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# Uranium Through the Ages

By Jeff Combs

The uranium market can be looked at in terms of what happened during a particular decade. For instance, the decade of the 1990s was dominated by the HEU deal, the easing of restrictions on CIS countries, and a continuation of the aftermath of the Chernobyl and TMI accidents. The 2000s saw the emergence of China, the entry of investors, and Kazakhstan becoming a major supplier. It also witnessed a dramatic spike in prices and important changes in pricing infrastructure, including a futures market and a forward price curve, due to the entry of wholesale brokers. Of course, the dominant event of the 2010s was the Fukushima accident, which led to a protracted decline in prices and the related “SWU for U” phenomenon, where excess SWU capacity squeezed out demand for U<sub>3</sub>O<sub>8</sub>. The 2010s also saw the transition to all-centrifuge enrichment capacity completed.

This brings us to the 2020s. In just the first 2.5 years of this decade, there have already been three major developments. One is COVID, which impacted uranium production and led to higher prices. A second is the creation of SPUT, which allowed greater participation by investors in the uranium market. This, too, has served to push up prices by increasing demand, driven in part by the belief in a renewed growth in nuclear energy. The third is Russia’s invasion of Ukraine and the worldwide reaction to it, which has led to a sort of blacklisting of Russian enrichment. As a consequence, the Ux Long-Term SWU Price has jumped dramatically, with the spot SWU price also showing notable gains.

**Additional Risks** – Not only have the major developments this decade led to higher prices, but they have also contributed to greater market risks. COVID has had specific and general impacts on the uranium market. Greater investor involvement has exposed the uranium market to the vagaries of the general equity market, and thus has introduced another layer of price volatility and unpredictability. For instance, even when uranium market fundamentals are strong, investors can be disgorging their uranium holdings if the equity market is under downward pressure and investors find they must sell. However, if investors find favor in energy commodities, the only sector to do well over the first half of the year, uranium can benefit from this trend.

By far the greatest risk and potential impact on the market relates to how the situation with Russia unfolds. Russia is the largest enricher in the world, and the West, along with other regions, has come to count on these supplies. Moving away from Russian enrichment has already had a notable impact on SWU prices, and finding replacement supplies will be a daunting, if not untenable, task, especially until additional alternative capacity can come online. Also, because uranium and enrichment are substitutes, any problems with enrichment supplies will manifest themselves in the uranium market.

**History Lessons** – One lesson about uranium history is that major events have a very long-lasting impact on the fuel markets, persisting a decade or more. The TMI and Chernobyl reactor accidents led to reduction in demand and lower prices in the 1980s and 1990s, and the cutback in uranium production that resulted led to the supply shortage and price boom in the 2000s. The Fukushima accident resulted in another long period of lower demand and depressed prices. It is noteworthy that while uranium prices have recovered, the Fukushima accident still affects uranium demand and hence the market. In this regard, Germany is continuing with its nuclear phase-out despite much higher natural gas prices, as Germany has opted to restart its coal plants instead of nuclear ones. In addition, the vast majority of reactors in Japan are still offline as part of Fukushima’s legacy.

Another event that has impacted the uranium market since its advent relates to the connection between military and peaceful applications of the atom. One of the most visible manifestations of this was the HEU deal, which lasted almost two decades. However, before this deal was the creation of the HEU itself, which is the reason that there is even a uranium market at all. The first nuclear reactor was fueled by thorium, but uranium made better bombs, and this established the infrastructure that was transitioned into the commercial industry and market.

Massive enrichment capacity was needed to make HEU for bombs, and the commercial industry inherited this capacity. During the last decade, excess enrichment capacity helped keep uranium prices depressed. Now, because of Russia’s attack on Ukraine, access to much of this capacity is problematic, leaving the market with less accessible supply and fewer potential suppliers. Thus, not only is demand recovering and excess inventories shrinking, but also the price-depressing effect of excess enrichment capacity is disappearing from the market.

Conclusion – In many ways, it seems like the world is returning to the 1970s, with higher oil and gas prices, and a political scene that is characterized by a potential reappearance of the Cold War. The question is whether the uranium market will also return to this period, which was characterized by limited, quasi-monopolistic, enrichment capacity and pressure on uranium supplies. The 1970s saw the first commercial uranium price boom, with prices reaching well over \$100 in today's dollars. The 1970s also saw a massive movement towards nuclear power due to oil supply issues that existed then. Today, climate change has joined energy security as a major factor behind efforts to increase nuclear power. Let's just hope nuclear fuel supply availability does not derail nuclear energy's latest promising advance.

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