

The precarious world of uranium supply and demand

Last month, the supply of uranium was severely interrupted when BHP declared force majeure on its deliveries of uranium as the main haulage system failed at Olympic Dam. Production has been reduced to about 20% of nominal and it is expected to take a number of months to repair and bring production back to its full output. Olympic Dam is a major producer of uranium, producing about 4,000 tonnes U per annum or just under 10% of global primary production. Therefore, losing the equivalent of 3,000 tonnes per year for six months or so (say 1,500 tonnes) represents a significant event in overall production that affects the delicate balance between uranium supply and demand.

Many people do not appreciate that the supply / demand situation for uranium is somewhat unique amongst commodities. I first gave a paper on this topic in 2007 to the Raymond James Uranium conference in New York (when the price of uranium was at its peak).

So what makes uranium so special in the world of commodities? A few things come to mind immediately. First, uranium is a single use commodity. Its demand is completely dependent upon how many nuclear power plants are in operation and how much fuel they need. In recent years, the global nuclear fleet has been consistently improving its operations but now has pretty much achieved its maximum. This means that demand cannot go up for the current fleet of nuclear power plants – there can only be negative shocks if a plant performs poorly. For example, following an earthquake in Japan, some plants were shut down for an extended period. This means that they are not using fuel so demand decreases.

As for the future of demand, the forecasts are for a dramatic

growth in new nuclear plants. The WNA is projecting growth of more than 50% in the number of GW in production over the next 20 years. This means a significant increase in demand that must be accommodated in future supply plans. However, it takes from 10 to 15 years to implement a new nuclear project from conception so there are really no surprises in demand in the short to medium term. We all know what plants are under construction so the projection for new demand is quite stable for the next 5 to 10 years with some uncertainty starting to appear at the 10 year mark.

So what does this mean? It means that demand increases in a predictable fashion and that the potential is always there for negative demand shocks if existing units perform poorly or are taken out of operation for any reason.

Now for supply. Similar to nuclear power plants, bringing new uranium mines into production takes quite some time and effort. Many projects are delayed as companies have been having difficulty in bring on new mines. Therefore, supply potential is also quite predictable for at least 5 years going forward. Again, as with nuclear power, the risk is that shocks affect the system negatively as there have been a number of events over the past few years that have halted production or delayed new mines.

And finally, as a fuel, uranium is also unique in that it is bought in batches. The volume of fuel required to operate a nuclear power plant is quite small so utilities can carry a significant inventory to reduce their risk. This means that buying and selling is not completely in step with usage. This is different from say, coal or gas that must be consistently delivered to keep fossil generating plants operating.

In the end, uranium prices have remained rather low over the past 20 years with a short term blip in 2007. These prices remain low because in most scenarios, supply and demand are in balance making it difficult for price increases that are

needed to encourage new supply. However, for utilities the risk remains. Therefore, the trend is now for utilities in the east (Japan, China, Korea and India) who are fast becoming the world's biggest users of fuel to invest in the resource itself to help them mitigate the risk. These countries also have little domestic supply so need to rely on supply from other countries.

Events like the one at Olympic Dam demonstrate how precarious supply can be. So we should expect countries with growing demand and little domestic supply to continue to step up their efforts to invest in global resources to reduce their overall supply risk.