

## **Industry Leaders Debating the Oil Cycle**

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The ongoing debate amongst the leaders in the oil and gas industry is about the current oil cycle. Is it a healthy norm and will be beneficial in the long term, or, is it a dramatic tragedy, deserving an urgent action? Are these the traditional camps of optimist and pessimist; half-full and half-empty? Which camp would one subscribe to?

A healthy norm, some believe, because commodity cycles are supply and demand driven to trim the fat, boost competition and differentiate those who are mostly fit to survive. These are the rules of the free market economy, leading to cost efficiency, higher productivity and economic development. Emotions aside, price is determined as the equilibrium state of supply and demand and all consequences of such cycles are realities that the industry has to bear with as a cost of economic development. After all, free market economy is a package deal, and one should accept some wounds and casualties in this journey. It had brought billions of people from poverty to higher standard of living. The 2015 cycle is not the only one and will not be the last one in the oil and gas industry. Nevertheless, the industry keeps going and is getting healthier over the years. This is the opinion of this camp.

A tragedy, some believe, because so far, approximately 250,000 employees were laid off and about \$ 250 billion USD worth of capital projects have been deferred. Many small to medium size companies are at the verge of bankruptcy. Hundreds of drilling rigs are stacked with their financial exposed. Many newly enrolled students at the college had decided to change majors from petroleum engineering. Shareholders,

including investors and oil producing countries had lost trillion of dollars in 2015. Indeed, economies of those countries had shrunk and their governments had approached IMF and World Bank for rescue. The lower the cycle plunges the crude price, the more severe the impact is, and the higher the crude price can swing up in future years. This can only strain the world economy and lead to further cycles. Furthermore, it can deprive humanity of unconventional oil, deep water resources and other sources of energy that can help fuel the world economy. This is the summary of this camp position.

It is fundamental that one understands the role of supply and demand. In his classical book, **The Origin of Wealth**, Eric D. Beinhocker explains the evolution of the economic studies from traditional economies into complexity economics, strangely enough, by reviewing the basic laws of thermodynamics. Economic theories were developed concurrently and amazingly alongside the progress of laws of physics.

The traditional economies was based on the first law of thermodynamics (energy is neither created nor destroyed). This applies to a closed system where the boundaries of the system do not allow exchange of energy or matter with the outside. A good physical example is the whole universe. If we apply this to economics, it was considered that value is preserved and is only transformed. Resources are transformed into goods and then into utilities. In other words, Wealth is only transformed and cannot be created (zero-sum theory). The classical law of supply and demand leading to temporary equilibrium is based on traditional economics. The more fundamental issue with traditional economies is its assumption of human behavior. It assumes that people behave in full rationality; i.e. people decision is based solely on their self-economic interest and not

on ulterior motives such as hatred or altruism. According to this, the balancing price between supply and demand forces is equivalent to the cost of goods or services that meets the demand of the customers plus a reasonable margin of profit that makes the business sustainable. This also assumes that the all players work under same circumstances. (Both assumptions are not valid. Supplier behavior is sometimes influenced by other motives, at the expense of their self-economic interest. Also, suppliers may not be working in a level field, for example, listed companies under short term market pressure at times have to compete against long term, privately-owned entities). Therefore, supply and demand forces do not always yield an optimum sustainable equilibrium, but rather a continuous turbulence which is hardly predictable by traditional economics. Traditional economics also assumes that people make economic choices rationally with full knowledge of all alternatives and full foresight of future trends. It does not recognize the fact that human's capacity to process all alternatives are limited and hence people end up making a relatively good decision but not always the best decision.

The short comings of traditional economics led economists to think of different theories, which gave birth to complexity economics. This coincided with the introduction of the second law of thermodynamics (the entropy of a closed system, which is a measure of disorder, is always increasing). Most systems are open, where boundaries exchange energy or matter with the outside, creating order inside but exporting entropy to the outside. A house is an open system. While cooling is done inside, disorder, heat and pollution are exported outside. The economy is an open system. Economy is a social systems consisting of people, matter, energy and information. It is an open systems where agents interact and generate an ever continuous change. Indeed, history, politics and any

other social activity is a good manifestation of an open complex adaptive system. There is a continuous state of evolving disequilibrium.

Oil and gas industry is an example of an open system consisting of many internal open systems. The industry interacts with external forces such as economic growth, political changes, technological innovations, transportation means and energy trends, etc. Within the industry, there are many open systems such as: National Oil Companies, Integrated Oil Companies, Independents, Service Companies and Operators, etc. These players have different internal and external forces such as market pressure on listed companies or high leverage of small and medium size independents. Playing field is not leveled amongst different players. National Companies have vast resources with low operating cost while unconventional oil players have high capital and operating cost. Motives are vastly different amongst different players, varying from short term quarterly results for listed companies to long-term strategic interests for producing countries. Hence, supply is not based entirely on a pure economic interest amongst all players. Demand is neither because of the future market, where both supply and demand is generated in paper barrels driven by sentiments and not by actual physical needs. It is very clear that traditional economics with classical supply and demand equilibrium theories does not apply in the complex open system of the oil and gas industry.

Historically, turbulence and cycles had been the norm in the oil and gas industry. This had been recognized and many key players have attempted to regulate the industry. The Standard Oil Company control and monopoly of the Oil market in the late nineteenth Century led the Supreme Court in USA, in 1911, to dissolve it and break it into relatively

smaller companies. The Railroad Commission of Texas played a major role to rationalize the oil production between the 1930s and 1960s and arrested the crude price decline. The OPEC and IEA mission was to smooth supply and demand cycles. These attempts had been successful sometimes, but failed miserably at other times.

The current crude price of approximately \$30 USD, equivalent to only half the cost of availing an additional barrel of future supply, is neither rational, nor sustainable. The deferral of capital projects will result in lack of supply in few years. Rigs, services and people will not be readily available to cater for the next wave of high demand. This will only result in a higher oscillation of crude price. Hence, if this cycle is not quickly regulated, it will bring further spikes in the future, including high surges and deep plunges of crude price that can only derail the global economy.

In summary, free market dynamics needs to be regulated and crude price has to nudge up to a minimum of \$60 in order to warrant future investment into additional capacities. Otherwise, oil and gas industry can no longer fuel the global economy with sustainable and affordable energy.