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Antimony

Dear Investors

The metal antimony, while likely unfamiliar to many, plays a critical role in various industries around the world. We believe that this metal is currently at the centre of one of the largest supply-demand imbalances in recent history – a shift that rivals some of the most dramatic commodity price movements we've ever seen.

In this note, we introduce antimony and its significance. We then highlight the magnitude of this imbalance, comparing it to other historical commodity price shifts. Next, we analyse the underlying changes to both supply and demand in greater detail. Finally, we outline our perspectives on how this forecasted imbalance presents potential opportunities.

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Antimony: An Overview

Antimony is the fifty-first chemical element on the periodic table, with the symbol Sb. Its name derives from the Greek words *anti* and *monos*, meaning "not alone" or "not one," reflecting its tendency to occur in compounds rather than as a pure element. The symbol Sb comes from *stibium*, the Latin term for "mark," as antimony was historically used to darken eyebrows and eyelashes.

Antimony tends to be found in stibnite deposits, which form after volcanic activity when mineral-rich fluids cool. These deposits are rare and typically form in small and shallow veins where the volcanic liquid has cooled. Often, stibnite formations are found in tandem with gold deposits. Antimony tends to be found towards the surface and gold tends to be concentrated deeper down.

A Historic Supply-Demand Shock

We believe there is strong historical precedent to suggest that antimony prices could reach at least US$100,000 per ton. As we'll explore later in this note, the supply-demand balance for antimony in the Western world has shifted by an estimated 30-40% – a dramatic change compared to past commodity shocks. For context:

- During the first oil shock of 1973, the Saudis and other Arab nations reduced the global supply of oil by around 15%, driving a 6-fold increase in prices.
- During Covid, demand for oil fell by around 30% as many people around the world were locked in their homes. As a result, oil prices briefly turned negative.
- Historically, a ~5% shift in the copper supply-demand balance often resulted in prices tripling
- In shipping, when Russian oil was embargoed following the Ukraine War, tanker rates went up around 8x in response to an 8% lengthening in ton mile demand. During Covid, when durable goods imports from China increased by around 15%, freight rates for container shipping increased around 10x.
- More recently, in agricultural commodities, global supply reductions of ~5% in coffee, cocoa, and oranges resulted in 3.5x, 5x, and 5x price increases, respectively.

By comparison, the 30-40% supply reduction in antimony for the Western world far exceeds these historical benchmarks, underscoring the potential for a significant price response.

Drivers of the Antimony Imbalance: Supply and Demand

There have been a few major factors that have shifted the supply-demand imbalance which we outline below.

Supply Constraints:

- China's Export Ban: In December 2024, China banned the export of antimony (in all its major forms) to the US. Industry participants we've spoken with confirm that China has not issued export licenses for antimony to any external nation since the ban. There are two main reasons for this:

    1. The first reason is that China is slowly depleting its antimony reserves and needs to preserve as much as possible for its own strategic purposes, including military applications and for decarbonising its economy via solar panels.
    2. The second reason is because antimony glazed over solar panels make them around 20-30% more efficient. With tariffs on their renewable industries to be imposed by the EU and the US, retaining antimony provides a competitive edge in solar panel manufacturing.

  China is a dominant player in the antimony market, producing approximately 50% of the world's antimony ore, and about 80% of the world's refined antimony. Outside of China, only 2–3 refineries have a proven capacity for mass production. We estimate that China's actions have reduced antimony supply to the Western world (which uses roughly 60% of the world's antimony) by around 30%.

- Russia and Tajikistan Halt Exports: Russia and Tajikistan are the second and third largest producers of antimony. Combined with China, these countries produce at least 80% of the world's antimony. Given antimony's critical role in ammunition and other weapons, industry participants we've spoken with report that Russia has ceased exporting antimony to Western nations, further tightening supply.

Demand Surge

- Surging Demand from Solar Panels: Antimony's use in solar panel technology has also seen a dramatic rise. In 2021, academic research revealed that glazing solar panels with antimony significantly improved their efficiency, making it a valuable component in both traditional silicon and cadmium telluride solar panels. Since then, this energy application has grown from representing less than 1% of total antimony demand in 2021 to approximately 40% today. With solar production in both the developed world and China expected to grow at an annual rate of 20%, this translates to a projected 10% increase in annual demand for antimony in the years ahead.

- Increased Military Demand: Antimony is commonly alloyed with lead to harden it, making it a critical component in batteries and the ammunition supply chain. In ammunition, bullets, and missiles, antimony is used to strengthen lead, enhancing the armour-piercing capabilities of these weapons. Approximately 2% of the total weight of ammunition is antimony. To illustrate the growing demand, Ukraine is currently producing over 1 million rounds of 155mm ammunition annually, while the US Department of Defense, having supplied much of its ammunition to Ukraine, must replenish a similar quantity each year. Factoring in these demand changes, along with Russia's usage, we estimate that antimony demand from ammunition alone has increased by approximately 3%.

- Emerging Battery Applications: Antimony's applications have expanded into battery storage technology, particularly in utility-scale storage plants. Its properties make batteries harder, stronger, and more resistant to corrosion, while also acting as a heat retardant to prevent "thermal runaway." These qualities extend the lifespan of batteries, making antimony a critical material in energy storage. Additionally, following the Grenfell Tower disaster in London, antimony's fire-retardant properties have led to its use in cladding materials to enhance fire safety.

One factor moderating demand is the reduced use of antimony in traditional lead-acid batteries as electric vehicles gain popularity. However, this decline may not be as significant as it seems. In 2024, US consumers purchased 15 million internal combustion engine or hybrid vehicles – which still require lead-acid batteries – compared to 17 million in 2014. This would suggest a reduction in demand of around 2% per annum. That said, most electric vehicless globally are equipped with 12-volt lead-based batteries to power backup systems, especially when the vehicle is idle, mitigating some of this decline.

Net of all of these effects, we estimate these changes have produced a staggering 30-40% shock to the supply-demand balance, tipping the market heavily toward a shortage. Prices have already begun to react, surging to around US$36,000 per ton. However, we believe there is much further to go. Historical context, combined with the unique challenges of substituting antimony in established supply chains, paints a picture that's supportive of this view. Substituting antimony is particularly challenging because supply chains are already optimised for its use. Moreover, antimony is typically used in small quantities per unit – whether in bullets, solar panels, fire-retardant materials, or batteries Even if the cost of antimony were to rise 10-fold, its critical benefits would continue to outweigh the added cost, given its relatively minor contribution to the overall unit cost.

Price Trend Durability

For a price trend to be significant, it must be durable. In this case, we see two key factors supporting the durability of the expected price move. Firstly, the only significant new non-Chinese antimony supply expected to come online in the next four years is from Larvotto Resources based in Australia. A thorough review of non-Chinese antimony companies reveals that no other entity has completed a pre-feasibility study on an antimony resource aside from Larvotto. This limited new supply reinforces the existing market tightness, supporting a sustained price increase. Secondly, China's strategic decision to preserve its antimony reserves for domestic use, both for critical future industries and national security purposes, signals a long-term constraint on global supply. These factors, coupled with the ongoing surge in demand for antimony in key sectors like solar energy and defense, creates a compelling case for a durable price trend.

Investment Opportunities in the Antimony Market

As we've delved deeper into the antimony market, we believe there are several ways to potentially benefit from this durable trend.

- ***Larvotto Resources: A Pure-Play Antimony Producer***
  Larvotto Resources, with its recently acquired Hillgrove project near Armidale, Australia, offers a unique opportunity to invest in a pure-play antimony producer. The area near Armidale has been mined for more than a century and the major mining areas have been drilled extensively. Historically, sustainable antimony mining was uneconomical due to oversupply from China. However, when the mine was previously in operation, the grades of antimony ore were very high, around 2.5% per ton of Sb (for comparison, many economic antimony deposits average below 1% Sb). Larvotto could help bridge the gap by producing up to 10% of world supply for the next 4 years. With prices projected to remain strong during this period, we expect the project to generate significant free cash flow, far exceeding the company's current market capitalization. Importantly, Larvotto does not need to refine the ore into ingots; it can export the concentrate directly to refineries in Mexico and the US, streamlining operations and reducing costs.

- ***Campine: A Leading Antimony Trioxide Producer***
  Campine, a European leader in lead and antimony recycling, provides exposure to the antimony trioxide market Primarily sourcing antimony from recycled lead batteries, Campine transforms it into antimony trioxide, a critical component of flame retardant materials. As one of the largest producers of antimony trioxide globally, the company exports to over 28 countries and supplies approximately 10% of the world's antimony trioxide market. As demand for fire safety materials continues to grow, Campine is well-positioned to benefit from increased antimony trioxide prices.

- ***Mandalay Resources: Capitalizing on Existing Production***
  Mandalay Resources, through its Costerfield mine in Victoria, Australia, offers immediate exposure to the antimony price surge. Victoria, historically rich in gold mines from the gold rush era, also holds significant antimony deposits interlaced with gold. Mandalay has been operating the Costerfield mine for around 15 years. In its latest quarterly production report for December, the company reported selling its antimony concentrate to Chinese refineries at an average price of US$36,000 per ton. Given antimony prices steadily rose throughout the period, we expect that spot prices were even higher by the end of the quarter. Furthermore, the fact that Chinese refineries are buying at these prices suggests that (i) the shortage extends to China, supporting the reserve depletion thesis, and (ii) prices in Western markets are likely higher.

We believe that these companies represent compelling value at current prices, as their free cash flow yields could exceed 50% per annum relative to the prices at which we acquired them. Crucially, we believe these companies are among the few with the ability to take advantage of the high antimony price for the next 4 years as they will already be in production or have the capacity to scale quickly.

While we remain optimistic about the antimony market's trajectory, we continue to monitor developments and will adjust our view accordingly if the determinative facts change.

Kind Regards,

Fawkes Capital Management

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