



ANALYSING COMMODITY PRICES: TREND FOR CRUDE OIL AND WHEAT IN US DOLLARS, EURO AND SDR

January 2017



CENTRO STUDI SUL FEDERALISMO

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Foreword

The Robert Triffin International (RTI), whose purpose is to continue the scientific and intellectual activities of Robert Triffin in the field of international economic, monetary and financial relations, supported the *Palais Royal Initiative* on the reform of the international monetary system promoted by Tommaso Padoa-Schioppa, Michel Camdessus and Alexander Lamfalussy. A report on it was then published and presented to the G20 in 2011.

In 2014, the RTI promoted the presentation of the report "Using the SDR as a Lever to Reform the International Monetary System" to follow up on the proposals included in the *Palais Royal* document.

In order to further investigate the issues related to SDR, the RTI – in collaboration with the Centro Studi sul Federalismo – then published "The ECU and the SDR: Learning from the Past, Preparing the Future" and now presents a research on "Analysing Commodity Prices: Trend for Crude Oil and Wheat in US dollars, Euro and Special Drawing Rights" carried out by Valentina Tosolini under the supervision of Antonio Mosconi, Head of the RTI Research programme.

The research clearly shows not only that the price of commodities is obviously determined by many variables related to the real economy (demand and supply) but that there is also a significant monetary effect. In fact during a period of US dollar devaluation prices tend to rise and vice versa in case of a revaluation.

Therefore, the hypothesis of increased stability in commodity prices if they were to be expressed in SDR should be examined with interest for its possible positive effects on the world economy and for the possibility of avoiding allocations of resources due to pure currency movements with possible distortions of the same cash flows.

The RTI will continue to explore the issues of the emerging multi-currency reserve system – which found momentum with the new composition of the SDR – both within monetary institutions and the framework of the international financial system.

*Elena Flor
Secretary General, Robert Triffin International*

Analysing Commodity Prices: trend for crude oil and wheat in US dollars, Euro and SDR

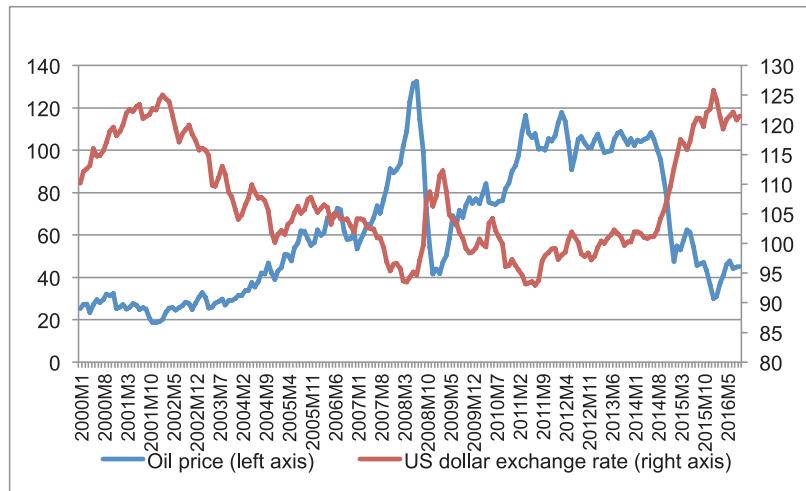
Valentina Tosolini*

Abstract

Commodities are currently quoted in US dollars. Their prices move accordingly to a wide range of variables linked to the real economy (demand and supply). The existence of big and liquid future commodity markets also plays an important role in the formation of commodity prices, driven by general macroeconomic outlook rather than commodity-specific factors. On top of this, the fact that commodities are priced in US dollars makes the exchange rate of the US currency a variable that affects the price of commodities itself.

For example, in general, since 2000 onwards an appreciation of the US dollar has been accompanied by a fall in the oil price. On the contrary, a devaluation of the dollar usually tends to reduce the price of crude oil in consumer countries. This, however, leads to an increase in real income and demand, hence, even if delayed, in prices.

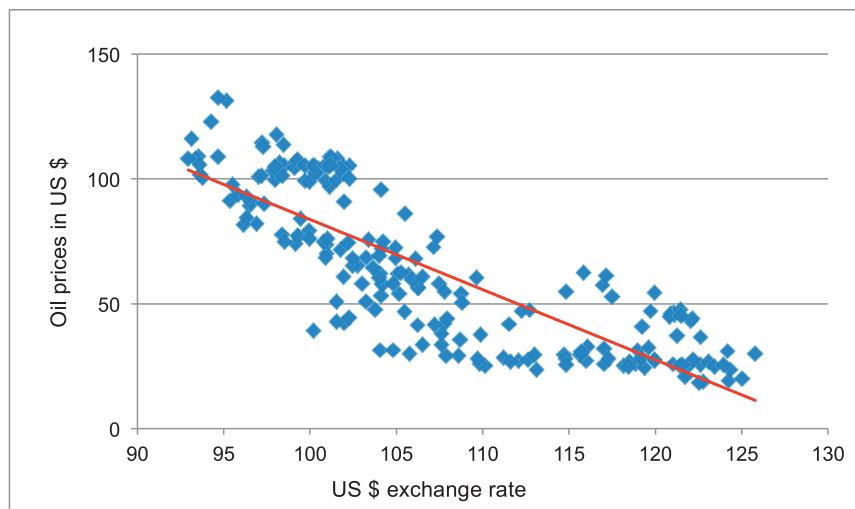
1: Oil price and US dollar exchange rate (2000-2016)



Crude Oil (petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, US\$ per barrel. Source: IMF.

Real effective exchange rate, CPI based; 2010=100. Source: BIS Statistics

* Valentina Tosolini collaborates with the Centro Studi sul Federalismo since 2013. She currently works for Eni Deutschland.

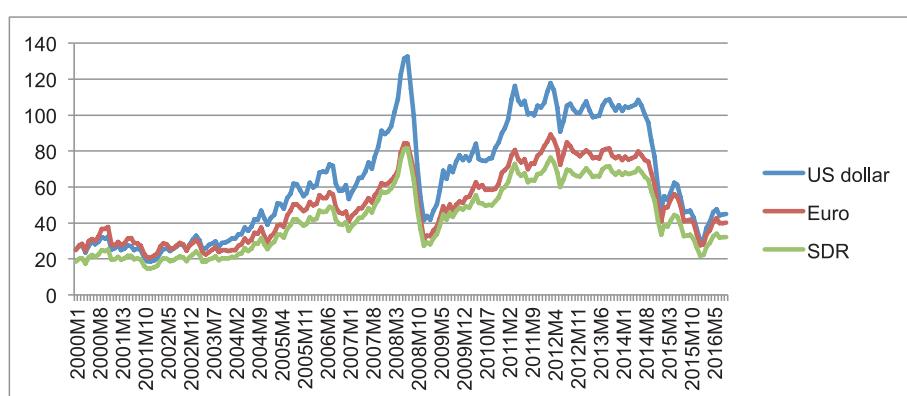
2: Oil price and US dollar exchange rate: Linear regression (2000-2016)

Crude Oil (petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, US\$ per barrel. Source: IMF. Real effective exchange rate, CPI based; 2010=100. Source: BIS Statistics

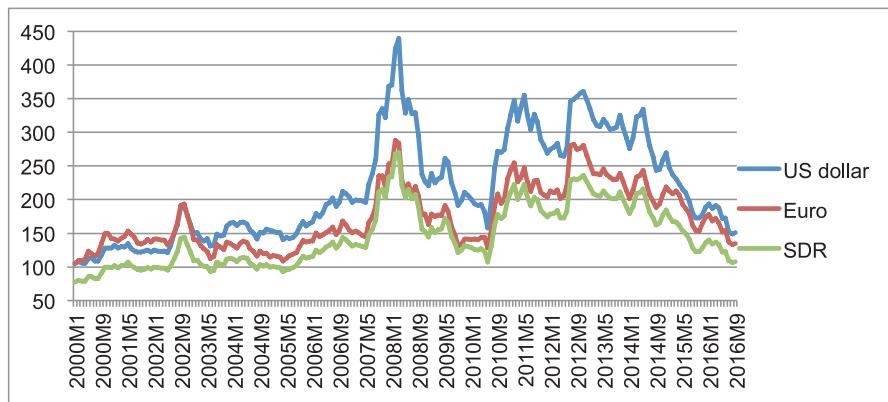
The Figures 1 and 2, which take into account the 2000-2016 data, suggest a negative correlation between the dollar exchange rate and oil prices, confirming what stated above: if the value of the dollar declines, the oil price goes up.

This paper analyses the evolution of prices of two commodities, oil and wheat, in the period 2000-2016, if they were to be priced in different currencies, namely the US dollar, the euro and the SDR (Special Drawing Rights).

As Figures 3 and 4 show quoting primary commodities in a supranational currency such as the SDR, would reduce market speculation and a discontinuous trend in prices. Primary commodities quoted in SDRs would have cost less: their prices would have been more stable since the SDR, with a defined value in terms of the major currencies, diversifies exchange risks.

3: Trend in crude oil prices per barrel in US dollar, Euro and SDR (2000-2016)

The price for crude oil (petroleum) in US dollars is the simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, Source: IMF
For an effective comparison, the price of an oil barrel expressed into USD\$ has been converted into Euro and SDR, using the monthly rate. Source: IMF and European Commission.

4: Trend in wheat prices per metric ton in US dollar, Euro and SDR (2000-2016)

Wheat, No.1 Hard Red Winter, ordinary protein, FOB Gulf of Mexico, US\$ per metric ton. For an effective comparison, the price of wheat has been converted into Euro and SDR, using the monthly rate. Source: IMF and European Commission.

Introduction

Both the price of commodities and the dollar exchange rate, are economic variables that influence the evolution and development of the global economy. Their changes have effects on international trade and economic activities in all countries. It is interesting then to study what is the link between these two variables and how the introduction of the SDR for pricing the main commodities would affect the global market.

As stated before, all commodities are priced in US dollars. Let's consider two types of goods: manufactured goods and commodities. Regarding the former, prices are determined by the cost of production in the country of origin and are denominated in the local currency. The prices of primary commodities such as oil or grains are determined by supply and demand in a real supra-national market and are expressed in US dollars.

If dollar prices of commodities and the national currency prices of manufacturing do not change, then any change in the valuation of the dollar affects the terms of trade between the United States and other countries; in particular, the higher the proportion of assets whose value is expressed in dollars, the higher the influence of the exchange rates.

For this reason, changes in exchange rates also have an impact on income distribution. Theoretically, if oil prices were almost fixed or hard to modify, i.e. "sticky prices", a devaluation of the dollar would lead to a reduction in drilling activities in the oil-producing countries, the costs of which are expressed in local currency; their dollar revenues when converted to local currency would not be sufficient to cover all costs. For this reason, these countries would have to face a reduction in their purchasing power. At the same time there would be an increase in the demand for oil from countries with appreciated currencies resulting in a significant pressure on prices.

Oil trade is denominated in dollars, therefore it is clear that a change in the dollar exchange rate affects the price of raw materials with consequences for countries outside of the United States in particular.

As for the effects on demand, a devaluation of the dollar reduces the oil price in domestic currency for consumer countries with floating exchange rate regimes such as Europe or Japan resulting in an increase in their real income and oil demand. The effect is neutral for countries that have pegged their currency to the dollar as China did till July 2005¹.

As for the effects of a change in the dollar exchange rate on the supply side, it must be kept in mind that oil companies use domestic currency to pay their employees, taxes and all production costs. These domestic currencies are often pegged to the dollar because of the fixed exchange rate regime adopted by the majority of producer countries. The effect on the producers is therefore less perceived. Nonetheless, a dollar depreciation can generate inflation and a decrease in purchasing power of producer countries also reducing the income available for drilling and ultimately the oil supply.

In the short term, the devaluation of the dollar has no effect on supply and demand, which are inelastic to prices, given on the one hand production capacity constraints and a low marginal production cost and, on the other hand, the difficulty in finding substitutes for oil.

In this situation speculation and investment in oil futures markets take place: when the dollar loses its value, commodities, including oil and grains, attract investors. Investing in futures becomes a way of protection against the weakening of the dollar, an investment that can generate considerable profits.

In the long run, there are two possible scenarios depending on the monopoly power. Net commodity exporters will seek to increase the export prices as much as they can to remedy the currency devaluation. In theory, if their market power is strong enough, they may even try to raise prices more than the value of the devaluation. If their oligopolistic power is low, a devaluation will instead imply a reduction in the production of the commodity in question, reducing its supply and increasing its price.

Supply and demand become more elastic because it is possible to invest in an increase in production capacity and search for alternatives to oil.

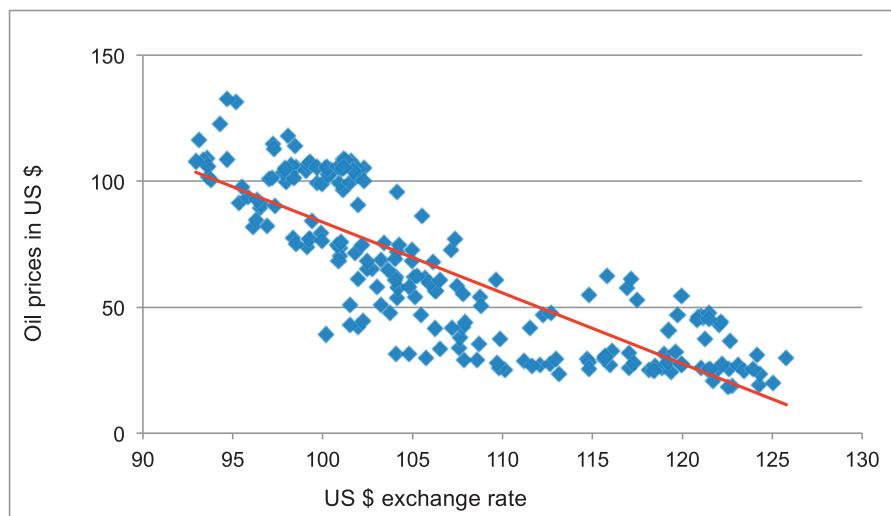
The inverse relationship can also be noted meaning that changes in oil prices can affect the dollar exchange rate. The reason can be explained using Faruqee's model (1995) according to which if a country accumulates foreign assets, its exchange rate appreciates without influencing its balance of payments. This is because the capital gain offsets the loss of trade caused by the reduced competitiveness.

The continued growth in crude oil prices indirectly contributes to the decline of the dollar because oil import costs grow, widening the deficit in the US balance of payments.

Examining the relationship between oil prices and the dollar exchange rate, the possible influencing factors include the need for producer countries outside the United States to stabilise their purchasing power and the increasing activity in oil futures and options. Also financial investors' risk-taking attitude and flight to safety episodes can play a role. If the US dollar is perceived as a safe haven currency investors might be influenced to exit from oil as an asset class. The growing oil "financialisation" which began in the early 2000 might be at the heart of a change in the direction of the correlation between oil prices and US dollar exchange rates (which was positive until 2000 and negative from then on).

On average then, *ceteribus paribus*, a devaluation of the dollar generally tends to reduce the price of crude oil in consumer countries. This, however, leads to an increase in real income and demand and in turn to an increase, even if delayed, in prices.

¹ During the Asian financial crisis, the trading band was narrow and the exchange rate of 8.28 RMB/USD was maintained until 2005. In July 2005 the Chinese government adopted a managed float exchange rate based on market supply and demand with reference to a basket of currencies where the US dollar had the largest weight and other currencies such as the euro, the Japanese yen, the pound sterling and even emerging market currencies were all given appropriate weights. At end-December 2015, outstanding foreign exchange reserves reached US\$3.33 trillion, and the RMB exchange rate was 6.4936 yuan per US dollar.

5: Oil prices and US dollar exchange rate (2000-2016)

Crude Oil (petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, US\$ per barrel. Source: IMF.

Real effective exchange rate, CPI based; 2010=100. Source: BIS Statistics

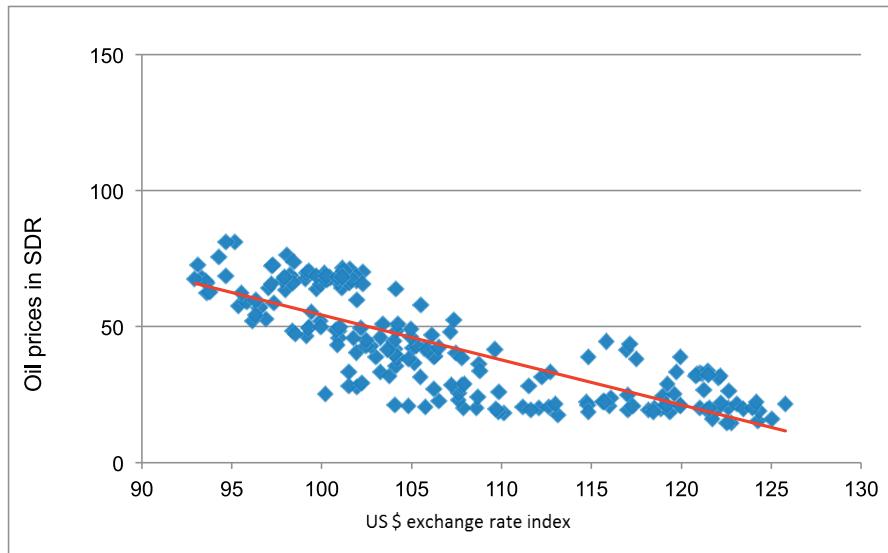
Figure 5, which takes into account the 2000-2016 data, suggests a negative correlation between the dollar exchange rate and oil prices, confirming what stated above: if the value of the dollar declines, the price of oil goes up.

In this figure, the linear coefficient of the tendency line is -2.41 showing a strong negative correlation between the reaction of oil prices and the devaluation of the dollar.

If oil and major commodities were listed in a supranational currency, such as the SDR, it would be possible to solve part of the problem of price instability because, being the SDR a basket currency, its exchange rate is, by definition, more stable than its single components. Furthermore, speculators, who tend to invest in oil through the use of futures contracts, would not be able to gain on exchange rate volatility.

In 2008, in fact, the increased number of market operators resulting in higher positions both long and very short term, was responsible for a strong speculation that led to a rise in the price of various commodities, including oil.

When measuring the correlation between oil prices denominated (artificially for this exercise) in SDR and US dollar exchange rate, a flattening of the tendency line would certainly occur, showing a linear coefficient of -3.84.

6: Oil prices in SDR and US dollar exchange rate (2000-2016)

Crude Oil (petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, US\$ per barrel. Source: IMF. The price was converted in SDR using IMF SDR monthly data.

Real effective exchange rate, CPI based; 2010=100. Source: BIS Statistics

1. The Oil Price Evolution 2000-2008

Since the oil market is global, with its price virtually identical in all parts of the world, the price reflects both total world demand and the supply of all producing countries. The primary demand for oil concerns transport, followed by the use for heating, energy and inputs for the petrochemical industry.

The growth in the demand for oil from all countries and, in particular, from those showing a strong economic development such as China and India, has been, and will continue to be, an important factor that pushes up the price of global crude oil.

In 2000 the OPEC increased 4 times its production quotas and reached the record level of 29.5 million barrels per day. Due to a good global economic stimulus and a high demand, oil prices grew into a new upward trend, finally leveling out above 30 dollars. It was only in December 2000 that prices fell back sharply.

This trend continued for two years, as a consequence of the bursting of the new economy bubble and the terror attack in New York.

In March 2002 crude oil prices were listed again within the desired OPEC range of 22 - 28 dollars / barrel and during the summer months were driven also by the threat of war between the US and Iraq.

The OPEC kept its production quotas extremely low; however, the oil production in autumn 2002 was almost 10 to 15% above the target rate. At the end of the year, an oil workers' strike in the OPEC member Venezuela caused a rise in oil prices. Moreover, after the decision of the Federal Reserve to lower rates almost to zero, the weakness of the dollar led to an increase in oil as well as wheat prices.

The year 2004 started with the lowest US stock figures for crude oil. The refineries supplied at the lowest limit. The premature austerity measures initiated by the OPEC in the first quarter led to a sus-

tainable increase in oil prices. The Iraqi oil supplies remained low due to continuing acts of sabotage. At the same time the world oil consumption rose unexpectedly. In China, the demand for oil became huge. The US oil consumption rose to a new record level, as a consequence of the increasing demand also driven by low interest rates.

In June 2004, the Federal Reserve decided to raise by a quarter percentage point its target for a key short-term interest rate, the first increase in nearly four years. A move which marked the end of super-low rates in the United States.

In October, through massive oil contract purchases, funds and speculators were pushing prices of crude oil up to new all-time high level of above 50 dollars per barrel.

In the first six months of 2006, oil prices reached in a level of 55 dollars per barrel, well above the OPEC target.

Investors feared the weakness of the dollar and started investing and speculating in commodities. In November 2007, the oil price reached a peak of 90 dollars per barrel.

The year 2008 began with the fear of an imminent recession, especially for the US economy. This led to a crash of the equity markets in mid-January. Investors fled from the dollar to the seemingly recession-proof crude oil which reached the record value of 146 dollars per barrel.

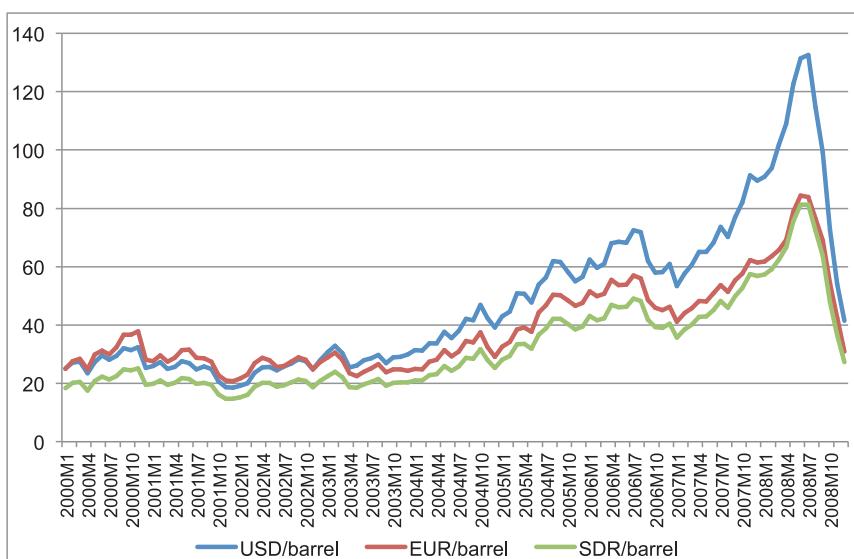
The US dollar exchange rate reached its lowest level in July with a value of EUR/USD of 1.578.

The oil price bubble burst in the summer of 2008. The overpriced oil increasingly slowed the world economy. With the crash of US banks in September, oil prices fell back to 100 dollars per barrel. The banking crisis spread to Europe and Asia. Global recession fears increased worldwide and from July to December of the same year, crude oil prices fell by 73 percent and ended the year at 40 dollars per barrel.

On December 24rd a weak dollar sold for 0.7093 euro went along with an oil price of 37.5 dollars per barrel.

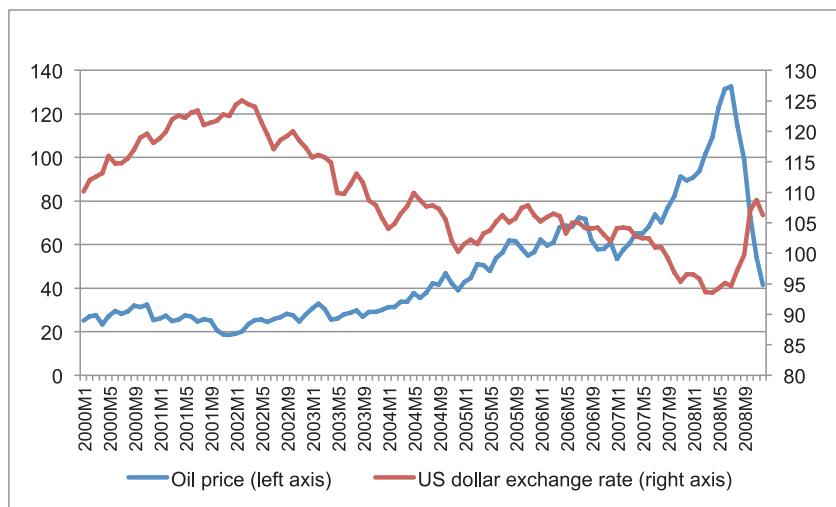
In the US, low demand coupled with high available stock held oil prices down.

7: Oil prices per barrel (2000-2008)



The price for crude oil (petroleum) in US dollars is the simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, Source: IMF

For an effective comparison, the price of an oil barrel expressed into USD\$ has been converted into Euro and SDR, using the monthly rate. Source: IMF and European Commission.

8: Oil prices and US dollar exchange rate (2000-2008)

Crude Oil (petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, US\$ per barrel. Source: IMF.

2. The Oil Price Evolution 2009-2016

During the spring months of 2009, the economic optimism prevailed and in autumn oil prices returned to 70 dollars per barrel.

The year 2010 was dominated by three major themes: the relaunch of the global economy after the 2008 banking crisis; China as an economic engine; and the sovereign debt crisis in the EU.

Greece and Ireland were saved from state bankruptcy by the European Community. This subsequently led to a depreciation of the euro against the US dollar. In early June the exchange rate EUR/USD was 1.194. As a consequence, oil became more expensive for Europe. China shone as a world economic power and became the driving force for the global economy being the best market for EU exports and for the German economy. Crude oil prices reached 90 dollars per barrel.

The year 2011 started dramatically for the oil market due to riots and revolts in the Arab world.

The world economy enjoyed a robust recovery, with China and Germany playing the role of economic locomotives. In the summer of the same year, the massive European debt crisis emerged. The IMF had to rescue Greece from the sovereign default. Portugal, Spain and Italy as well had to witness a downgrade of their rating.

Also in the US it was necessary to set a limit to the increasingly growing public debt. In autumn fears of a new recession re-emerged and the global stock markets were also hit. In December, the euro reached its lower value of the year with an exchange rate EUR/USD of 1.2889.

In December the nuclear conflict with Iran, under the threat of sanctions and a possible war, was a strong issue for the oil world market.

When oil regions such as Iran cut back production, the relative price of oil rises, improving the terms of trade of oil producers. Output falls in the United States and Europe because oil is an intermediate input in the production of manufactured goods. This shows that oil price increases are leading indicators of US recessions.

In 2012 the oil price confirmed its growth and remained expensive.

The Western countries acted against the nuclear threat from Tehran with sanctions and an oil embargo, so that in spring Iran ran into considerable difficulties in selling oil.

The debt crisis in the Eurozone was still unsolved. Throughout the entire year a special effort was asked to Greece and Spain with more drastic savings packages, as a prerequisite for further support loans from the Eurozone – i.e. rescue fund.

China's economic engine lost speed. The key emerging markets of Brazil and India experienced a growth slowdown.

In the US, unconventional drilling and oil production technologies were supposed to make the US independent from any crude oil imports thanks to the implementation of the so-called hydraulic fracking in five years. This is also the reason why the US WTI crude oil was traded up to 20 dollars per barrel lower, against the leading variety BRENT. The US was expected to overtake Russia and even Saudi Arabia in oil production.

The first months of 2013 were quite dramatic in the US because the US government threatened insolvency (fiscal cliff). In March the euro crisis emerged again, this time with the national bankruptcy of the small island of Cyprus. That hardly reached bailout was strongly criticised and pushed down the euro exchange rate to EUR/USD 1.28.

In February, crude oil prices climbed to their highest level in the past 10 months, with a value of 98 dollar a barrel and then turned into a clear downward trend. The main reason for the glut of crude oil can be searched in the United States: shale oil in conjunction with the fracking, as new successful mining technology, encouraged the new oil boom in the US. The oil and gas sector gave the US economy a significant impulse for a new growth in the second half of 2013.

In June of the same year the world economy was worried about when the Fed would begin to scale back its expansionary monetary policy. This happened first in December with the decrease in bond purchases.

In China, the exaggerated economic growth slowed to a more solid but probably more sustainable growth.

July and August 2013 were characterised by a price rise reaching a 16-month high. From September on, oil prices began to fall. In October, the global geopolitical situation relaxed and also in the Middle East and North Africa the geopolitical tensions calmed down, so that the risk premiums on crude oil futures contracts were reduced from more than 10 to less than 5 dollars per barrel.

In November and December, crude oil values increased again supported by the economic performances of the US experiencing a decreasing unemployment rate.

In 2014 the US provided the world market with a good oil offer.

In March the Ukraine-conflict occurred. There was a danger of an uncontrolled spiral of sanctions of the West against Russia and vice versa. In September and October, the crisis situation eased. However, by the end of the year the economic and financial problems in Russia increased.

In June, the ISIS conquered large parts of Iraq and some cities in North and East Syria.

Oil prices reached a high level, but then subsequently experienced an unexpected but massive and sustained fall. The oil boom in the US had significantly oversupplied the world oil market.

However, the OPEC did not take austerity measures. Therefore, during the summer months crude oil prices fell sharply from 110 dollars per barrel to only 80 dollars per barrel in October. In December the oil quotation fell below 60 dollars per barrel.

When assessing the demand for oil, the influence of the demand for increasing reserves is not taken

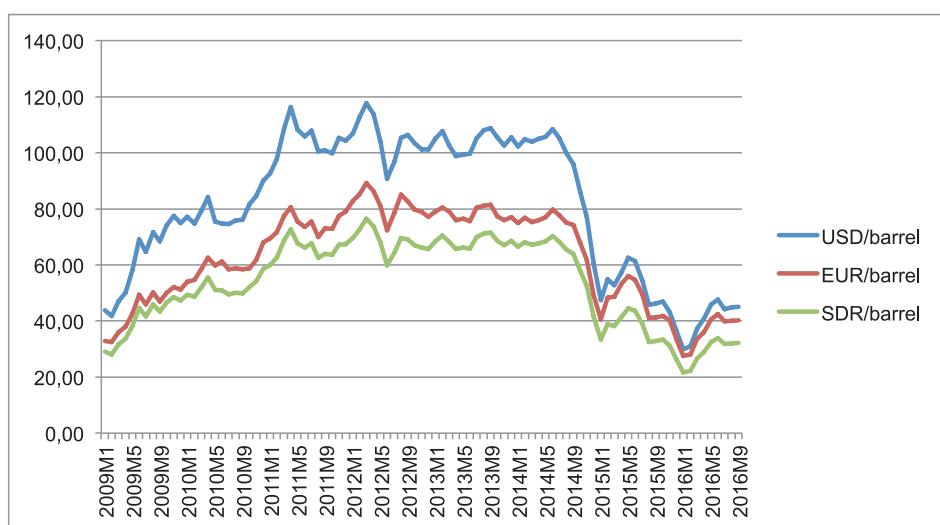
into enough account. It is known that the demand for reserves has been a major component of the total demand in 2011-14 and its absence one of the major determinants of the price collapse in the fourth quarter of 2014.

In 2015, despite persisting geopolitical tensions in the Middle East, a number of factors weighted in oil prices: sustained oil production in OPEC members, subdued aggregate demand growth and the lift of US export ban.

The US dollar was strong throughout the year, anticipating expectations of an interest rate increase for the first time since 2006, which eventually materialised at the end of the year.

In December 2015, the monthly average oil price was 36.6 dollars per barrel and the reduction continued in early 2016.

9: Oil prices per barrel (2009-2016)



The price for crude oil (petroleum) in US dollars is the simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, Source: IMF
For an effective comparison, the price of an oil barrel expressed into USD\$ has been converted into Euro and SDR, using the monthly rate. Source: IMF and European Commission.

10: Oil prices and US dollar exchange rate (2009-2016)



Crude Oil (petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh, US\$ per barrel. Source: IMF.
Real effective exchange rate, CPI based; 2010=100. Source: BIS Statistics.

In early 2016, crude oil prices fell further from 37 dollars to below 30 dollars a barrel. In mid-January, Iran confirmed its compliance with the nuclear deal, so that after many years of embargo, Iranian oil was able to come again into the world market. Tehran has accordingly taken all measures to speed up its export volumes. This significantly reduced the existing over-supply of the oil world market, but clearly decreased to less than one million barrels / t. The world economy slowed down especially due to China's economy which lost its pace.

From February to April the oil-producing countries were struggling to freeze oil supplies at the January level. In April, the "Freeze" meeting, which was held in Doha, failed due to Saudi Arabia's veto. Surprisingly, oil quotation was not the so called "bear" one. Oil prices did instead increase. Many market analysts saw this rapid price rise as premature because there was still much speculation at play and oil prices were not rational.

In May, the situation changed unexpectedly. Several major oil producing countries, such as Nigeria, Iraq, Venezuela, Canada and Libya, reported production losses. As a result, overproduction was quickly withdrawn from the table and crude oil quotations tested the price level of 45 / 50 dollars per barrel.

In June, the number of active oil drilling points in the US rose again and in July there was a sharp price drop from 50 to 44 dollars per barrel. The US oil producers secured against this price decline by hedging the futures contracts. This meant that the oil that would be produced over the next 12 months had already been sold through contracts on the oil stock exchanges, thus securing its revenues.

By the end of September a surprise came from the OPEC. In the Algiers, the oil cartel decided to limit the future oil production volumes. At the OPEC meeting of November 30th, it was agreed a cut in production (from January and for at least six months) for the first time since 2008 in order to address the global supply glut and lift prices, coordinated with other key non-OPEC producers including Russia.

3. Cereal Prices and the Exchange Rate

Let us now consider the price of cereals. Wheat is the most widely produced cereal after maize. The annual world production covers 20 percent of global calorie needs. The largest wheat producers in the world are the United States, India and China.

Wheat is traded on the CBOT (Chicago Board of Trade) in bushels. A contract is 5,000 bushels (about 136 metric tons). The price of wheat is highly dependent on global economic and political factors and can have a high impact on the rice market. Wheat is becoming increasingly important also as a basis for the bio-fuel production.

The wheat price is influenced in particular by the trading on the CBOT and the Kansas City Board of Trade (KCBT). The crop price development has always been very unstable since the height of the harvest depends on the weather and unforeseen natural disasters. These factors can reduce the harvest and lead to an increase in prices. Unexpectedly good harvests lead to stagnating prices of wheat.

Internationally, wheat is traded on commodity futures exchanges as soft and hard wheat.

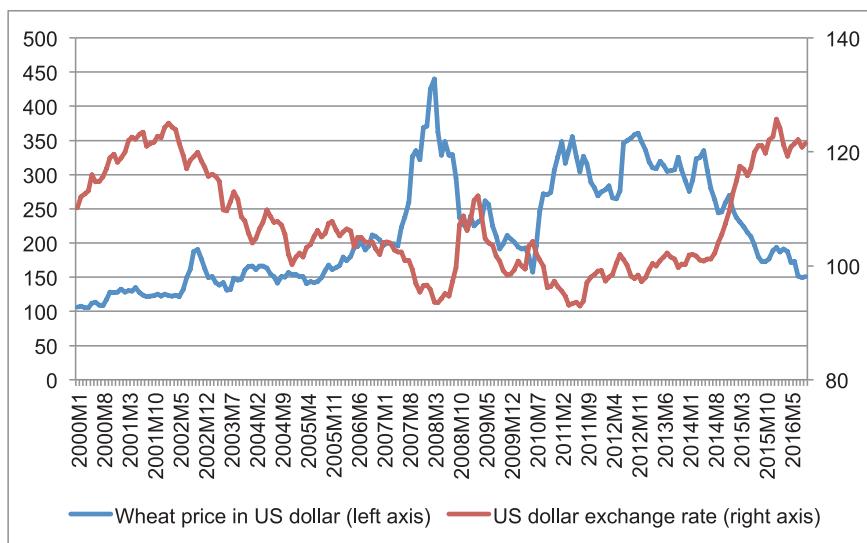
In 2000, the US and Europe decided to ease the existing conflicting restrictions on speculation on food. Producers and processors of raw materials secured from the commodity exchanges against price fluctuations by buying and selling futures.

The proportion of speculators on the commodity markets has increased from about 20 percent before deregulation to today's 80 percent. Banks and funds have discovered food as a profitable investment opportunity.

The more money flows in the agricultural funds, the more prices grow, which in turn attracts more investors. Since speculators bet on rising prices in the long term, buying commodity futures leads to an increasing demand.

Cereal price volatility has increased considerably since the 2000 deregulation. Until 2004, prices for wheat futures fluctuated only by 20-30 per cent. Then fluctuations were up to 70 percent.

11: Wheat prices and US dollar exchange rate (2000-2016)



Wheat, No.1 Hard Red Winter, ordinary protein, FOB Gulf of Mexico, US\$ per metric ton. Source: IMF. Real effective exchange rate, CPI based; 2010=100. Source: BIS Statistics.

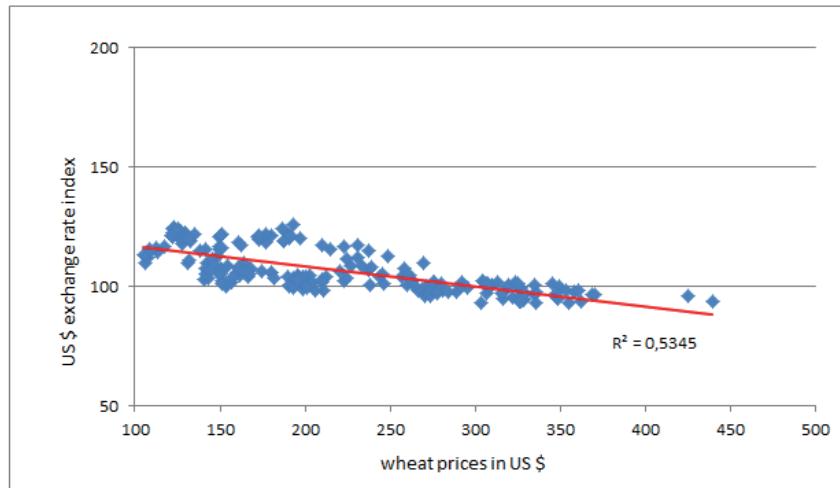
Considering the Pearson product-moment correlation coefficient a moderate correlation can be found between the US dollar exchange rate and wheat prices.

That is because wheat prices are influenced not only by the US dollar price, but also by natural, political and speculative factors.

The same applies to the correlation between wheat prices and the SDR.

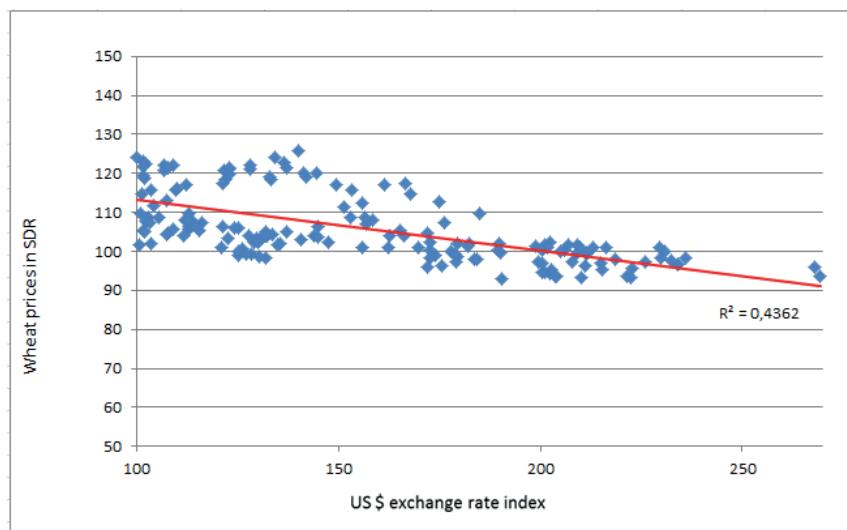
What is undeniable is that over the time the price of wheat in SDR has been less volatile than its price in US dollar and euro.

12: Wheat prices and US dollar exchange rate: Linear regression (2000-2016)



Wheat, No.1 Hard Red Winter, ordinary protein, FOB Gulf of Mexico, US\$ per metric ton. Source: IMF. Real effective exchange rate, CPI based; 2010=100. Source: BIS Statistics.

13: Wheat prices SDR and US dollar exchange rate: Linear regression (2000-2016)



Wheat, No.1 Hard Red Winter, ordinary protein, FOB Gulf of Mexico, US\$ per metric ton. Source: IMF. Real effective exchange rate, CPI based; 2010=100. Source: BIS Statistics.

4. The Wheat Price Evolution 2000-2008

There has always been modest, even welcome, speculation in food prices and it traditionally worked like this. Farmer X protected himself against climatic or other risks by "hedging", or agreeing to sell his crop in advance of the harvest to Trader Y. This guaranteed him a price, and allowed him to plan ahead and invest further, and it allowed Trader Y to profit, too. In a bad year, Farmer X got a good return but in a good year Trader Y did better. When this process of "hedging" was tightly regulated, it worked well enough. The price of real food on the real world market was still set by the real forces of supply and demand.

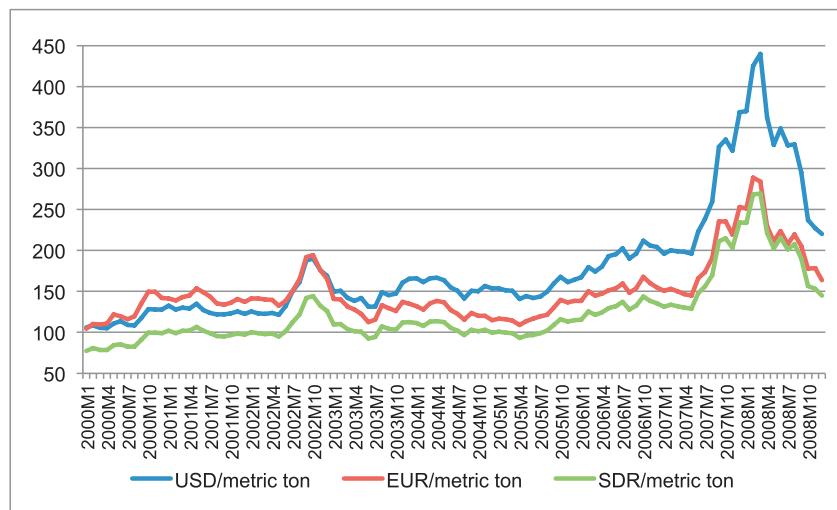
But all that changed in the mid-1990s. Then politicians in the US and Europe decided to abolish the regulations on commodity markets. Contracts to buy and sell foods were turned into "derivatives" that could be bought and sold among traders. Starting from 2006, the leap in wheat prices was in sharp contrast to the downtrend and the prolonged slump in commodity prices from 1995 to 2002, which even prompted calls for the revival of international commodities agreements. For some analysts, the increase signalled the "end of the cheap food". The price boom was also accompanied by much higher price volatility in cereals, highlighting the greater uncertainty in the markets. In early 2008, volatility in wheat prices was twice the level of the previous year. Many factors were responsible for this price spike: production shortfalls, low stock levels, oil prices, biofuel demand, growing incomes in emerging economies, depreciation of the US dollar and speculation.

In 2008, the housing bubble and the credit default led to a significant decline in the US dollar exchange value and the commodity market became another lucrative playing field.

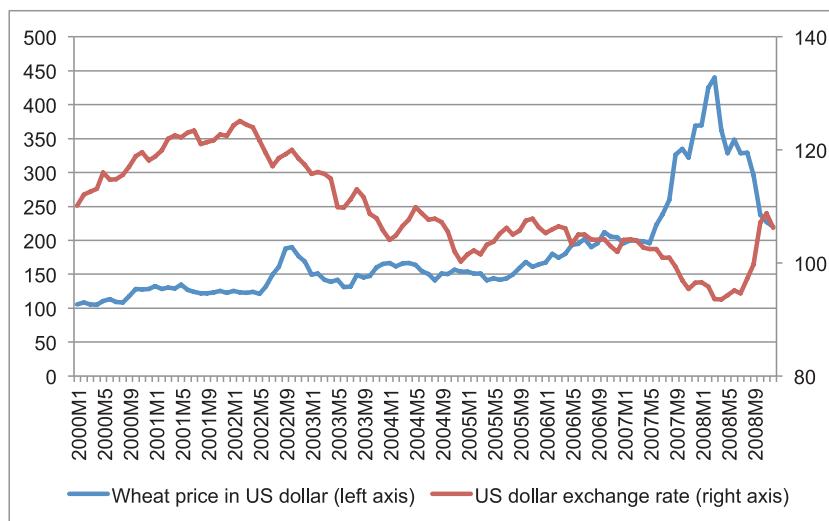
Because most commodity prices are commonly expressed in US dollars, a depreciation in the value of the US dollar reduces the cost of commodities for countries whose currencies are stronger than the US dollar. For countries whose local currencies are pegged to or are weaker than the US dollar, the depreciation in the US dollar increases the cost of procuring, in this case, wheat. More than 30 developing countries peg their currency to the US dollar so that large fluctuations in prices can have a destabilising effect on real exchange rates of those countries, putting a severe strain on their economy and hampering their efforts to reduce poverty².

If expressed in SDR, price increases would be less dramatic and within a range of historical variation.

² "Et contre la guerre des monnaies entre l'Europe et les Etats-Unis, que pouvons-nous ? Par notre appartenance à la zone franc, nous sommes pieds et poings liés à l'euro. Dès qu'il monte, notre coton vaut moins cher, puisqu'il est acheté en dollars. Vous trouvez ça normal ? Un pays parmi les plus pauvres accroché à la monnaie la plus haute ? Plus elle grimpe, plus nous tombons. Et personne ne proteste. Et surtout pas la Banque mondiale. » D'un geste un peu maladroit, agacé, il remonte les manches de son boubou bleu brodé décidément, ce boubou ne lui va pas : trop vaste, trop joli, trop brodé. Le président se redresse" Orsenna, Erik (2006).

14: Trend in wheat prices ton in US dollar, Euro and SDR (2000-2008)

Wheat, No.1 Hard Red Winter, ordinary protein, FOB Gulf of Mexico, US\$ per metric ton. For an effective comparison, the price of wheat has been converted into Euro and SDR, using the monthly rate. Source: IMF and European Commission.

15: Wheat prices and US dollar exchange rate (2000-2008)

5. The Wheat Price Evolution 2009-2016

In 2009, despite a higher US production of 2.97 billion bushels, with an estimated consumption of 3.05 billion bushels, consumption exceeded production. This is partly due to a strong demand especially from China.

The weakening United States dollar and developments in the macroeconomy, including oil price hikes and cautious optimism about the economic recovery, contributed to firmer wheat values.

In 2010 the price of grains continued to grow thanks also to a particularly favourable economic situation in the US and the correlation with other commodity markets such as meat and petrol. In addition, adverse weather conditions in the Midwest and Northern United States affected the prices as well.

In June 2011, global wheat prices remained significant. The peak was reached in May and from July on prices declined slightly, although prices for specific commodities such as rice, maize, and wheat remained volatile.

Over the last quarter, wheat prices were declining due to good winter yields in Europe and the United States. The Russian Federation's improved harvest and lifting of the ban on its export of wheat along with the suspension of Ukraine's export quotas gave an additional boost to supply in international markets. Similarly, despite downward revisions to anticipated maize production in the United States on account of the unusually high temperatures and low precipitation in July across the maize producing region, global output of grains in 2011/2012 was projected to be 3 percent higher than estimated output for 2010/2011.

Considering the seasonal trend in grain prices, recurring patterns can be found. For example, the price of corn increases usually from January to June, while the price of wheat tends to grow in the second half, especially from July to October.

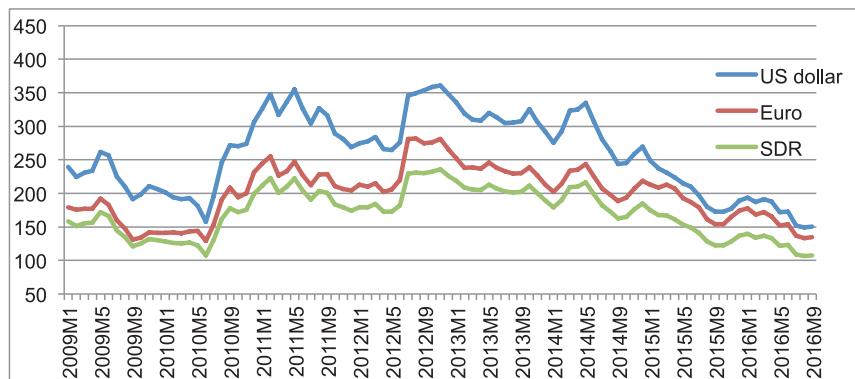
In 2013 the price exceeded the level of April and July 2012. Since October 2010, a stable upward trend, led to an increase in the price from 55 to 102 US dollars, which means an increase of more than 90 percent in 33 months.

The price of wheat is one of the few commodity prices which registered a positive result in 2014. With nearly a decline of 2.5 percent compared to the previous year, it was under pressure in the middle of the year and kept on decreasing in September.

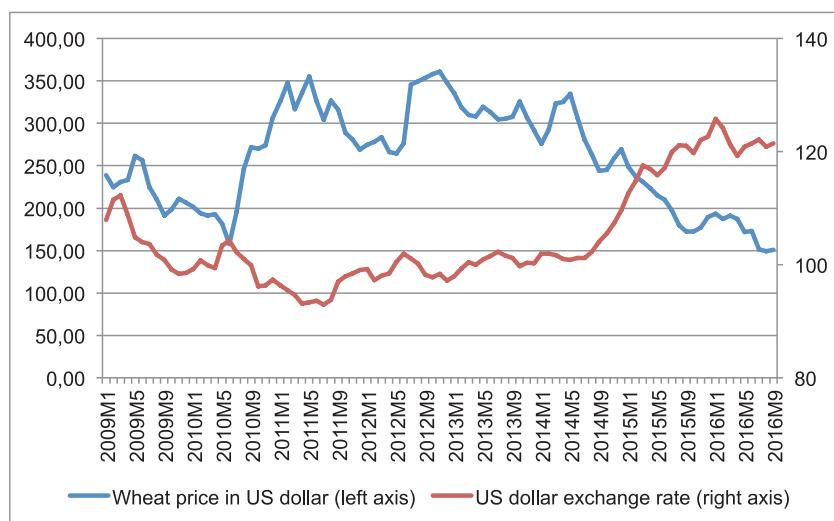
While the US wheat prices have been affected by a strong US dollar (a strong US dollar makes more expensive for foreign buyers to purchase US wheat), on the other hand the European milling wheat benefited from the weak Euro and the strong EU exports.

In 2015, an overabundance of wheat supply occurred which was likely to continue in 2016. Following two consecutive years of record crops, world wheat inventories are at sufficiently large levels. This coupled with less buoyant growth in demand for feed wheat, could contribute to fairly stable market conditions.

With world wheat stocks at sufficiently large levels to buffer against any unexpected production shortfall, international prices have remained under downward pressure. In fact, the overall favorable supply prospects for another season kept the Chicago Board of Trade (CBOT) quotation at some 25 percent below the levels registered in the corresponding period last year.

16: Trend in wheat prices in US dollar, Euro and SDR (2009-2016)

Wheat, No.1 Hard Red Winter, ordinary protein, FOB Gulf of Mexico, US\$ per metric ton. For an effective comparison, the price of wheat has been converted into Euro and SDR, using the monthly rate. Source: IMF and European Commission.

17: Trend in wheat prices and US dollar exchange rate (2009-2016)

Wheat, No.1 Hard Red Winter, ordinary protein, FOB Gulf of Mexico, US\$ per metric ton. Source: IMF. Real effective exchange rate, CPI based; 2010=100. Source: BIS Statistics.

Concluding Remarks

The effects of macroeconomic volatility in low-income countries are an important impediment to sustained growth and development. Compared to other countries, low-income countries are particularly vulnerable to sharp swings in commodity prices, natural disasters, and variable external financing flows – as the ensuing high output, price, and fiscal volatility imposes large growth and welfare costs.

Quoting primary commodities such as oil and wheat in supranational currency such as the SDR, would reduce market speculation and a discontinuous trend in prices. Primary commodities quoted in SDR would cost less: their prices would be more stable since the SDR, with a defined value in terms of the major currencies, diversifies exchange risks.

As of March 2016, 204.1 billion SDRs (equivalent to about \$285 billion) were created and allocated to members. The value of the SDR is now based on a basket of five major currencies – the US dollar, the euro, the Chinese renminbi (RMB), the Japanese yen, and pound sterling – as of October 1, 2016. The respective weights of these currencies are 41.73 percent, 30.93 percent, 10.92 percent, 8.33 percent, and 8.09 percent. The fact that the Chinese renminbi is now in the basket opens a wide discussion about the need for a real over national currency that is not affected by the limit of the well-known “Triffin dilemma”.

The next basket review is currently scheduled to take place by September 30, 2021 and it would be a great opportunity to include also currencies of countries such as India, Brazil and Russia, shifting at least 5 percent of quotas and letting the SDR represent the real global economic power distribution.

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