

# **Chinese mining investment globally: Who, where, and how?**

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## 1. Introduction

In 2022, according to the Observatory of Economic Complexity (OEC), China imported US \$623 billion in mineral products, making it by far the world's most important minerals importer (Simoes and Hidalgo, 2011). That same year, the United States—the second largest minerals importer—imported roughly half as much as China (Ibid.). Thanks to a vast investing spree around the world in recent years, an increasing share of China's mineral imports is secured via foreign direct investment (FDI). In 2000, according to the figures compiled by S&P Global, Chinese investors held stakes in an estimated 40 mines abroad—less than 1% of the more than 5,000 mines outside China at the time including in the data (2024).<sup>1</sup> By 2022, according to the same data source, the figure had jumped to an estimated 1,250 mines—a 30-fold increase—out of a total of just under 37,500 (Ibid.). Through these investments, Chinese mining firms have established themselves as central players in the countries that supply the world with cobalt, lithium and nickel—some of the minerals critical to the energy transition. In 2022, according to the OEC's data, China accounted for 96% of Congolese cobalt exports, 72% of Chilean lithium exports, and 95% of Indonesian ferro-nickel exports (Simoes and Hidalgo, 2011).<sup>2</sup> This marked a dramatic change. Fifteen years prior, China accounted for 31% of Congolese cobalt exports, 7% of Chile's lithium exports and less than 1% of Indonesian ferroalloy exports (Ibid.).<sup>3</sup>

Chinese mineral investments have attracted increasing scrutiny in recent years, especially as Chinese critical minerals exports have become a central issue in the China-US Trade War first launched by Washington in 2018. As early as 2019, commentary in Chinese media raised the possibility that the US could lose access to Chinese rare earths as part of the trade war (Reuters, 2019). In 2023, after the Biden administration sought to curb Chinese access to semiconductors, the Chinese Ministry of Commerce announced that it would cut exports of germanium and gallium to the West (Baskaran and Schwartz, 2024). The following year, after the two metals' export to the US had already stalled, Beijing announced an outright export ban of the two minerals, in addition to antimony, to the US (Ibid.). Finally, in early-2025, in the midst of the global trade war unleashed by the Trump administration, China announced a halt to the export of certain rare earths minerals altogether (Bradsher, 2025). In the aftermath, analysts raised alarms about the security implications of the curb for the US (see Baskaran and Schwartz, 2025).

Despite that scrutiny, however, we still know relatively little about China's mining investments around the world. Who are the Chinese miners investing abroad, and how do they differ from their competitors? Where are Chinese miners investing? What types of mines are they buying? What drives Chinese investments in different countries? Impressive efforts have been made to catalogue state-owned mines (see World Bank, 2011), Chinese-owned mines in Africa (see Ericsson et al., 2020), or the scale of Chinese involvement in specific metal or mineral sectors (see Gulley, 2024), but the pace of change in the field poses significant challenges. Some projects fail to materialize, others are indefinitely mothballed, and many new mines are acquired or brought online yearly. Furthermore, the strategies of Chinese miners and refiners evolve in response to commercial, economic, social, and political considerations.

This paper seeks to advance our understanding of Chinese mining investment by leveraging more than 30 interviews conducted in the Democratic Republic of Congo and seven Chinese provinces between 2016 and 2024 and three newly compiled datasets on the Chinese mining sector and Chinese mining investments globally. The first dataset, compiled from scratch specifically for this work, contains comprehensive and cross-verified information about 166 Chinese-owned mining properties that were in production in 2022—

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<sup>1</sup> The two figures are estimates and, as will be elaborated on below, may overrepresent the actual totals.

<sup>2</sup> The data, for cobalt, includes “Cobalt, unwrought, matte, waste or scrap, powders” and “Cobalt, articles thereof, nes”; for lithium, it reflects “Lithium carbonates”; for ferro-nickel, it simply reflects “Ferro-nickel”.

<sup>3</sup> Indonesia banned the export of raw nickel in 2014, as part of an effort to catalyze investment in domestic refining capacity (Guberman, Schreiber, and Perry, 2024). As a result, Indonesian nickel exports generally take the form of transformed product, and the majority of it is exported in the form of ferroalloys.

the most comprehensive such dataset to date. The second dataset, which draws on data produced by S&P Global (SPG), explores the broader dynamics of Chinese mine ownership globally between 2000 and 2022. Finally, the third dataset contains information about Chinese investments in the largest 281 non-Chinese publicly traded mining companies in the world.

China's rising demand for minerals, paired with its growing mining investments around the world in recent decades, has already had important impacts on the sector. In the first decade of the millennium, iron and copper prices roughly tripled, largely on the back of Chinese demand. In other words, what is often referred to as the 2000s commodities boom is widely understood to have been driven in large part by Chinese demand (Economy and Levy, 2015; Blas and Farchy, 2021). China's growing presence in the sector also destabilized existing well-established metals and minerals markets. For instance, when China became the world's largest importer of iron ore in the early-2000s, the market "had operated under a negotiated benchmark pricing regime" (Massot, 2024). In 2010, just four years after Baosteel (now Baowu) took over the negotiations, the benchmark pricing regime fell apart, replaced by spot-pricing. Though the undoing of the pricing regime was unintended (Ibid.), it was the result of Beijing's objective to weaken the grip of the "Big-3" producers on the sector (Wilson, 2011). In fact, the Chinese government had previously gone so far as publicly blaming iron ore price rises on the Big-3's monopoly status (Ibid.). Similarly, describing Baosteel's 2009 investment in Australia's Aquila Resources, the Chinese mining giant's chairman had claimed that the investment would "strengthen Baosteel's control over strategic resources, weaken the monopolistic grip over global iron ore supplies and lower purchasing costs" (Cang and Klamann, 2009).

In addition to facilitating the acquisition of metals and minerals to fuel economic development, another objective of Beijing with regards to the mining industry was to build up China's own sector to become globally competitive. As Humphreys (2015, p. 145) put it: "The Chinese authorities may have believed that, by adding to the flow of capital to the sector, its companies would boost mineral supplies generally to the benefit of all consumers (of which, of course, China was much the largest). But there was evidently also a desire to have companies which could operate profitably as miners in their own right." As a result, the government sought to consolidate and rationalize the sector. It merged some of the country's large mining SOEs, including in the coal and rare earths sectors (Global Times, 2021). The government also closed hundreds of small mines whose inefficient production could not justify their environmental footprint, including in Inner Mongolia (Humphreys, 2015) and Jiangxi (Global Witness, 2022). Beijing's strategy succeeded. The consolidation of the industry and the flurry of investments Chinese miners have undertaken abroad, which has led to important technology transfers, contributed to Chinese miners becoming industry leaders. Furthermore, as Chinese firms' investments multiplied and their need for mining engineers grew, higher education programs seeking to supply the industry with qualified workers mushroomed, which also led to a rapid increase in the quantity and quality of mining research originating in China. Meanwhile, mining engineering programs in the West have been shuttered for lack of demand. In 2019, the China University of Mining and Technology, which offers China's top mining engineering program, had an enrollment of roughly 35,000 students (Study in China Admission System, 2020). That same year, a reported 851 students were enrolled in mining engineering programs in the US as a whole (Society for Mining, Metallurgy, and Exploration, 2021).

Today, Beijing continues to wield vast influence over the Chinese mining sector. In fact, mining is at once a sector where vast amounts of political and financial capital are exerted and one that—as the China-US Trade War makes clear—provides Beijing with important economic statecraft firepower. Reilly (2021) provides a useful taxonomy, which he calls "nested orchestration" to explain how the Chinese government wields its economic influence. The system, which combines direct action with delegation, is one whereby national leaders implement some economic statecraft initiatives, while delegating authority to line ministries and government agencies to do the same. In turn, these lower levels of government deploy orchestration techniques to mobilize and manage financial institutions, state-owned enterprises, and

regional authorities.<sup>4</sup> Though, as Reilly highlights, the system is complex and features many actors, the two key channels through which the government influences Chinese foreign investment in mining are diplomatic charm offensives, including through the provision of development finance to national governments, and subsidized credit to Chinese firms.

Few destinations for Chinese mining FDI better illustrate this dual strategy than the Democratic Republic of Congo (DRC). Despite being one of the world's most resource-rich countries, the DRC remains among its poorest. In his 2006 re-election campaign, Joseph Kabila announced his ambitious Cinq Chantiers (Five Construction Sites) infrastructure program, a key part of his post-war development strategy for the DRC (Landry, 2018). The following year, his government signed an enormous resources-for-infrastructure agreement valued at a total of over US \$9 billion with a consortium led by China Railway Engineering Corporation (CREC), which Kabila hoped would bring his development vision to life (Ibid.). By 2009, after multiple rounds of renegotiation, a new agreement was reached, which would see China Export-Import Bank finance US \$3 billion in Congolese infrastructure (Ibid). In many ways, the Sicomines agreement served as a beachhead for other Chinese investors, equipped with generously priced credit from Beijing. In 2016, China Molybdenum (now CMOC) bought a controlling stake in the Tenke Fungurume mine—one of the DRC's largest mining assets—from US-based Freeport-McMoRan for a series of transactions worth US \$3.8 billion (Lipton et al., 2021). The financing for the deal was provided in the form of a syndicated loan, in large part underwritten by China Development Bank (Custer et al., 2023). The year before, another publicly traded Chinese firm, Zijin, had bought almost half of the Kamo a mine—which holds one of the largest copper deposits in the world—from Canada-based Ivanhoe Mines (Fasken, 2015). Zijin pays less than half what its non-Chinese competitors pay in interest rates.<sup>5</sup> And, in 2020, China Molybdenum (CMOC) bought another Freeport-McMoRan asset in the DRC, the Kisanfu mine, for US \$550 million (Reuters, 2020). Thanks to this rapid string of investments, as the data collected for this paper demonstrates, Chinese investors now have stakes in 29 of the DRC's roughly 40 active copper and cobalt properties. Furthermore, in part thanks to the large projects financed by Beijing in the DRC, Chinese investors in the country have been shielded from some of Kinshasa's squeezing of foreign investors, which had fueled many corruption scandals (see Global Witness, 2014).

Leveraging new datasets and dozens of interviews, this paper elucidates multiple hitherto underexplored aspects of Chinese mining sector investments around the world. First, it sheds new light on the Chinese companies carrying out mining investments abroad and the importance of state-owned enterprises (SOEs) to the sector. More specifically, as it demonstrates, Chinese SOEs held ownership shares in 106 of the 166 active (in 2022) Chinese-owned mining properties located outside China identified for this work. Second, it explores the geographical distribution of Chinese-owned mines around the world, with a focus on Chinese investors' risk tolerances when making new investments. It demonstrates that, though more Chinese-owned mining properties outside China are located in Australia than any other country, most Chinese-owned mines are located in high-risk countries, chief among which is the DRC. It also distinguishes between the respective levels of risk tolerance of SOEs and private firms when investing abroad. Third, it presents a detailed overview of the commodities produced by Chinese-owned mines. In terms of commodities secured via Chinese mining FDI, copper—which is critical for China's own infrastructure development and for the industries that Beijing wants to promote for industrial development—is the most important. More

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<sup>4</sup> The Ministry of Commerce (MOFCOM), as the agency responsible for how companies conduct international trade and foreign investment policy, and as one of the agencies responsible for development finance, is at the center of the system (Ibid.). The other actors involved are the National Development and Reform Commission (NDRC), which is responsible for industrial policy and overall economic policy; the State-owned Assets Supervision and Administration Commission (SASAC), which controls state-owned enterprises (SOEs); the Ministry of Finance (MOF), which oversees the financial sector, manages the government's budget, sets fiscal policy, issues economic regulations, and dominates macroeconomic policies; the People's Bank of China, which manages monetary policy and overseas state-owned banks. Finally, the Ministry of Foreign Affairs (MOFA) remains a "unique source of analyses and information about the outside world, a major source of proposals on policy options and a privileged channel of foreign-policy implementation".

<sup>5</sup> More specifically, in the first quarter of 2024, Zijin paid 3.38% in effective interest rates, compared to 7.11%, on average, among the ten largest publicly traded (as of June 2024) western mining companies.

specifically, copper is the primary commodity produced by 55 of the 166 active properties identified as part of this research, and it is a by-product in 10 more. Gold, which is produced as a primary commodity in 23 Chinese-owned properties, comes in second place, followed by coal (22 properties) and iron ore (14). Finally, this paper explores the strategies used by Chinese firms in acquiring mines overseas, including the increasingly common practice of taking over existing mines and mining companies.

## 2. Research Questions and Methodology

This paper seeks to shed light on the ways in which Chinese mining companies invest overseas. More specifically, it addresses the following questions: Where are Chinese miners investing? What types of mines are they acquiring? What are the factors driving their investments? And how have the answers to these questions changed since 2000? To address these questions, this paper draws on three data sources—including one original dataset compiled specifically for this paper—in addition to 37 interviews conducted in the Democratic Republic of Congo and China.

The first dataset compiled for this paper contains detailed information about 166 Chinese-owned mining properties that were active in 2002. The 166 properties, which comprise 203 individual mines, are scattered across 45 countries. More specifically, these are all the properties that could be identified through an exhaustive search in which any Chinese (including Hong Kong) company, directly or indirectly, held a stake of 10% or more in 2022.<sup>6</sup> The underlying data was collected from multiple sources, including individual governments' mining cadasters, SPG's Capital IQ database (2024), the London Stock Exchange Group's Refinitiv database (LSEG) (2024), Costmine Intelligence's Mining Intelligence database (CI) (2022), the China Global South Project's Congolese mines database (CGS) (2025), as well as individual companies' websites and shareholder communications. All the data was cross-verified between the SPG, LSEG, CI, and CGS databases (and, where applicable, the mines' IDs in each database were included in the data). In all instances, the mines were also cross-verified using government cadasters and/or company publications; news reports; or reports by civil society, such as the Extractive Industries Transparency Initiative. The names of the properties are presented as they are reported by their owners—or, alternatively, by SPG—and their coordinates; host country; the commodities they produced in 2022; and their Chinese owners that year, including notes clarifying indirect ownership links and whether the primary owner was a state-owned enterprise, are included in the data. Ideally, data on all projects—in development, active, mothballed, terminated, cancelled, etc.—could have been produced, as doing so would have provided a fuller picture of Chinese firms' strategies and investment positions. However, due to funding and time constraints, it was not possible to do so.

The second database compiled for this paper contains cursory information on the dynamics of Chinese mine ownership globally between 2000 and 2022, including the host countries where these mines have been concentrated and whether investments have taken the form of greenfield or brownfield ventures. More specifically, the data contains information about the location of mining properties at any stage of their development that, in any given year between 2000 and 2022, featured 10% or more Chinese ownership, according to SPG. For the first year they are listed as Chinese-owned in the SPG database, mines that did not previously have entries are coded as new constructions, while those that existed but were previously owned by non-Chinese companies are coded as new investments. The SPG database, though it is probably the most comprehensive of its kind, contains erroneous information when it comes to the identity of mines' owners (as do the LSEG and CI databases). More specifically, many mines are listed as Chinese-owned when they are not. To remedy this issue, mines listed as Chinese owned but for which the Chinese owners

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<sup>6</sup> Only properties that are directly owned by Chinese entities or indirectly owned through companies headquartered outside China but majority-owned by Chinese investors firms are included in the data. For example, properties owned by Yancoal Australia (more than 60% owned by Shandong Energy Group) are included in the data, while those owned by Rio Tinto (11.25% owned by the Aluminium Corporation of China) or Sociedad Química y Minera de Chile (23.77% owned by Tianqi Lithium) are not.

are unnamed (listed only as “private interest”, “undisclosed buyer”, or “unnamed owner”) were removed from the sample.<sup>7</sup> The resulting data, though not perfectly accurate, provides a relatively reliable picture of the dynamics of Chinese mine ownership.

The third database compiled for this paper contains information about Chinese investments into mining companies around the world. More specifically, it contains information about the largest 281 publicly traded miners located outside China and Hong Kong, their headquarters’ location, the share of their stock that is owned by Chinese investors, the identity of their largest Chinese investor, and that investor’s total shareholdings. The data on these 281 publicly traded miners was drawn from the Natural Resource Governance Institute, while that on their total Chinese holdings was drawn from SPG.

Finally, this paper also leverages 37 interviews with Chinese mining executives and government representatives conducted in the Democratic Republic of Congo in 2016 and in China between 2022 and 2024. More specifically, meetings at the field offices of two Chinese miners in the Democratic Republic of Congo were arranged, in addition to tours to five of China’s largest mining companies—three of which are state-owned—at their Chinese headquarters, mines, and/or processing plants. Furthermore, informal interviews were held with mining executives at a mining conference held in Chengdu in the Fall of 2022, which, in some cases, were then followed up with additional conversations. Finally, Chinese government officials involved in the mining sector—on the commercial and diplomatic sides—were interviewed both in the Democratic Republic of Congo and in China. To protect the identity of these individuals, any information that could reveal their identity is hidden.

### **3. Results and Discussion**

#### *3.1 A preamble on state ownership*

The first outright acquisition of a foreign mine by a Chinese miner was carried out in 1992, when state-owned Shougang Group acquired 98.5% of the shares of Hierro Peru, along with its mining rights in the iron-rich Marcona district (Gonzalez-Vicente, 2018). The fact that the Shougang Group was state-owned—and benefitted from important political connections (Mufson, 1995; Hassard et al., 2007)—is critical to understanding the Hierro Peru investment. In fact, until 2003, SOEs like Shougang were the only Chinese firms permitted to invest abroad. Though private firms now invest globally, SOEs continue to account for most of China’s outward investments, and they operate vastly differently from their private counterparts when it comes to foreign investment. As Ramamurti and Hillemann put it, “the distinctive behavior of CMNEs [Chinese multinational enterprises] is to a considerable extent due to their state ownership” (2018, p. 40).

One key difference that has been pointed out in the literature on Chinese foreign investment is that SOEs are more likely than their private counterparts to target resource-rich countries for their investments (Ramasamy et al. 2012). Bass and Chakrabarty (2014), in their work exploring the granular details of the links between state ownership and resource investments, find that SOEs tend to invest more in exploration projects compared to private firms, which tend to focus their efforts on exploitation projects. They conclude that this phenomenon is driven by the fact that “SOEs’ owners—governments—are most concerned with securing their country’s future” via these investments (Ibid. p. 1).

Another important finding in the academic literature on Chinese foreign investment is that Chinese firms—driven by SOEs—appear to have large risk appetites. Largely due to the support they can expect to receive from Beijing, Chinese foreign investors are understood to have a different attitude towards risk than their

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<sup>7</sup> This is after hundreds of such mines were manually verified, and the vast majority of them were found to not have any Chinese links.

Western counterparts. The first academic work to point this out was a landmark paper by Buckley et al. (2007), which demonstrated that Chinese firms disproportionately invest in countries with high levels of political risk. In explaining this surprising finding, they hypothesize that the risk appetites of SOEs—which comprise their whole sample of investors—might differ from those of private firms because of their capital access and government ties, among other factors (Ibid.). These results have since been echoed repeatedly in the literature (Amighini et al., 2012; Duanmu, 2012; Kolstad and Wiig, 2012; Quer et al., 2012; Ramasamy et al., 2012; Cuervo-Cazurra et al., 2014; Meunier, 2018).

As hypothesized by Buckley et al. (2007), Chinese firms’ apparent risk tolerance—which is particularly applicable to SOEs—appears to stem at least in part from the support they can expect to receive from Beijing when investing in risky countries. This support can take various forms. First, Chinese diplomats—like their Western counterparts—can play a role in facilitating investment (Gonzalez-Vicente, 2012). This is especially salient since China has more diplomatic representation around the world than any other country (Economy, 2024). In some cases, the Chinese government can even negotiate with host governments on behalf of Chinese firms, as documented by Li et al. (2013) in the case of Chinese investments in Tanzania’s extractives sector. Fan and Wang (2017) provide important support for the diplomatic mechanism. They find that host country risk levels appear to negatively correlate with Chinese investment, but that strong political ties between Beijing and host country governments mitigate this negative impact. In other words, closer political ties between China and prospective host countries appear to increase the risk tolerance of Chinese investors. This support appears to disproportionately benefit SOEs, as was relayed to me by an executive a mining executive from a private firm interviewed for this work. The interviewee discussed with envy the support provided by the government for SOEs, indicating how his firm would not be able to count on the same level of support if one of its foreign investments went awry.

Beyond maintaining political ties through traditional diplomatic engagement, Beijing often relies on its two largest policy banks—the China Export-Import Bank (CEIB) and the China Development Bank (CDB)—to facilitate FDI in developing countries. In recent decades, the two banks alone have committed more than a trillion dollars in financing to the developing world (Custer et al., 2023). Hundreds of billions’ worth of the two banks’ loans were resource-backed, which helps advance resource acquisition (Alves, 2013; Landry and Tang, 2024). Finally, according to data compiled by AidData at the College of William and Mary, CEIB and CDB have extended dozens of loans, totaling roughly US \$11.5 billion, specifically to support the acquisition, development, or expansion of mines abroad or the building of infrastructure to support these mines—most of which were acquired by SOEs (Custer et al., 2023). Beyond facilitating investment, loans from China’s policy banks can directly help mitigate operational risks for Chinese investors. As discussed by Gelpert et al. (2021), many Chinese loans to developing countries feature clauses that explicitly seek to protect Chinese investors. As the authors state: “cross-default and cross-cancellation clauses in some of the Chinese contracts trigger if the debtor takes action adverse to ‘any PRC entity’ in the borrowing country” (Ibid., p. 37). In the case of mining projects, such “adverse action” could include expropriation.<sup>8</sup> Though only a few major mines have been expropriated in recent decades, many have been sold at cut-rate prices due to threats of expropriation—a practice that was particularly prevalent in the DRC in the early-2000s (RAID and African Resources Watch, 2020). As discussed in the introduction, however, Chinese investors, may be shielded from some of that risk by Beijing’s generous development finance program.

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<sup>8</sup> Expropriation represents a key source of risk for mining companies when they invest billions of dollars developing a new mine. To explain the dynamics of foreign investment, Vernon (1971) introduced the idea of what he called the “obsolescing bargaining”. In the model—which is often referred to as the hold-up problem—the relative bargaining power between investors and the host government shifts from the former to the latter as the project proves successful. Investors cannot easily withdraw their investments in a host country’s fixed asset after the fact—there are huge sunk costs involved. As Buckley (2008) argues, the model is especially salient when it comes to the mining sector, as few investments require larger upfront costs, and are as immobile, as mines.

Another factor that might change Chinese firms' attitudes towards risk—and economic risk in particular—is the direct availability of relatively cheap credit available to Chinese investors from government-controlled banks. Financing can represent a critical barrier for miners looking to invest in new ventures, especially in risky countries where their investments can easily be derailed. Chinese firms, however, can access relatively cheap credit from government banks. In short, cheap credit allows Chinese mining investors to take on more short-term risk in anticipation of higher long-term returns. It also enables them to secure critical minerals deposits when the prices of the underlying resources are low, which helps maximize long-term returns. This echoes Bass and Chakrabarty's finding that SOEs, because of their long-term orientation, tend to invest more in resource exploration projects compared to private firms, which tend to focus their efforts on exploitation projects (2014). As with the other forms of government support outlined above, SOEs are advantaged compared to their private counterparts when it comes to securing credit. As the academic literature on the subject demonstrates, they can access vastly larger amounts of capital at more attractive interest rates (Cull and Xu, 2003; Yi and Liang, 2016; Lardy and Huang, 2018; Bunny, 2020; Bai et al., 2021). This point was also relayed to me by two Chinese mining executives—one from an SOE and the other from a private firm—interviewed as part of this work. Both revealed that SOEs, thanks to their close ties to the government and to state banks, have vast advantages when it comes to securing capital. Furthermore, because natural resources are instrumental in sustaining China's economic growth, Chinese demand for minerals is—and is expected to remain—high. Therefore, Chinese firms can remain confident that a domestic market for the critical minerals they secure by investing will continue to exist. An executive at a large Chinese mining SOE I interviewed put it succinctly: “Chinese firms have two big advantages when it comes to their investments: cheap credit and large domestic demand”.

State-ownership can represent a double-edged sword, however—especially in a sector as politically sensitive as mining. Meyer et al. (2014) demonstrate that Chinese firms, and SOEs in particular, face legitimacy challenges when investing in industrialized countries, where policymakers fear that these investments will lead to wholesale technology and jobs transfers to China. As Ramamurti and Hilleman put it, Beijing's government involvement has sometimes been a disadvantage for Chinese multinationals looking to internationalize into developed countries. Multiple situations have arisen where Western governments halted Chinese SOEs' takeover bids (Cuervo-Cazurra et al., 2014). As the cases of the China National Offshore Oil Corporation's failed US \$18.5 billion bid to acquire Unocal in 2005,<sup>9</sup> the Aluminum Corporation of China's failed attempt to purchase an 18% stake in Rio Tinto for \$19.5 billion in 2009,<sup>10</sup> and China Minmetals' failed initial bid to acquire OZ Metals in 2009 all demonstrate,<sup>11</sup> similar concerns have long existed when it comes to Chinese investments in the extractives sector.

### *3.2 Who accounts for China's mining FDI?*

Unsurprisingly, given the discussion above, SOEs account for the majority of active Chinese-owned mining properties documented for this paper. More specifically, 106 of the 166 (64%) of the Chinese mining assets identified in this work are owned by SOEs (defined as companies in which any Chinese government agency or body, directly or indirectly, has any ownership stake). This finding differs slightly from that of Landry's forthcoming paper, which demonstrates that SOEs account for 82% of all Chinese-owned mines abroad (compared with 87% of the mines in China itself). The discrepancy between the two figures might be due to the fact that the data compiled for this paper only captures operating properties, while Landry's data represents an estimate that includes mines at every stage of development. SOEs, which tend to be more patient than private firms, may be more likely to invest in projects in early stages, rather than operating

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<sup>9</sup> The purchase, which raised concerns in Congress, was placed under review by the Committee on Foreign Investment in the United States. It was withdrawn, due to “political hurdles”, two months after initially being placed (Barboza, 2005).

<sup>10</sup> The purchase attempt—the second of the kind (the Aluminum Corporation of China had purchased an 12% stake in Rio Tinto the previous year (Barboza and Werdigier, 2008)—drew the attention of the Australian Foreign Investment Review Board (FIRB). Eventually, Rio Tinto decided to cancel the sale (Barboza and Wines, 2009).

<sup>11</sup> The initial bid was rejected on “security grounds” before being revised (Wassener, 2009).



ones. This would reflect the paper by Bass and Chakrabarty (2014) discussed above, which finds that SOEs tend to invest more in exploration projects compared to private firms, which tend to focus their efforts on exploitation projects. Landry (forthcoming) raises a different possibility to explain the relatively limited number of foreign mines owned by Chinese SOEs compared to domestic ones: many of China's mining SOEs were set up by local or provincial Chinese governments specifically to mine local deposits. The other 60 mining properties identified as part of this work are owned by private companies whose links to the government vary quite substantially—though most, if not all, feature party committees (see Lin and Milhaupt, 2021; Landry, forthcoming). Both private mining companies I visited as part of this research—admittedly, an extremely limited sample—featured party structures, which have become increasingly common over the past decade (Ibid.).

An important distinction between the state-owned Chinese firms that own shares of foreign mines and their private counterparts is the sheer diversity of SOEs. While the privately owned Chinese firms that own stakes in active foreign mines are almost all from the energy, metals, or mining sectors—the only exceptions being a few investment firms and mining equipment manufacturers—the SOEs that own mines around the world are vastly more diverse. Though most of them are from the energy, metals, or mining sectors, among the ones that owned stakes in foreign mines active in 2022 are Anhui Foreign Economic Construction Group, a large infrastructure contractor that has ventured into the mining sector and has stakes in the DRC's Tshibwe diamond mine;<sup>12</sup> the China-Africa Development Fund, a special fund of the China Development Bank that owns a stake in Liberia's Bong mine; China North Industries (NORINCO), a state-owned defense corporation with stakes in at least five mining properties in the DRC, Myanmar, Namibia, and Sudan; China Railway Construction (CRC) a company that—as its name suggests—primarily engages in railway construction but nevertheless has a stake in Ecuador's Mirador mine; China Railway Engineering Corporation, a rival of CRC that has stakes in at least five mining properties in the DRC and Mongolia; East China Mineral Exploration and Development Bureau, an agency based in Nanjing that has stakes in Brazil's Itaminas project; and Zhongding International Engineering, a construction firm that has a stake in Indonesia's Kusuma Raya Utama. One Chinese investor—the “Highland Fund”—is listed as ambiguous in terms of its state ownership in the paper's underlying data. All that is publicly known about the fund, which has a 13.33% stake in Russia's large Bystrinskoye mine, is that it is a “consortium established by prominent Chinese investment funds and corporations”.

### *3.3 Where are Chinese-owned operating mines located?*

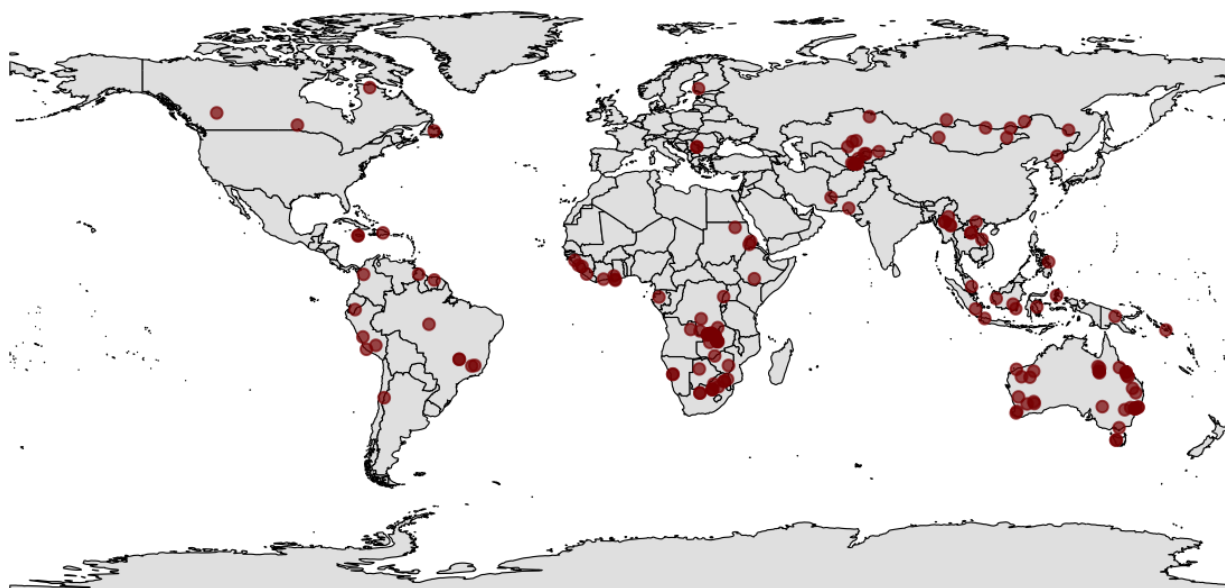
Much of the recent discussion on Chinese mining abroad focuses on the developing world, and on Africa in particular. This is hardly surprising given that Chinese miners have acquired a vast number of properties on the continent. As demonstrated in Figure 2, which maps active (in 2022) Chinese-owned mining properties outside China, 66 of the 166 operating Chinese-owned properties identified as part of this work are located in Africa—the most of any continent. Of these mines, 30 are located in the DRC, ten in South Africa, and seven in Zambia. While Chinese-owned South African assets produce a wide array of minerals—as primary commodities, four produce gold, two produce manganese, two produce platinum, one produces chromite, and one produces copper—the Congolese and Zambian properties almost exclusively produce copper and cobalt. In fact, 36 of the 37 properties identified for this work in either country produce copper and/or cobalt and one single mine—the DRC's Tshimbwe diamond mine—primarily produces something else altogether. Perhaps unsurprisingly given China's own location, many of the Chinese-owned properties identified in this work—41, to be exact—are located in Asia (including Russia). Unlike for Africa, no country accounts for a disproportionate share of the Chinese-owned mines on the continent. Indonesia, which hosts the most properties, accounts for seven, which primarily produce bauxite (3), nickel (3), and coal (1). Tajikistan is home to six properties, which primarily produce gold (3),

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<sup>12</sup> The company also held stakes in a Zimbabwean diamond mine as part of a joint venture with the Zimbabwean army's *Matt Bronze Enterprises*. However, production ceased after the Mugabe government accused the firm of stealing the country's diamonds in 2016.

antimony (1), coal (1), and lead (1). Myanmar hosts five of the properties included in the sample, which primarily produce copper (2), lead (2), and nickel. The Myanmar figure is almost certainly an underestimate, as a vast number of Chinese miners operate informally or semi-informally in the country's rare earths sector (see Global Witness, 2022). Finally, the remainder of China's mining properties in Asia is divided among many countries, including Kazakhstan (4), Mongolia (4), Kyrgyzstan (3), Laos (3), and Russia (3). Oceania accounts for 36 of the sampled properties, 34 of which are located in Australia. Australia, where the first Chinese foreign investment in a mine took place—hosts more Chinese-owned properties than any other country sampled. Chinese-owned mines in Australia run the gamut of resources. They primarily produce coal (15), copper (5), gold (4), iron ore (4), zinc (3), lithium (2), and manganese (1). Latin America and the Caribbean account for 16 Chinese-owned mining properties. Five of the properties are located in Brazil, including two that produce iron ore and the remainder that produce phosphates and/or niobium (the only mines included in the sample that produce these commodities). Then follow Peru, where three properties are located, and Jamaica, which hosts two mines. Finally, North America (Canada specifically) accounts for four of the properties included in the data and Europe for three.

Figure 1: Global Distribution of Chinese-Owned Mining Assets in Production (2022)



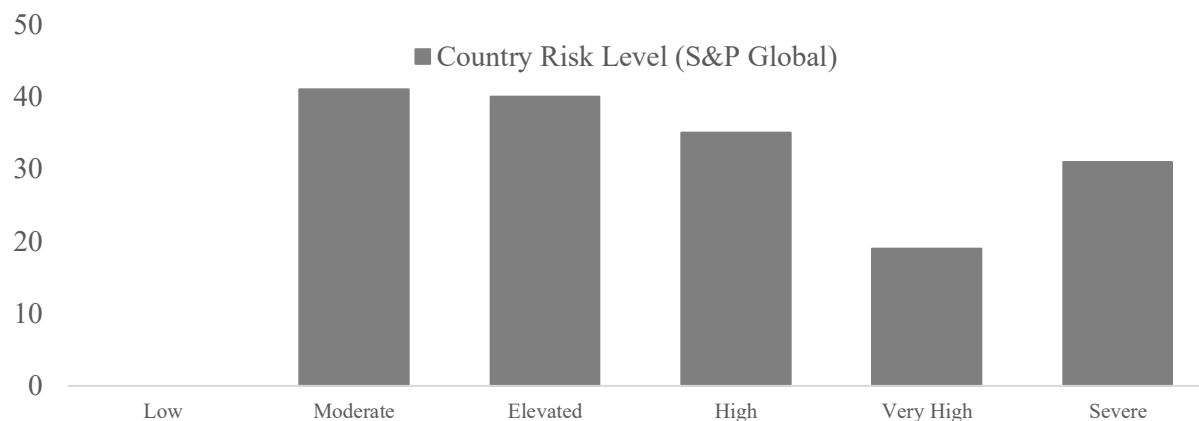
Source: Author's Data

When it comes to risk, Chinese investments appear to be concentrated in potentially perilous jurisdictions. More specifically, according to SPG's own risk taxonomy, which reflects political, economic, legal, taxation, operational, and security risk—and was selected because it covers the very categories that are particularly salient to foreign investors—the countries where Chinese-owned mining properties are located range in risk level from 1.3 (Finland), which corresponds to “moderate”, to 4.8 (Sudan), which SPG regards as “severe” (See Figure 2).<sup>13</sup> In addition to Finland (with one mining property), the only other countries classified as moderate that play host to active Chinese-owned mines are Australia (34 properties), Canada (4), and Colombia (1). At the “severe” end of the spectrum, 30 properties are located in the DRC in addition to the one in Sudan. Chinese companies' holdings in countries categorized as severely risky could be due to the fact that they are particularly risk-tolerant. However, a potential alternative explanation is that, as discussed by Landry (2021), Chinese investors, by virtue of being latecomers in many markets, are often

<sup>13</sup> Interestingly, only two countries—Brunei and Monaco—are categorized as having “low” risk levels by SPG. There is an additional category (“extreme”) included in SPG's risk taxonomy, though no country is categorized as such. The country categorized as having the highest risk level, Yemen, falls in the “severe” category.

limited in their investment options. Put differently, European investors, many of which have a history of investment dating back to colonialism, and their American counterparts, which have decades of experience, may have “locked in” safer assets. In a similar vein, it is worth noting that Chinese investors, in part due to their state-ownership, are often blocked from investing in some more advanced economies, as discussed above. For instance, none of the 166 Chinese-owned properties contained in the sample collected for this paper are located in the United States. And, though Chinese firms directly or indirectly own four mining assets in Canada, the Canadian government has, in recent years, sought to curb Chinese investment in the sector (Rajagopal, 2024).

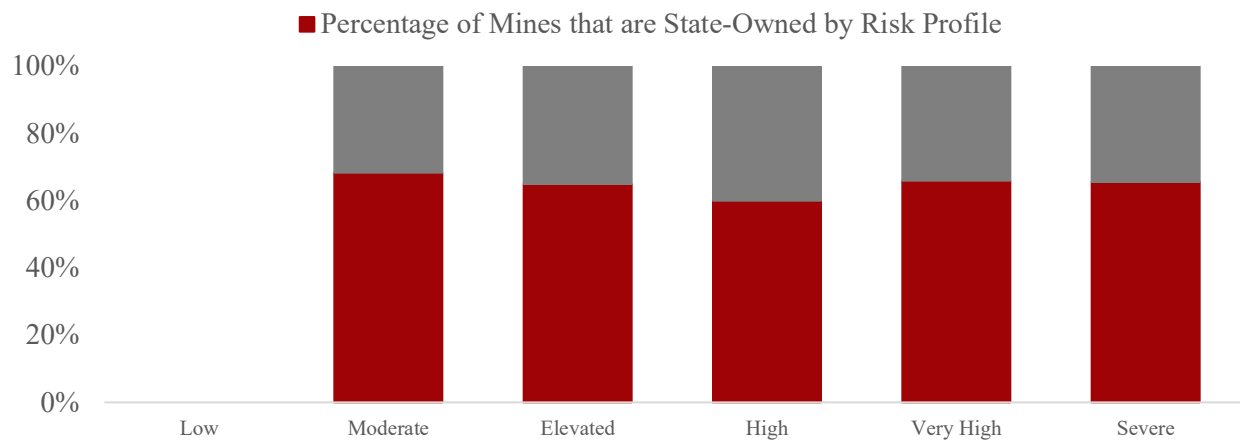
Figure 2: Number of Mining Properties by Country Risk Profile



Source: Author’s Data (Mines); SPG (Risk Profiles)

The sample of 166 mining properties collected for this paper does not suggest that Chinese private investors and SOEs differ in terms of the geographic distribution of their investments specifically when it comes to risk. Instead, as demonstrated by Figure 3, what the data suggests is that mines in both moderately risky countries and very risky countries are slightly more likely to be owned by SOEs compared to their counterparts in countries with high—but not critically so—levels of risk. One possible explanation for the fact that SOE ownership is relatively high for mines located in “moderate” countries might be the fact that Chinese SOEs began investing abroad much earlier than their private counterparts and that Australia was an early destination for their investments. As mentioned above, the first investment in a foreign mine by a Chinese company took place in Australia when, in 1987, Sinosteel entered a joint venture with Rio Tinto to exploit the Channar iron ore mine (Rio Tinto, 2017). A potential explanation for why SOEs are not more represented in severely risky countries—and the DRC specifically, which is a relatively recent investment destination for Chinese firms—is the proliferation of small-scale private mining companies operating in the country, many of which are Chinese. A Chinese interviewee I met in the DRC in 2016 explained that, due to the growing Chinese demand for copper and cobalt and the large and growing Chinese presence in the Congolese copper belt, many small private investors were eager to set up mining operations in the area.

Figure 3: State Ownership Share by Risk Profile



Source: Author's Data (Mines); SPG (Risk Profiles)

### 3.4 What commodities do Chinese-owned mines produce?

China's demand for minerals—and the investments that follow—are largely driven by economic factors. Consider the fact that, between 1980 and 2020, China's total annual steel production grew almost 30-fold, and it now produces more steel than the rest of the world combined, and the same quantity of steel as the United States' total production from 1900 to 1938 (United States Geological Survey, 2023; World Steel Association, 2024). Furthermore, China is the world's most important refiner of—among many others—rare earth elements, cobalt, copper, nickel, and lithium (Castillo and Purdy, 2022). This vast metal production helps explain why Chinese demand for minerals is so strong. As Humphreys (2015, p. 62) puts it, “Mineral supplies are not just a matter of commercial importance for individual enterprises. Their availability plays a part in China's broader development ambitions and in the ability of the economy to grow and to create jobs.” Beijing expects that its reliance on critical minerals will continue to grow in years to come, as China pursues a leadership position in the green energy and electric vehicle sectors. *Made in China 2025*—an ambitious industrial policy initiative aimed at rapidly growing China's high-tech sectors and advanced manufacturing base (McBride and Chatzky, 2019)—is the most visible example of the government's expansive vision. Simply put, becoming a high-tech manufacturing superpower necessitates vast quantities of mineral resources.

In terms of commodities secured via Chinese mines globally, as Figures 4A and 4B demonstrate, copper, which is the primary output of 55 of the 166 active mining properties identified in this research, and a byproduct in ten more, is by far the most important. In fact, copper is the primary commodity produced by almost twice as many properties as second place gold—which is the primary output of 23 properties and a byproduct of 24 more. In third place comes coal, which is the primary output of 22 properties. Finally, Chinese companies own 14 iron ore mining assets around the world, and four additional properties produce iron ore as a byproduct. Interestingly, none of the 166 properties included in the sample primarily produce silver, though silver is a byproduct of 34 of them.

Figure 4A. Properties' Primary Commodity

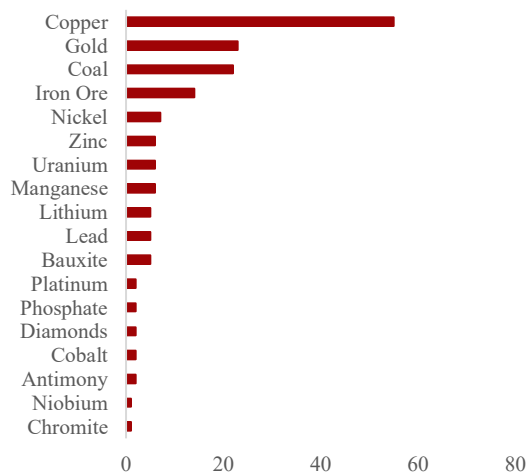
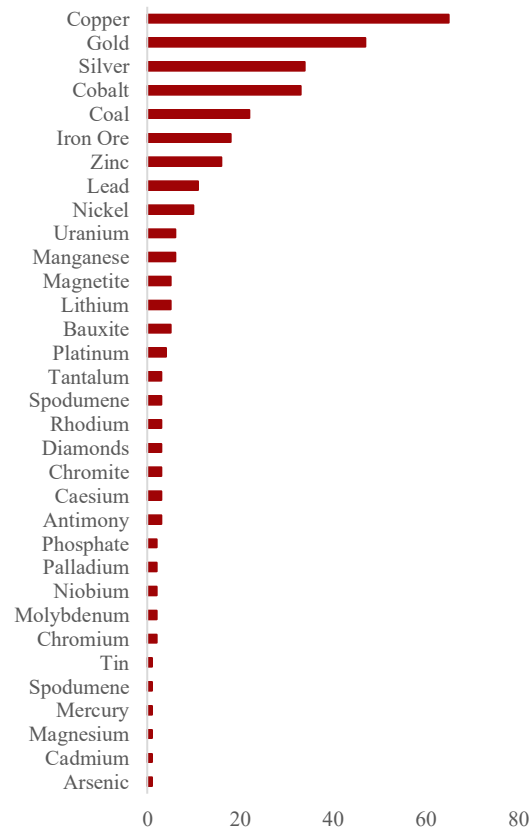


Figure 4B. Properties' Commodity Exposure



Author's calculations using author's data

Unsurprisingly, the output of Chinese-owned mines abroad in many ways reflects the needs of Chinese industry. During the early years of China's economic miracle, much of the mining investments undertaken by Chinese firms were in the iron ore sector, which was critical to steel production (Humphreys, 2015). As discussed earlier, many of the mines were located in Australia, where Chinese miners continue to operate extensively (Ibid.). Starting in the late 2000s and early 2010s, Chinese companies acquired a large number of copper mines around the world, especially in the DRC (Landry, 2018). Copper is used extensively both in infrastructure development—copper wiring undergirds electricity grids everywhere—and for industrial applications. In fact, modern internal combustion engine cars contain more than 20 kilograms of copper while their battery-powered counterparts contain about four times as much (Copper Development Association, 2025). Finally, in recent years, many Chinese mining investments have taken place in the lithium sector, as lithium represents the cornerstone of the battery age. The International Energy Agency (IEA) predicts that, by 2040, if we are to honor our climate change commitments, demand for lithium will increase more than forty-fold (2022). Chinese demand is at the center of this phenomenon, and Chinese mining investments have followed. According to my own research, Chinese firms directly or indirectly held large stakes in 13 of the 19 most productive lithium mines in the world in 2022, including the four largest. In many cases, these stakes were acquired by investing in lithium producers themselves, as took place in 2018 when Tianqi Lithium acquired a 23.77% stake in Chile's Sociedad Química y Minera de Chile (SQM), the world's largest producer, from Canadian firm Nutrien (Reuters, 2018).

### *3.5 How have Chinese firms approached mines acquisition?*

Buckley (2008) forcefully argues that a special theory of FDI model is needed to understand the extractives sector. One of the key reasons he lists to explain this need is the rise of China as a new and enormous source of both capital and demand for resources. Furthermore, he notes that “emerging country multinational enterprises are prominent in the extractive industries” and “a number of prominently foreign investors in the extractive industries are state owned firms”. To explain his reasoning, Buckley outlines factors that are unique to the extractive sector: resource deposits are geographically fixed; investments cannot be carried out gradually (mines are “lumpy and not easily scalable”); investments tend to take place in distant and culturally distant (from the point of view of investors) settings; and much of the activity in mining projects is difficult to subcontract (Ibid.). While Buckley is right in pointing out that general theories of foreign investment tend to perform poorly in explaining resources investment, as the previous sections make clear, the prevalence of SOEs in China’s mining sector makes it so even specific theories about extractive sector FDI might fail to explain Chinese investments around the world. Furthermore, as the paragraphs that follow demonstrate, how Chinese firms approach investment is a highly dynamic phenomenon and important changes have taken place in recent decades.

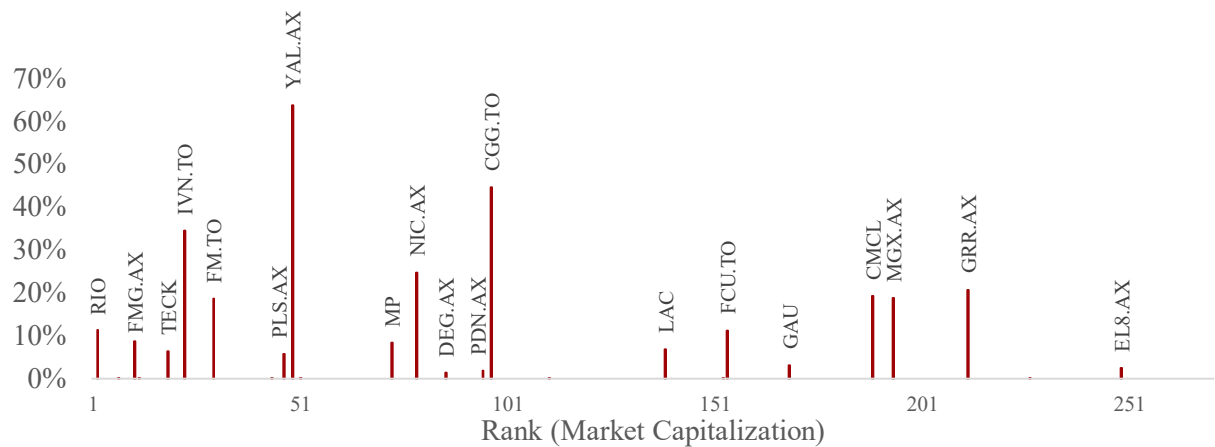
Many Chinese mining companies have faced important hurdles in expanding overseas (Humphreys, 2015). First, until recently, mining in China was rudimentary, and Chinese firms lacked some of the technical knowhow or technologies taken for granted by their competitors. As Humphreys puts it, mining was “suboptimal from a technical point of view, with low-tech operators ‘picking the eyes out’ of deposits and rendering them uneconomic for large-scale mechanised mining” (2015. p. 75). Furthermore, in China, the mining sector was highly fragmented, with small mines dotting the landscape and a notable lack of large, highly mechanised mines (Ibid.). Outside China, permitting processes were often more complex and involved more stakeholders than Chinese companies were used to (Ibid.). Finally, Chinese firms far from their home bases could not rely on their usual networks of reliable suppliers, and had to adapt to different business cultures, local labour requirements, and laws (Ibid.). As a result of these challenges, in the first years of China’s foray into mining around the world, investments have often featured deep-pocketed Chinese miners taking stakes in existing mining companies or mines but letting their minority partners continue to manage operations. As Abdenur (2017, p. 176) put it, “Chinese companies tend to ‘test the water’ through mergers and acquisitions, as well as joint ventures, before delving into greenfield activities like direct mining or drilling”.

This strategy offered another advantage. As was revealed to me in multiple interviews, by sending teams of mining engineers to learn about the operations of mines operated as joint ventures on-site, Chinese companies could adopt new methods and technologies to use in other properties. Another strategy that was routinely used and was described to me by the manager of a Chinese-owned mine in the DRC, was to purchase mines wholesale but retain as much of the management and staff from the previous operators as possible. This echoes Li (2009), who argues that many Chinese companies viewed joint ventures as opportunities to generate a series of advantages, including knowledge flows, technology transfer, and increases in innovation capabilities. As Huang and Zhu (2016) put it, mergers and acquisitions and joint ventures were viewed as incurring less risk than greenfield projects.

These dynamics are reflected in Chinese investments into foreign mining companies themselves. As Figure 5 demonstrates, many of the world’s largest mining companies feature substantial Chinese ownership stakes. In fact, seven of the largest 50 non-Chinese publicly traded miners—Rio Tinto, Fortescue, Teck Resources, Ivanhoe Mines, First Quantum Minerals, Pilbara Minerals, and Yancoal—feature substantial Chinese ownership. Furthermore, the largest Chinese investments in foreign miners largely took place before Chinese miners had themselves grown globally competitive. For instance, the Aluminum Corporation of China first took a stake in Rio Tinto in 2008 (before failing to increase it in 2009, as discussed above), Hunan Valin Iron & Steel invested in Fortescue in 2009, and the China Investment

Corporation initially took a stake in Teck Resources in 2009 (before offloading most of its holdings between 2017 and 2024).

Figure 5: Chinese Ownership (%) of Foreign Mining Companies by Market Capitalization



Source: Author’s Calculations (SPG Data)

Over time, however, Chinese miners have closed the gap with their competitors in terms of production technology and technical know-how. When I visited Chinese-owned and operated mines in 2024, my hosts were eager to demonstrate that their processes were as advanced as those found almost anywhere else. As a result, Chinese miners have become increasingly willing to invest alone and operate mines on their own. Though a combination of equity acquisition and lending, as Figure 4 clearly demonstrates, wholesale mine purchases are becoming increasingly common. More specifically, in large part thanks to these outright acquisitions, between 2002 and 2022, the average Chinese holdings in foreign mines where Chinese firms owned at least 10% increased from 60% to 81%.

Figure 4: Average total Chinese ownership stakes in foreign own mines, 2000-2022

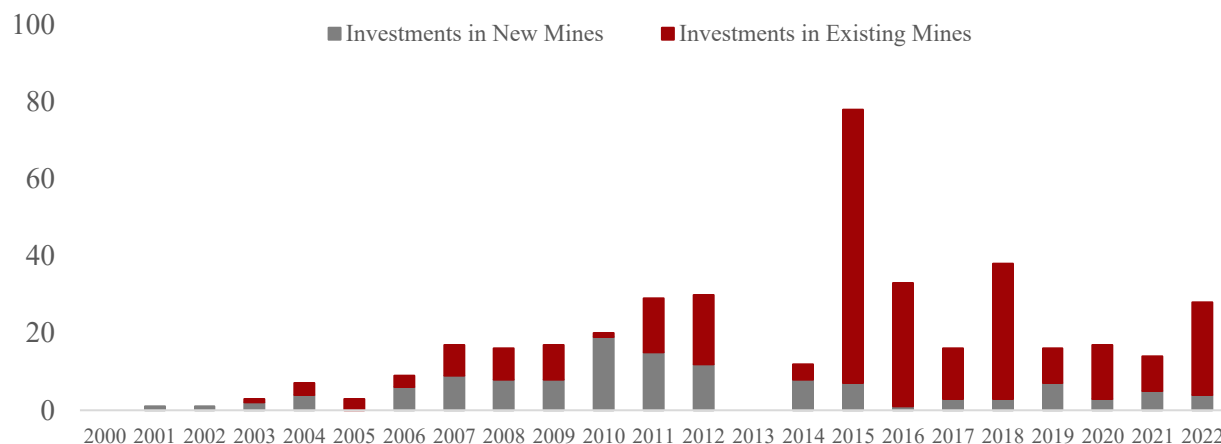


Source: Author’s calculations (SPG Data)

Another important change that has taken place with regards to Chinese firms’ investment strategies is a distinctive shift towards investing in existing mining operations rather than developing them from scratch. This shift towards brownfield investments, which is illustrated in Figure 5, is explained by both a drop in investments in new mines by Chinese companies (the part of the graph that is shaded in grey) and an increase in investments in existing ones (the part shaded in red). This dynamic may be explained by the fact

that during the 2010s commodity prices slump, Chinese companies bought an unprecedented number of mines around the world. In fact Chinese miners acquired stakes in more than 40 mines located outside China per year between 2010 and 2019, on average.

Figure 5: Chinese Mine Investments by Mine Type (New vs. Existing), 2000-2022



Source: Author's Calculations (SPG Data)

Part of the phenomenon illustrated in Figure 5 may be explained by the price dynamics of metals and minerals. As discussed in the introduction, metals and minerals prices skyrocketed during the first decade of the century. Though they dropped during the 2008 recession, they quickly recovered and peaked again in early-2011 (Federal Reserve Bank of St. Louis, 2025). What followed, however, was a steady drop in metals and minerals prices that took place over five years (Ibid.). During that period, Western miners' revenues cratered, and they faced difficulties securing credit. This liquidity crunch forced many companies to offload assets, and many mines were made available for purchase (see, for example, FP Analytics, 2019). This increased supply of mines, paired with lower prices for the commodities they produced, significantly reduced the price of assets. As discussed earlier, Chinese companies—and SOEs in particular—did not face such cash flow problems. Chinese miners, metals producers, and investors could borrow relatively cheaply from China's policy banks and state-owned commercial banks. Therefore, they were able to capitalize on opportunities to buy mines cheaply.<sup>14</sup>

#### 4. Conclusion

This paper, by leveraging three new datasets and dozens of interviews, elucidates previously underexplored aspects of Chinese mining sector investments around the world. First, it sheds new light on the Chinese companies investing abroad and the importance of SOEs to the sector. More specifically, SOEs accounted for 106 of the 166 active Chinese-owned properties around the world identified for this work. Second, it highlights the geographical distribution of Chinese mines globally, with a focus on Chinese investors' risk tolerances. Though more Chinese-owned mining assets abroad are located in Australia than any other country, Chinese-owned mines are concentrated in high-risk countries—with the DRC representing an especially important destination for investment. Furthermore, Chinese SOEs and private firms do not differ

<sup>14</sup> This dynamic was not limited to Chinese miners. Commodity traders, which can hedge against commodity price swings and remain liquid even during downturns, were not affected by the drop in minerals prices in the same way as miners. Therefore, they also began to invest in mines. For instance, Glencore—which saw its cash reserves increase from US \$1.35 billion at the end of 2011 (Glencore, 2011) to US \$2.85 billion in at the end of 2013 (GlencoreXstrata, 2013)—merged with mining giant Xstrata in May 2013 (Ibid.). Though it also sold mines in the intervening years—including its prized Las Bambas copper project to China's MMG (Reuters, 2014)—it then purchased or increased its stakes various mines in the DRC in 2017 (Glencore, 2017).



markedly in terms of risk tolerance, though these dynamics may be explained by factors specific to Australia and the DRC. Third, this paper breaks down the commodities produced by Chinese-owned mines. Copper—which is critical for infrastructure development in China itself and for the industries prioritized by the government—is by far the most important commodity secured through foreign mining investment, followed by gold (23 of the 166 properties), coal (22 properties), and iron ore (14 properties). Finally, this paper explores the changing strategies that have been used by Chinese firms in acquiring mining assets overseas, including the increasingly common practice of taking over existing mines instead of entering joint ventures.<sup>15</sup>

Given the increasing focus on critical minerals in Washington—President Trump floating the annexations of Canada and/or Greenland and his attempts to secure Ukraine’s rare earths, all within the first weeks of his presidency, share critical minerals as a rhetorical thread—this paper has important policy implications. Many Western analysts portray China’s resource investments, especially in the developing world, as a contemporary form of gunboat diplomacy (and Washington appears poised to turn towards a more aggressive approach to secure minerals). However, as this paper demonstrates, many of the advantages enjoyed by Chinese firms in investing around the world are financial: they can access credit at lower rates than their competitors and are often directly or indirectly supported by Beijing’s development finance. Furthermore, Beijing maintains an unparalleled network of embassies and consulates around the world, which help facilitate commerce. In short, the Chinese government plays a critical role in facilitating Chinese mining investments, but largely does so through financial heft and soft power.

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<sup>15</sup> It is worth noting that the dynamics discussed in this paper do not account for all Chinese minerals acquisition. As discussed in the introduction, much of China’s minerals imports continue to be secured on open markets, rather than through “captive mines”. Furthermore, offtake agreements continue to play an important—though underexplored—role in China’s resources acquisition (and represent an area on which future scholarship could focus).

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