Global Oil Markets: The Need for Reforms

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Structural causes of oil price instability

Crude oil prices are structurally unstable. This is a characteristic that oil has in common with multiple other raw materials and manufactured products, whose supply is rigid relative to price in the short term. In the case of oil, not only supply, but also demand, is rigid in the short term. Whenever unilateral or bilateral rigidity prevails, prices will tend to swing widely.

The cause of rigidity of supply may be either that production can simply not be modified in the short run; or that capacity additions tend to take place in large increments (this being the norm in most heavy industries, where scale economies are important: oil refining, petrochemicals, metal smelting etc.).

A further cause of rigidity is in the structure of costs. If production requires large upfront investment, it is likely that indirect or sunk costs will dominate over direct costs in the total cost structure of the industry. In this case, whenever additional capacity is created, it will tend to be used to spread the indirect cost on a larger production base. Oil exploration and production definitely belong to the category of industries in which sunk costs dominate. Hence, when a new field is discovered or new capacity is added, it will tend to be used to the maximum level which is compatible with the preservation of the long-term value of the field.

It is only in some OPEC countries, notably Saudi Arabia and the other Arab Gulf producers, that large-scale investments are made to create capacity, which is then deliberately kept on stand-by rather than used: this is because these countries are pursuing the objective of being able to condition other producing countries’ behavior through their potential influence on prices. In other words, this behavior is already part of an effort to counteract the structural instability of prices, not a manifestation of the spontaneous tendency of the market.

The effectiveness of OPEC’s quota policy (or more precisely of the Saudi and some other OPEC members’ policy to invest in capacity and keep it fallow) is however dubious, as in the end what matters is the sentiment of the market. At times of intense demand the “swing producers” may increase their production, which means that their unused capacity will decline: the market may take this decline as a reason for expecting higher prices, just as well as it might take the increased production as reason for expecting lower prices. The opposite may be the
case when prices are weak and quotas are lowered. So, swing producers run the risk of obtaining exactly the opposite outcome than was intended.

It is said sometimes that the source of oil price instability is the fact that OPEC countries maintain prices at artificially high levels through production quotas: in this view, uncertainty concerning quota policies breeds instability. This is, however, certainly not the case, because price instability existed well before OPEC, and is found in all markets in which supply is rigid in the short term, even if these markets are highly competitive. The destruction of OPEC’s quota system may well lead to lower average prices, but it would not lead to greater stability. In fact, by driving out of the market a lot of marginal sources (offshore, non-conventional oil) maximization of OPEC output may very well increase instability.

Demand, too, is rigid relative to price changes in the short run. There are several causes of this, some structural, some man-made. Among the former the key one is that the consumption of energy is largely determined by the characteristics of our cities, houses, vehicles and appliances. Do we live close to or far from our workplace? Do we have access to public transportation to commute? Do we live in apartments or individual homes? How large? How well insulated? What kind of car do we drive? How efficient are the appliances we purchase? And so on. All of these are questions, the answer to which depends on decisions made in the past under different price conditions, none of which is likely to be rapidly revised when prices change. The final consumer will need to be convinced that the change in prices is here to stay before he considers changing such important aspects of his lifestyle. Eventually, change will occur, but it is likely to be slow and very gradual.

Another reason for the limited reaction of demand to prices changes is that in the past 30–40 years the proportion of energy expenditure in the average family budget has constantly declined. It is only in 2008 that prices rose to the point that the average family was spending on energy as much as it did in 1980 in proportion to its total income. Final consumers will keep spending on energy because by and large they can afford to do so. The level of affluence in the industrial countries is such that families enjoy greater discretionary power in their spending patterns, and can devote more to energy if prices increase.

Among man-made reasons for price rigidity we should mention all those mechanisms which insulate the final consumer from the direct impact of price changes. These may be high excise taxes on hydrocarbon fuels in many OECD countries (not the USA!) or subsidies in many developing countries for which the end result is the same.

Demand does react to prices in the longer run. This is important because once the pattern of energy consumption has changed it is unlikely to revert to what it was earlier. For this reason we sometime hear about “demand destruction”: demand is destroyed because once the consumer has bitten the bullet and opted for energy conservation he is unlikely to increase his consumption in a mirror fashion if prices decrease. High prices will destroy a share of the pre-existing demand.

The delayed response of demand to price changes will not necessarily lead to price stability. It will, in contrast, lead to even greater uncertainty, as investors and governments will not know exactly what to expect on the demand side.

It is indeed rather extraordinary how badly we understand global oil demand. We have sophisticated models to forecast demand in different sectors and countries, yet we are constantly faced with surprises. The International Energy Agency adjusts its demand forecasts for the current year several times during the year and not by a small margin. So, when it comes to the more distant future uncertainty is very high.

Price instability is a problem because it becomes impossible to predict future prices. If we do not understand thoroughly the extent to which demand will react to prices and the timing of the reaction, forecasting prices becomes very difficult.
That the oil market is characterized by bilateral price rigidity does not, of course, mean that prices have no influence at all on demand and supply, but the influence they have is retarded and not necessarily straightforward.

Furthermore, given short-term supply and demand, prices may be undetermined within a broad margin. Existing supply and demand will seriously react only if prices reach very high or very low levels. Given a prevailing price discovery mechanism, the mechanism will generate a specific price; but the same balance or imbalance between demand and supply would prevail even with higher or lower prices. So, the so-called market fundamentals, demand and supply, will normally validate whatever price has come to prevail. This price may be influenced by factors that are totally unrelated to oil fundamentals (for example, the value of the dollar relative to other currencies) and change accordingly; fundamentals will not “resist” this change. For the best part of 2007 and the first half of 2008 oil prices kept rising higher and higher, and it was then said that the market was testing where the upper limit that demand would tolerate would be.4 This rather mythical “tipping point,” beyond which demand would finally collapse, was never truly found: prices collapsed because the financial crisis intervened.

Consequences of oil price instability and the relevant definition of volatility

When we speak of price instability or volatility, it is necessary to define exactly what is meant. Volatility exists for intraday trading, indeed within the hour or the minute, as well as for longer periods. Which type of volatility interests us?

The best approach to a useful definition of volatility is to focus on its consequences. Why are we concerned with volatility? The key problem is that volatility may lead to the impossibility of forming a sufficiently stable expectation about future prices to guide investment decisions. The latter may be corporate decisions concerning large-scale projects or individual consumer decisions concerning which car to buy next: all have implications for several years.

Thus, not all volatility constitutes a problem. Acute volatility which would occur around an identifiable trend line would not be as much of a problem: investors would still be able to form expectations concerning the future of prices and factor in the volatility as a random element of risk which could be addressed with the appropriate financial techniques. The problem arises when the pattern of price changes is such that no stable trend or underlying rule is detectable.

In forming our expectations about future prices we can only look at past experience and attempt to extrapolate into the future. If prices swing widely, no stable trend line can be identified. No attempt to endogenize prices into econometric models has ever succeeded, leaving us totally in the dark about where future prices may be.5 We may, with difficulty, predict future fundamentals but, as mentioned above, each demand and supply equilibrium is compatible with a whole range of prices, not just one. Where will the price “stick” within the range?

A confirmation of the growing uncertainty concerning future prices comes from the work of the Energy Intelligence Administration of the United States. Their International Energy Outlook, published yearly, normally contains three scenarios for future energy supply and demand: a reference, a high oil price and a low oil price scenario. Prices are exogenously assumed and differentiate the scenarios. The gap between the high and low oil prices which are used to establish the scenarios has progressively widened over time: in 2005, based on the fact that the previous year prices had averaged about US$35 per barrel, the high price assumption was $50 per barrel for 2025, and the low price assumption was $20 per barrel already before 2010, remaining stable until 2025; in 2010 the high price scenario assumption is prices growing...
rapidly to $186 per barrel by 2020, then decelerating up to $210 per barrel in 2035; and the low price scenario assumes prices rapidly declining to $52 per barrel in 2015 and remaining stable for the next 20 years. Therefore, the price in the first scenario is 400% of the price in the second by the end of the period: it is hard to imagine two more radically divergent hypotheses, a clear indication that there is extreme uncertainty about the future of oil prices. Furthermore, the low hypothesis in 2010 equals what only five years earlier was taken to be the high price hypothesis, to be reached in 2025. What if the expectations that we had five years ago turn out to be more appropriate than those of today? Can we exclude this? Hardly so. At any moment in time we have a tendency to extrapolate into the future the most recent trend (the best information about future prices is today’s price) and yet it is evident that reality does not conform to this expectation.

**Attempts at defining a long-term equilibrium price**

Repeated attempts have been made at defining long-term equilibrium prices for crude oil, but with limited success.

We have information on the cost of producing oil (although there might be multiple definitions of this cost) and may attempt to construct a long-term supply curve, i.e. a curve which tells us how much oil may be commercially produced for each level of prices.

This is summarized in Figure 8.1, originally introduced by the International Energy Agency and subsequently widely utilized in different versions.\(^6\)

![Figure 8.1 Production cost of hydrocarbon reserves](image)

*Figure 8.1 Production cost of hydrocarbon reserves*
The chart is not properly a long-term supply schedule: it tells us which reserves are commercially exploitable at any given level of prices, but says nothing about the pace at which they will be exploited. Thus, we cannot easily pass from the knowledge that all conventional oil is commercially viable at US$40 per barrel or less, to an expected level of production at $40 per barrel. Competitive markets would ensure that the lowest cost oil is produced first, and higher cost resources are only exploited when lower cost ones are exhausted. If this were the case, and in the absence of policy constraints to production or investment, a level of production sufficient to satisfy demand might be compatible with prices at or below $40 per barrel.

However, it is argued that the world cannot rely exclusively on low cost conventional oil, and a plurality of other resources should be developed for comfort and security of supply. Hence the idea arises that prices ought to be somewhat higher than $60 per barrel, lest the world depends too much on OPEC. This then becomes a politically desirable level of prices, which is said to be potentially stable. But will it actually be stable? There is absolutely no solid ground for expecting this much: at any moment in time capacity may be insufficient or redundant, causing prices to rise or fall.

All that we can say is that a level of prices somewhat above $60 per barrel would be compatible with diversification of sources and meeting demand. But could prices fall below or rise above for extended periods of time with little consequence for supply and demand (both rigid to prices)? Surely so.

All discussion about long-term equilibrium points to prices that would be desirable on the basis of more or less complex considerations: in some cases issues of fairness or producing countries’ budget or investment requirements are also considered on the basis that producers will not tolerate a price they consider to be unfair. At any moment in time, however, prices can seriously diverge from any desirable level. From the point of view of investors, the conclusion that eventually prices may tend to converge towards a desirable level is of little comfort, if this convergence comes about only very slowly and in the meantime the project is a financial disaster.

The vast majority of energy investment projects have very long gestation periods, easily exceeding five years. The discussion of long-term fundamentals, if it gives us any guidance at all, does so for an unspecified “long term,” which by definition is longer than the gestation period of individual projects, since it is through the implementation of investment projects that prices may be expected to converge to what we believe is their long-term equilibrium point. But from the point of view of investors, returns in the early years of operation of a project are crucial to determine financial viability. Thus, information concerning long-term equilibrium prices is of limited comfort when a final investment decision has to be made for any specific project. Investment becomes an act of faith.

Price makers and price takers before Brent

It is because of the structural reasons discussed so far that the oil industry has tended to have well defined price makers and price takers. Depending on the specific historical period under observation, either one or a group of companies or a group of governments have “made” prices, which the rest of the investors’ universe has tended to accept. As at any moment in time fundamentals will be compatible with a range of prices, not just a single point in the curve, a price maker only needs to point to any price that falls within the broad acceptable range to see it validated by fundamentals.

In the golden age of the oil industry, price making power was enjoyed by the seven or eight “sisters,” with the support of institutions such as the Texas Railroad Commission, the US Treasury Department, the British government and more, all of which tended to implement
policies which supported the sisters rather than rocking the boat. Price stability was in the interest of all, and it required some “management” of competition.

Oil was traded then, primarily physically and bilaterally, but the market was neither transparent nor a level field. The sisters traded at preferential prices between themselves, to compensate for their internal imbalances (some were long, some were short of crude) and eliminate the incentive to compete with each other. Sales to outsiders were at less favorable prices, to ensure that they could not become a threat to the sisters’ market dominance.

The success of this lightly camouflaged cartel was facilitated by rapidly growing demand for oil, which resulted not only from energy demand growing rapidly, but also from oil being priced sufficiently low progressively to displace coal.

Nevertheless, the position of the companies was constantly threatened by newcomers, attracted by the high rates of return, notwithstanding the fact that oil prices were relatively low. Newcomers enjoyed a protected position because the sisters were able to manage the market and guarantee that the marginal producer would be able to achieve a profit rate above zero. Today it is OPEC that performs essentially the same service for the benefit of the international oil companies (IOCs).

This state of affairs, however, could not last forever. As the share of oil grew and that of coal shrank, the outlook for growing oil demand worsened. The pace of new entries into the industry quickened in the 1950s and 1960s, and the sisters found it impossible to defend prices. As the latter eroded, producing countries’ governments reacted by forming OPEC. By the end of the 1960s margins had thinned and the sisters were expressing concerns that prices were untenably low.

Then control shifted from companies to governments, and OPEC became the price maker. This, however, should be qualified, because in fact OPEC simply attempted to ratchet up and consolidate price increases, which were largely determined by “the market”. As this continued to be non-transparent and insufficiently liquid, at any political crisis (the Yom Kippur war, the Iranian Revolution, the onset of the Iraq-Iran war) some refiners found themselves cut off from their customary sources and went scrambling to find alternatives; as the market was segmented, these were difficult to find, and prices were jacked up. Then what were in essence prices on fringe, non-representative transactions were taken by OPEC as being the new equilibrium price, which they manifestly were not.

OPEC therefore turned out to be a poor price maker, and by 1985 completely lost this role: Saudi Arabia broke ranks and eventually opted for reference pricing. This proves that playing the role of price maker is not necessarily an easy task, and one which requires a good deal of flexibility and pragmatism.

Yet the failure of OPEC as price setter was not due exclusively to the organization’s inability to stand up to the task: important structural causes contributed to it.

Firstly, the industry’s vertically integrated structure was destroyed in the 1970s. The sisters lost control of reserves in almost all leading producing countries: while in 1970 they still controlled three-quarters of global production, by the end of the decade their share was less than one-quarter. The rest was now in the hands of national oil companies (NOCs) which had only very limited integration downstream into refining and marketing. The industry therefore became disintegrated, meaning that the dominant share of crude produced was sold at arm’s length, while previously it had been traded between units of the same company. As long as crude oil was exchanged within the same company, the role of prices posted by the companies was essentially to determine their tax liabilities in the exporting vs the importing country. But when crude is sold at arm’s length between two financially independent entities, price makes all the difference, and equilibrium, in what amounts to a bilateral oligopoly, becomes unstable.

All the more so since the temporary increase in prices creates an opportunity for appropriating a rent; the latter will swing from exporter to importer depending on their respective bargaining
power. At the same time, higher prices also encouraged new entrants, as had happened in previous decades: and it so happened that just at that time new provinces were rapidly expanding their production thanks to recent discoveries: the North Sea, first and foremost, but also Alaska, Mexico and the Soviet Union.

The emergence of an effective price maker therefore depends on several circumstances, including the degree of vertical integration and the cost of overcoming barriers to entry: both are well established generalizations in the literature on oligopolistic markets. Today, the industry remains predominantly disintegrated, as the NOCs have not pursued (or have been prevented from pursuing) vigorous integration downstream in the markets of the importing countries. However, barriers to entry are much more significant, because the pace of new discoveries has slowed, and incumbent IOCs struggle to replenish their proved reserves, let alone manage to expand them. Smaller discoveries may or may not mean that we are heading towards a global plateau in oil production, but in the shorter term certainly mean that new oil is not coming to the market.

**The Brent market: from physical to financial**

As OPEC was unable to defend the prices that it had attempted to consolidate, the price making function shifted to two markets: Brent in the United Kingdom and WTI in the USA. We should, however, more appropriately speak of price discovery function, rather than price making, as neither market has a clear price leader.

The market for WTI had existed for a long time, while the market for Brent emerged with the increase in North Sea oil production. Several circumstances facilitated the emergence of the Brent market: the fact that this was crude produced in an industrial country with a very pro-market government, the fact that Brent is a seaborne crude, hence potentially exportable everywhere in the world and the fact that several producers were independently operating in the North Sea and potentially competing with each other.

It is an interesting historical question exactly why WTI and Brent became benchmarks for setting the price of all other crude oils in the so-called reference pricing system, and I believe that it would be difficult to argue that there was any kind of historical necessity. Simply, as the industry needs a price discovery mechanism, and no other one was available, these two emerged. Surely, the preference of the former sisters, which were the major producers of oil in the British North Sea and controlled the logistics, was an important facilitating factor.

Both Brent and WTI were originally physical markets. Oil was traded bilaterally and over the counter, and transactions could only be observed through the work of reporting services. Futures and options linked to Brent were only launched by the IPE (today’s ICE) in 1988 and 1989, respectively. Previous attempts had failed. The reason that they then succeeded is precisely because, in the meantime, Brent had become a benchmark.

So what is “reference pricing”? Reference pricing means that the price of a crude which is not freely traded is tied by some formula to the price of another crude which is freely traded. The crucial point of this definition is that the vast majority of crude oil which is exchanged internationally is not freely traded. Limitations are in some cases imposed by the exporter, who only allows lifters that intend to refine the crude oil and sell the products; these undertake not to sell on a cargo to some other potential refiner or buyer, and the seller imposes limitations on destination, also in order to benefit from price discrimination depending on the destination. In other cases it is allowed to sell on cargoes to other buyers, but exchanges occur only between a limited number of players, for large deals and over the counter, hence are not easily observed. In fact, multiple other markets for crude oil exist, but they have slowly lost importance; transactions have increasingly been carried out at a differential to Brent or WTI rather than at fixed
prices. Markets such as that for Alaska North Slope (ANS), Ural blend or Dubai have mimicked Brent and WTI.

The process whereby a benchmark emerges is fairly straightforward, and it is self-perpetuating, in the sense that once a benchmark has emerged it will be difficult for an alternative benchmark to become accepted. A benchmark emerges because a specific market displays greater liquidity, and parties trading in other markets become reluctant to accept prices that greatly diverge from those of the more liquid market, on the assumption that they would in any case have the alternative of trading in the benchmark. In other words, even if I am buying Ural blend rather than Brent, I am not willing to pay a price for Ural which is unrelated to that of Brent because I assume that I would in any case have the alternative of buying Brent. However, this assumption is not well founded: it has never been so, and it is even less so today now that the production of Brent (and other North Sea crude oil that have progressively been added to Brent to preserve its credibility) is rapidly declining.

However, the fact that at some point the physical Brent market has emerged as one of two key benchmarks has facilitated the launching of the paper market (futures and options) because whoever wished to hedge his position and manage his risk could efficiently do so on the Brent paper market even if he was not trading in Brent, because the price of the crude that he was trading in was tied to Brent. Hence, the fact that the physical market initially became a benchmark facilitated the birth of a paper market; today it is the existence of a vast paper market that is the main reason why Brent remains a benchmark.

Originally, paper contracts were constructed to converge to the physical price. They were in essence bets on the future level of physical prices. But over time as liquidity on the paper side of the market increased and on the physical side decreased, it is now the price of physical contracts which converges to the price of paper. No physical trader will enter into a contract at a price which substantially diverges from that signalled by the paper market, because the accepted price is that which everybody believes is prevailing. Demand and supply play only a minor role in shaping market beliefs and expectations, and the price of paper barrels dominates that of physical barrels.

This is not to say that the price of paper barrels is totally independent of fundamentals: obviously if this price were pushed out of the range of prices that are compatible with existing demand and supply, then fundamentals would react, but even more important would be the expectation, founded or unfounded, that fundamentals would react. As we have seen, the very existence of a “tipping point” is questionable, as neither demand nor supply has ever tipped. We just presume that there must be one.

Thus, as trading in paper has progressively grown over trading in physical barrels (a process that has continued incrementally from 1988 to 2003) paper trading has become the main price discovery mechanism, but the market was nevertheless broadly reflecting if not of fundamentals, at least of expectations about fundamentals. However, beginning around 2003 or 2004 the market appears to have known a radical transformation, as commodities in general and oil in particular have become an asset class on a par with equities, bonds and currencies, and trading in derivatives has become more important in all of the above. This transformation led to the formation of an extraordinary oil price bubble. The bursting of the financial bubble, and consequently also of the oil price bubble, in the summer of 2008 opened the door to a period of greater stability, but it is not at all clear whether this was just a parenthesis or another fundamental turning point.

**Consequences of “financialisation” and the quest for sanity**

What is the problem with oil futures becoming an asset class and attracting increasing attention from individual investors, hedge funds, index funds and the like? The problem is that financial markets increasingly have characteristics which are incompatible with the role of oil as a physical commodity.
Notwithstanding all hypotheses concerning the rationality of markets and of individual investors, financial markets are prone to creating bubbles and alternating booms and busts. Rationality would require trading on the basis of the intrinsic value of an asset, that is buying an asset when its price is deemed to be low relative to its intrinsic value (the asset is underpriced) and selling when it is deemed to be high (the asset is overpriced). If we speak about stocks or bonds, the measure of under- or overpricing is the expected return (dividend, interest coupon) on the asset. In the case of commodities, which per se generate no return, the measure of under- or overpricing is the expectation of the future price of the commodity as determined in physical markets by the equilibrium of demand and supply. But if, as for oil, it is the paper market that discovers the price of the physical commodity, the reasoning becomes circular: investors will view the asset as overpriced if they expect the price to decline, and underpriced if they expect the price to increase. This means that they will sell if they expect others to sell and vice versa will buy if they expect others to buy. This tends to generate waves of buying or selling: while a lower limit to prices necessarily exists, an upper limit is much more difficult to identify.

For all financial markets, be they equities, bonds or commodities, it has been demonstrated that momentum trading brings greater rewards than value trading. Momentum trading (that is trading in accordance with the recent tendency of the market) is based purely on past information and totally ignores information about the future; it tends to amplify the structural oscillations of the market (which, in the case of oil, already tend to be wide) and generates better profits if oscillations are wide. If the market is uncertain and registers small oscillations with no clear direction (in this case it is sometimes said that the market is rangebound) momentum trading may generate poor returns or even losses.

Momentum trading can be encapsulated in mathematical algorithms, and is therefore easily used for automatic, computer-based trading. This has been a growing phenomenon, opening the door to flash trading, which is becoming increasingly important as well as controversial, owing to the fact that very short-term volatility is increased if a lot of flash trading takes place.

Momentum rules are conceived to react to turning points in the market after they have occurred. They may react very promptly or with some delay, depending on the specific rule retained, but they always follow. It is of course possible to design trading rules that attempt to anticipate turning points, although it is not clear that they would yield better returns. A rule anticipating turning points must be built on some assumption of minimum or maximum boundary for the price, some notion of a tipping point. This is easier to have when prices are in a downward rather than in an upward spiral. It is likely that expectations concerning where the turning point might be will be influenced by considerations concerning fundamentals, and in this sense the market will always display some reactivity to fundamentals, although this manifestly does not prevent some very wide swings. This is not surprising, because after all we have argued that oil prices are structurally unstable and at any moment in time the prevailing price is arbitrarily determined within a range whose boundaries are not precisely defined.

What the transformation of oil into a financial asset does, therefore, is to create a phenomenon of resonance, amplification of the structural instability of oil prices into wider and wider swings fuelled by momentum trading. The mathematical expression for resonance tells us that this is contained within certain boundaries by a damper. If the damper were zero, oscillations would become infinite, i.e. explosive. In the oil market, the damper is the market’s view of where the boundaries are, although it should be stressed that this view is purely subjective, in the sense that we have never witnessed supply decline significantly because prices had gone too low, nor demand because prices had gone too high. We have never observed a physical tipping point.

Furthermore, the volatility of prices, and especially the evidence of wide swings, attracts additional liquidity. At any moment in time, investors or professional traders can choose their
playground, i.e. which asset they will be trading. As the key for maximizing profits is in the price swings, investors will move from the more sedate to the more unstable markets. Hence, money moves in and out of a specific market depending on its observed pattern, and as it does so it also amplifies or reduces the swings. Hence we also have self-reinforcing expectations of volatility/stability: the former attracts liquidity which will enhance volatility, the latter will lead to liquidity being drained away, which will enhance stability.

In short: financialisation is not the cause of instability, the latter is structural to the oil industry, but it amplifies oscillations and undermines confidence in any concept of long-term equilibrium price. Yet, financialisation is inevitable, because physical traders need to contain their risk through hedging, and it is investors (speculators) that make hedging possible. As we cannot either limit the number of investors or the liquidity that they will direct towards this market, speculation leads progressively to financialisation, which in the end magnifies oscillations, hence the demand for hedging. This will create bubbles, which will inevitably burst. For some time thereafter the market will be less prone to wide swings and liquidity will be drained to other markets. There are storms and periods of calm.

**Anchors and storms**

Because expectations play such a central role in the behaviour of the market and the price discovery process, it has been suggested that the key to stable oil prices is in influencing expectations and providing the market with an “anchor” in the form of a central price that the market will come to accept as the equilibrium price at least for some time.\(^\text{11}\)

This eminently declaratory recipe assumes that an entity exists with sufficient voice and credibility that the market will believe. The message may or may not be reinforced by the availability of some tool to punish whoever may be tempted to challenge it.

Following the crazy swing of 2008, several voices were heard asserting that the right price would be in the region of US$75 dollars per barrel.\(^\text{12}\) A rare almost complete convergence of opinion between exporting and importing countries was observed, reinforced by the opinion of some leading experts which argued that such price has multiple advantages.\(^\text{13}\) The Saudi Minister of Petroleum has not lost an opportunity to repeat the mantra that prices in the $70–80 per barrel range are just perfect.\(^\text{14}\)

In fact, prices in the latter part of 2009 and 2010 have kept within a relatively narrow trading range centered on that magic number. The reduced volatility has led to liquidity moving towards other markets (notably currencies) and some important traders have disappeared\(^\text{15}\) or decided to size their operations down.\(^\text{16}\)

So, the anchor appears to be working, but this might be not because of its strength and ability to resist the pull of the ship, but simply because we are now in a period of calm, and nothing has happened to encourage investors to challenge the centrality of $75 per barrel. Yet a new storm is possible at any moment, and could easily be sparked by instability in the currency markets: a weak dollar immediately translates into higher oil prices, and a minor upward trend can be set in motion which would progressively lead to a bubble. The 2008 episode was fully four years in the making: the most convincing starting date that one can find for it is 2004, with the combination of unexpected growth in Chinese demand and clear evidence that the demise of the Saddam regime would not have led to a rapid increase in Iraqi demand anytime soon. So, we may conceive of a scenario of dollar weakness, persistent high growth in China and other emerging countries, inflationary fears in the OECD and loss of enthusiasm for renewable sources of energy, in some combination: a new, long upward trend in prices would then almost certainly appear. But, just as easily, prices may hedge down from the magic level, in response to
continuing sluggish growth, an objectively well supplied market, renewed expectation of a rapid increase in Iraqi production and abundant spare capacity. It is probably the very ambiguity of the current situation that keeps prices in an uneasy balance: as soon as expectations would conform in one direction, and price movements become unidirectional, a new storm may erupt.17

If so, will the anchor hold? Well, it has very little force to keep the ship in place, as there is no clear tool to resist a new swing if one is set off. If prices were to decline, can we expect OPEC to step in and cut production? As long as the decline in prices is minor, maybe OPEC will succeed in maintaining discipline. But beyond a certain point member governments will find meeting their budget obligations increasingly difficult, and some will start cheating on their quotas. Non-OPEC members that also have important expenditure commitments, such as Russia, will move in the opposite direction, that is they will pump more to preserve revenue. The market will smell blood and even more forcefully bid prices down. We know what comes next, because we witnessed it already twice: Saudi Arabia will either threaten or implement a price war, and prices will collapse. When this happened in 1986, following a period when they were relatively high, prices settled at a considerably lower level for no less than 15 years. When it happened again in 1999, coming out of a period of low prices, the decline could be stemmed. A new wave of downward speculation starting from the current level is more likely to inaugurate a protracted episode of lower prices. In the opposite direction, there is nothing to prevent a repeat of the 2007–08 episode, possibly reaching even wilder highs. After all, the upward trend in 2008 was interrupted by the financial crisis, the collapse of Lehman and the brutal drainage of liquidity that ensued. It could have gone on longer; it could even have consolidated a higher level of stable prices, at or above $100 per barrel, for a relatively long period. Fundamentals would have validated what investors might have brought about.

Obviously, OPEC would not intervene in a rising market. Saudi Arabia might declare that it is ready to increase production and satisfy any request to lift its oil, but would not actively flood the market to bring prices down. In addition, governments of importing countries would not lightly resort to drastic measures to reduce demand in the short term (such as some form of rationing), because in the end consumers would be willing to pay and, as long as oil exporters either adjust expenditure to the higher income or invest in OECD government bonds, the net outcome does not need to be deflationary. In fact, in the event of a deflationary effect the OECD governments would in all likelihood react with expansionary monetary and fiscal policy, further ensuring that demand does not decline.

The relative stability of the post–2008 period is therefore precarious and may be quickly reversed. We may be living in a lull between storms: a good opportunity to reinforce the anchoring.

**Reinforcing the anchor**

We can think of several ways in which the anchor may be reinforced. These should preferably not be considered in isolation from each other, but as a package of mutually reinforcing measures and tools. The underlying idea is that the feedback from fundamentals to expectations must be reinforced: this is the damper that may prevent resonance from becoming catastrophic.

**Increase physical trading**

A first step in the right direction would be to increase the volumes of crude oil that are available for physical trading in transparent and well supplied exchanges. This can be attempted either in the proximity of plural producers (e.g. in the Arabian/Persian Gulf) or in the proximity of major logistical and refining hubs. Oil exchanges supported by abundant storage facilities
should be set up to trade in standard parcels of various quality crudes, presumably through regular auctions, or through a futures contract which is physically deliverable, although the latter is more difficult. This would allow crude sellers and buyers to deal on a fixed price basis rather than on a differential to a benchmark, although they obviously would also have to be aware of what is happening to the benchmark. The ultimate objective of establishing such physical markets would be to reinforce the price signal coming from fundamentals and facilitate the feedback from physical demand and supply to prices.

The establishment of such markets would require the co-operation or at least the acceptance of producers, who would allow secondary trading of their crude. Although, as mentioned earlier, many of the most important producers impose limitations to the trading of their crude oil, this is not true of all of them. It may be possible to encourage some producers to take the lead or simply make this development possible.

Physical oil exchanges may be conceived of in traditional hubs such as Singapore or the Caribbean, or in new hubs. Examples of these worth noting are the Turkish port of Ceyhan, where several pipelines are expected to converge to load crude oil from various producing countries and companies into tankers, and the European ports of Rotterdam and Trieste, where crude oil from various origins is received to be fed into multiple inland logistical distribution networks. The system of oil pipelines carrying crude oil to various refineries in the European Union could also be developed into a trading platform.

These markets would not be as hugely liquid as today’s benchmarks, but would, so to speak, have their feet more firmly on the ground. One of these may even succeed in launching its own futures trading activity, progressively offering an alternative to current benchmarks.

**Increased vertical integration**

The process of vertical disintegration has been identified as one of the causes of increasing instability in oil prices. Moving in the opposite direction, that is, re-establishing vertical integration in the industry, would help to contain instability.

This may happen either through companies of the importing countries acquiring greater access to upstream resources in producing countries and relying less on arm’s length purchases of crude oil, or through oil companies of the producing countries integrating downstream into refining and distribution in some of the markets of their clients.

Both processes are visibly underway, although the heirs of the seven sisters are not in the forefront. The companies of the two pre-eminent emerging importers, China and India, are seeking access to upstream resources pretty much globally. Some of the companies of the producing countries are integrating downstream, by refining more of their oil at home, and investing internationally in refineries in their key foreign markets.

The process is slowed down by the perception that the producing countries’ NOCs would not be allowed to take over companies from the importing countries. Ever since the UK Monopolies and Mergers Commission was instrumental in forcing the Kuwait Investment Office to sell the bulk of the participation in the equity of BP18 (that it had acquired picking up shares in a bear market when the British government decided to divest its participation) it has been clear that there are certain red lines that the NOCs will not be allowed to cross. This negatively impacts security of supply and price stability.

Importing countries should stop protecting the independence of their NOCs through various non-competitive tools, such as a golden share, and move in the direction of allowing some presence of the oil companies of producing countries in their markets.
The promotion of co-operative international storage

The International Energy Agency and several governments of countries that are not members of this organization have established mechanisms to create strategic storage to be used in the event of a serious physical shortfall of oil supplies. The experience of 30 years of managing such strategic storage facilities is that the physical shortage conditions that would trigger their use never occur; prices are impacted first. However, strategic storage is assumed not to be a tool for market intervention, that is, not to be used to keep prices down if they tend to increase beyond a point, although in certain documents and legislative acts market disturbances or excessive price increases are mentioned as possible triggers.19 In short, strategic storage is helplessly mired in definitional ambiguity, and essentially useless.

Clearly the stability of the oil market would gain out of expanding commercial storage availability. Greater storage availability would allow better physical arbitrage of short-term imbalances between demand and supply, and improved management of prices. Storage however is expensive and oil stored in the producing countries may not be viewed as being fundamentally different from oil that is left in the ground.

A possible co-operative approach to commercial storage would be for the importing countries to invest in storage facilities either in the importing countries themselves, or in a transit country in strategic locations. The storage facilities would be available for exporting countries to deposit their oil at times when the market might be oversupplied, and draw it down at times when oil is scarce. The decision to deposit or draw down would be entirely in the hands of the owner of the oil, who is the depositor, or a party that has acquired the deposit from the owner. Tradable certificates of deposit would be issued by the storage facility. Deposited oil and/or certificates issued against it would be accepted as collateral for loans from official agencies of the importing countries, such as the European Investment Bank, or commercial banks willing to enter in this trade.

The ability to deposit oil and receive a loan for it would encourage exporters to make more oil available. Oil deposited in storage would have a depressing effect on prices, but not as direct as oil on the market which cannot find a buyer; and oil from storage would flow to the market more promptly in case of rising prices. In short, this would be a way to increase the elasticity of supply, hence the feedback to price changes from the supply side.

The provision of demand security / TOP contracts

Availability of excess capacity in the major producing countries is an essential contributor to price stability. If excess capacity is not available, investors will bet that prices can only rise, hence push them higher; and in case of weak prices the major producers lack the clout to impose discipline and stem the decline.

Saudi Arabia has an official policy of maintaining an unused capacity cushion of at least 2mbpd, and in fact maintains much more than that. However, this costs billions of dollars in investment which has essentially no return. It is therefore not surprising that major exporters, which are expected to invest and establish capacity ahead of demand, would clamor for demand security as the other side of the coin of the supply security which is demanded by importers. It is hardly acceptable that they be expected to maintain large unused capacity in slack markets while smaller or non-OPEC producers (notably Russia) may increase exports at will, while benefitting from the higher prices that are made possible by OPEC discipline.

The simple way out of this dilemma is to borrow a page from the gas trade and offer oil for sale on a take or pay (TOP) basis. This may sound strange because TOP contracts are out of fashion with the “free market at all costs”, but in fact they remain popular in the gas industry
and an essential tool for stability. Transforming current evergreen arrangements into TOP contracts simply means that the buyer accepts an obligation to lift certain minimum volumes at some agreed formula prices. Presumably TOP buyers could receive a modest discount in exchange for their commitment, and formula prices used in TOP contracts might be based on lags and longer moving averages, as is the case for gas, thus smoothing out the oscillations of benchmark prices. This approach may not be very popular with the IOCs of the OECD countries, but things appear to be moving in this direction in relations between the Gulf producers and some of the major East Asian importers, notably China, which are more concerned about security of supply than price minimization in the short term.

The imposition of advance notice of final consumer price changes

A last tool which may be used to encourage greater price stability is imposing an obligation of significant advance notice to companies operating in the retail market before they are allowed to change prices to final consumers. The rationale for this approach is that these companies are in a position to hedge their supplies, while retail final customers normally are not. If retailers can change their prices to the final customer overnight, they have little interest in hedging. In fact, it is well known that the oligopolistic nature of the retail fuels market allows retailers to pass price increases on to the final customer very promptly, while price decreases are passed on at a much more leisurely pace. There is hardly any real price competition at the retail level.

Requiring retailers to announce price changes several months in advance would not only encourage them to hedge, and allow final consumers to plan ahead their response (for example, by bringing forward or postponing purchases), but also encourage competition, because the cost of falling out of step with the competition would be potentially higher. The latter effect would be further enhanced if, in addition to the requirement for advance notice, limitations were added to the frequency at which adjustments could be made.

Retailers are, in most cases, part of vertically integrated structures or sufficiently large buyers that they can exercise some market power and resist excessive price increases. It is important to align interests in such a way that retailers will be encouraged to defend the interests of the final consumers, and for that it is necessary to limit their ability to pass on price increases to consumers. While consumers have little voice and will not generate a feedback signal to resist excessive price increases, retailers and large consumers can do so.

The role of the Gulf producers

In the context of a concerted international effort to increase oil price stability and credibility, the Gulf producers have a crucial role to play. Simply because they are the most important producers and have the lowest budget constraints, they are naturally in the position of being price leaders. Theirs are the marginal barrels, even if they refuse to play the role of swing producers.

Some movement in the direction sketched above has taken place already. With respect to enhancing the role of physically traded oil, the launch of the Oman future contract on the DME has been a fundamentally important step. The contract has attracted steadily increasing liquidity, and is being used as a tool to receive delivery of physical barrels. It may still be too small to generate a signal that can influence other markets, but eventually this will happen.

There are several scenarios for the future of the Oman contract and physical trading in the Gulf. One possibility is that some of the major producers shift to the Oman contract as their benchmark, dropping the essentially useless Oman/Dubai assessed by Platts (which has no life of its own). This would certainly attract considerable liquidity into the Oman futures contract. Another possibility is that other Gulf major oil producers might set up their own forward and
futures markets for physical delivery of their crude. A detailed description of how this might be implemented, based on the parallel with the market of government bonds, has been proposed in another paper of mine.20

Interest in vertical integration into the final markets of the OECD countries has been apparent for some time and should be encouraged; Kuwait acquired significant downstream assets in the 1970s, and PDVSA (Venezuela) acquired CITGO in the USA. Abu Dhabi has a significant participation in OMV (Austria) through its company IPIC. Saudi Aramco has been mostly absent from the European market but has entered in joint ventures in the USA and several Asian countries. After the KIO/BP episode no further attempts to acquire a major participation in an IOC have been registered, although it is not clear why mergers between IOCs, which lead to a progressive decline of competition in the industry, should be viewed positively, while acquisitions from NOCs of the producing countries should be taken as a threat.

Some agreements which provide for importing countries to make storage available to exporters are emerging in the Far East, and the same can be said of supply arrangements with an implicit or explicit lifting commitment similar to a TOP contract. The Gulf countries are in a position to push for much more of these, especially in the context of intensifying exchanges with the Far East. Doing the same with Europe or the USA might be more difficult owing to the popular and entirely irrational view that the USA should “wean” itself off dependence on Arabian oil. In the case of Europe, Gulf oil is being marginalized by the expected increase of Russian, Central Asian and North African exports, which may be increasing further because of rapidly growing Iraqi exports from Mediterranean loading terminals.

Thus, the game of oil price stabilization may turn out to be very much an Asian affair. The long established practice of discriminating by destination may come to be used less as a tool to extract a small extra rent from Far Eastern customers than as a tool to stabilize the Asian market and have global oil prices discovered there rather than in the volatile financial markets of New York or London.

Notes
1 Giacomo Luciani is a Princeton Global Scholar, Scientific Director of the Master in International Energy at the Paris School of International Affairs of Sciences-Po, and visiting Professor at the Graduate Institute for International Development Studies in Geneva.
3 For example in 2004 one of the factors which started the upward trend in prices eventually culminating in 2008 was an unexpected increase in Chinese demand.
4 See Paul Horsnell “The Dynamics of Oil Price Determination” Oxford Energy Forum, November 2007, pages 13–15, where he introduces the notion that the market is like a toddler, “constantly in search of defining where the boundaries of behavior should be, and then constantly pushing towards those boundaries until it finds them and gets a reaction.”
5 Different empirical “predictors” have proven valid at different times: volumes of oil in storage, production costs, the strength/weakness of the dollar, the S&P index, expectations of inflation … Some models have endogenously computed prices, but these are not meant to be reliable predictions of the level of prices at specific dates, more like broad tendencies or consistency requirements.
6 For example, Ali Aissaoui (“GCC Oil Price Preferences: At the Confluence of Global Energy Security and Local Fiscal Sustainability,” Energy Security in the Gulf: Challenges and Prospects (ECSSR: 2010); proceedings of the ECSSR 15th Annual Energy Conference, Abu Dhabi, November 16–18, 2009) uses the chart to argue that “oil prices in the range of $60 to $80 per barrel should be appropriate to support energy investments worldwide.” However, his main thesis is that the market is unable to discover an appropriate price and this should be reached through non-market considerations, and presumably enforced through an agreement between exporters and importers to maintain prices within a band.
7 E.g. again Ali Aissaoui, op. cit. Aissaoui proposes a complex calculation based on the permanent income hypothesis and multiple assumptions concerning the GCC’s production profile, domestic consumption, population growth, as well as interest rates, to conclude that a price of $90 per barrel would reasonably satisfy the group’s fiscal requirements. In this writer’s opinion, Aissaoui’s is an important result, and it is true that in the end the interests of oil producers must be taken into account, however many of his assumptions are debatable, and in any case it is not clear how the market would be influenced, so that the desired price is achieved.


10 Wikipedia has good articles on Resonance, Harmonic oscillator and Damping.

11 This is very elegantly explained by Bassam Fattouh in “Price Formation in Oil Markets: Some Lessons from 2009,” OIES, Oxford Energy Comment March 2009.

12 This price was declared “fair” by King Abdullah of Saudi Arabia.

13 French President Nicolas Sarkozy and the British Prime Minister Gordon Brown essentially concurred, advocating a price that would ensure long-term supplies. Among analysts, Ali Aissaoui has published several Commentaries arguing in favor of $75 per barrel. The most complete presentation of his argument is in “GCC oil price preferences—at the Confluence of Global Energy Security and Local Fiscal Sustainability,” a paper presented at the ECSSR 2009 Energy Security Conference.

14 The power of his statements was demonstrated by the reaction of the market when he changed his statement from $70–80 per barrel to $70–90 per barrel: see Reuters “Saudi’s Naimi shifts up to $70–90 price range” November 2, 2010.

15 Including of course Lehman Brothers. Among those that folded their commodity trading practice we count UBS, while City sold Phibro to Occidental.


17 In fact at the time of writing (November 2010) the upward trend story appears to be gaining ground in the market. See e.g. “Oil heats up as bulls target $100-a-barrel price” FT October 19, 2010.


19 I have examined this point at length in “Strategic Oil stocks and security of supply”, CEPS, Working Document #353, June 2011, Brussels.


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Part II

Political Responses