

SAFEGUARDING FOOD SECURITY IN VOLATILE GLOBAL MARKETS



EDITED BY
ADAM PRAKASH



The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar nature that are not mentioned.

The views expressed in this information product are those of the author(s) and do not necessarily reflect the views of FAO.

ISBN 978-92-5-106803-8

All rights reserved. FAO encourages reproduction and dissemination of material in this information product. Non-commercial uses will be authorized free of charge, upon request. Reproduction for resale or other commercial purposes, including educational purposes, may incur fees. Applications for permission to reproduce or disseminate FAO copyright materials, and all other queries concerning rights and licences, should be addressed by e-mail to copyright@fao.org or to the Chief, Publishing Policy and Support Branch, Office of Knowledge Exchange, Research and Extension, FAO, Viale delle Terme di Caracalla, 00153 Rome, Italy.

© FAO 2011

Cover design by Giancarlo de Pol

Cover photo (centre) ©FAO/Ami Vitale

Typesetting and layout by River Valley Technologies (river-valley.com)

Safeguarding food security in volatile global markets

Edited by Adam Prakash

Food and Agriculture Organization of the United Nations, Rome, 2011

Contents

Preface	xiii
Foreword	xv
Overview	xvii
SETTING THE STAGE	
1 Why volatility matters — Adam Prakash	1
2 Commodity prices: theoretical and empirical properties — Matthieu Stigler	25
3 Rising vulnerability in the global food system: beyond market fundamentals — Adam Prakash and Christopher L. Gilbert	42
4 Rising vulnerability in the global food system: environmental pressures and climate change — Global Perspectives Unit (FAO) and Natural Resources Department (FAO)	64
5 The nature and determinants of volatility in agricultural prices: an empirical study — Kelvin Balcombe	85
6 Emerging linkages between price volatilities in energy and agricultural markets — Stefan Busse, Bernhard Brümmer and Rico Ihle	107
7 Grains price pass-through, 2005-09 — Christopher L. Gilbert	122
8 Price transmission and volatility spillovers in food markets — George Rapsomanikis	144
9 The world rice market in 2007-08 — David Dawe and Tom Slayton	164
10 Country responses to turmoil in global food markets — Mulat Demeke, Guendalina Pangrazio and Materne Maetz	175
11 International commodity agreements — Christopher L. Gilbert	202

12 The fallacy of price interventions: a note on price bands and managed tariffs — Brian Wright and Adam Prakash	231
INFORMATION, EXPECTATIONS AND THE ROLE OF STOCKS 242	
13 The rise of commodity speculation: from villainous to venerable — Ann Berg	242
14 The economics of information and behaviour in explaining excess volatility — Adam Prakash and Matthieu Stigler	281
15 Storage arbitrage and commodity price volatility — Carlo Cafiero, Eugenio Bobenrieth and Juan Bobenrieth	301
16 The role of low stocks in generating volatility and panic — Matthieu Stigler and Adam Prakash	327
17 Global governance: international policy considerations — Panos Konandreas	345
18 Coping with food price surges — Christopher L. Gilbert and Alexandra Tabova	377
19 Using futures and options to manage price volatility in food imports: theory — Alexander Sarris, Piero Conforti and Adam Prakash	403
20 Using risk management tools to manage price volatility in food imports: practice — Morgan Stanley Commodities Group	421
21 The global grain contract: towards a new food security instrument — Ann Berg	447
22 Strengthening global food market monitoring — Jim Greenfield and Abdolreza Abbassian	459
23 Addressing the biofuels problem: food security options for agricultural feedstocks — Brian Wright	479
24 Targeting the most vulnerable: implementing social safety nets — Zoltan Tiba	491
25 Targeting the most vulnerable: implementing emergency reserves and other food security instruments — Agricultural Support Systems Division (FAO)	509
26 Targeting the most vulnerable: implementing input subsidies — Zoltan Tiba	529
27 Investing towards a world free of hunger: lowering vulnerability and enhancing resilience — Josef Schmidhuber and Jelle Bruinsma	543

Chapter 13

The rise of commodity speculation: from villainous to venerable

Ann Berg¹

Throughout history, food profiteering has been roundly condemned. Those engaging in speculation, hoarding or exploitation, or otherwise extracting money from sustenance have met with sharp rebuke, punishment or even execution. Until now. During the twenty-first century the once maligned food profiteer – particularly the commodity speculator – has been transformed into a generally positive and welcome force. Far from causing harm or havoc, the modern commodity speculator is often hailed as the new oracle of the food cycle, boldly wagering multi-million dollar bets on the direction of prices on mammoth futures exchanges. While pouring unprecedented amounts of money into trading commodities, speculators claim they are merely aiding what futures markets are meant to do – discovering the equilibrium price of goods at any moment in time. By providing “liquidity”, they deliver a societal good and, citing numerous supportive economic studies, they maintain that their trading activities have negligible impacts on global benchmark prices or affect the food security policies of nearly every commodity dependent country. In short, unlike speculators of the past, they have managed to raise themselves to a respected professional class, shielded to some extent from ethical inquiry.

Background

Food security and statehood have gone hand in hand since ancient times. As far back as the fifth dynasty (2350 BC approximately), the rulers of Egypt took control of grain management; by the reign of Ptolemy I in 306 BC, they held ownership of supply, land and granaries, dictating that “all [grain] prices were fixed by fiat” (Levy, 1967). The *Code of Hammurabi*, the inscribed Babylonian tablets, determined exact wages for labour and services to be paid in per annum amounts of grain. The ancient city state of Athens, highly dependent on grain imports ranging from Sicily to the Black Sea, regulated every aspect of the grain trade including a ban on exports, the lawful port of entry (Piraeus²), maritime loans, inventories, prices and import taxes. In 386 BC, a group of Athenian grain merchants was tried for the capital crime of “hoarding and collusion”. Early on in its Republic, Rome adopted *frumentariae leges* to control the supply and price of grain to its citizens.

¹ Former director and trader at the Chicago Board of Trade and FAO consultant.

² Importation to any port city other than Piraeus was a capital offense.

Similarly, Asia linked political control to food. During the Han Dynasty (202 BC - 270 AD), Chinese officials received half their salaries in grain. The collection and pricing of grain was extensively monitored and prices fixed during the first millennium BC under an official system during the Zhou Dynasty. In fourth century BC India, the *Arthashastra* or "handbook for princes" instructed that only proper authorities should undertake grain collection and that profit margins charged by merchants be strictly capped.

Starting in the first millennium, references appear in religious texts on food speculation. The Christian movement of Monasticism decried the "making of profits" over wheat in Syria. Talmudic law, compiled from approximately 70 AD to 500 AD forbid "fruit hoarding" and the hoarding of other food essentials such as oil, wine and flour, particularly with the intention of reselling these products at an exorbitant mark-up.³ From its beginning in the seventh century, Islam forbade speculative activity (*gharar*) as one of its principles. According to the eleventh century Arab Islamic theologian Al-Ghazzali:

If a person hoards foods, then how can the needy reach it? [...] This is a grave sin. As for grains, the sin is for those who intentionally hoard to sell at a higher price later [...]. (Ghazzali & Field, 1991)

Similarly, in his *Summa Theologica*, St. Thomas of Aquinas condemns the "buying of goods in the market with the intention to resell them at a higher price."

The monetary revolution

The western feudal land-based system that had hindered the development of commercial markets disintegrated slowly starting in the thirteenth century. For centuries prior, fragmented political authority, a dearth of metallic coinage, irregular and variable minting and the widespread practice of "clipping" or "shaving" led to the reliance on barter or even peppercorns and lengths of *Frision* cloth as means of exchange (Bloch, 1967). The minting of gold practically ceased in medieval Europe between ninth century and thirteenth century even while the East maintained a gold standard. The gold solidus, or the bezant, was standard issue in Byzantium from the fourth century onwards and likewise the gold dinar⁴ in the Arabian Caliphate from the late seventh century. This foreign gold coinage did, however, circulate in Europe - the bezant finds increasing mention after the trade treaties established between the city state of Venice and Constantinople in the late eleventh century. The dinar facilitated trade between Southern Europe and the increasingly complex Islamic world.

While the Middle East⁵ and China - during the Song Dynasty - established the recognizable components of banking - deposits, loans and letters of credit over long distance, the European system remained weak. Based on a multiplicity of silver coinages such as dñiers, sous or later livres, contracts or loans were understood to be settled in equivalents of goods or labour, because of the ever present risk of non-payment of specie (Bloch, 1967). Although the Crusades precipitated monetary innovation (such as the Knights of Templar's check writing system that allowed the deposit of goods in Europe to serve as collateral against money drawn in the Jerusalem) crucially, medieval society never invented the banknote; paper money was circulating since the ninth century in China, a wonder recorded by Marco Polo (Venice) around 1295 and Ibn Battuta (Tangier) a few decades later.

³ For a discussion of hoarding and Judaic law see: http://luc.edu/law/activities/publications/clrdocs/vol19issue2/keith_sharfman.pdf.

⁴ The gold dinar lasted for 13 centuries until the outbreak of World War I.

⁵ For a description of economic conditions in tenth-century Islam, see <http://www.international.ucla.edu/cms/files/kuran.0130.pdf>.

Fibonacci's *Liber Abaci*, written in Pisa in 1202 AD, reveals the growing scholarship and mathematical approach to commercial transactions, as well as the spread of Islamic scientific inquiry into southern Europe. *Liber Abaci* offers a compendium of tools for calculating present value, compounding interest, evaluating geometric series, dividing profits from business ventures and pricing goods and monies involving complex varieties of weights, measures and currencies.

When the balance of trade began to improve between southern Europe and its Eastern trading partners, more gold came into circulation. In 1252, Genoa and Florence⁶ began minting their own coins and in 1284, Venice followed with the ducat.⁷ Under Europe's new bi-metal system in the 13th century – silver coins served as domestic money and gold, with its higher store of value, became the international medium (Bloch, 1967). Indeed, the economy itself was roughly divided between the interior of Europe that was loosely populated by rural communities and townships and the outer ring of cities that engaged in shipping. The Hanseatic League founded in the twelfth century, which had its own legal system and defence policy against piracy, formed as a international alliance of trading oligarchs that hailed from a number of North Sea and Baltic towns (Polanyi, 1957).

The increased commerce propelled the development of banking, first in Venice in 1177 and later in other Italian and French trading centres, giving rise to *bills of exchange* - the forerunners of banknotes. Grain financing - begun in thirteenth century Italy by Lombard merchant banks - was arguably the first organized speculative trade in forward grain pricing and debt trading since Athenian times.

As the moneyed economy replaced the medieval system, financial innovation grew. In 1262, Venice issued the *Ligatio pecuniae* - a decree that formalized the paying of interest at 5 percent to lenders of capital and consolidated previous debt issuance. This innovation led to further developments in the financial markets: "government credits were traded in a secondary market and financial derivatives, such as overdue interest - became diffused objects of trade" (Pezzolo, 2005). The system marked the beginning of modern public finance and a sophisticated credit market based on government loans (Pezzolo, 2005).

Trade, risk and moneyed credit played crucially in the development of risk management mechanisms and speculative activity emerging during sixteenth century. In 1531, an exchange for the purpose of conducting commercial and financial transactions opened in Antwerp. Validated by Hapsburg emperor Charles V, a legislative framework regarding contract making and litigation was put in place within the same decade.

Shortly thereafter, as the principal market for Baltic grain, Amsterdam established a forward trade in grain that included transactions in cargo shipments or inventories stored in other ports. The exchange quoted daily the prices of wheat and rye. In addition, Amsterdam merchants developed a contract known as *stellage*, which was a forward contract with an option by the buyer to annul the contract for a paid premium. Other instruments - resembling modern options on futures - such as rights to buy or sell quantities at a specific price at a certain time - developed at the same time (Gelderblom & Jonker, 2005). During poor harvests, prices naturally rose, causing Amsterdam's sheriff in 1556 to accuse German and Flemish merchants of a "great evil." Following several official bans on forwards issued in 1556, 1565 and 1571, forward contracting continued, but was hampered by a government "keen to guard against the manipulation of the trade in staple foods such as grain, fearing the social unrest which might follow price increases" (Gelderblom & Jonker, 2005). *Windhandel* - or trading in the wind - came to be the Dutch expression denouncing speculation.

⁶ The florin.

⁷ The ducat would become the dominant regional gold coin for the next several centuries.

In England, statutes prohibited grain speculation as early as 1552. The statutory offenses were based on three common law violations: (1) forestalling—the purchase of grain outside of a market and a subsequent sale in the market; (2) regrating—the purchase and resale of grain in the same or nearby market; and (3) engrossing—the purchase of grain before harvest for the purpose of reselling after harvest (Banner, 1998). The law's prohibition of food speculation thus rested on a solid base of popular disapproval. Popular belief held that "speculation raised prices, harmed the poor [...] exacerbated shortages [...] gave rise to deceit, and more subtly undermined the common good" (Banner, 1998).

Mercantilism in Europe

Capital markets obtained a major impetus with the creation of the first joint stock corporations in the early 1600s. By allowing the pooling of capital, these new structures revolutionized commerce and investment opportunities. Differing significantly from modern counterparts - as charters of the crown - they received monopoly powers for particular areas of commerce enabling them to become colossal enterprises. The Dutch East Indies Corporation, for example, would eventually tower in the seas with a fleet of 150 battle and merchant ships and a labour force of 50 000. This financial innovation - mutual ownership - did not aid futures markets development in commodities. Rather, the joint stock company was an extension of mercantilism, a system aimed at promoting exports and limiting imports through tariffs and the Navigation Acts.

In fact, the mercantile system was highly protectionist. In Amsterdam, increasing taxes and tariffs levied by the state in the seventeenth century, caused skilled labour and commerce to move to other centres, diminishing its once thriving grain trade (Hudgins, 1997). Mercantilism also sought to safeguard the general organization of guilds, workers' wages and prices. In France, the guilds were nationalized. In England, the existing town and rural organization was unified through the Statute of Artificers (1563). So pervasive was the Statute that according to historian S.T. Bindoff.

[...] the restrictive principle had, like some giant squid, fastened its embracing tentacles round many branches of domestic trade and manufacture," and "in the last decade of Elizabeth's reign scarcely an article in common use – coal, soap, starch, iron, leather, books, wine, fruit – was unaffected by patents of monopoly. (Bindoff, 1950)

The Poor Law in 1601 was enacted to deal with the rural labour dislocation caused by the conversion of much crop land to sheep grazing enclosures that was fuelling England's wool manufacture. The observation of individuals "unattached to the manor or any feudal superior" sounded an alarm in England in the seventeenth-century. and the social and economic causes of the new pauperism became the subject of much literature and several humanitarian and religious movements. In 1660, Thomas Lawson published an *Appeal to the Parliament concerning the Poor that there be no beggar in England*, testifying to the disquiet over the new class of poor.

*The English Corn Laws, which existed in some form since the reign of Henry III (1225), underwent a change during this time. Originally intended to guard against the scarcity of bread, as the agricultural revolution progressed by enclosing common lands, consolidating small plots and severing the feudal bonds between land owner and tenant, the payment of rents took prominence.*⁸

⁸ For an excellent dissertation on the Corn Laws, see Marks (1908).

Under the new [Tudor] regime, Money took the place of Men. It was no longer "The yeomanry must not be destroyed, the King must not lose his foot soldiers;" but, "Rents must not fail, the value of land must not decline." In England, in the seventeenth century, "Agricultural Depression" did not mean that bad harvests were ruining farmers by giving them less corn to sell, it meant that harvests had been too abundant, Nature too bountiful, and so corn was cheap and the farmer could not pay his rent". (Marks, 1908)

Not surprisingly, then, while European powers battled each other for supremacy and sought a stable domestic food supply, commodity futures markets did not develop during this period and the notorious speculative fevers that erupted in the seventeenth and eighteenth century, such as "tulip mania" (1637) and the "South Sea bubble" (1720) involved schemes of a more exotic nature.

By the late eighteenth century, the Enlightenment had stirred an eruption of new political and economic ideas. Adam Smith wrote *The Wealth of Nations* (1776), Echoing Smith, Immanuel Kant in 1795 rejected the mercantilist dogma in the prophetic *Perpetual Peace*, asserting that only representative Republican governments which respected autonomy and universal hospitality could be trusted to keep citizenries out of war. David Ricardo, after amassing a fortune on the London Stock Exchange, articulated his renowned theory on comparative advantage in 1817. As an early gold bullionist, he theorized that lax monetary policy was the cause of Britain's inflation. A wave of bullionist thinking eventually led to the 1844 enactment of Peel's Law, requiring the Bank of England to control banknote issuance and maintain a statutory level of gold reserves.

In 1830, England abolished its centuries-old Settlement Laws and Poor Laws, abruptly unshackling its labour force. It repealed its Corn Laws in 1848, and other countries began enacting similar reforms.

As nations eased trade barriers, commodities flowed around the globe and the grain trade dramatically increased. It was during this century that family enterprises replaced state monopolies: the major family grain companies – Continental – (founded by Michel Fribourg Belgium - 1813), Bunge (Netherlands -1818, later Bunge y Born, Argentina - 1884), Louis Dreyfus (France, Germany - 1851), Cargill (the United States of America - 1865) and André (Switzerland – 1877), emerged as giants of the trade – most of which are in dominance today.

Japan

Following the proto futures grain exchange in Amsterdam, the next centre to develop forward and eventually futures trade in grain was the Dojima Exchange in Osaka, Japan during the Tokugawa Period (1603 -1867). Following the development of warehouse receipts, called rice bills, the market emerged as an autonomous commercial development between rice buyers and sellers. The *bakufu* (officials), however, saw the trading in these bills as fictitious and the cause of inflation, and therefore shut down trading in 1705. It also confiscated the wealth of the warehouseman in front of whose house trading was conducted and declared void his credits to feudal lords (Schaede, 1989).

In 1730, when bountiful harvests together with monetary intervention were depressing rice prices, the government abruptly changed course and issued a decree to sanction trading at the Dojima Rice Exchange. Similar to today's futures contracts, the contracts in rice were centrally cleared and derived from an underlying asset - standardized in size and quality. Margining and mark-to-market accounting also existed although somewhat differently from

modern exchange practices. The trade was lively and robust. At the end of the afternoon trading session, the settlement price was achieved by lighting a fuse attached to a box and the price realized at the point of extinguishment became the “fuse cord price.” If traders continued to trade, then the exchange’s designated brigade of watermen threw buckets of water on the traders to halt trading. The last price realized during this period became known as “the bucket price” and was used as the mark- to-market price (Schaede, 1989). The fuse cord price, however, served as the opening price the next business day.

The Government of Japan tried unsuccessfully to intervene in the Dojima rice futures market several times over the next 100 years. By 1940, trading on the Dojima Rice Exchange was suspended.

Developments in the United States of America

It is against the law to run a gambling house anywhere within the United States of America, but today, under the cloak of business respectability, we are permitting the biggest gambling hell in the world to be operated on the Chicago Board of Trade. (US Senator Arthur Capper, 1921)

Commodity markets in the American colonies existed haphazardly from early on. In 1666, a corner on the wampum market was recorded. In 1697, “The Exchange” was operating commodity trading in fuel and grain on Broad Street in Manhattan. Speculation increased during the Revolution and the War of 1812, sometimes disrupting the war efforts (Markham, 2001). Commodity centres arose in Baltimore and Philadelphia but did not result in formal establishment. The United States of America Supreme Court gave validity to commodity speculation when it ruled that a tobacco trader could legally profit from advance notice of the signing of the Treaty of Ghent in 1817, which caused a steep rise in tobacco prices. Stating that a purchaser need not disclose price sensitive information to the seller of a good, Chief Justice Marshall held that, “It would be difficult to circumscribe the contrary doctrine within proper limits, where the means of intelligence are accessible to both parties” (Markham, 2001). Legal certainty of commodity transactions was key to the American exchange experiment.

The most famous and still extant futures exchange to emerge in the nineteenth century was the Chicago Board of Trade (CBOT) in 1848. Organized originally by 82 members as a cash market, it also provided rules for ethical trading practices and reliable standards of weights and measures. Soon after the founding of the exchange, grain brokers began trading in “cash forward contracts,” and eventually futures and instruments called “privileges” – the equivalent of options. The rationale behind this innovative marketplace was to mitigate the price swings of the harvest cycle - the trough caused by distressed harvest selling (grain often rotted on the ground) and the subsequent sharp peaks as end-of-season supplies ran short.

Chicago’s geographic location at the southern edge of Lake Michigan and at the centre of extensive rail lines made it ideal as a trans-shipment hub and, combined with its commercial activity, was pivotal to the “Great European Grain Invasion” lasting from 1870 to 1913. Besides the easing of import tariffs in Europe, a revolution in American transport, transport networks and infrastructure facilitated mass shipments of grain eastward. By 1836 the first steamship cargo of Midwestern wheat sailed the Great Lakes to Buffalo, New York. By the 1840s, the Erie Canal linking Buffalo further east to Manhattan was shipping millions of tons of wheat at freight costs of USD 10 per tonne compared with USD 100 per tonne by road. The adoption of grain quality standards,⁹ swift advances in mechanization, and burgeoning

⁹ Adopted in the state of Illinois, 1870.

wheat production across the upper plains propelled the United States of America into the premier global wheat exporter, overtaking Prussia and its Black Sea neighbours.

Many contemporary [nineteenth century] critics were suspicious of a form of business in which one man sold what he did not own to another who did not want it [...]. (Rothstein, 1966)

The CBOT, recognized from the onset for its legitimate commercial purpose, nonetheless drew Congressional attention soon after the start of futures trading. In 1882, a Senate Committee was charged with investigating “corners and squeezes” in oat and wheat futures and possible manipulation of rail shipments (New York Times, 1882¹⁰).

Corners, squeezes and bear raids were a frequent occurrence at the CBOT for decades. The most renowned wheat corner was perpetrated by Joseph Leiter in 1889 which caused wheat prices to appreciate by about 50 percent. In response, another giant speculator P.D Armour chartered tugboats to break the ice in Lake Michigan allowing wheat to flow towards Chicago and accordingly: “The Northwest scraped its granaries, Russia ate rye ... and Argentina swept the floor.” An “avalanche of wheat”¹¹ arriving in Chicago broke the price causing Leiter to default on his obligations.

Responding to the new world of commodity price volatility, other forward/futures exchanges emerged at this time – Liverpool, (roughly the early 1800s), Frankfurt (1867), Alexandria, Egypt (1871), New York (1872), Vienna (1872) Bombay (1875), London (1877), Hamburg (1880), Izmir, Turkey (1891), Winnipeg, Canada (1904) and Rosario, Argentina (1909).

As Chicago grew in importance in establishing the price of grain, the Farm Alliance and other farm groups demanded federal regulation of the CBOT. The Democratic Party introduced several measures favouring the suppression of “the pernicious practice of gambling in agricultural products by organized exchanges [...]” (Himmelberg, 1994) – none of which passed. During WWI the Government of the United States of America became involved in grain distribution its Allies, at which time wheat exports tripled and the price rose to USD 3.25 per bushel. According to the historian Murray Rothbard,

[...] under pressure by the agriculturists, the government programme fixed by statute, not maximum prices for wheat but minima; the Food Control Act of 1917 fixed a minimum price of two dollars a bushel for the next year's wheat crop. Not content with this special subsidy, the President [Wilson] proceeded to raise the minimum to two dollars and twenty-six cents a bushel in mid-1918, a figure that was then the precise market price for wheat. This increased minimum effectively fixed the price of wheat for the duration of the war. (Rothbard, 1972)

After the War ended, prices slumped and the farm bloc demanded and obtained the first federal futures market regulation. The Grain Futures Act (GFA) of 1921, however, was soon declared unconstitutional owing to its taxing power provision. Another Act followed in 1922 which required exchange disclosure of traders, record keeping and anti-manipulation measures.

The GFA did not end market manipulation, however. After a substantial rise in wheat prices in 1924, a Senate investigation found that some speculators had concealed their trading through the use of several accounts. The investigation determined that one of the worst abusers was CBOT member Arthur Cutten. Cutten made reportedly USD 11 million in pushing the wheat price from USD 1.05 to over USD 2.00. When cargoes of Argentinean

¹⁰ New York Times “The Gambling in Grain”, April 18, 1882.

¹¹ Reportedly six million bushels.

wheat arrived in Chicago collapsing the corner, however, Cutten was forced to buy more wheat. A Congressman later would remark that, "Cutten owned more ...grain than anyone since Joseph of Egypt." (Markham, 2001)

During the same time, the GFA administrators "recommended some limitations on [...] longs and shorts [...]" and thought it "advisable to place some limitation upon the extent to which prices of grain futures could fluctuate within a single day" (Markham, 2001). Then United States President Herbert Hoover, who had voiced his support for the hedging function furnished by the CBOT, remarking "that it cheapened the cost between farmer and consumer by reducing the risk", subsequently pronounced that he knew of no more "glaring exhibit than these millions taken by sheer manipulation of the machinery provided by the Board of Trade" (Markham, 2001).

The farming community, too, was suspicious of the CBOT, particularly after it denied Farmer's National - a cooperative - exchange membership. Alexander Legge, a former Farm Board Chairman complained in 1932 that the members of the CBOT "have set up a little government of their own, in which trials are held like a secret lodge, no lawyer being allowed to represent the client, and there being no appeal from their decisions to any court of record" (Markham, 2001).

In 1936, responding to complaints about trading on the exchanges, Congress enacted the Commodity Exchange Act "to facilitate honest and fair practices and to restrain fraud, excessive speculation and manipulation in commodity exchanges" (Stassen, 1982).

Global protectionism and monetary instability after WWI

Following WWI, the liberal creed of laissez-faire imploded. As countries debased their currencies to fund the war effort, the system of fixed currencies based on the gold standard fell apart like a spoked wheel without a hub. No other war had changed the map of Europe so dramatically - four empires disappeared: the German, Austro-Hungarian, Ottoman and the Russian. Because the United States of America came late to the conflict and managed to remain on the gold standard, it emerged the strongest in the aftermath. Other countries, however, grappled with re-establishing a working monetary system.

Against this backdrop of hyperinflation that ravaged the economies of Russia, Austria, Hungary, Poland, Bulgaria and Germany, the restoration of the gold standard and the fixed-rate currency system was a tenet common to all political and social doctrines of the new Europe. Russia, whose leader Vladimir Lenin had espoused a non-money economy, was first to stabilize its currency (ruble) to gold in 1923. In Italy, Prime Minister Benito Mussolini waged a nationalistic battle - *Quota Novanta* - vowing to restore the weakened Italian Lira to the pre-war level of 90 against the British Pound (itself fixed to gold in 1924). In an opposite move, France devalued its currency to one fifth its former level in order to gain a competitive export advantage. Britain symbolically fixed its currency at the pre-war level at USD 4.82 and quickly saw a 12 percent surge in unemployment. Previously considered a purely economic institution, an unstable world discovered that a single money standard was also a social mechanism, underpinning the welfare of swaths of agriculturalists and workers. (Polanyi, 1957)

Once currencies were re-fixed to gold,¹² they came under speculative attacks and government intervention. Also common were bank panics: a bank failure in Austria in 1931 ignited a wave of bank runs (in which depositors demanded specie) across the financial world. That same year, Britain left gold and devalued its currency, creating a de facto Sterling

¹² Several South American and Asian countries refixed to a silver standard tied to a gold ratio.

currency zone for nearly half the world. Eight years earlier, the British economist John Maynard Keynes, had damned the gold standard for its stringency, calling it a *barbarous relic*.

In a review of the interwar period, the current United States of America Federal Reserve Chairman describes the impossibility of reconciling the two opposing trends that eventually tore the gold standard apart: "central banks could do little in the face of combined banking and exchange-rate crises, as the former seemed to demand easy money policies while the latter required monetary tightening" (Bernanke, 2000). In the late 1920s, when the United States of America Federal Reserve countered inflation with monetary contraction, it helped trigger a worldwide depression.¹³

A recent analysis, "Commodity Market Disintegration in the Interwar Period" (Hynes et al., 2009) documents the increase in trade costs relative to commodity values following 1929. Examining commodity prices at origin vs. landed prices, it verifies increases in trade costs of 160 percent between 1913 and 1933, ascribing these increases to protectionist tariffs, scarcity of trade finance and the breakdown of the gold standard. Citing from the *Winnipeg Free Press*:

By 1931, complaints still abounded about "the spasmodic nature of export buying" and worries over the fact "that speculative trading [was] at an absolute minimum and exporters show[ed] interest only at wide intervals" remained (1931). There was also the impression that "rarely, if ever" had the exchange witnessed "such a dull and featureless grain market" (1931). Soon, a new concern had also arisen: "few, if any traders, dreamed that before the end of another week Great Britain would have abandoned the gold standard...and that owing to these things export of Canadian wheat to the United Kingdom would be practically at a standstill.

So monumental an event was Britain's abandonment of gold standard that, "The Tokyo Stock Exchange had announced that it would not open. Tokyo was followed by Bombay, Calcutta, Johannesburg, London, Berlin, Amsterdam, Copenhagen, Vienna, Oslo, Stockholm, Brussels and Athens. The Paris Bourse opened, but limited all trades to 5 percent of all holdings and no dealing in foreign exchange. Montreal's Exchange opened similarly restricted. The New York Stock Exchange remained open, but as in dark November 1929, short selling was forbidden. In the artificial market thus created, stocks gyrated unsteadily, closed higher; bonds closed at lows for the year."¹⁴

As global protectionism replaced the doctrine of *laissez-faire*, world trade collapsed by 66 percent. The United States of America left the gold standard in 1933 and the other countries operating on a "dirty float" arrangement abandoned gold by 1937. Conferences in Brussels, London, Lausanne, Geneva and Locarno failed to reinstate a pre-war stable monetary system to allow for the resumption of trade. Some countries reverted to barter: Germany conducted trade through bi-lateral barter arrangements with the nearby Balkan states and across the Atlantic with Brazil and Argentina, bypassing the banking system altogether. The collapse of the monetary system would also coincide with the demise of the liberal state as autarchy and totalitarianism erupted out of war's wreckage in Europe, South America and Asia.

Commodity dependent countries reeled during this period as commodity prices spiralled downward. In an article written for *Foreign Policy Associates*, Stephen Naft observed: "The decline in the prices of coffee, copper, tin, nitrates [...] and rubber [...] all but shattered the economic structure of South America. Budget deficits, [an] inability to pay the salaries of government employees, numerous bankruptcies and mass unemployment called forth

¹³ The New York Fed's discount rate, at 3.5 percent in January 1928, reached 6 percent by August 1929, its highest value since 1921.

¹⁴ Excerpted from *Time Magazine*, August, 1931.

general discontent [...] and bewilderment. One of the consequences was a large crop of military revolts and similar uprisings" (Naft, 1937). Cuba, highly dependent upon its sugar exports, saw its economy collapse as sugar prices fell from a high of USD 0.11 per pound to USD 0.02, sparking a revolt in 1933. The increasingly chaotic monetary system and its effects on credit and commodity prices prompted Herbert Hoover to pronounce in 1931:

The restriction on credit has grown greatly in the past few weeks. There are a multitude of complaints that farmers cannot secure loans for their livestock feeding or to carry their commodities until the markets improve. There are a multitude of complaints of business men that they cannot secure the usual credit to carry their operations on a normal basis and must discharge labour. There are complaints of manufacturers who use agricultural and other raw materials that they cannot secure credits beyond day to day needs with which to lay in their customary seasonal supplies. The effect of this is to thrust back on the back of the farmer the load of carrying the nation's stocks. The whole cumulative effect is today to decrease prices of commodities and securities and to spread the relations of the debtor and the creditor. (Hoover, 1957)

After the Government of the United States of America attempt to create a floor under grain prices, a news writer provided this narrative: "Three weeks ago Chicago's Board of Trade, instigated by Washington, set a temporary level below which grain future prices would not be allowed to sink. Last week that artificial floor was removed. Prices which had been bobbing along on the rule like balloons without lifting power promptly dropped the maximum amounts permitted in one day's trading. Great was the hullabaloo."¹⁵

WWII and its aftermath

The commodities trade and currency system changed substantially following the Second World War. Protectionism persisted after the War. Servicing the war debt which burdened the major European nations, put their balance of payments under great strain. While Europe and East Asia lay in ruins, the United States of America emerged in a dominant position: besides holding 80 percent of the world's gold, it boasted a booming capital market and produced half the world's coal, two-thirds the oil, and more than half the electricity. With only 6 percent of the world's population, it generated 40 percent of global industrial output.

Needing markets, the United States of America used the 1944 conference at Bretton Woods to put forward a new monetary arrangement. Rejecting the Keynesian plan of a central clearing house using a universal currency called the *bancor*, it advanced a system of American based monetary institutions and a currency formulation that would stamp the United States Dollar with reserve currency status.

Under the Bretton Woods system, currency parities were "pegged" rather than fixed to the United States Dollar giving the system flexibility. The United States Dollar was then fixed to gold at USD 35 per ounce creating a quasi-gold standard system. The arrangement cleverly solved the problem of bank runs, as the public could not redeem foreign currency in gold equivalents and, the United States of America had outlawed gold coin ownership since 1933. The International Monetary Fund (IMF) would administer the stabilization fund by making short-term loans (in dollars) to any country suffering a balance of payments problem that might threaten currency alignments.

The disruption to the world economy by WWII put a halt to many commodity futures trading centres. Some countries simply banned futures trading altogether as too speculative.

¹⁵ Excerpted from Time Magazine, 1933.

India for example, had thriving futures markets in Bombay and Calcutta as well as several other cities trading in cotton, jute, spices, wheat and oilseeds commencing in 1875. As a sophisticated trade, traders in the Indian cotton market often undertook arbitrage with other major international cotton markets, such as Liverpool, New York and Alexandria. A complete regulatory framework for futures trade governed operations, including rules and conditions for futures transactions, brokers' licensing and clearinghouse functions. However, futures trading was restricted during World War II, not to be restored until 2004:

Options on oilseed and cotton, food grains, spices and sugar were first banned. The inflation of the later war years was a direct outgrowth of conscious government policies designed to meet exigencies of the war effort. The imperial administration, concerned with obtaining railway wagons for military transport, placed serious restrictions on the commercial use of the railways, causing shortages in most essential commodities imported into the city. The spiralling prices fuelled speculative activity in the futures markets, and futures trading was halted owing to rampant hoarding. (Hathaway, 2007)

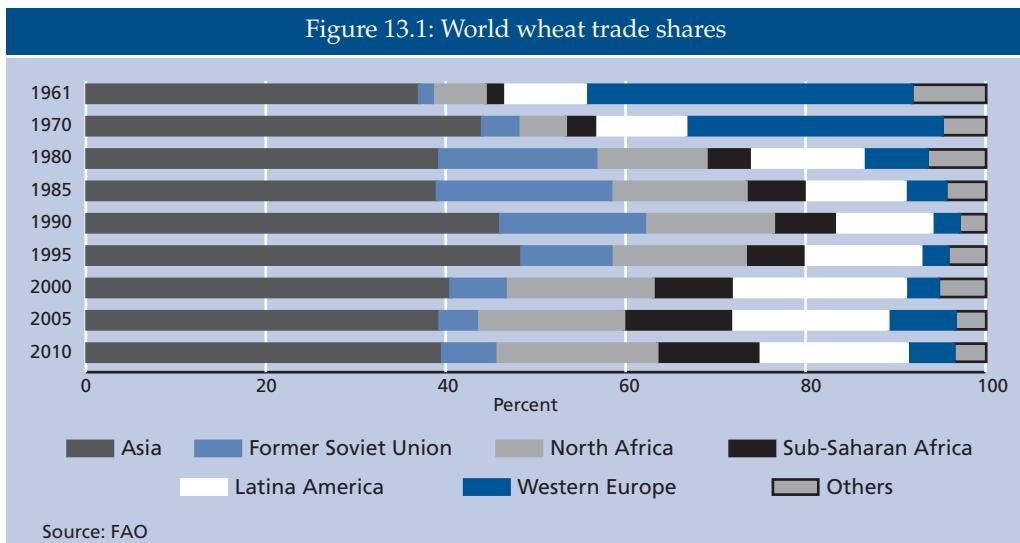
The Cotton Exchange in Alexandria Egypt (1885), which also dealt in cereals, was effectively shuttered by agrarian reform measures passed in 1950. Similarly, the Rosario (1909) and Buenos Aires (1907) exchanges in Argentina, which had experienced an annual trade volume of 20 million tonnes in the 1920s, saw commodity trading dwindle to negligible levels as the "Government established a monopolistic market, acting as the only buyer of crops, thus eliminating free market transactions" (Basurto & Caram, 2009).

Seeking to integrate its recovering national economies, in 1957 Europe established the European Economic Community in under the Treaty of Rome, initially involving Belgium, France, Germany, Italy, Luxembourg and the Netherlands. Simultaneously, it formulated the Common Agricultural Policy that allowed for the free flow of agricultural goods within the EEC and placed tariffs on third country imports. The system provided producers with subsidies in the form of direct price supports for commodities produced. Designed to protect producers from the volatilities of global markets and eventually create self sufficiency (Western Europe was the single largest wheat importer until the early -1970s as shown in Figure 13.1, CAP impeded a revival of futures trading in cereals and oilseeds for the next several decades.

Although futures trading in the United States of America restarted after WWII, a price support system administered under the Commodity Credit Corporation radically diminished the pricing function of futures. With few exceptions, prices and futures trade languished during the 1950s and 1960s. The early 1970s proved another matter. In 1971, the United States of America President Richard Nixon announced that grain sales to the USSR and the People's Republic of China would no longer be subject to the Export Control Act that required United States flag carriers to transport half the tonnage shipped to these countries. The result was a massive vessel chartering and grain purchase programme by the USSR (aided by substantial United States export credits), which went unannounced for months. As the multi-million ton sales were revealed, grain prices exploded. They continued to move still higher as an Australian drought slashed global production and India tendered for sizable quantities of wheat.¹⁶

The demand shock in grains was exacerbated by the United States of America decision to suspend US Dollar/gold convertibility. While the war in Southeast Asia was increasingly

¹⁶ In reaction, the Government of the United States of America stepped up its international crop surveillance and instituted export reporting procedure to ensure that such an episode would not be repeated. These programmes have been maintained and are of great value to the grain trade.



straining the United States of America financial system, the Government of France demanded gold in exchange for United States Dollar liabilities (the London gold market was valuing the United States Dollar at about USD 45 per ounce). In August 1971, vowing that "the American dollar must never again be a hostage in the hands of international speculators," President Nixon announced that he had instructed the Treasury to suspend convertibility of the United States Dollar into gold. The administration had failed to appreciate the loss of faith in its currency owing to the deterioration of its gold/foreign liabilities ratio: In 1953, the United States of America gold reserves exceeded foreign liabilities by threefold; by 1970, foreign liabilities were five times greater than gold reserves.

The United States Dollar sank 30 percent against other major currencies while gold - unmoored from its USD 35 an ounce peg - rallied to USD 200 by 1974. The price of maize, which had dipped below USD 1 per bushel, traded close to USD 4 per bushel, soybeans soared to USD 12 per bushel and wheat topped the USD 6 mark. Compounded by the petroleum crisis in 1973, the inflation experienced in the United States of America finally culminated in wage and price controls.

Birth of financial futures

The end of Bretton Woods arrangements gave rise to the mammoth futures market of financial instruments. To enable trade between the United States Dollar and foreign currencies, Chicago Mercantile Exchange swiftly launched seven currency futures contracts in 1972: British Pound, Canadian Dollar, Deutsche Mark, French Franc, Japanese Yen, Mexican Peso and Swiss Franc. Seeing the opportunities of a volatile interest rate environment, the CBOT launched United States debt instruments, starting with the mortgage backed Ginnae Mae followed by the 30 year Treasury bond contract (1975).

The innovation of exchange traded financial futures spurred the creation of the Commodity Futures Trading Commission in 1974. The United States of America Congress vested the CFTC with broad oversight and anti-fraud powers, including the authority to

approve position limits and the specifications of all futures contracts listed on United States exchanges to ensure that they are resistant to manipulation.

Financial futures trading revolutionized credit markets, including consumer financing. Mortgages that had been traditionally based on fixed rate 30 year loans became flexible, retail credit that had only been extended on a store to customer level became intermediated by credit card companies. These new forms of financing became increasingly mainstream, particularly after interest rates declined from double digit levels.

On the institutional level, a new industry emerged outside the oversight of the CFTC. In 1982, the International Swaps Dealers Association established itself, “to encourage the prudent and efficient development of the privately negotiated derivatives business.” Initially, most of the transactions were standard interest rate swaps – often hedged at the CBOT. But unlike the futures trade that was centrally cleared in which buys and sells were offset, the swaps book consisted of strings of bi-lateral transactions that burgeoned into a USD150 trillion open interest by 2004, causing financier Warren Buffet to call these instruments – Weapons of Mass Destruction.

Elsewhere during the 1980s, financial futures markets multiplied. Following the easing of capital controls, the London International Financial Futures Exchange (LIFFE) launched in 1982, followed by Marchés A Terme d’Instruments Financiers (MATIF, Paris 1986) and Deutsche Börse in 1990. As intervention cereal stocks were declining and CAP reformed its producer subsidies from commodity specific price supports to direct compensation schemes, MATIF launched a rapeseed and milling wheat contract in 1988. LIFFE absorbed the London Commodity Exchange in 1996 that had been a trading centre for coffee, cocoa and sugar for several decades.

Global effects

The market liberalization that swept across the globe starting in the 1990s generated a surge in commodity exchange and derivative market development. The new exchanges differed markedly from previous models – shifting their focus from commercial concerns to producer needs. Income growth, rising demand for agricultural products and a reduced scope of price support systems¹⁷ created a need for risk management centres to deal the resultant regional price volatility.

In addition to economic and political forces, the technological revolution proved highly instrumental in exchange development. By incorporating instant audit trails and safeguards against fraud, market manipulation and execution errors, the electronic trading system that began in Europe in the mid-1990s was pivotal in establishing market integrity, as it required less regulatory supervision than the traditional open outcry system. The superior oversight and surveillance functions allowed electronic exchanges to gain overwhelming government endorsement, even in countries such as China (Mainland), India and Thailand that previously halted or banned commodity futures trading. In addition, the trend toward restructuring the governance of the exchanges from mutually held, often exclusive, membership associations to transparent shareholder organizations instilled participant confidence in exchange integrity.

Information technology provided an equally important producer benefit welcomed by governments: price transmission. Historically, most commodity exchanges developed as physical transaction hubs where producers delivered and sold their crops to buyers with

¹⁷ Some countries, such as Argentina, Brazil, New Zealand and South Africa, opted for the complete elimination of price supports.

storage facilities, having to accept the spot offer price. Market fragmentation – i.e. poor price correlation among the regional exchanges – also characterized the exchange network. As the new electronic exchanges broadcast multiple prices from various markets – spot and forward, they gave producers a range of seasonal and geographic options for storing or marketing their crops. In short, governments realized that exchanges helped confer pricing power to the producer. Combined with their enhancement of institutional development – e.g. grading and warehouse receipt systems, supply chain integration and farm credit facilitation, exchanges became seen as desirable national policy initiatives. As an example of the newfound producer focus, the South African Futures Exchange designated over 100 delivery locations in its corn and wheat contracts to encourage farmer participation following the elimination of price supports. Several emerging countries saw the establishment of a futures exchange a mark of modernity – in Turkey, Prime Minister Erdogan inaugurated the Turkish Derivatives Exchange in 2005 in Izmir.

Emerging market exchange development, however, was not without several hitches. As a front runner in this field, China (Mainland) saw too rapid a growth starting in the mid-1990s:

*[...] the frenzied growth of China's futures markets was accompanied by rampant abuse, triggering two waves of reform, the "First Rectification" and the "Second Rectification." The First Rectification was launched with the publication of a directive informatively titled *The Notice of Firmly Curbing the Blind Development of the Futures Market*. Over the subsequent five years, authorities slashed the number of exchanges from over 40 to 15, delisted 20 futures contracts (leaving 35), began issuing licenses to futures commission merchants for the first time while lopping their number by over 70 percent, restricted trading on foreign futures exchanges, introduced new rules and regulations, and shifted the control of the exchanges from local governments to regulatory authorities. (M. Gorham, 2005)*

The reforms eventually left three exchanges – Zhengzhou, Shanghai and Dalian – each with a separate product base – which today stand as some of the largest exchanges by contract volume.

In Thailand, manipulation of the rice contract caused the exchange to halt rice trading. The Government of India suspended trading in wheat, dal, tur, potatoes and rice in 2007 when it witnessed an inflationary trend in the prices of these commodities. The wheat and cotton contracts failed to gain traction at TURKDEX, which today is strictly a financial derivatives exchange.

The United States of America derivatives revolution

By the mid-1990s the Over the Counter (OTC) market in interest rate swaps was in full swing, topping USD 10 trillion in notional amounts of outstanding contracts. The opaque market made headlines in 1995 when the firms Proctor and Gamble and Gibson Greeting Cards sued Bunker's Trust for "misleading" them about the riskiness of derivatives transactions sold to them. One of the swaps, called a ratio swap, tied Gibson's interest rate payments to the *square* of Libor divided by 6 percent ($libor \times libor/6\%$), causing its losses to explode as the London rate topped 6 percent. Nonetheless, the swaps business continued unabated, but took another turn when the Federal Reserve orchestrated a bail out of Long Term Capital Management by its creditor banks in 1998. The business had become cannibalistic – it would need wider avenues of growth.

Free market fervour and the movement for deregulation accelerated in the United States of America in 2000. The Commodity Futures Modernization Act allowed for the exemption of

energy products from position limits (later to be called the “Enron loophole” when the energy firm collapsed) and the exemption of over-the-counter swaps and derivatives from CFTC oversight. More significantly, Congress overwhelmingly passed the Gramm, Leach, Bliley Act, repealing the Glass-Steagall Act of 1933 that had separated insurance functions and commercial and investment banking. Together, these acts provided the engine for staggering increases in futures trading volumes by firms that had no commercial interest in the contracts beyond profit making. According to Robert Reich¹⁸:

By 1999, Wall Street was salivating over such a [Glass Steagall] repeal because it wanted to create financial supermarkets that could use commercial deposits to place bets in the financial casino. That would yield the Street trillions.

The CBOT also embraced the deregulatory spirit. Since the early 1990s it had been steadily increasing the speculative position limits in its agricultural markets with the approval of the CFTC. These limits, which had existed for decades at 600 contracts per commodity would finally grow to 22 000, 10 000 and 6 500 for maize, soybeans and wheat respectively by 2005 and were set to double when the 2006-08 high food price event hit.

When two renowned academics from Yale University and the Wharton School published “Facts and Fantasies about Commodity Futures,” (Gorton & Rouwenhorst, 2004) commodity derivatives trading kicked into high gear. In a remarkable sleight-of-hand, the authors redefined commodity futures a distinct “asset class,” upending their traditional role as hedging or risk transfer instruments. Examining commodity futures prices between 1954 and 2004, they proclaimed that they had less volatility and better returns than bond and equity markets and, because they were inversely correlated to securities, they were ideal investments for those seeking “portfolio diversification.” Although the analysis did not include any costs associated with rolling positions forward – something necessary in actual position maintenance, the world of investment banks embraced the analysis with unfaltering faith. “Facts and Fantasies” became the doctrine enabling the banking and brokerage industry to persuade a whole new customer base into commodities “investment.”

Tradable commodity indices - which had existed since the launch of the Commodity Research Bureau index in 1985 (NYBOT), followed by launch of Goldman Sachs Commodity Index in 1991 (CME) and eventually several others - now became a lucrative retail offering. The institutions selling these products would typically charge a customer fee of 2 percent of assets and 20 percent (or more) of profits. For the sales firms, nothing in the equity or fixed income world could compare with the profitability of the commodity index fee structure.

In fact, the commodity index retail fund might be viewed as one of the most ingenious innovations ever sold. As a reverse fixed-for-floating swap transaction,¹⁹ it obliges the customer to deposit 100 percent collateral to purchase a basket of commodity futures. The sales firm then allocates the deposits as follows: 2 percent is collected up front as an annual asset fee; 8 percent (approximately) goes to the clearing house to cover the initial margins for the commodities involved; the remaining 90 percent is placed in T-bills. Customer funds cover 100 percent of losses incurred by declining commodity prices while profits from increased prices are split with the sales firm. Significantly, the customer funded 100 percent collateralized portfolio makes the sales firm immune to any counterparty or default risk. For

¹⁸ Robert Reich, Wall Street Pit: Why the U.S. Economy Is So Out of Whack, 4 April 2010 <<http://wallstreetpit.com/22245-greenspan-summers-and-why-the-economy-is-so-out-of-whack>>

¹⁹ Swaps usually involve an exchange of payment streams in which one party (the buyer) agrees to a fixed rate or price and the other party (the seller) a floating one. In commodity index funds transactions, the customer acts as the swaps seller to the sales firm, as the customer bears the market risk while the sales firm bears none.

the sales firm, the commodity index fund is a zero risk/high return product with no exertion - other than placing orders.

Not surprisingly, several firms petitioned for and received "hedge exemption" status, meaning that they could amass positions in excess of the already colossal speculative limits. According to Barclays Capital, about USD 320 billion dollars is invested in various commodity index funds today with most linked to the GSCI and the Dow Jones UBS commodity index fund (not inclusive of hedge funds).

In addition to index products, OTC swaps also became a significant agricultural market offering. The market is opaque – existing figures on the market depth, volume or purpose, are not public; so whether swaps are customized products intended to reduce price risk exposure or whether they are another form of speculation cannot be ascertained for now.²⁰ However, according to recent CFTC Commitment of Traders Report, Swap dealers have negligible short positions and hold substantial portions of the long open interest in agricultural commodities, i.e. 20 percent, 25 percent and 37 percent in CBOT corn, soybean and wheat contracts respectively.²¹

Speculation has received commendation from high ranking officials, economists and popular pundits. Former United States Federal Reserve Chairman Alan Greenspan consistently praised derivatives trading as creating market efficiency and told a Senate hearing in 2006 on energy that market speculators also have been able "to hasten the adjustment" to higher prices and "eased the shock to the economy." Nobel prize winner and New York Times editorialist Paul Krugman utterly dismissed the idea that index investing amounted to "virtual hoarding" an idea proposed by hedge fund manager Michael Masters before a United States Senate sub-committee in 2006 (Masters, 2008).

The *Economist* and the *Financial Times* also have frequently minimized the possible price impacts of speculation, ascribing price movements instead almost entirely to supply and demand fundamentals. Two articles in the Economist (June 26, November 19, 2010) made assertions that there was "almost no evidence" to connect commodity speculators with commodity price spikes. In July 2010, an FT article lionized the hedge fund owner of Amarajo, which took delivery of 240 000 tonnes of cocoa in the LIFFE Euronext market, calling his trades "devilishly brilliant." (Financial Times, 2010)²². It dismissed the idea that "snapping up" virtually all of the deliverable supply amounted to a corner, even though the record price of cocoa induced the shipment of African origin cocoa from New York warehouses back to the northern European delivery points of Amsterdam and Antwerp.²³ When cocoa prices dropped over 30 percent within a month, the FT did not follow-up on the price spike and collapse, leaving important questions unexamined and unanswered.

As for-profit entities, the exchanges themselves have become forceful marketers of their own products and the merits of commodity futures. Having merged the CBOT, COMEX and NYMEX into the CME Group, the super-exchange has a ubiquitous presence in trade journals, newspapers and broadcast media. Euronext LIFFE²⁴ also vaunts its rising presence in commodity futures trade, openly challenging the CME for dominance. Saying

²⁰ The CFTC since 2008 has made a "special call" to swaps dealers asking them to divulge their swaps book, but does not publish the findings.

²¹ As of November 16, 2010.

²² Financial Times. 2010a. "Man in the News: Anthony Ward", July 23.

²³ In United States futures markets, such a movement of commodities would be considered a "distortion of trade" and not allowed to continue. See also Financial "Chocfinger is no Bond Supervillain" July 20 (2010).

²⁴ The exchange includes the LIFFE and Matif product complex of coffee, sugar, cocoa, wheat, rapeseed, corn, feed wheat and other agricultural products.

that commodity investing “has never been easier,” in the 2010 Summer issue of Swiss *Derivatives Review*, a Euronext LIFFE director reproaches CBOT grain contracts for their lack of convergence between cash and futures, (Dudden, 2010) encouraging traders to switch to its products.

Academic analyses have also thrown support to the entrance of new types of speculators. In 2008, Sanders, Irwin and Merrin (Sanders et al., 2008) argued that the level of passive index fund investing stabilized after 2005 in agricultural markets and was beneficial in absorbing the short hedging needs of the market. In another analysis written for the OECD, the authors applied Granger causality to the grain markets to determine if the levels of long positions held by index traders were predictive of price; they concluded “no” (Sanders et al., 2008).

As an isolated contrarian study, UNCTAD’s 2009 Trade and Development Report countered the prevailing creed of free market orthodoxy, contending that the massive inflow of fund money had caused commodity futures markets to fail the “efficient market” hypothesis. Calling the steep rise of institutional inflows into commodity futures the “Financialization of Commodity Markets,” it argued that swap dealers and index funds ignored supply and demand fundamentals when making decisions to buy or sell commodity futures, (UNCTAD, 2009).²⁵ The Report concluded that dealers/funds distorted proper price discovery. The CBOT itself raised the same concerns about the lack of convergence between futures and cash and the permanent contango²⁶ in the wheat market, coinciding with the increase in fund activity.

A new framework

Structural changes in global commodity markets have greatly contributed to rising prices and increased price variability. These fundamental trends toward higher prices have been a key lure for increased speculative activity on the major futures exchanges. Most factors contributing to higher prices and higher speculative volumes have been widely cited by economic journals and can be summarized as follows:

- ▶ Markets liberalization and decline of price supports.
- ▶ Deregulation of the financial service sector in the United States of America that allowed proprietary trading by banks.
- ▶ Declining margins in securities trading.
- ▶ Diversion of some foodstuffs into fuel products.
- ▶ Rising demand for food in emerging markets.
- ▶ Under-investment in agriculture owing to prolonged low food prices.
- ▶ Low price transmission to producers in agriculture.
- ▶ Sudden governmental interventions in the export market such as export bans, tariffs and quotas
- ▶ Ease of access to electronic market place
- ▶ Restructuring of primary exchanges from member organizations to for-profit corporations
- ▶ Expansive monetary policy

Speculation is a necessary part of futures markets. Without it, hedging pressure would create stochastic markets and disable their risk transfer capacity. A 1960s study by Holbrook Working established a ratio of speculators to hedgers, stating that a *T*-Ratio of at least 1.15 was needed to absorb hedge orders. Today, however, the question might be reversed – is there

²⁵ Timed rather to prospectus dates or subscription levels.

²⁶ A futures market structure in which each successive contract is priced higher than the one preceding it.

a ratio sufficient for hedgers to absorb the speculative activity? The annual volume of trade in the CBOT wheat contract for 2009 was about 90 billion bushels – the equivalent of trading the Soft Red Wheat crop every business day.²⁷ Even if commercials were heavy participants in this trade volume – most of their buying and selling would have to be deemed speculative as well.

Poorer countries deserve answers to the question: in what proportions are speculative vs. fundamental forces driving commodity futures price formation? As food is the largest single expenditure for over a billion people in this world, price hikes in basic staples simply means reduced consumption of food. According to the International Food Policy Research Institute:

The excess price surges caused by speculation and possible hoarding could have severe effects on confidence in global grain markets, thereby hampering the market's performance in responding to fundamental changes in supply, demand and costs of production. More important, they could result in unreasonable or unwanted price fluctuations that can harm the poor and result in long-term, irreversible nutritional damage, especially among children. (Robles et al., 2009)

High and volatile benchmark futures prices unleash a chain of events in food distribution networks tending to fuel futures prices even higher. In 2008, this chain of events resulted in record high prices. As estimates for stock-to-use ratios in wheat declined to the lowest levels in 30 years, prices shot up. Hoarding, government controls and protests in about 30 countries erupted. Finally, India, Pakistan, the Russian Federation, Ukraine and Argentina all took measures to constrain exports. Consequently, demand was funnelled into the United States of America market and CBOT wheat futures soared to USD 12 per bushel, before breaking back to under USD 5 per bushel the following year.

Furthermore, fluctuating markets make planting decisions far riskier than ever; price signals observed during planting may completely reverse by harvest, causing great hardship. As Jayati Ghosh observes, "the world trade market in food has started behaving like any other financial market: it's full of asymmetry". So farmers think, "Well, wow, the price of sugarcane is really high" and they go out there and cultivate lots of sugarcane. By the time their crop is harvested, the price has collapsed. So you get all kinds of misleading price signals. Farmers don't gain".²⁸

Poorer countries also suffer from monetary policy effects when food prices rise. Most developing countries' price indices are heavily weighted in food. In both India and China, the central banks are responding to domestic food inflation by raising interest rates. These rate hikes may produce more harm than good by stifling business growth and farm productivity instead of stabilizing food prices.

Unfortunately, the will to examine the issue of speculation barely exists. In the richer countries - hosts to the quadrillion dollars a year futures exchanges - obesity, not food deprivation, is the greater concern. Hunger and starvation are abstractions seen through the intermediation of a flat screen TV. Revealing how the general population is unperturbed and largely unaware of the thirty-fold increase in speculative agricultural "investment" in 6 years - a September 2010 Financial Times/Harris poll found that only about 10 percent of respondents in United States of America and the United Kingdom believed that speculators were responsible for the rising food prices. As higher futures prices only marginally impact the price of foodstuffs consumed in both countries owing to a diet of highly processed

²⁷ The annual soft red winter wheat crop in the United States of America is about 400 million bushels – 10.8 million tonnes.

²⁸ Interview with therealnews.com, 2010.

packaged foods with high marketing costs, their perception is probably not inaccurate.²⁹ Many asset managers and traders also claim that the world of currency chaos and expansive monetary policy has forced their trading strategies; pleading the hardship of reversal of fortunes – they contend that ownership of United States Dollar denominated commodities is a Darwinian form of “survival strategy.”

Also, in modern celebrity culture, “big traders” have become “aspirational” figures. Gone are the images of frenetic locals clad in polyester jackets; today’s sleek suited traders are the picture of wealth - worthy of imitation. Financial firms involved in derivatives trading employ over 1 600 lobbyists in the United States of America to help burnish their image as providing a grand social good, even though derivatives trading does not directly contribute to a nation’s Gross Domestic Product (GDP). Many officials in the “watchdog” organizations are pulled directly from the investment bank community, reinforcing the “interlocking directorate” phenomenon between big business and government, first observed in 1956, by sociologist C. Wright Mills.³⁰

Methodology

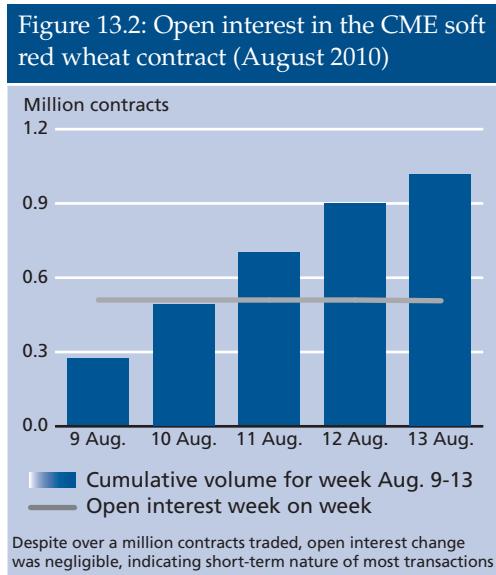
Most attempts to date to quantify the effects of speculation in agricultural markets have failed. The available data – provided via exchanges to the CFTC – cannot adequately address the issue. Also, the CFTC has only recently changed its reporting system; today it provides a detailed disaggregated report that more accurately reflects the new entrants into the market. Unfortunately, the higher level of disaggregation makes year-to-year comparisons impossible. For example, it previously placed “swaps dealers” in the same category as commercials, but now assigns them a separate category. It has also created another category of “managed money” – presumably hedge funds that use long, short and spread strategies without bias. Although significant and groundbreaking, the COT report only provides a weekly snapshot of categories of longs and shorts and not trading activities. Ownership (long and short) is an important informational component - however, open interest does not move markets. Open interest does not reveal the buying or selling patterns by the various trader categories on a particular day.

Indeed, by the time the CFTC publishes its weekly report, futures markets may have moved up the daily price limits for three days and collapsed under expanded limits for the subsequent two days. One week’s volume often surpasses the crop size by multiples, underscoring the significance of transactions and order flow versus weekly changes in open interest (Figure 13.2).

Now that markets are electronic, the daily “pit” commentaries previously provided by commission house merchants are gone - the information on the quantities bought and sold by various firms, including the major grain firms and hedge funds, is no longer available. But the exchanges could produce these reports with great precision. They possess a perfect audit trail on the buys and sales of every firm - including quantities, prices and time of sales. In addition, they have a window into the entire order book. If a market locks “limit up,” they can see what firms have entered orders to buy “at the market” and the size of these orders.

²⁹ Even with a wheat price of USD 12 per bushel, its price component in a one pound box of breakfast cereal (costing around USD 4) on the United States of America supermarket shelf would be about USD 0.20. This price structure of value added foods contrasts markedly with countries whose populations buy price-sensitive staples such as rice, wheat and legumes directly from local markets.

³⁰ See Mills (1956).



With the expansion of limits at the CBOT, a single speculator can, for example enter an order for 22 000 contracts of corn³¹ - 2.78 million tonnes - the equivalent of fifty-five Panamax sized vessels.³² The illumination of actual trade and order book data may not settle every question about the primary drivers of price, but they would at least reveal correlations between price swings, volatility levels and trader categories. As a serious supporter of transparency, the CFTC should seek these numbers.

Also, regulators should revisit the question - what is "excessive speculation?" Since the passage of the Commodity Exchange Act (United States of America – 1936) excessive speculation on exchanges has been prohibited, but not defined. Indeed, there appear to be no parameters for defining such; daily contract volumes exceeding the underlying crop size, frequent limit up and limit down price moves, wide divergences between cash and futures are today seemingly normal components of price discovery. However, according to a former investment banker:

A good definition of "excessive speculation" is the market condition where non-commercial interests set the price. This occurs when speculative interests dwarf commercial volume and crowd out commercial transactions at a given price. The textbook belief is that this can never happen on the assumption that commodity prices are extraneous to derivatives market activity, and that there is an infinite supply of capital on both side of the market. Under such a theoretical system, when long speculators push up the price above the "true" level, for example, an adequate number of shorts will come in to stabilize prices. This is clearly an idealized and inaccurate set of assumptions as there is no known "true" price, speculative capital is not infinite, nor is it now neutral (many new entrants, e.g. institutions indexing, have a long bias). In the real world, speculation can be excessive.³³

³¹ Technically only 13 500 can be owned in any one month, so the buy order would have to be split into two different months.

³² 22 000 corn contracts equals 110 million bushels or 2.78 million tonnes.

³³ Jeff Korzenik: "Fundamental Misconceptions in the Speculation Debate," <http://inefficientfrontiers.wordpress.com/2009/07/29/fundamental-misconceptions-in-the-speculation-debate/>

Speaking before the Senate sub-committee on the effect of massive index fund ownership, Michael Masters stated:

Passive investment provides no benefits to the market while it exacts a heavy toll. Investors' desire to turn the commodity derivatives markets into something they are not (namely a valid investment vehicle) must be subjugated to the needs of bona fide hedgers to hedge their risks and discover fair prices. (Masters, 2008).

Although the entire derivatives industry has at times been labelled “casino capitalism,” little debate exists on the global societal detriment of channelling more than a quadrillion dollars³⁴ away from real investment into an activity that produces no economic growth and is a “zero-sum game.” Former Federal United States Reserve Chairman Paul Volcker has deeply criticized the explosive growth of all derivatives trade, dismissing it “as a way of shifting around rents within Wall Street rather than contributing to overall United States of America productivity growth.”³⁵

Also, now is the appropriate time to investigate how structural change in futures markets, including the migration from pit to electronic trading, has impacted the market structure, a phenomenon completely unknown. Anecdotally, many of the small grain commission firms in the United States of America have been driven out of business owing to price volatility. Price diversion between futures and cash values has caused hedging to become too risky and margin calls too expensive. During 2008, many banks refused to extend credit based on futures volatility and elevators refused to quote bids beyond 30 days. As a result, futures commission merchants report a lack of resting orders in deferred contracts. Under this vacuum, markets can suffer from greater volatility and price spikes as buys and sells “at the market” simply go to daily price limits up or down. It also deters arbitragers which provide an important smoothing function to markets by exploiting the mispricing of calendar and inter-commodity spreads. Locals also are absent to smooth out the spikiness of large sized orders. Theoretically – it may be that the new structure of trade has become highly asymmetrical – divided by relatively small hedgers and speculators on the one hand and large non-commercial institutional players on the other. Indeed – the CFTC’s report on the open interest percentages shows a large amount of long- and short-ownership by 8 or less traders raising the question of “concentration.” Although published without regard to trader type, the COT reveals in wheat, for example, that 37 percent of the long open interest and 24 percent of the short open interest are controlled by 8 or less traders, challenging Adam Smith’s capitalistic notion of the multitudinous “invisible hand.”

Addressing volatility

In addition to providing greater transparency to transactions, exchanges - which to date have relied on both position limits and price limits - could also consider several new approaches to address volatility.

Limit the size of market orders entered within a particular time period. Although the investigation is still ongoing, the stock market “flash crash” (May 2010) in which the United States of America based Dow Jones Industrial Average (DJIA) dropped about 1 000 points in a matter of minutes is thought to have been triggered by large sized orders entered in rapid succession. As the market dropped

³⁴ The Bank for International Settlements has reported that the notional amounts of exchange traded derivatives has topped over a quadrillion dollars since 2006.

³⁵ See: <http://www.ft.com/cms/s/0/49e72392-ec3d-11de-8070-00144feab49a.html#axzz179YidQKa>.

precipitously, many technical trading systems - based on complex mathematical models which now dominate stock exchange trading - automatically cancelled outstanding buy orders. The resultant vacuum in the buy-side of the market sent the DJIA into free fall. Futures exchanges, having allowed order sizes to increase dramatically over the past twenty years should re-examine the appropriate size of at-the-market buy and sell orders. Instead of allowing one speculator to enter an order that could be as large as 22 000 contracts of corn for example, perhaps they should consider a time-lagged sequence of order entry – one which will not overwhelm the entire system at any point in time.

Ban high frequency trading. High frequency trading (HFT) - which probes the exchange order book - is counter to the price discovery function of futures markets and should be banned. Price discovery occurs when two traders find an equitable mutual price at which they are willing to exchange goods. HFT uses superior technical capabilities and speed to gain insights into the order books of the marketplace and then trade “in front” of these orders – an illegal practice called front running. A CFTC editorial recently stated that HFT needed “reining in,” commenting that “parasitical trading does not truly contribute to fundamental market functions.”³⁶ Unless exchanges can demonstrate that HFT benefits the risk transfer and price discovery process of futures markets, it should be banned.

Apply spot month limit positions for longer time period prior to delivery month. Under today’s rules, speculators must reduce the size of their positions to 600 contracts (all United States grain commodities) before the first notice day of the contract – the day when sellers tender their intentions to the clearinghouse to make physical deliveries against their short positions. In the CBOT July wheat contract, speculators must reduce their long or short position from, for example, from 4 000 contracts to 600 contracts before June 30 – the July contract’s first notice day. The position reduction and the associated extensive amount of rolling, particularly by long index funds (in this example – the roll is executed by selling July wheat and buying September wheat), has tended to create distortions between the spot and following month.³⁷ The exchanges should consider whether this reduction might be undertaken two to three months prior to first notice day to smooth out this rolling process.

Settle contracts every month – either by delivery or cash. Because futures prices anticipate forward events, prices can trade at wide divergences to cash values in between delivery periods which may occur only 4 to 5 times a year. Delivery – or cash settlement every month – would cause continuous convergence of cash to futures in the front month contract.

Allow shipping certificates or warehouse receipts to expire within one year of issuance. Because of the steep contango - also called “carrying charge” - in some markets, taking delivery of spot month (by warehouse receipt [WHR] or shipping certificate [SC]) and selling the next month allows firms in some instances to earn around 3 percent on their principal after storage and insurance are deducted.³⁸ The wide contango – has transformed commodity instruments into short- to medium-term financing arrangements and has hindered the movement of grain in and out of the delivery market. If exchanges wanted to force the grain back into commercial channels, it could limit the life of these instruments to one year. Thus holders of expired WHRs or SCs would have to sell the grain represented by the expired instruments to a willing cash buyer.

Reduce position limits. The CBOT increased its limits over a twenty year period from 600 contracts to 22 000 (corn), 10 000 (soybeans) and 6 500 (wheat). The total tonnages of these limits are colossal, as illustrated in Table 13.1. Relatively small limits exist for the same or similar contracts at Euronext

³⁶ Bart Chilton, CFTC Commissioner, “Rein in the Cyber-Cowboys,” Financial Times, Sept 6, 2010.

³⁷ Much discussion has surrounded the index funds’ position roll in wheat; as of November 2010, index funds constituted a long position of about 30 million tonnes against a crop size of about 10 million tonnes. The massive roll – selling spot month and buying the next month is confined by each fund’s prospectus to a few days prior to first notice day and has tended to push the spread between spot and next month to the cost of full carry – i.e. the cost of storage, insurance and finance. In November 2010, the Dec/Mar wheat spread traded at a record cost of carry of USD 0.40 per bushel – in other words the December contract was USD 0.40 discount to the March. (Discussed further in Chapter 21)

³⁸ See CFTC Agricultural Advisory Committee Meeting August 5, 2010 - http://www.cftc.gov/ucm/groups/public/@newsroom/documents/speechandtestimony/aac080510_aulerich.pdf for explanation of this.

Table 13.1: CME Group (CBOT) agricultural positions limits – number of contracts and metric tonne equivalent

Contract	Spot month	Single month	All months
Corn	600 (76.2 thousand tonnes)	13 500	22 000 (2.79 million tonnes)
Soybeans	600 (81.6 thousand tonnes)	6 500	10 000 (1.37 million tonnes)
Wheat	600 (81.6 thousand tonnes)	5 000	6 500 (890 thousand tonnes)
Rice	600 (54.6 thousand tonnes)	1 800	1 800 (163 thousand tonnes)
Oats	600 (51.6 thousand tonnes)	1 400	2 000 (170 thousand tonnes)

Table 13.2: Euronext LIFFE agricultural positions limits – number of contracts and metric tonne equivalent

Contract	Spot month	All months
Milling wheat	2 000 (100 thousand tonnes)	4000 (200 thousand tonnes)
Rapeseed	1 200 (60 thousand tonnes)	2400 (120 thousand tonnes)
Corn	1 200 (60 thousand tonnes)	2400 (120 thousand tonnes)
Cocoa	None	None
Coffee	None	None
Sugar	None	None

Note: Trading Facilities in the European Union – such as commodity futures exchanges - fall within the scope of the Markets in Financial Instruments Directive (MiFED). Although MiFED's trade transparency requirements do not cover derivatives trading, MiFED does allow Member States under Recital 46 to extend transparency requirements to financial instruments such as derivatives. In addition, commercial commodity firms are largely exempt from the reporting requirements applied to investment firms when transacting on regulated markets. MiFED does not address position limits in commodity futures.

LIFFE and these contracts are gaining rapidly in open interest reportedly because their pricing is highly correlated with underlying cash values (see Table 13.2). CBOT needs to re-examine its position limits in the agricultural complex.³⁹

Increase margins. Although controversial because high margins dissuade legitimate hedging, raising margins can reduce the leverage within the system and help control volatility. In November 2010, China's Zhengzhou Exchange and Dalian Exchange, concerned about the "price inflation" caused by excessive speculation in its markets, raised margins in several food commodities and saw an immediate decline in prices.

Finally, the exchanges could create entirely new contracts that represent the world pricing system more fairly and completely than current contracts which are ultimately domestic pricing mechanisms (discussed in Chapter 21).

³⁹ After the July 2010 "corner" on Euronext LIFFE cocoa contract, a German cocoa association warned the exchange that the market had become disorderly; adding - that unless the exchange changed its rules and regulations, it would consider switching its business to the InterContinental Exchange which had strict enforceable limits on cocoa contract ownership and rules against market manipulation.

Conclusions

One man's crust of bread is now a rich man's securitized asset class. (former CBOT trader)

Throughout history, speculation has been strictly circumscribed or prohibited because of its market distorting effects and its disruption to the social order. For a variety of reasons, speculation and modern-day speculators have gained increasing respectability, particularly in the United States of America. An over abundance of food and dwindling numbers of agriculturalists have banished the millennial-old concerns of hoarding and shortages in the richer nations. Also, owing to the enormous profitability of commodity linked products, banks and other traders have waged a successful public relations campaign, surmounting criticism traditionally associated with speculative activities. The creed of free market orthodoxy, defining agricultural markets as just another set of institutional arrangements to be gainfully exploited, has also stifled any debate over the morality of food profiteering and the effects upon the poor. Finally, aided by an admiring "celebrity conscious" media, speculators have ascended to a savvy venerable class, able to amass fortunes at the push of a button.

A deep fissure divides the world's rich and poor. The IMF World Economic Outlook (2007) reports that, in the past 20 years, the effective global labour force quadrupled, which has put downward pressure on wages – in both rich and poor countries, and has created a life threatening hardship in the least developed ones. Conversely – owners or controllers of capital have never had so many opportunities to enrich themselves. Almost nothing is taboo⁴⁰ on the trading menu: leveraged bets on corporate debt repayments (credit default swaps), life expectancy (mortality bonds) and of course – the price of food. Largely insulated from failure, today's institutional mega-traders can manoeuvre from one "hot sector" to another, with zero regard to ethical considerations.

Some voices have come forward to say the system has gone awry. The renowned trader George Soros has opined:

[...] every speculation is rooted in reality... Speculators create the bubble that lies above everything. Their expectation, their gambling on futures help drive up prices, which is especially true for commodities. It is like hoarding food in the midst of a famine, only able to make profits on rising prices. That should not be possible.⁴¹

Several emerging commodity futures markets which appear to enjoy a balance of hedgers and speculators prove that agricultural futures can reduce transaction costs, aid income realization and improve rural welfare, and as such are significant drivers of agricultural development. While speculation is crucial to proper functioning markets, unlimited speculation is not. As the prices broadcast from the major exchanges, particularly the CBOT, reverberate around the world and affect billions of lives, a serious and more directed inquiry into the trading on the international commodity futures markets should commence. Only a new methodological approach – one that analyses orders and transactions, segregated by trading types - can start to separate fact from fallacy.

⁴⁰ The CEA prohibits the listing and trading of event futures contracts based terrorism, assassination, war and gaming.

⁴¹ George Soros interview with Stern magazine, July 3, 2008.

References

- Banner, S.** 1998. *Anglo-American Securities Regulation: Cultural and Political Roots 1690-1860*. Cambridge: Cambridge University Press.
- Basurto, A. & Caram, I.** 2009. The rise of Argentine agricultural commodities, *Swiss Derivatives Review*, 44.
- Bernanke, B.** 2000. *Essays on the Great Depression*. Princeton: Princeton University Press.
- Bindoff, S.** 1950. *Tudor England*. Baltimore: Penguin Books.
- Bloch, M.** 1967. Land and work in medieval Europe, in *Natural Economy or Money Economy: A Pseudo-Dilemma*. New York, Harper Torch Books.
- Dudden, I.** 2010. NYSE LIFFE commodity derivative markets provide opportunities for international investors, *Swiss Derivatives Review*, 43.
- Gelderblom, O. & Jonker, J.** 2005. Amsterdam as the cradle of modern futures and options trading, 1550-1650, in *The Origins of Value*, ed. by Goetzmann, W. & Rouwenhorst, G. Oxford: Oxford University Press.
- Ghazzali & Field, C.** 1991. *Kimiya-yi Saadat (The Alchemy of Happiness)*. New York, Armonk, M.E. Sharpe.
- Gorton, G. & Rouwenhorst, K. G.** 2004. Facts and fantasies about commodity futures, *NBER Working Papers* 10595, National Bureau of Economic Research, Inc.
- Hathaway, K.** 2007. *The potential effects of government intervention in a market economy*, Bethesda, MD, FMI-inc.
- Himmelberg, R.** 1994. *Antitrust and Regulation during WWI and the Republican Era, 1917-1932*. New York, Garland Press.
- Hoover, H.** 1957. *Memoirs of Herbert Hoover - The Great Depression 1929-1941*. New York, The MacMillan Company (Herbert Hoover Presidential Library).
- Hudgins, E.** 1997. *Freedom to Trade: Refuting the New Protectionism*. Washington D.C., Cato Institute.
- Hynes, W., Jacks, D. & K., O.** 2009. *Commodity market disintegration in the interwar period*, NBER Working paper No 14767.
- Levy, J.-P.** 1967. *The Economic Life of the Ancient World*. Chicago, University of Chicago.
- M. Gorham, W. X. Q.** 2005. *The fall and rise of Chinese futures 1990 - 2005*, Future Industry.
- Markham, J.** 2001. *The Financial History of the United States*. New York, Armonk, M. E. Sharpe.
- Marks, M.** 1908. *The Corn Laws: a popular history*. London, A. C. Fifield.
- Masters, M.** 2008. *Testimony before the U.S. Senate Committee of Homeland Security and Government Affairs*, United States Senate, Washington, DC.,
- Mills, C.** 1956. *The power elite*. Oxford, Oxford University Press.
- Naft, S.** 1937. *Fascism and Communism in South America*. New York, Foreign Policy Associates.
- Pezzolo, L.** 2005. Bonds and government debt in Italian city-states, 1250-1650., in *The Origins of Value*, ed. by Goetzmann, W. & Rouwenhorst, G. Oxford: Oxford University Press.
- Polanyi, K.** 1957. *The Great Transformation*. Boston: Beacon Press.
- Robles, M., Torero, M. & von Braun, J.** 2009. When speculation matters, *Issue briefs*, International Food Policy Research Institute (IFPRI).
- Rothbard, M.** 1972. *A New History of Leviathan War Collectivism in WWI*. Boston, E.P Dutton & Co.
- Rothstein, M.** 1966. The international market for agricultural commodities, 1850-1873, in *Economic Change in the Civil War Era*, ed. by Gilchrist, D. & Lewis, W. Greenville, Del.: Eleutherian Mills-Hagley Foundation.
- Sanders, D. R., Irwin, S. H. & Merrin, R. P.** 2008. The adequacy of speculation in agricultural futures markets: Too much of a good thing?, *Applied Economic Perspectives and Policy*, 32(1): 77-94.

Schaede, U. 1989. Forwards and futures in Tokugawa-Period Japan - a new perspective on the Dojima rice market., *Journal of Finance and Banking*, 1.

Stassen, J. H. 1982. The commodity exchange act in perspective: A short and not-so-reverent history of futures trading legislation in the United States, *Washington and Lee Law Review*, 39,3: 825?843.

UNCTAD 2009. *Trade and development report*, Geneva.

