Silver Monitor

Capitalight Research Inc.

November 22, 2022

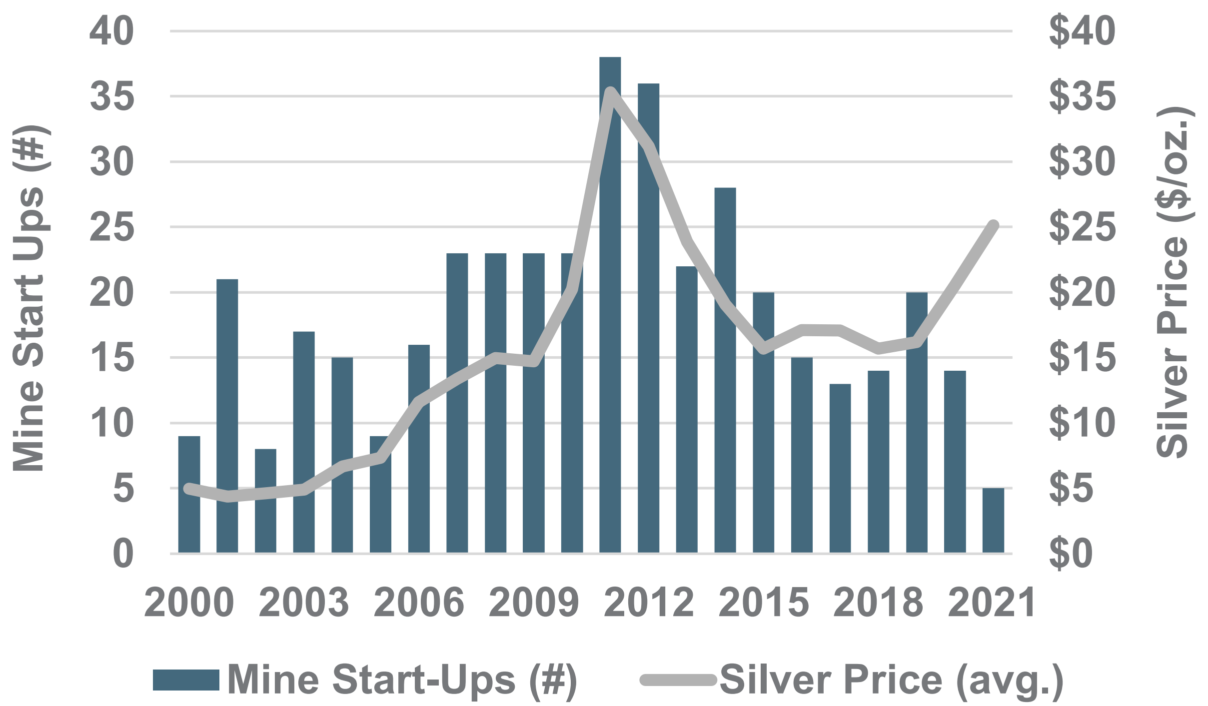
Dr. Tom Brady
Tom@capitalightresearch.com
Chantelle Schieven
Chantelle@capitalightresearch.com

Global Silver Mine Trends & Geopolitical Risks

In our October 2022 *Silver Monitor*, we reviewed primary and by-product silver mine trends that have been commissioned since 2000. This month we extend the analysis to incorporate geopolitical risks associated with relatively new mines as well as for overall global silver mine supply.

Discussed last month, Figure 1 displays the annual count of mines that recorded 1st silver production by year since 2000. Under this analysis, there have been ~415 silver related mines opened since 2000. As shown on the figure, mine starts have generally coincided with silver prices, peaking in 2011 with 38 mines recording first silver production[1]. Silver mine commissioning has trended downward since 2019, with only 5 operations recording first production in 2021.

Figure 1: Global Silver Mine Start-Ups Since 2000



Source: Capitalight Research

1. This is a bit surprising as the majority of global silver mine supply comes as by-product from lead/zinc, copper and gold primary mines. As such silver mine supply should be less responsive to sustained increases and decreases in silver prices and influenced more by market trends in lead and zinc, followed by copper and gold.

Credit Ratings

A credit rating is an evaluation of the credit risk of a debtor (an individual or company) which relates their ability to pay back debt. An overall credit rating is generally a mix of quantitative (such as debt related financial ratios) and qualitative (diversity of revenue, management, etc.) information on the debt entity. A sovereign credit rating is the rating of a national government and indicates the risk level of the investing environment and also takes into account political risk (government and economic stability). There are three main credit rating agencies including S&P, Moody's and Fitch. Table 1 provides a summary of various credit quality levels used by S&P and Moody's when evaluating corporates and sovereigns, with AAA and Aaa, respectively being the highest quality rating with minimal risk to an investor. Ratings below this highest quality have increasing levels of risk. Debt issues with ratings from BBB- to BBB+ (for S&P) and Baa3 to Baa1 (for Moody's) are subject to moderate risks and are considered medium-grade (and may possess some speculative characteristics). BBB- (Baa3) are the lowest rating that is still considered investment grade, with lower ratings deemed sub-investment grade and possess increasing levels of credit risk to eventual default.

A sovereign credit rating is the rating of a national government and indicates the risk level of the investing environment and also takes into account political risk (government and economic stability).

Countries with the highest credit ratings that also produce significant silver include Australia, Canada and Sweden. U.S. credit is currently graded a level below at AA+ (Aa1). Both Mexico and

Table 1: Credit Quality Levels for S&P and Moody's

Soverign Credit Quality	Issuer	
	S&P	Moody's
Highest Quality	AAA	Aaa
High Quality	AA+ to AA-	Aa1 to Aa3
Strong Payment Capacity	A+ to A-	A1 to A3
Adequate	BBB+ to BBB-	Baa1 to Baa3
Likely to Meet Obligations (ongoing uncertainty)	BB+ to BB-	Ba1 to Ba3
High Credit Risk	B+ to B-	B1 to B3
Very High Credit Risk	CCC+ to CCC-	Caa1 to Caa3
Near Default	CC	Ca
Default	D	C

Source: Bloomberg, Capitalight Research

Peru have grades of BBB (Baa2) or one level above BBB- (Ba3) which is the lowest level considered to be "investment grade". The credit agencies have also applied a "negative outlook" on Peru due to the deteriorating stability and effectiveness of the national government.

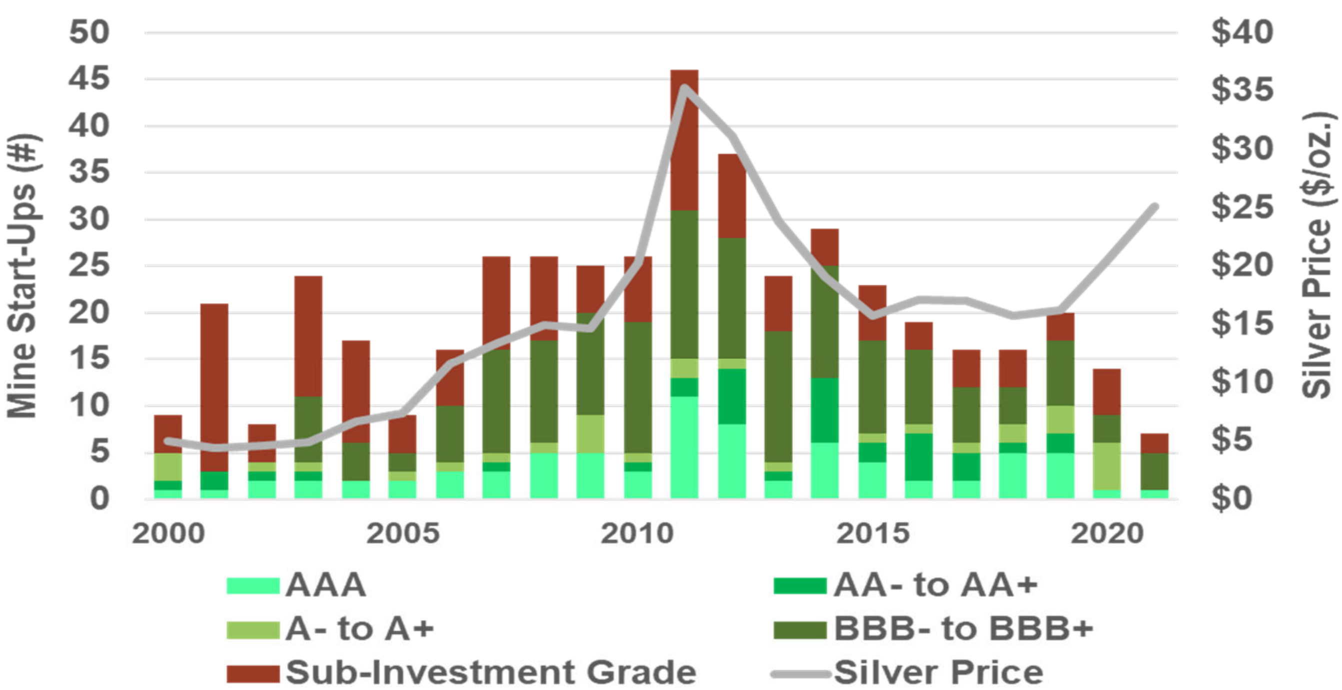
Countries with credit ratings of B+ and below are deemed sub-investment grade and are considered speculative. Due to the higher current and anticipated risks, sub-investment grade bonds will carry significantly higher interest rates. For example, Bolivia, with a long-term bond rating of B+ (or B1) currently has a spread of nearly 400 basis points (or 4%) higher than that of highest quality, Canada. Argentina which has an extremely low sub-investment grade of CCC- has a spread well over 3,000 basis points (or 30%) over that of Canada.

Countries with credit ratings of B+ and below are deemed sub-investment grade and are considered speculative. Due to the higher current and anticipated risks, sub-investment grade bonds will carry significantly higher interest rates.

New Silver Mines & Sovereign Risk

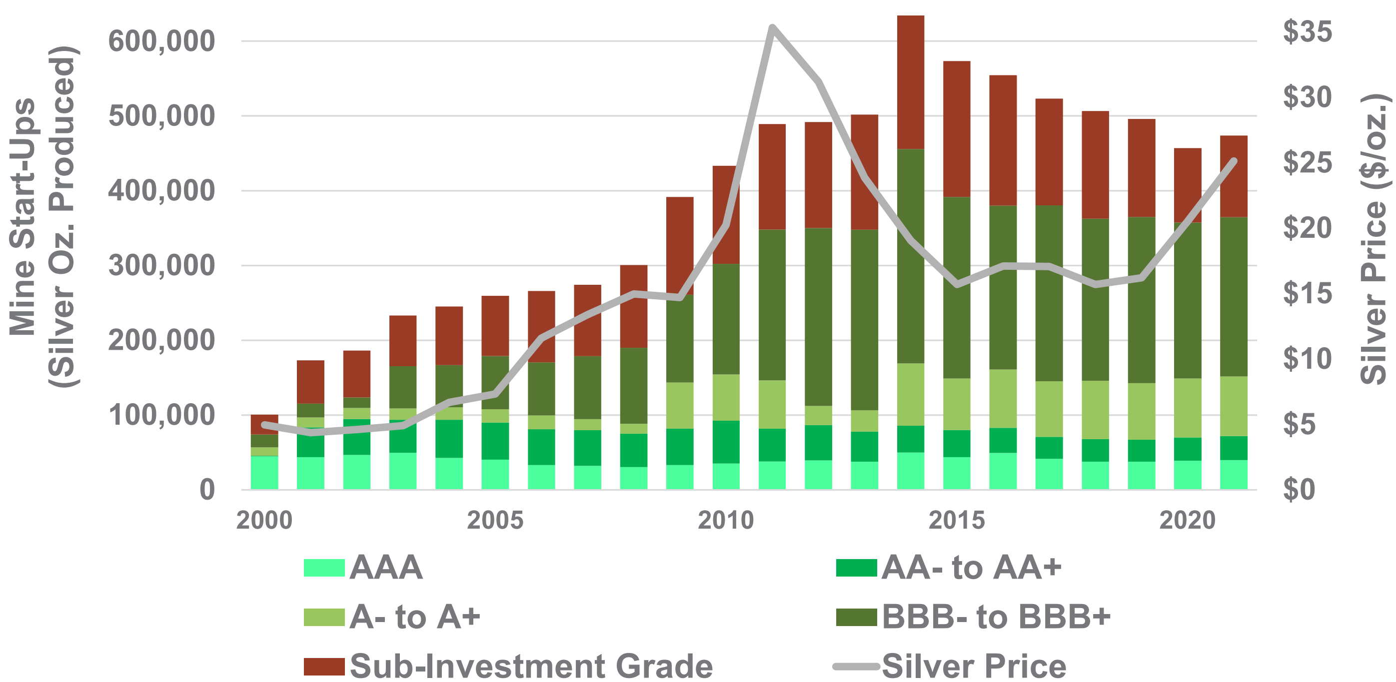
Figure 2 builds on Figure 1 through identifying silver mine start-ups by country credit rating. As depicted by the red stacked bars, during the silver price run up, from 2000 through 2011, a significant amount of the new mines were commissioned in geopolitically risky areas. On average during this period, nearly 40% of mines each year were opened in countries with sub-investment grade ratings. This average has dropped to 16% since the post 2011

Figure 2: New Silver Mine of Start-Ups, By Sovereign Credit Ratings



Source: Bloomberg, Capitalight Research

Figure 3: New Silver Mine Production, By Sovereign Credit Ratings



Source: Bloomberg, Capitalight Research

price decline Mining companies have reduced their appetites for investing in operations in the more geopolitically risky areas.

Figure 3 shows silver production from these relatively new mines, also by country credit rating. Note the relatively flat production from new mines in AAA and AA- to AA+ countries (collectively averaging ~80M ounces annually) since 2000. While production has generally climbed from new mines in sub-investment grade countries, the bulk of production comes from the mid-grade (or BBB- to BBB+) graded countries (Peru, Mexico, …). Over the last decade, over 230M silver ounces have been produced from mines in mid-grade countries.

Silver production has generally climbed from new mines in sub-investment grade countries, the bulk of production comes from the mid-grade (or BBB- to BBB+) graded countries (Peru, Mexico, …). Over the last decade, over 230M silver ounces have been produced from mines in mid-grade countries.

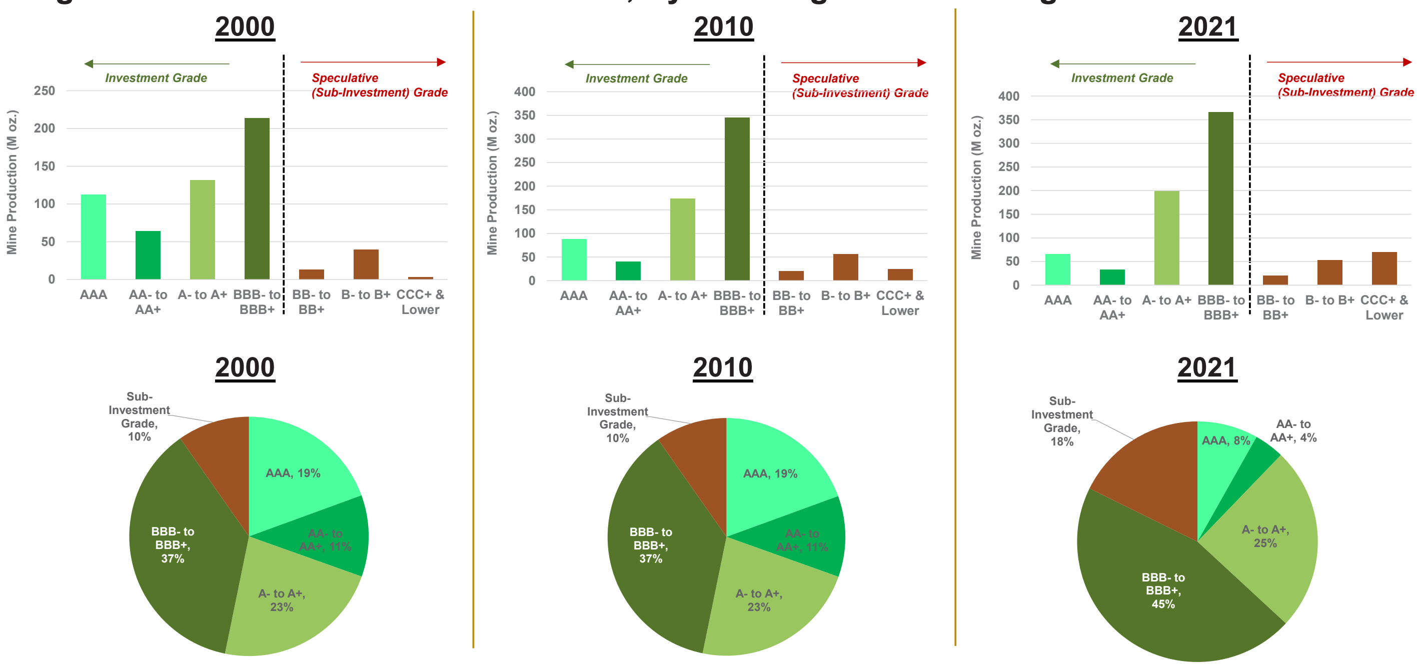
Global Total Silver Mine Supply & Sovereign Risk

For total silver mine supply, Figure 4 summarizes production trends by sovereign credit quality. In 2000, ~55% of global silver production came from countries with an A- (A1) rating or higher, with 37% from mid-grade countries (BBB- to BBB+) and 10% from sub-investment grade. In 2021, the percentage share from A-rated or higher countries fell to ~37% of the global total, with mid-grade countries contributing 45%. Last year, 18% of global mine supply (~143M ounces) came from sub-investment grade countries.

For mining companies, investors and other stakeholders having a solid understanding of sovereign credit ratings is needed as these may indicate issues from which a government is unable or unwilling to meet loan obligations. Many mining companies incorporate sovereign credit risks into their investment decisions through a mix of quantitative methods (such as including this risk in calculating discount rates) and qualitatively methods (which may include 3rd party proprietary geopolitical risk assessments, etc.). Next month we will include estimates of country risk for the key silver producing countries.

Many mining companies incorporate sovereign credit risks into their investment decisions through a mix of quantitative methods and qualitatively methods.

Figure 4: Global Silver Mine Production, By Sovereign Credit Rating



Source: Bloomberg, Capitalight Research

Disclaimer

The views expressed in the research report regarding any particular company, security, industry or commodity price are the independent and personal opinions of the research analysts and their associates. Views expressed herein should not be considered as a recommendation to buy or sell nor should they be relied upon as investment advice. Past performance is not a predictor of future results. Individual investment results may vary, and all investing involves risk of loss. You are responsible for your own investment decisions. Information contained in this report is current as of the date of publication and has been obtained from third party sources believed to be reliable. Capitalight Research Inc., and its affiliates, do not make any representations regarding the accuracy, completeness or reliability of any information contained herein and does not accept any responsibility or liability for any loss or damage caused by a reader's reliance on any information contained herein. Research analysts and their associates are prohibited from trading against their investment opinion, if any has been expressed. The compensation of the research analyst and their associates are not linked directly or indirectly to their opinions or to the performance of any particular company or security. Capitalight Research Inc. has not provided any consulting, advisory, investment banking or paid-for research services to any of the companies named in this research report. The research analyst or associate do not own shares of the companies named in this research report. Capitalight Research Inc. maintains a Restricted List of securities with pending research reports. Any employees, including their spouses and dependents, that are aware of pending research reports are restricted from trading securities on the Restricted List until the research report has been fully disseminated.

Anti-Spam

You are receiving this material from Capitalight Research Inc. located at 130 King St West, Suite 1940, Toronto, Ontario M5X 2A2. Capitalight Research Inc. respects your time and your privacy. If you no longer wish us to retain and use your personal information for the purposes of distributing newsletters, reports or other commercial electronic messages, please let us know via email. For more information on our Privacy Policy please visit our website at www.CapitalightResearch.com.