (2008). Exploding commodity prices, lax monetary policy and sovereign wealth funds. *Vox*, 20 June. At www.voxeu.org
- Clapp, J. and Helleiner, E. (2012). Troubled futures? The global food crisis and the politics of agricultural derivatives regulation. *Review of International Political Economy* 19(2), 181-207.
- Cohen, H. (2011). CFTC to impose position limits on some commodity derivatives. Harvard Law School Forum on Corporate Governance and Financial Regulation. <http://www.blogs.law.harvard.edu/corpgov/2011/12/08>
- Desai, M. (2008). Act now to prick the bubble of a high oil price. *Financial Times*, 6 June.
- Erb, C. and Harvey, C. (2005). *The strategic and tactical value of commodity futures*. National Bureau of Economic Research Working paper 11222.
- FAO (2008) *Soaring food prices: facts, perspectives, impacts and actions required*. HLC/08/INF/1. Rome.

- FIA (2012). Futures Industry Association, Volume Report (March). www.futuresindustry.org/volume/futures&options-.asp
Financial Times, London.
- Gilbert, C. (2010). How to understand higher food prices. *Journal of Agricultural Economics*, 61(2), 398-425.
- Gorton, G. and Rouwenhorst, K. (2004). *Facts and fantasies about commodity futures*. National Bureau of Economic Research Working Paper 10595.
- Greenberger, M. (2011). Will the CFTC defy Congress's mandate to stop excessive speculation in commodity markets? http://works.bepress.com/michael_greenberger/43/
- Hamilton, J. and Wu, J. (2009). Effects of Index Fund investing on commodity futures prices. Department of Economics, University of California, San Diego (mimeo).
- Henderson, B., Pearson, N., and Wang, L. (2012). *New evidence on the financialization of commodity markets*. University of Illinois at Urbana-Champaign.
- IMF (2006). *World Economic Outlook*, September. Appendix 5.2, Modelling the relationship between speculation and commodity prices. Washington.
- IMF (2013). *Commodity Market Review*, April. Washington.
- Irwin, S. and Sanders, D. (2010). *The impact of Index and Swap Funds on commodity futures markets: preliminary results*. OECD Food, Agriculture and Fisheries, Working Paper 27. Paris.
- Jacks, D. (2007). Populists versus theorists: futures markets and the volatility of prices. *Economic History* 44, 342-62.
- Kaminska, I. (2013) Commodities and banks, a recap. www.ft.com, July 22.
- Kat, H. (2006). *Is the case for investing in commodities really that strong?* London, Cass Business School, 12 September.
- Korniotis, G. (2009). *Does speculation affect price level? The case of metals with/without futures markets*. US Federal Reserve Bank, FEDS Working Paper 29.
- Krugman, P. (2011). Commodities: this time is different. *New York Times*, 29 January.
- Library of Congress (2000). Commodity Futures Modernization Act. <http://www.thomas.loc.gov/cgi-bin/query/z?c106:H.R.5660>:
- Meyer, G. and Braithwaite, T. (2013). Banks' influence over raw materials supply chain under scrutiny. www.ft.com 21 July.
- Meyer, G. and Terazono, E. (2013). US watchdog acts on metals warehousing. www.ft.com 22 July.
- Newman, S.A. (2009). *The New Price Makers: An Investigation into the Impact of Financial Investment on Coffee Price Behavior*. Working Paper 2009/7, Swiss National Centre of Competence in Research, Geneva.
- OECD (2008). *The relative impact on world commodity prices of temporal and longer-term structural change in agricultural markets: a note on the role of investment capital in the US agricultural futures market and the possible effects on prices*. Trade and Agriculture Directorate, TAD/CA/APM/CFS/MD(2008)6. Paris, March.

- Pagliari, S. (2010). Reforming the US financial architecture: the regulation of derivatives, rating agencies and hedge funds. *Foundation for European Progressive Studies*, January.
- Reuters, www.uk.reuters.com
- Silvennoinen, A. and Thorp, S. (2009). Financialization, crisis and commodity correlation dynamics. Quantitative Finance Research Centre, Queensland University of Technology, Preliminary draft.
- Singh, M. (2012). It's time to levy the risk takers. *Financial Times*, October 17.
- Singleton, K. (2013). *Investor flows and the 2008 boom/bust in oil prices*. Stanford Graduate School of Business Working Paper.
- Smith, A. (2006). The Gorton and Rouwenhorst commodity code. At <http://business.highbeam.com/4355784/article-1G1-22835644>. Accessed 12 December 2012.
- Stoll, H. and Whalley, R. (2010) Commodity Index investing and commodity futures prices. *Journal of Applied Finance*, 20(1), 7-46.
- Suppan, S. (2011). Comment of CFTC's proposed rule for agricultural swaps. In Institute for Agriculture and Trade Policy, *Excessive speculation in agricultural commodities: Selected writings 2008-11*. Minneapolis.
- Tang, K. and Xiong, W. (2010). *Index investment and the financialization of commodities*. Princeton University.
- Tudor Jones, P. (2010). Price limits: a return to patience and rationality in US markets. At www.ft.com/cms/834d6096-de23-11df-9364-00144feabdcD.pdf.
- UNCTAD (2009). Managing the financialization of commodity futures trading. In *Global economic crisis and multilateral remedies*, pp. 23-40. Report by the UNCTAD Secretariat Task Force on Systemic Issues in Economic Cooperation. Geneva.
- UNCTAD (2011). *Price formation in financialized commodity markets: the role of information*. Geneva.
- Valiante, D. (2013). *Price formation in commodities markets: financialization and beyond*. Centre for European Policy Studies Task Force Reports, Brussels.
- Working, H. (1960). Speculation on hedging markets. *Stanford Food Research Institute Studies* 1(2), 185-220.