

1. Introduction

The Coronavirus 2019 (Covid-19) global pandemic has not only caused infections and deaths, but it has also wreaked havoc with the global economy on a scale not seen since at least the Great Depression.¹ Covid-19 has the potential to destroy individual livelihoods, businesses, industries and entire economies. The mining sector is not immune to these impacts, and the crisis has the potential to have severe consequences in the short, medium and long-term for the industry. Understanding these impacts, and analysing their significance for the industry, and the role it plays in wider economic development is a crucial task for academic research.

2. Surveying Potential Impacts

The primary impact on the sector has been a dramatic contraction in demand as industrial production, and construction, has effectively halted across a large swathe of the planet, for a period yet to be determined. This reduction in demand has caused dramatic falls in the prices of a range of metals and minerals across March and April 2020 (Table 1). These falls have been most dramatic for aluminium and copper.

Table 1: Selected mineral prices March and April 2020 Source: www.kitco.com

Metal	30-Day Spot Price March 4, 2020	30-Day Spot Price April 2, 2020	% reduction
Aluminium (US\$/lb)	0.7772	0.6608	15
Copper (US\$/lb)	2.5612	2.1917	14
Gold (US\$/oz)	1641.85	1616.8	2
Lead (US\$/lb)	0.8518	0.7652	10
Nickel (US\$/lb)	5.6986	5.0681	11
Zinc (US\$/lb)	0.8916	0.8404	6

These dramatic falls in prices have been mirrored by collapses in the shares of many of the large mining multinationals. On January 22, 2020 the share prices of BHP Billiton and Rio Tinto, two of the largest mining companies in the world, stood at US\$56.34 and US\$60.50 respectively.² As of March 18, 2020 BHP had lost 45% of its value, before recovering slightly to a share price of US\$36.56 on April 3, 2020. Rio Tinto followed a similar path – bottoming out at US\$36.42 – a 40% fall, before again recovering slowly to US\$45.06 on April 3, 2020. These paths show clear parallels with the experience during the Great Financial Crash of 2008-2009 (GFC). During that shock BHP lost 68% of its value between November 2008 and October 2009. Rio Tinto suffered even more losing 88% of its value between November 2008 and February 2009. Whether the collapses in value of the large mining firms continue, and results in drops on the scale of the GFC, depends on the duration of the lockdown and the economic and social conditions that emerge in its aftermath.

A clear difference however between Covid-19 and the GFC is the experience of the gold industry. In the aftermath of the GFC gold prices surged as investors moved their money out of equities and into

¹ 'Virus slump expected to rival big recessions in history', <https://abcnews.go.com/International/wireStory/virus-slump-expected-rival-big-recessions-history-69896631v> (Accessed April 8, 2020)

² All share price data is sourced from Yahoo Finance.

the safe-haven of gold. Gold prices rose 156% between November 2008 and September 2011.³ However as shown in Table 1 gold prices are in decline, and indeed slumped further in mid-March to a low of US\$1474.25 on March 19, 2020. Investors and businesses have moved away from even the supposed safe haven of gold, choosing instead to hoard currency such as the US dollar, needed to fund businesses who have faced unprecedented drops in revenue. The impact of this effect can be seen by comparing the share price of Ashanti Gold, a Ghanaian based gold mining company with operations across Africa, during the GFC and now. Between November 2008 and November 2010, the company's share price rose by over 160%. Between February 24, 2020 and March 20, 2020, the company lost 38% of its value, before recovering slowly by early April, but still over 20% down from just over 6 weeks before.

In addition to impacts through lower prices mining activity itself has been hit directly by Covid-19. In Mongolia Rio Tinto was forced to suspend non-essential operations due to government regulations.⁴ Mine workers in Burkina Faso, Ghana and Chile have tested positive – likely to be the tip of an ever-growing iceberg.⁵ A number of operations in South Africa have had to shut-down production, bringing additional future capital costs from re-opening mine sites in future.⁶

These dramatic drops in prices, share prices and activity across mining companies, across all commodities, highlight the potentially catastrophic impact on the industry. The implications of these reductions remain to be seen, but should be an important focus for future research. They could include reduced investment in new operations, technology and exploration, mothballing of existing mine-sites, laying-off of workers, reducing corporate social responsibility activities, or renegotiating taxation and royalty agreements with host country governments. Should any or all of these take place the ramifications will be felt far beyond the mining sector itself.

3. Taking Action

Some evidence of the initial actions being taken by mining companies is beginning to emerge. Teck Resources has halted construction of a copper mine in Chile, along with reducing production and crews at coal and copper projects.⁷ Yamana Gold has reduced production and demobilised workers in Canada and Argentina.⁸ Coal miners in Illinois have been furloughed.⁹ These cut-backs to supply have helped buttress some of the falls in demand, and account for some of the rises in prices seen in late March and early April. However, this brings a twin challenge for companies of lower prices and lower production. It also raises the prospect of over-supply on the market, as and when this production comes back on stream.

The differential experience of gold between the GFC and Covid-19 highlights a potentially important short-term impact from Covid-19, that could be different from the experiences faced in the GFC. In

³ Data from www.kitco.com (Accessed on April 8, 2020)

⁴ 'Rio Tinto's Mongolian operations take Covid-19 coronavirus hit', <https://www.mining-technology.com/mining-safety/rio-tinto-mongolia-coronavirus> (Accessed on April 8, 2020)

⁵ 'Covid-19: How the coronavirus pandemic is hurting the mining industry.', <https://www.mining-technology.com/features/how-covid-19-is-hurting-mining/> (Accessed on April 8, 2020)

⁶ 'South African Mining Sector Braces for Coronavirus Lockdown', <https://www.voanews.com/africa/south-african-mining-sector-braces-coronavirus-lockdown> (Accessed on April 8, 2020)

⁷ 'COVID-19 jobs tracker: Layoffs, furloughs and hiring during the pandemic', <https://www.bnnbloomberg.ca/covid-19-jobs-tracker-layoffs-furloughs-and-hiring-during-the-pandemic-1.1417086> (Accessed on April 8, 2020)

⁸ *ibid*

⁹ 'Hundreds furloughed by Tulsa coal mining decision', <http://www.okenergytoday.com/2020/04/hundreds-furloughed-by-tulsa-coal-mining-decision/> (Accessed on April 8, 2020)

many countries the higher gold price seen in the GFC encouraged, induced and incentivised the growth of Artisanal and Small-Scale (ASM) gold miners, causing environmental degradation and deforestation, but crucially providing income, foreign exchange and livelihoods to countries, regions and individuals. What the impact on those involved in this sector will be from the lockdown, falling prices, and reduced demand is an important question for future research. This is especially important given the increasing evidence of an inter-linkage between agriculture (and therefore food security) and ASM in many countries (Bryceson & Jønsson, 2010; Maconachie, 2011; Hilson, 2016), and the role that the activity plays in providing a safety net to many of the poorest communities in the world (Aizawa, 2016).

Those employed in the large-scale mining sector will also be impacted across the world, potentially in both the short and medium term. In addition countries incomes may also be hit. Many developing economies are heavily dependent on mining and both private sector and public sector incomes are dependent on activity in the sector. Mineral rents as a percentage of GDP are higher than 15% in Mongolia, Suriname, Mauritania, Eritrea and Guyana (World Bank, 2020). These countries face a dilemma of shutting down mining activity (if possible) to reduce the spread of the virus, against reduced tax revenue at a time of huge fiscal stress. How these countries cope with such a crisis is a vital area for future research, to help build resilience to future pandemics.

Beyond these short-term impacts there are likely to be medium and long-term impacts to individuals, companies and countries in, and related to, the mining sector from the Covid-19 pandemic. The scale of the global recession that is likely to occur as a result of the pandemic will depend upon how fast and far countries move out of lock-down, and how governments deal with the financial implications of the crisis. On the one hand economies may bounce back quickly, given that no productive capacity has been destroyed (as was the case in economic collapses following wars), and that there hasn't been widespread reductions in the global money supply, such as that occurred in the aftermath of the Wall Street Crash and the GFC. On the other hand, lockdowns may continue sporadically over months or years with implications for global industry and construction, reducing the overall demand for minerals and thus reducing production, prices or both. This raises the prospect in the medium-term of over-supply in some markets, with potentially sunk investments in the sector that either need to be mothballed or operated at reduced profits or even losses. This could translate to lower returns for shareholders, lower investment in the industry – leading to reductions in efficiency, lower investment in community, social and environmental projects, squeezes on wages – impacting livelihoods and lower tax receipts for governments often critically dependent on revenue from the sector. The extent to which these effects occur and the impacts they have on companies, communities and countries is an important avenue for future study.

The shock from Covid-19 and the impacts upon the mining industry are critical avenues for research given the wider long-term criticality of the sector and the shifting environment in which it operates. An important group of literature is emerging that highlights the critical role of the mining industry in providing the raw materials needed to transition to a low-carbon economy (e.g. World Bank, 2017; Bazilian, 2018). In order for the mining sector to meet this need it needs to be in a position to shift production to new resources and new deposits and be flexible to respond to rapid shifts in technology – requiring a certain amount of financial resilience. Should the pandemic erode such resilience this may have profound implications for meeting the challenge of combating climate change – understanding the impacts of this is vital for academia, policymakers and industry alike.

Covid-19 could increase or decrease trends already occurring in the industry, with long-term implications for the shape of the industry. The incentives to use labour within the sector could increase, with falling wages, or fall due to bureaucratic measures that may be placed on the

industry. This could reduce or increase the incentives to increase automation, within the industry.¹⁰ Global economic shifts such as increased recycling and moves to a circular economy have potentially large implications for the mining sector (Lebre et al, 2017). These shifts are likely to be impacted by, and interact with, the economic consequences of the Covid-19 pandemic. Analysing these dynamics is crucial for industry and academia alike in order to understand future pathways for the industry, and implications for companies, communities and countries.

The Covid-19 global pandemic may well become the most defining economic and social event in decades. It is, and will continue to, impact the mining sector in profound ways. In the short term it is hitting prices, production and profits within the sector – impacting shareholders, communities and governments. Its medium and long-term effects are much more uncertain. What is clear however is that understanding these impacts is vital in ensuring that the mining sector can fulfil its role in providing livelihoods and tax revenue and helping to facilitate the low-carbon transition.

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¹⁰ 'Covid-19: Could the coronavirus pandemic accelerate autonomous mining?', <https://www.mining-technology.com/features/coronavirus-autonomous-mining-projects/> (Accessed on April 8, 2020)