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Abstract

The aim of this study is to show that the volatility in food prices over the past four years cannot be explained merely by the market fundamentals of demand and supply. While global changes in demand and supply are bringing about radical changes to the food equation, evidence exists that market failure in the world grain market has worsened the problem.

Excess liquidity, brought about by monetary growth policies after the subprime crises and financial meltdown in 2008, has stimulated speculation and hoarding. Strong incentives for financial operators to find better returns in places like the commodities market is attested by the six-fold increase in the number of derivatives contracts made between 2002 and 2008. Furthermore, agriculture is one of the most heavily subsidised, protected, and distorted markets in the world. This is a key reason behind a decade long lack of progress in the Doha Round of the WTO.

This paper investigates the hypothesis that speculative activities are a primary or major source of volatility in the agricultural commodities market over the past decade and that this has significantly contributed to price inflation. It also explores Malta's possible involvement in food commodity speculation, albeit on a small and negligible scale.

**Keywords:** food security, price hikes, excess volatility, speculation, financial derivatives, deregulation.
Introduction: Food commodity prices and the threat to food security.

Agriculture has over the years experienced a decline as an industrial sector, particularly in the developed economies of Western Europe and North America. Government subsidies and improvements in technology such as the genetic modification of crops, have induced an ever increasing supply and this, coupled with low income and price elasticities of demand, have rendered ever cheaper the price of food. Indeed, over the period 1974-2005, food prices on world markets fell by as much as 75% in real terms (The Economist 2007) with the price of all the three basic cereal staples; rice, wheat and maize (corn), experiencing a long-run decline of more than 1.0 percent per annum over the past century (Timmer 2009).

Rather than food price inflation, the issues of concern in affluent countries centred on production surpluses, ecological and environmental degradation and sustainability, domestic and industrial wastage, water management and health related problems such as obesity and heart disease. That is why the unexpected and extraordinary price hikes experienced in 2008 and again in 2010/11 have created socio-economic shocks throughout the world. Wheat prices, along with those of rice, maize, oilseeds, and dairy products all reached record peaks in nominal terms. Indeed, in 2007 – 2008 The Economist's (2007) food-price index was higher than at any time since it was created in 1845!

According to World Bank (2009) estimates, the number of people in extreme poverty rose by between 130 to 150 million, with the total number of people living in hunger rising to 963 million in 2008 (FAO 2008, 2009). Prices then fell sharply in the second half of 2008. But market tensions emerged again during 2010, and at least another 40 million people around the world were driven into extreme hunger and deprivation. By early 2011, fears emerged that a repeat of the 2008 crisis was underway (Oxfam 2011) and indeed, the FAO food price index, measured in nominal terms, reached an all time high in February 2011 (Figure 1, below).

What is striking about the current situation, is the existence of high prices and simultaneously, the high volatility of these prices (Von Braun 2008). According to a High Level Panel of Experts report on Food Security and Nutrition of the Committee on World Food Security, henceforth referred to as the HLPE 2011 report:

“What is new on international food markets is the existence and persistence of upward pressures that provoke simultaneously higher and more volatile prices. ……markets needed one of the worst depressions since World War II (with a growth rate of world output falling from +5.4 percent in 2007 to +2.9 percent in 2008 to -0.5 percent in 2009) to get food prices down, and the fact that even with such a depression, food prices did not fall back to their pre-2006 levels”.

(HLPE 2011 report p.21)
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Figure 1: Food Price Index at current and constant terms $US (2000=100) 1960-2011 (World Bank)

Of course, people in the Low Income Food Deficit Countries (LIFDCs) suffer the brunt of food price spikes (Maros and Martin 2008, Clapp 2009) because as much as four-fifths of their income is spent on food when compared to ten to fifteen percent in rich developed countries (Hertel et al. 2004). Moreover, this renders the price elasticity of demand in poor countries to be much higher than in wealthier ones (Regmi et al. 2001).

Figure 2 presents the average own-price elasticity for various food subcategories calculated for 114 countries ranked in relation to their 1996 per capita GDP and categorised into three income groups: low, medium and high. (Regmi et al 2011) Consumers in low-income countries respond more readily to price changes than in high-income countries, with price elasticity varying from (-)0.5 for cereals, a staple food, in the Democratic Republic of Congo to (-)0.063 in the U.S.A. Clearly, this is another way of saying that “when prices rise, populations in poor countries eat less food.”(HLPE 2011 p.23)

Figure 2: Global food price elasticity in relation to Income. Data source: Regmi et al. 2011)
In a competitive market system, price variability is theoretically expected to generate maximum economic welfare by balancing out market variations in demand and supply and eliminating price disequilibria. But price variability becomes problematic when it is large and unanticipated, because the level of uncertainty that it creates increases risks for producers, traders, consumers and governments. As stated in a joint policy report (FAO et al. 2011) in preparation for the June 2011 meeting of the group of the twenty wealthiest nations (G20):

‘Suffice it to say that price volatility becomes an issue for concern and for possible policy response when it induces risk averse behaviour that leads to inefficient investment decisions and when it creates problems that are beyond the capacity of producers, consumers or nations to cope.’


Scope and Method

This discussion paper focuses on the hypothesis that the global food crisis experienced in 2008 and again in 2010/11, was directly correlated with speculation in the financial derivatives market. This hypothesis has not been confirmed. Many factors may explain the global food crisis and this paper investigates alternative explanations based on a literature search and on official data published by international agencies such as the International Monetary Fund, the World Bank, the Food and Agricultural Organisation and the United Nations Conference on Trade and Development, amongst others.

The aim of this study is not meant to provide a comprehensive answer to what are the determinants of a food crisis. Rather the objective is to contribute towards the ongoing debate and this should be of interest to students, researchers, policy makers and anyone who has an interest in current global issues. The study findings have economic, political and legislative implications for policy makers.

One special aspect of this paper is an examination of the positive correlation between the high levels of imports in Malta carried out during the short period of 2007-2011 at a time of rising grain prices in the international market, and food exports.

The study is limited by its dependence on data provided by official agencies. Moreover, the study could have benefited from quantitative and qualitative primary research However due to time restrictions this was not possible.

The Dynamics of the International Food Crisis: Underlying Causes.

Free market economic theory is based on the concept that consumer demand and the supply of firms are closely interrelated and that this relationship determines market prices. Any change in any one or more variables that influence demand such as a change in households’ income, price expectations, population etc. and/or any change in any one or more variables that
influence supply such as the costs of production, price expectations and currency revaluations, technological developments, public policies etc., would invariably bring about a change in market prices.

Demand and Supply Considerations in the Global Food Market

In a background of supply constraints, partially brought about by adverse weather conditions across the globe, an increase in demand, itself the result of global population growth - seven billion in 2011 - along with expanding urbanisation and greater affluence in the rapidly developing economies of Asia and South America, along with the depreciation of the U.S $ and the high cost of oil, the global food market has been experiencing ever increasing prices..

Figure 3 below clearly illustrates, for example, the close relationship between oil and food prices. This is because agriculture is a heavy consumer of oil products with about ten to fifteen percent of all energy in the industrialised countries being used for chemical fertilisers, transport fuel, on-farm activities and also for the end of the value chain, that is in the processing of crops and food, refrigeration and cooking (Hawken et al. 1999).

![Figure 3: Food Price Index vs Crude Oil Prices at current US $ (1968-2011). Data Source: IMF, EIA (U.S.A)](image)

Furthermore, high oil prices have induced heavy investments in the production of ethanol, an important bio-fuel. Between 2007-2009 bio-fuels accounted for 20% of the global use of sugar cane, 9% of vegetable oil and coarse grains and 4% of sugar beet and in 2010, ethanol production accounted to 40% of maize production (FAO et al. 2011). Indeed, as attested by the HLPE (2011) report on World Food Security, the bio-fuel boom has had a major impact on the evolution of world food
demand for cereals and vegetable oil, “increasing the share of the industrial use in world consumption of vegetable oils from 11 percent to 24 percent between 2000 and 2010”. (HTPE 2011 report p. 32)

Moreover, government imposed mandates to blend fixed proportions of bio-fuels with fossil fuels, or binding targets for shares of bio-fuels in energy use, aggravate the price inelasticity of demand and this has contributed to the volatility in agricultural prices (Organisation of Economic Cooperation and Development, OECD 2008).

Another factor that has led to the food crisis is the use of trade policy restrictions. Around forty food exporting countries have imposed some sorts of trade restrictions: food taxes, quotas, or across-the-board bans. Average tariffs on agricultural and food are high for middle income and high income countries, 25% and 22% respectively (FAO et al. 2011). Trade Protectionism on agricultural products is not only as much as four times higher than on non agricultural products but it is also much more volatile (Bouët et al. 2008).

Agricultural trade policies tend to insulate domestic prices from world markets and lead to pro-cyclic effects. When prices are high, protection decreases, thereby increasing demand on world markets. When world prices are low, protection increases, effectively operating as a variable levy. Therefore, large country trade policies increase world price volatility and create negative externalities for smaller countries (De Schutter 2010).

In spite of World Trade Organisation (WTO) efforts to liberalise world trade, data published by the OECD (2010) indicates that government support in OECD countries still accounts for 22% of the total receipts of agricultural producers and that more than half of that support is delivered in ways that are highly distorting of trade and competition (OECD 2010), while a study by the International Food Policy Research Institute (IFPRI 2008) predicts that removal of trade restrictions would reduce world cereal prices by an average of 30%.

The relationship between higher food grain prices and the increased demand for food from the BRICS countries (Brazil, Russia, India, China and South Africa) is another significant and contentious issue. China and India have huge populations that account for nearly 40% of the total world population. In addition, their per capita incomes have been rising fast in recent years due to very high levels of economic growth. Now, any economics student worth his salt would interpret this as a perfect example of a demand shifter. As income increases so does the demand for grain, both directly and indirectly because grain is a complementary source of livestock protein. Given current supply balances, one may conclude that such an increase in demand would invariably lead to higher food prices. In theory that would be correct and such a conclusion should explain current global perceptions as to who is mainly responsible for current food price hikes (Krugman 2011a).
However, facts seem to indicate otherwise. According to the HLPE 2011 report, hardly any change had been registered in the rate of grain consumption in India and China during the last decade. If anything, there has actually been a slowdown:

“The apparent acceleration of feed use in the last decade, however, is more linked to a recovery of feed use in the Former Soviet Union after the 1990s. It means that, even with the booming demand for meat in Asia, the growth of feed consumption outside the former Soviet Union is not accelerating but is slowing down….Excluding use for bio-fuel, the growth rate for non-feed use is stable compared with the 1990s and markedly inferior to its historical performance. Without bio-fuel, the growth rate of world cereal consumption is equal to 1.3 percent compared with 1.8 percent for bio-fuel.”

(HLPE 2011 report p. 32)

The report clearly blows up the ‘myth’ about increased consumption from developing countries leading to higher global demand and therefore, higher grain prices (Ghosh 2011).

The point to be made here is that while prices are determined by the net effects of aggregate supply and demand changes over time, they cannot in themselves explain their inherent composition. As emphasised by Abbot, Hurt and Tyner (2008):

“The factors driving current food price increases are complex. We make no attempt to calculate what percentage of price changes are attributable to the many disparate causes, and, indeed, think it is impossible to do so.”

(Cited in Timmer 2009 p.10)

Using what he calls a “simple price formation model” in order to explain the importance of analysing current price determination on the basis of consumer and producer short run elasticities in conjunction with their long run adaptations to price changes, Timmer (2009) concludes that:

“The slow and steady shifters of both supply and demand can explain gradual increases in prices, such as seen from the early 2000s until late 2007. The lagged response to earlier periods of low prices can explain some acceleration in these prices, especially for rice and wheat. But the explosion in food prices late in 2007 and in the first half of 2008 clearly requires additional explanation.”

(Timmer 2009 p.11)

In other words, while market adaptations to changes in demand and supply may partially explain food price inflation, they cannot fully account for the magnitude of food price hikes and the erratic food price volatility experienced after 2007. Between 2005 and 2008 food prices rose by 83%, wheat prices increased by 127% and rice prices by 170%, Maize prices nearly tripled! Prices started to fall at the end of 2008 with those for rice and wheat dropping by 55% in the second half of 2008, while maize dropped by 64 % in the same period. International food prices then started to rise sharply again in the second half of 2010, and the price index of food surpassed the peak levels of 2007-2008 (UNCTAD 2010). The Food Price Index (FAO 2010) increased by over 30 % between June and December 2010, while the price index for cereals jumped by 57 % during the same period (De Schutter 2011).

It is in the light of these food price explosions that the role of liberalised financial markets and the speculation in financial derivatives has to be seen.
Financial Derivatives

In today's globally interconnected and electronically accessible trading system, the role of financial derivatives and speculation in the ongoing food crisis has to be closely analysed. Indeed, evidence exists, albeit controversial, that large increases in speculative investment, driven by food commodity derivatives, have played a very significant part in pushing up global food prices (Ghosh and Chandrasekhar 2009).

Derivatives are financial instruments that include several types of contracts such as forwards, futures, options or swaps. Briefly, these may be described as contracts made between two or more parties that agree to sell or buy a certain quantity of assets. Such assets may be stocks, bonds, commodities, currencies, interest rates or market indexes. Options and futures are the most commonly drafted contracts, the former being financial instruments that convey the right, but not the obligation, to engage in a future commodity transaction. A future contract is a standardised contract with the parties involved binding themselves to a contractual obligation to buy or sell at a certain date in the future, and at a specified price (Pace et al. 2008).

‘Futures’ are extremely important in commerce and they have been used since Greco-Roman times as a form of insurance against commercial risks, a process of commercial speculation also known as ‘hedging’. However, when left unregulated, ‘futures’ may be used as a means of making large profitable gains, sometimes with devastating negative effects on society and the economy. Inflationary pressure may be one such effect. By artificially increasing demand, ‘futures’ may induce prices to increase above their real value and this would in turn induce further purchasing by speculators in the hope that price will continue to rise. A so-called ‘positive feedback loop’ in which prices rise far above the underlying value of the commodity would be created and this is what inflates ‘economic bubbles’ (Pace et al.2008).

While dire consequences such as the infamous Bengal famine of 1943 in which three million people died (Sen 1999, cited in De Schutter 2011), may at times be brought about by the manipulation of market prices through the hoarding of essential goods when these are in short supply, more sinister effects may result from the excessive speculation of non-commercial speculators (Wise 2011b). This form of speculation, also known as ‘momentum-based speculation’ (Fu and Qian 2011), allows investors, mainly institutional investors such as banks, insurance companies and pension funds, to make profits by investing in ‘derivatives’ based on commodity price indices. A commodity index is a large sum of money managed by a specialised fund manager, who uses that money to buy a basket of ‘futures’. Values are calculated on the basis of the returns made in the specified commodity exchanges. The most famous index is the S&P GSCI, formerly known as the Goldman Sachs
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Commodities Index, set up in 1991 and another well known index is the Dow Jones-AIG Index (Gilbert 2008).

The effect of the commodities index funds in post 2008 appears to have been to throw the commodities futures markets into 'contango', producing a vicious circle of prices spiraling upward. The U.S. Commodity Futures Trading Commission (CFTC) defines ‘contango’ as the “market situation in which prices in succeeding delivery months are progressively higher than in the nearest delivery month” (S&P GSCI Fact Sheet 2011). And, in no complimentary terms, an EU Commission Report describes such a situation as:

“….herding behaviour in times of strong (usually upward) price trends, which in developed and easily accessible markets can result in the emergence of speculative bubbles…”

(EU Commission report, SEC (2008) 2971, p. 3)

As index funds generally bet ‘long’ on rising prices, they tend to purchase and hold on to their investments for a longer time than the typical commercial hedger does. This further pushes prices up, attracts even more ‘speculative capital’ into the market and adds to price volatility (Wise 2011a). As illustrated in Figure 4, ‘spot’ prices increased dramatically after 2002. ‘Futures’ prices then followed suit, setting off a chain-reaction in the market (Masters and White 2008).

![Figure 4: Commodity Index Investment compared to S&P GSCI Spot Price Commodity Index. Source: Goldman Sachs, Bloomberg CFTC Commitment of Traders CIT Supplement (Cited in Masters and White 2008)](image)

Whereas the traditional speculator may drive up the price of a commodity by physically hoarding the commodity, the index speculator and the fund manager accomplish the same objective by hoarding futures paper contracts for those commodities (Masters and White 2008). They need not bother about maintaining a warehouse; their hoarding is purely and solely virtual!
Speculation and Food Prices

Some experts express some scepticism about the role of speculation in inducing commodity price hikes. While confirming the dramatic increase in the number of investors in the futures market and the very strong increase in the share of index funds in the Commodity Futures market before the 2008 peak in commodity prices, Sanders et al. (2008) do not see that level of speculative activity as high by historical standards. Gilbert (2008) made a similar conclusion, while Krugman bases his scepticism on the argument that speculation in the futures market can only be blamed for increasing food prices if it is accompanied by hoarding. Since there is little evidence of hoarding, he concluded that speculation cannot be the cause of the surge in food prices (Krugman 2008, 2011b).

In actual fact, although data on stocks is globally lacking, a point highlighted in the recommendations drawn up in the June 2011 G20 Paris meeting, evidence does exist of hidden hoarding. This as pointed out by an IFPRI report stating that hidden hoarding may take the form of: ‘households hoarding rice, and importers buying more than they normally do, and these small amounts may add up to sizeable quantities’ (IFPRI Forum 2008 p.11). In addition, panic buying of food grain and government export restrictions may not be reflected in global stock data, rendering statistical analysis less robust.

Moreover, should certain studies that support the view that stocks and high food prices are positively correlated, thus implicating speculation as a major determinant of food price hikes, take into account lags in stocks and adjust these to price changes, then the positive correlation between stocks and high food prices, would be even more extenuated.

Indeed, an econometric analysis carried out by Imai et al in 2008, a rational distributed lag model is used in order estimate the positive co-relationship between adjustments in global stocks of wheat, maize, and rice in particular, as they respond to changing current and lagged prices, over the period 1986-2008. In their conclusion these researchers assert that:

‘Although the results vary a great deal with the specification used, what is important to note is that there are many cases in which both current and lagged prices have significant effects on the current stocks of these commodities. Specifically, contrary to assertions made, the long-run propensity to hold stocks (or the long-run effect of commodity prices) is positive. In the case of rice, the propensities are substantially larger. This corroborates that speculative hoarding has contributed to exacerbating the shortages in the global food market and thus reignited inflation.”’

(Imai et al. 2008 p.13)

The fact that rice stocks are more responsive to changes in price than in the case of wheat and maize can be explained by what Timmer calls a rational behavioral response or the “psychological hoarding behaviour” (Timmer 2009, p.17) of millions of individuals reacting to the
actions of panicky governments who, after seeing the spiraling prices of other grains, imposed export restrictions on rice or imported huge quantities of the grain in order to keep their domestic rice economy stable. Rice is mostly grown by small Asian holders, marketed by a dense network of small traders and processors, purchased by consumers in a readily storable form and stock levels can change quickly at any or all levels of the supply chain. Thus rice speculation in 2007/08 was mostly the result of hoarding by millions of individual consumers and suppliers. Talk of a price spiral induced a real price spiral (Timmer 2009).

In the case of wheat and corn however, Granger Causality tests related to a ‘supply of storage’ model used by Timmer, indicate that price expectations are most likely to be influenced by excess liquidity or what he calls “hot money”:

“From this perspective, the most volatile element behind the sudden and sharp run-up in food commodity prices was likely to have been the ‘hot money’ in search of the next investment boom, after the crash in tech stocks and then real estate derivatives (and before the financial system itself crashed). The source of this hot money was the massive liquidity infusion provided by the US Federal Reserve System as it sought to stave off (unsuccessfully, as it turns out) a recession caused by collapsing real estate values and subsequent threats to the nation’s financial system.”

(Timmer 2009, p.19)

In other words, massive liquidity creation led to the financial speculation that overwhelmed the commodities markets, bringing about huge food price increases. Moreover, speculation is so intrinsically entrenched institutionally (Wise 2011a) that changes in one or more of the commodity prices, such as oil, invariably affects another, in this case food. In addition, index funds are mandated to keep the value of their commodities in strict proportion, so that when the prices and value of energy products go up, the funds have to buy more grain futures to maintain the mandated proportions.

This represents yet another impetus for institutional investors to buy agricultural futures regardless of what is happening to the market fundamentals of supply and demand for food (Ghosh 2010, Wise 2011a).

All in all, the evidence as elicited from current literature clearly points its finger at the intimate connection between global food prices and financial speculation as the major cause of the 2008 and 2010/11 food crises. While demand and supply considerations such as the oil crises, rising input costs, bio-fuel mandates, dire weather conditions, soil depletion, inadequate public investment and credit facilities to cultivars, trade policy restrictions and so on, have played a significant part in generating higher food prices; the magnitude and volatility of these price hikes cannot be explained by market fundamentals alone. Indeed, food production in the years before the crisis had increased much faster than utilisation, leading to an increase in stocktaking and a fall in global food trade.
Furthermore, the aggregate and per capita consumption in both India and China had actually fallen (Ghosh 2010).

Financial deregulation, particularly the U.S. Commodity Futures Modernization Act in 2000, allowed all investors, including investment banks, hedge funds, and pension funds to trade in commodity ‘futures’ without any position limits, disclosure requirements, or regulatory oversight from the Commodity Futures Trading Commission (CFTC). The legislation allowed ‘index traders’ to use swap agreements in order to take long-term positions in commodity indexes, making it possible for them to trade in commodity futures without the need to exercise any physicals ownership of the commodities involved.

It was the manipulation of the commodity markets and the misleading price signals that this generated, that led to excessive price volatility in 2008. Financial intermediaries were able to exploit this instability by making huge profits, at the expense of both farmers and consumers (Ghosh 2010).

The role of Speculation in Food Supply: the case of Malta

As a small island state, with a population of less than half a million, and an agricultural sector that contributes less than 2% of its Gross Domestic Product (National Accounts 2010), Malta’s role in the global food commodity markets pales into insignificance when compared to that of the rest of the world. Indeed, neither its production, nor its consumption levels, nor its investments in international financial markets can be significant enough to induce an iota of variability in international food prices. On the other hand, Malta’s small size, lack of natural resources and heavy dependence on imports makes it highly vulnerable to international prices, particularly commodity prices.

Indeed, according to FAOSTAT and USDA data published by Robert Townsend et al. (2011), Malta’s net cereal imports as a share of consumption ranks as one of the highest in the world, at almost 100%. The level of food consumption as a share of food expenditure ranks as one of the lowest at less than 15% and is at par with that of some of the most developed countries in world. This clearly indicates that while Malta is highly vulnerable to global food price shocks in terms of inflation it is not as vulnerable in terms of food security as is the case in most developing countries, particularly those in sub-Saharan countries in Africa.

On the other hand, neither can one assume that speculative activities in food commodities do not take place on this island. The Maltese have always been considered as highly entrepreneurial in spirit, and data collated by the Statistical Authority of Malta (NSO), provides some surprising and interesting information. During the short period of 2007-2011 when grain prices skyrocketed on the international market, high levels of imports were taking place. This
positive co-relationship between rising grain prices and extraordinary grain imports during this period, provides scope for further research in this area.

Total import and export figures of cereals, namely maize, wheat and rice along with sugar show that between the years 2001 and 2006, both the volumes traded and their prices were relatively stable. However, the last three years of the decade were characterised by both high prices and market volatility. This highlights Malta’s vulnerability to the ripple effects brought about by the international markets, such as price inflation. As Figure 5 indicates, Malta (as on February 2009) had an annual rate of food inflation of 10.4%, the second highest in the EU after the UK.

![Figure 5: Malta’s Annual Food Inflation as on February 2009, compared to other EU countries.](data-source: Eurostat, (as cited by the Rural and Environment Research and Analysis Directorate of the Scottish Gov.)

All import and export figures used in this overview incorporate inter-EU and extra-EU trade and all price values are in nominal terms. It is also pertinent to point out that these values do not represent spot market values but an average contractual value related to different grades of a particular commodity. For example, there are at least seven different grades of sugar and about thirty-six different grades of rice. Furthermore, the quantities imported or exported are a function of different variables including anticipated prices, market conditions, exchange rates, as well as storage capacity and these factors have not been separately studied in this overview.

In 2007, Malta imported 97.6m Kg of maize, a 113% increase over the previous year. Imports increased by a further 10.34% in 2008 and this at a time when prices were increasing at levels ranging between 13% and 30% annually. By 2010, import figures returned to their pre 2007 levels, levels that averaged out at about 60m Kg of annual maize imports.
Exports figures are even more striking. Malta can hardly be considered as a food exporting nation and as far as maize is concerned, no significant exports were carried out before 2005 and none at all in 2006. However, 33.2m Kg and 27.3m Kg of maize were exported in 2007 and 2008 respectively. Average price per kilo increased from €0.16 in 2007 to €0.25 in 2008, an increase of 56.3% in only one year!

A similar pattern may be observed for Durum wheat. A total of 57.5m Kg was imported over the period 2007-2010, a dramatic increase, when compared to a mere total of 418,775 Kg imported between the years 2001-2006.

As far as exports are concerned, over 42m Kg of Durum wheat were exported between 2007 and 2010, when none had ever been exported before 2007. In 2008, the value per kilo of exported Durum wheat was €0.40 when compared to €0.17 in 2007, an increase of 135%!

It is also interesting to note that while the import trend line for wheat had a negative coefficient of -0.0141 over a ten-year period; that for maize had a positive coefficient of 0.0084. In other words,
maize imports increased even when prices were increasing, indicating expectations of further price increases.

![Wheat Imports Graph](image1)

![Maize Imports Graph](image2)

Figure 8: Wheat and Maize imports (2001-2010) in relation to priceSource NSO

The high increase of both wheat and maize imports in 2007 and 2008, as well as the unexpected and substantial export of both grains in the same period, throws light on the Maltese entrepreneurial spirit in seeking out quick profits. While further and deeper research has to be carried out on the hypothesis that international food price hikes were enticing local importers to speculate and make substantial profits by importing, hoarding and exporting food commodities, the evidence at least seems to lead in that direction. A number of import-export companies may even have been set up for this purpose.

Speculative import – export activities are even more evident in the case of rice and sugar, given that none of these commodities is cultivated on the Maltese islands. With the exceptions of 2004 and 2008, when rice imports fell by 29.6% and 36.4% respectively, imports between 2001 and 2010 stood at around 2m Kg annually, with the average import price per kilo standing at €0.75 in 2006. However, in 2007 the average price rose by 25.3% and by another 20% the following year. While imports were in decline, falling by 4% in 2007 and 36.4% in 2008, we find rice exports increasing by 649% in 2007 over 2006!

![Rice Imports Graph](image3)

![Rice Exports Graph](image4)

Figure 9: Rice Imports and Exports Source NSO
An almost identical picture pertains to sugar, with 2007 experiencing the highest level of imports at 33.3m Kg. Again, this may have been in anticipation of higher prices. In 2008, sugar exports increased by 767.85% at an average value per kilo of €0.71. About 90% of this export was intra-EU when usually most sugar exports are extra-EU, particularly to North Africa and Arabian Gulf states.

Both the imports and exports functions for rice extrapolate a positive trend line in relation to price over the period 2001 – 2010, with price being much more volatile in the export market. In the latter case, the $R^2$ value is low at 0.26, indicating that only 26% of the price variations can explain the linear regression. This however confirms the high level of volatility on the international spot price market after 2006. Import prices for all the commodities considered here, including sugar, may be relatively more stable because the regular business activities of domestic entrepreneurs is importation, and hedging may have mitigated the excessive volatility that occurred in international spot markets. With the exception of rice, and perhaps some sugar products, hardly any exports had taken place prior to the 2007/08 price hikes and any speculation that occurred was relatively short term.
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Commercial speculation of this kind may be having both positive and negative effects on the local domestic market. On the one hand, high price and commercial speculation may be encouraging investment in Durum wheat production, a development that should be encouraged given the dire need to protect the last remaining patches of the Maltese rural environment. Domestic Durum wheat production also serves as an important substitute for imported animal fodder and both its labour and capital intensity are relatively low when compared with other currently grown cash crops.

Commercial speculation in rice, sugar and maize may on the other hand lead to inflationary retail prices with ensuing negative effects on the local economy. Nevertheless, deeper analytical research is required on all of these issues.

Conclusion

Two issues that highlight the literature on the current situation in food commodity markets are the growing long-term trend for food prices to increase and the excessive volatility of these prices. Together, high prices and price volatility are impinging on food security concerns, and food security underlies global political, social and economic stability. The socio-political and economic turmoil currently underway all across the globe puts paid to that.

High prices and excessive volatility are usually associated with speculation and price bubbles. Hence, the 2007/08 food crisis triggered a controversial debate about the extent of speculative activities as a root cause of this crisis. The positive co-relationship between hoarding and prices, both current and lagged, has been empirically analysed in a number of econometric studies. In the case of wheat and corn, volatile elements - mainly excess liquidity or ‘hot money’ in search of new investment booms - were an influential factor in driving up price expectations and hoarding behavior. This substantially exacerbated the shortages in the global food market and led to further price inflation.

Commercial speculation, namely the ‘hedging’ of risks by traders, is generally seen in a positive light, principally because it ensures the availability of much needed liquidity to suppliers, leads to market ‘price discovery’ and enhances trade. It is financial speculation, brought about by the deregulation of financial markets, which attracts the greatest controversy. Deregulation dismantled the legal barriers that once separated investment banking from retail banking and also set aside the supervision of ‘over the counter’ transactions in financial derivatives. Globalisation and capital mobility associated with the speculative trading in ‘derivatives’, particularly food commodity index linked derivatives, overwhelmed commercial speculation and exasperated both the long term trend in higher food prices and price volatility.

This resulted in dire economic, social and political consequences for vulnerable states, particularly poor net food-importing countries. In this light, one may well consider the perpetuation of a food
crisis through financial speculation as a moral and legal issue; an infringement on human rights. Legislative efforts, such as the enactment of the Dodd-Frank Act in the U.S. (CFTC 2011), and the EU proposed ‘OTC Derivatives, Central Counterparties and Trade Repositories’ Directive (European Parliament, 2011), are indeed attempting to reform speculative trading. The latter, also known as the European Market Infrastructure Regulation (EMIR), into force on 16 August 2012. However, these seem to be too tepid and prone to serious loopholes. Perhaps legislators fear the economic and financial losses that may impinge on the highly lucrative, financial sectors of their economies.

In spite of its small size, Malta too has been involved in food commodity speculation, albeit on a very small and negligible scale. However, no matter how small, the level of activity involved attests to the entrepreneurial spirit of the Maltese. Companies that in the past only imported grain for the local market or as a raw material for other processed products increased their imports of grains and sugar in 2006/07 in anticipation of further price increases. Subsequently, as inferred from NSO data, substantial amounts of wheat, maize and rice in particular, were being hoarded and eventually exported at lucrative prices. More in depth studies of this novel aspect of Maltese commercial food commodities speculation have to be carried out in order to substantiate and analyse the economic viability of these import-export activities.
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