

SYNERGY

Bilkent Energy Policy Research Center Newsletter



Energy
Policy
Research
Center

Black Swans of the International Politics

A black swan analogy usually used for events that refers to an unforeseen occurrence that typically has extreme consequences. This profile tends to be seen more in the rising powers of energy politics. Gaye Christoffersen indicates that some analysis identifies China as a black swan in energy politics due to its unpredictable nature, conflicts of interests in the Middle East, and lack of shared rules and practices in the global arena. Russia is another powerful state which falls under the black energy swan category with its globally impacted energy policy choices. Energy insecurities like oil embargos, gas crisis and regional security concerns (securing pipelines, protecting straits from pirates, etc.), lack of state capacity to control domestic energy market regulations, and incoherence between local and international energy regulations negatively affect Black Swan's energy diplomacy. Through international cooperation's black swans of energy like China and Russia started to standardize their energy regulations and increase their influentially in world energy politics.

BRIC states try to form an energy block to expand their powers. However, one should not forget that they do not only cooperate by adopting common energy strategies, they also compete with one and other, and with developed states to dominate their targeted region. In the Chinese case, by using its veto power in the UN Security Council, China tried to secure its bilateral energy deals while playing the protector role for the regional states such as Iran. Unfortunately, such actions only save the moment. China can only transform itself into a white energy swan if it adopts more transparent energy policies, acts more comprehensive, and become a more predictable player by following international practices and regulations in the market. To start such a transformation, international institutions such as Shanghai Cooperation, G20, BRICS would provide a better ground than the Middle East or UN for China to prove itself.

In each summit, the priority of member states, thus their agenda changes. In the 2009 BRIC summit, participants supported dialogues among energy providers, buyer and transit countries, diversification of energy supplies, and cooperation in energy infrastructure. In 2011, Sanya Summit an Action Plan created to improve the relations among the member states. The Sanya Declaration opposed the excessive volatility in world commodity prices, especially in the energy sector. Declaration emphasized the need to strengthen producer-consum-



er dialogues to achieve a better balance of supply-demand. It also abutment cooperation on renewable (including nuclear) energy. The 2012 Delhi Summit produced a Delhi Declaration and a Delhi Action Plan. Just like the Sanya declaration, the Delhi declaration also emphasized strengthening producer-consumer dialogues, especially in the food and energy sectors. Summit recognized Iran's right to develop nuclear energy. I think The Delhi Action Plan was more critical than the previous summits because, in this summit, states discussed the possibility of a BRICS framework for multilateral energy cooperation and the possibility of creating an alternative world energy order. When it comes to the 2013 Dubai summit Energy and the food security was the top issue.

As you can see, even the priorities change the state's primary concerns, and problems revolve around the same issues. Of course, time to time member states interests' overlaps; for instance, both China and Russia hope BRICS to provide a counterweight to US power. However, this does not mean that they all expect the same outcome. China hopes to transform BRICS into a system which supports Chinese initiatives in the world polity and economy. To fulfill its goal in 2011, China becomes an observer country in Energy Charter 2011 and a participant in the Task Force for Regional Energy Cooperation in Central Asia in 2014.

On the other hand, Russia was and still is hoping to become the leader of BRICS to expand its power. Till the 2013 summit, Russia believed that BRICS could take on a geopolitical role under Russian leadership. It realized that BRICS is not ready for such domination. Yet, it continued to conduct its actions as if it was the leader of the new global energy block. In 2015 Russia host-

ed the 7th BRICS Summit, 15th Shanghai Cooperation Organization Summit, and informal meeting of the Eurasian Economic Union (EEU). As we can see, states perceive such organizations as a tool to accomplish their policy goals. Thus the task that they take on, their involvement degree in such summits, differs.

As emerging economies, all BRICS States constitute 40% of the world population, and they depend on hydrocarbon resources. Since they depend on hydrocarbon resources, they contribute to air pollution and climate change too. Because of that, most of the Western states, environmentalist critics BRIC countries. Because of their population, growing economy, and non-renewable energy consumption, all of these states have to be included in the decision making of each international energy agreements and regulations. Otherwise, it would be unrealistic to expect full-filling results from international energy agreements.

As rising powers, BRIC states have to overcome many impediments. They need to find the best solutions and projects to enhance their progress, whitening their economic limitations. Some futuristic projects like the green economy project may not be able to adopt by these states due to economic burdens and/or requirements of the project. By using international institutions, regional or strategic partnership platforms as rising powers, these energy black swans can legitimize their actions, create new blocks in the international arena and change the existing dynamics of world politics to fulfill their aims.

Yüksel Yasemin Altıntaş

Electricity Market Challenges In A Low-Emission World



Electricity markets around the world are having difficulty incorporating policy objectives to market mechanisms. It is not a new issue. Since the opening of electricity markets, everyone had a suspicion that the markets favor natural gas. There were several reasons for this phenomenon. The most important one was the efficiency of fuel conversion. But this has to change...

The rise of natural gas in power markets or power systems may be traced to the late 1970s. In 1978, the Public Utility Regulatory Policies Act of 1978 of the USA had a definition called QF, qualifying facilities. These facilities are either small power production renewable facilities or cogeneration plants. Initial sunk costs, stranded asset discussions were started with this QF definition. As cogeneration became a bigger market, the technology improved. It also forced the system to accept new players with their small or cogeneration plants.

The early roots of the standard market model merited low-cost production. Low-cost production in a fossil fuel world can only be satisfied by either efficiency or low fuel cost. The reflection of this in economics is marginal cost. So, the system works on the competition of marginal costs. The more efficient and less variable costs lead to an ever cost-effective system.

As things move forward, natural gas has become the natural winner of the market system. Whenever the market liberalized, natural gas has become the star. The clean, efficient, flexible primary fuel system is an essential asset in power markets. But natural gas has one Achilles heel that is the oil-linked pricing of natural gas. The electricity prices were a shadow derivative of oil prices in most places.

During the early stages, the most visible problem was missing money problem. The competitors in the power market can earn their marginal costs, but the mechanism doesn't guarantee their capital expenditures or investment costs and the security of supply. Therefore capacity

mechanisms were invented as a necessary evil to solve investment returns problems.

This corrected, and the working mechanism creates a competition based on efficiency. But how about renewables? Think this way; we have a joke about 100 solar panels. If we have 100 solar panels and need –let's say- 60 of them, which ones should be dispatched, which ones should not be dispatched? There is not an easy solution for such a mechanism to solve the renewable dispatch solution.

Some researchers proposed "on-demand" and "on available" market mechanisms. Some other offered flexibility mechanisms. There may be baseload power markets, as suggested in the Japanese market reform or separate fossil and renewable markets. But the main question remains: What is the competition criteria? If it is efficiency, how should we price efficiency within the renewable world? There is an easy solution; the most efficient renewable resource is the one closest to the source. But then this contradicts the inherent economies of scale of the power sector.

I think that the marginal cost paradigm is not the central pillar of renewable power markets. The competition among renewables should be based on the opportunity cost of not getting dispatched. It requires a complementary flexibility market. Current balancing markets may evolve into flexibility markets. Then there is the question of opportunity cost. Pricing an opportunity cost in zero marginal cost resources will be hard. Some may claim that it is LCOE, levelised cost of energy. But then you guarantee everyone their investments at least.

Markets are the main instruments of power system operations. If they can not handle price costs and policies correctly, the whole procedure will be inefficient, and it will be a burden to the customer. Long term contracts are a temporary remedy. Competitive renewable energy markets are the new challenge of the energy markets.

Bariş Sanlı

BRENT OIL	62.27 \$/BL	GASOLINE	6.94 ₺/LT
USD/TRY	5.74	DIESEL	6.58 ₺/LT
EUR/TRY	6.32	FUEL OIL	3.78 ₺

The Upcoming U.S. Shale Boom (or Bust?)

The U.S. shale boom of the 21st century had remarkable significance not only for its wildcatters but also for the nation's energy policy. Having been externally dependent for most of its energy needs, the improvisation of horizontal drilling and hydraulic fracturing in the shale layer created a new reality for the upstream sector. According to the Energy Information Agency's estimates, 6.5 million barrels of oil are being produced from shale resources today. The figure roughly equates to about 59% of the U.S. domestic oil production. On the natural gas side, the story is no different. In 2018, U.S. dry shale gas production was estimated to have been around 20.95 trillion cubic feet, which is equal to almost 60% of U.S. dry natural gas production. Alongside securing domestic production of the hydrocarbons, the U.S. Chamber of Commerce's 21st Century Energy Institute estimate that the extraction of unconventional shale oil and gas has created 1.7 million jobs already and a total of 3.5 million jobs are projected to be created by 2035. This immense growth has indeed unlocked a lot of the underlying resources for the use of the public. It has also led to sudden overproduction of the resources and led to a supply glut. Since then, the natural gas prices in U.S. have gone down and have not recovered yet. The already existing high-cost nature of fracking is putting profitability pressures on the producers. It is now estimated that for oil, producers need at least \$50 bbl to break even.

At this point, it should also be noted that a prime difference between the independent shale producers of the U.S. and the large-scale National Oil Company's is that shale is backed largely by instruments of capital markets when compared to IOC's and NOC's that have a variety of different funding sources. As a result of the Quantitative Easing (QE) programs that followed the 2008 financial crisis, significant amounts of cash were held by investors at near zero-cost and some of this money was redirected towards shale companies in line with the booming shale industry. According to a research paper by Amir Azar, a fellow at Columbia University's Center on Global Energy Policy, the North American Exploration and Production (E&P) companies held a net debt of \$50 billion in 2005 which ballooned to \$200 billion by 2015. Indirectly, the drilling and well service companies that work with these E&P firms also have a stake in the payment of this debt. The 2014-2015 oil price shock had a devastating effect on these producers as the general drilling rig count in the U.S. showed which neared a record low of 404 functioning rigs in 2016.

Coming to 2019, the WTI benchmark price is once again hovering between \$50-\$60 bbl and with the uncertainties surrounding the U.S.-China trade war, no sure way of determining upside risk currently exists. What has changed this time when compared to '14-'15 crisis is that, according to Rystad Energy, the top 40 shale companies have about \$100 billion dollars of debt that will be maturing within the next 7 years. In a separate estimate from the Wall Street Journal, between 2020 and 2022, a colossal \$137 billion in shale debt will be maturing. While the interest rate cuts from central banks are creating accommodative conditions for the debt markets, capital markets are wary of the financial troubles the industry is experiencing due to the persistent low commodity prices and access to financing through these markets remain relatively restricted when compared to the boom periods of the industry in the late 2000's.

From a cash-flow perspective, the shale producers are already in a hard position. As part of their lease contracts in U.S. and of legal mandate in some states, they have to distribute at least 12.5% of their oil sales to the landowners. Based on rough estimates and of 2018 average market conditions, 29% of the shale production in the U.S. is used to pay back just the interest on their loans. Adding the high cost of the operations of shale drilling on top of these costs, it is not hard to see why the shale producers might be struggling. Based on the opinions of some industry veterans, a fairly decent share of this shale debt will be virtually impossible to be paid back. On the other hand, some of the recent events in the industry tell a different story. During a federal government auction for a Permian Oil lease in Sept 2018, a record was broken. In a two-day auction, \$972 million was raised for 142 parcels of land and \$95,000 per acre was the recorded price for some of the lands in the New Mexico side of the Permian. The indus-



try itself is either expecting a future boom in its business cycles or the irrationality of the sector, as emphasized by some critics, is purely on the play. Whatever it may be, players in the industry are certainly pursuing aggressive policies.

With regards to the current status of the markets, the shale industry will be depending on a multitude of price factors to determine its future. On the production side, the stability of Saudi Arabia as a swing producer and the general condition of the U.S. producers will be key. On the supply side, geopolitical risks surrounding the Hormuz Strait should be watched for potential disruptions for the shipments and the attacks on the Abqaiq infrastructure highlights the present tensions and the risks for the producers in the region. On the consumption side, the negotiations surrounding the trade war talks should be watched closely and the activities of the refiners in India and the Mediterranean would also be good points for forecasting the future demand. On the demand side, the sanctions against Iran should be monitored as Iran is thought to be storing its extracted hydrocarbons in storage facilities and also using its Very Large Crude Carrier (VLCC) vessels as floating storage by docking them close to their potential customers in Asia. When considering the financial aspects of the industry, the risk-averse nature of investors based on the on-going trade war can be changed based on the outcomes of the negotiations. If an agreement can be reached, then for a short period of time, investors with higher risk tolerance can engage in lending to the distressed producers just as how investing in junk bonds of distressed companies in 2017 was on the rise before the increase in tensions between U.S. and China. If that will be the case, then the Federal Reserve might again embark on its gradual interest increase program, which would be raising the cost of borrowing in the medium-to-long term for these companies.

In a case where the talks go without a resolution, then the market dynamics would likely be hard to predict at this point, and the most likely scenario would involve expecting an economic slowdown along with decreasing commodity prices, which would negatively impact these debt-loaded firms. A defense on behalf of the firms and the market dynamics is that technological improvements might play out increasing the well efficiencies of these firms, but having the current problems existing at the macro level, a single micro solution such as this will unlikely be able to solve the general problem. The currently distressed firms are also not observed to be engaging in an increased number of mergers, a move that usually entails companies across similar sectors coming together with the hopes of consolidating their activities in anticipation of preparing for possible economic slowdowns. In a potential fallout scenario, a good outcome might be that the companies with actual operational efficiencies and sound financial policies would likely survive and emerge as the new major players in a relatively more competent industry. Whatever the case may be, the next ten years for the shale industry will probably be much different than how the previous ten years have played out.

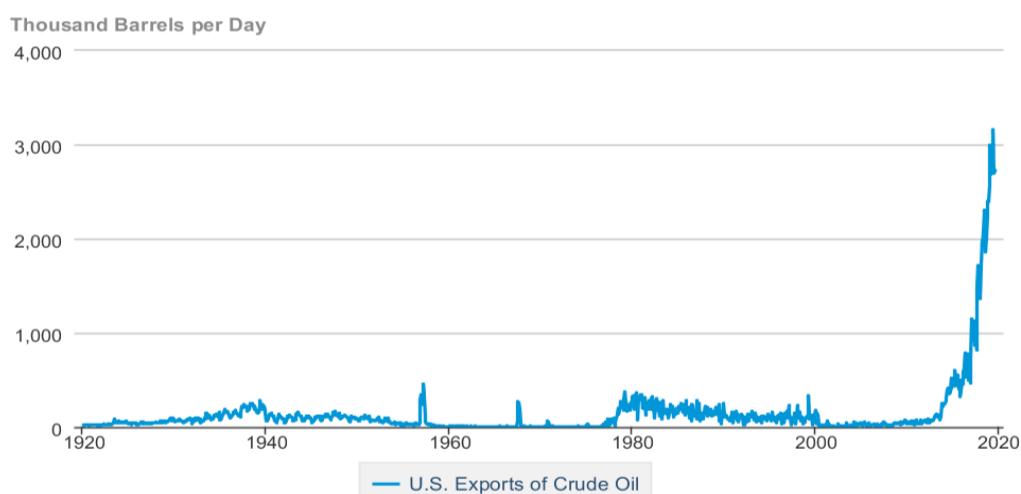
The United States on Global Energy Governance

The United States, as the most influential political actor in the 20th century, topped the energy consumption for many decades. They established bilateral relationships with oil-producing countries such as Iran, Saudi Arabia, Venezuela, and Canada. The American government established many different military bases to chokepoints of the oil market, such as Strait of Hormuz. All effort was made to ensure supply security. After the Americans lived the consequences of the 1973 Oil Crisis, they focused on the supply security more intensively and increased their activities in these regions and in the international political arenas. The new rules, such as storing the same part of the oil, helped them to survive the following oil crisis with receiving less damage.

Today, on the other hand, the United States produces more oil than most of the OPEC countries, and it is expected to be the net exporter in the future. However, this does not guarantee becoming an energy-independent country. There are several reasons for that, and in this section, we are going to discuss each of them. The first reason is that despite the United States produces more oil than most countries today, and they still depend on the diversity of different types of oil that OPEC provides. Therefore, even the amounts of imports declined, they continue to buy Saudi oil and other refined products such as gasoline and diesel from other countries.

The impact of the Abqaiq attack on Saudi oil facilities showed that the U.S. gasoline market still vulnerable to foreign attacks. Since the oil prices determined by the global markets, any event has the potential to affect the American energy sector and even national security. Charles Glaser, in his study, *How Oil Influences U.S. National Security*,

U.S. Exports of Crude Oil



 Source: U.S. Energy Information Administration

works on these dynamics and explains why global events have an impact on American national security.

Glaser claims that the scholars working on energy issues does not link the possibilities for international conflict, and it creates an important gap in their analysis. Today, not only the United States' oil demand but the demand for other major powers have an impact on American interests. For example, China is a growing economy and investing huge amounts of money on its military sector and consistently looks for opportunities to increase its impact against the American hegemony. If this country, find access to more amount of oil, they will be able to threaten the United States more effectively. Therefore, it



is the U.S.'s responsibility to limit Chinese activities in the oil-producing regions. The sanction policies against Venezuela and Iran limit oil to reach Chinese soil to a certain degree, but the United States must keep their presences in the critical regions to protect its national interests.

In his, article Glaser introduces several key variables that might have an impact on American national security. The first of them is dependence. Glaser states that the more the United States consumes, the larger the negative impact of global price increases on its economy. Even when the United States achieves oil independence, the economy will remain sensitive to disruptions in the global supply of oil. We see that Glaser's statement is accurate in predicting the outcomes of attack to the Saudi facilities, as we mentioned above. It brings us to another key variable, energy intensity.

We can define the energy intensity as the amount of energy required to produce a unit of output. According to Glaser's study, the U.S. energy intensity has declined by approximately 50% since the late 1970s, and the U.S. Energy Administration projects a 50% drop more by 2040. If the United States manages to drop the consumption of the energy intensity, then we can expect that higher oil prices might have a positive impact on their economy. However, this also depends on the demand for U.S. petroleum. Today, they are not producing the type of oil that most of the world demands. If the structure of the demand mechanism changes in the future, they might enjoy higher revenues in that sector.

Overall, despite having a vast amount of oil and natural gas resources, the U.S. dependence still continues. The rising powers in Asia threaten the American position in international politics, and to decrease its impact, the United States should focus on limiting their access to energy resources. Up to now, the American government manages to do this by applying sanctions and using military forces.

Yet, as Glaser points, these policies create vulnerability on military capability and economic prosperity. While following such policies on an international level, they should also focus on lowering their domestic consumption and energy intensity level.

Gökberk Bilgin

Follow us on social media!

@bilkentepc



SYNERGY

Publisher: Bilkent Energy Policy Research Center

Editor: Gökberk Bilgin

Contact: eeeps@bilkent.edu.tr

Synergy is a weekly online newsletter published by volunteers on bilkentepc.com. It welcomes feedback from readers. Please submit your letters to eeeps@bilkent.edu.tr. The Editorial Board will review the letters and print them as space permits. The contents of this newsletter are the author's sole responsibility. They do not necessarily represent the views of the Bilkent Energy Policy Research Center or any of its Members.