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Uranium Markets: Somewhere Over the Rainbow?

There is no remembrance of former things; neither shall there be any remembrance of things that are to come with those that shall come after.

(Ecclesiastes: Chapter 1, verse 11)

Uranium yellowcake has several specific characteristics that influence its pricing.

It is normally sold to the user of reactor fuel rather than to the immediate downstream processor. The nuclear utility arranges conversion, enrichment, and fabrication of fuel rods. This sale to the end-user who arranges the toll processing of the raw material to the finished fuel assembly is very unusual for mineral products. It is rooted in uranium's history of military usage when mines sold to a handful of governments who had a monopoly of processing beyond yellowcake. Both the miner and the utility are potentially liable to being squeezed by intermediate processors.

The pricing of most minerals has developed from their history, and there is rarely unanimous agreement that present pricing systems are ideal. There is, however, seldom a consensus either on the changes needed or on the timing. Usually one side would seemingly lose out from a change just when it is benefiting from improved fortunes. Uranium is atypical in two respects. First, both producers and users have ceded much of the pricing power to third parties, not in the shape of an impersonal but transparent terminal market, but through opaque transactions. Secondly, there is a much greater disjuncture between contract and spot prices than in other products, primarily because of the lengthy duration of many contracts. Spot prices are always much more volatile than contract prices, but typically fluctuate around them, which is much less apparent in uranium markets.

Uranium is not unusual amongst mineral products in effectively having only one use. Other examples include base metal concentrates and iron ore. Those are, however, bulky products containing large amounts of water and gangue materials, and base metal smelters and steel works cannot long survive without a continuing supply of newly mined materials. By contrast yellowcake has a high value to weight ratio and is easy to store. It competes with stockpiled material that may be kept in a variety of different forms. Utilities can therefore theoretically operate for a fair time without continuing purchases of newly mined uranium.

The prices of alumina and base metal concentrates are linked to varying degrees and in varying ways to the prices of their metals. Although changing uranium prices may work through to the costs of nuclear power and thence to prices, there is no explicit link between the prices of electricity and of uranium.

Users of most mineral products, including coal for power stations, require a steady flow of material. They consequently have continuing up-to-date knowledge of market conditions and of prevailing prices. By contrast, most utilities have a limited number of reactors whose fuel is changed at most once a year. Their purchases of uranium are, therefore, equally infrequent and normally in just sufficient quantities to cover their reloads. This lumpiness and infrequency of purchases means that buyers may lack continuing awareness of market conditions, which can at times create a sense of panic.

The infrequent and lumpy nature of reactor requirements may also limit the utilities' willingness to buy small quantities on spot markets. These are unlike the large liquid terminal markets of the base and precious metals. As most producers prefer to sell on long-term contracts, the spot market has mainly been an outlet for excess supplies, whether from utilities' inventories in excess of their requirements, from new entrants into an already fully contracted market (China, Russia and Central Europe in the 1990s), or from re-blending government stockpiles of all types of material. That has depressed spot prices for an extended period until such supplies have now become nearly exhausted. Utilities may have been willing to buy from spot markets when supplies have been abundantly available, but they are more likely to seek secure contracts when such supplies become stretched. The spot market should then become a more limited market of last resort for smoothing out unforeseen blips in demand and supply rather than a source of base-load supplies. Its illiquidity and volatility make it a highly risky market for speculative investment.

To the extent that nuclear reactors are living off stocks of previously mined uranium, whatever the form in which it is now held, uranium markets share some of the characteristics of the precious metals, gold and silver. Prices are not solely dictated by present requirements and newly mined supplies, but by expectations and by the willingness and ability to hold stocks. A change in expectations, however shallowly or deeply grounded, can exert powerful pressure on spot prices.

Even when expectations are stable, utilities have a wide range of potential strategies to optimise their fuel charges depending on the relative costs at each stage of the production and operating cycles. The price of uranium is only one element in the mix. In consequence producer pricing of yellowcake would be impossible to sustain except in the very short-term.

Several generations of purchasers of nuclear fuel and utility managers have not experienced anything like the recent surge in uranium prices, and lack the expertise to deal with it. Conversely, new entrants to uranium mining have not witnessed how markets can implode with virtually no change in physical requirements.