

Silver market review and how to get exposure on the ASX

September 2019

JF Bertincourt, Terra Studio

Contents

BRIEF MARKET ANALYSIS

- Supply and demand
- Market size: gold v silver
- Price volatility
- Gold : silver ratio

ASX-LISTED SILVER COMPANIES

- Selection criteria
- ASX companies with silver exposure
 - Mineral resource benchmarking
 - Capital expenditure benchmarking
- Leverage through equities

Introduction

Mining is cyclical

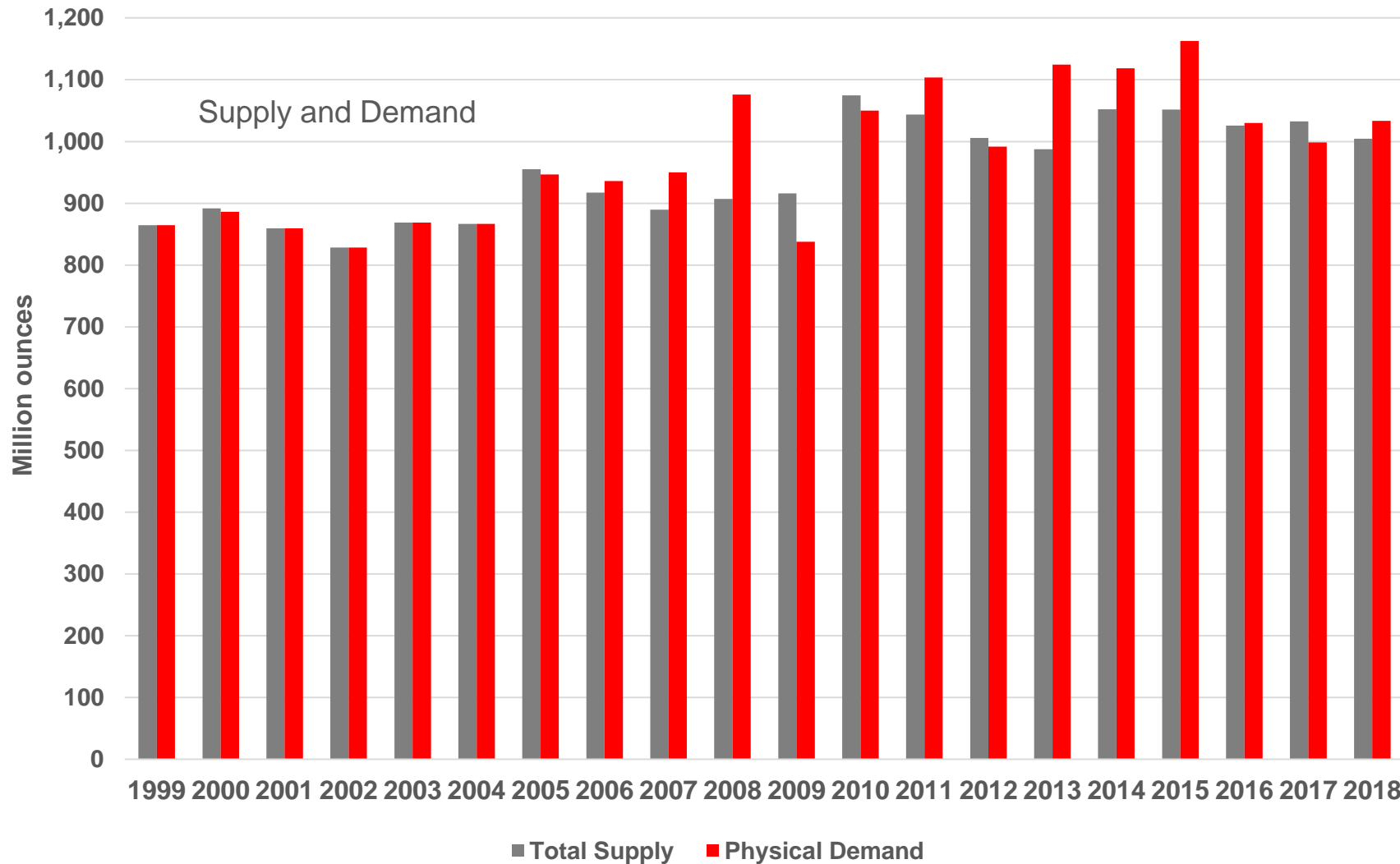
Timing is critical

Leverage

- Mining is cyclical: exploration & mining activities relate to economic activities, capital markets, metal prices
- Timing is critical: the value of a project and even the viability of a project is highly dependent of its development timing relative the underlying metal price cycle
- Valuation of mineral resources equities and properties is highly leverage to the underlying metal(s)

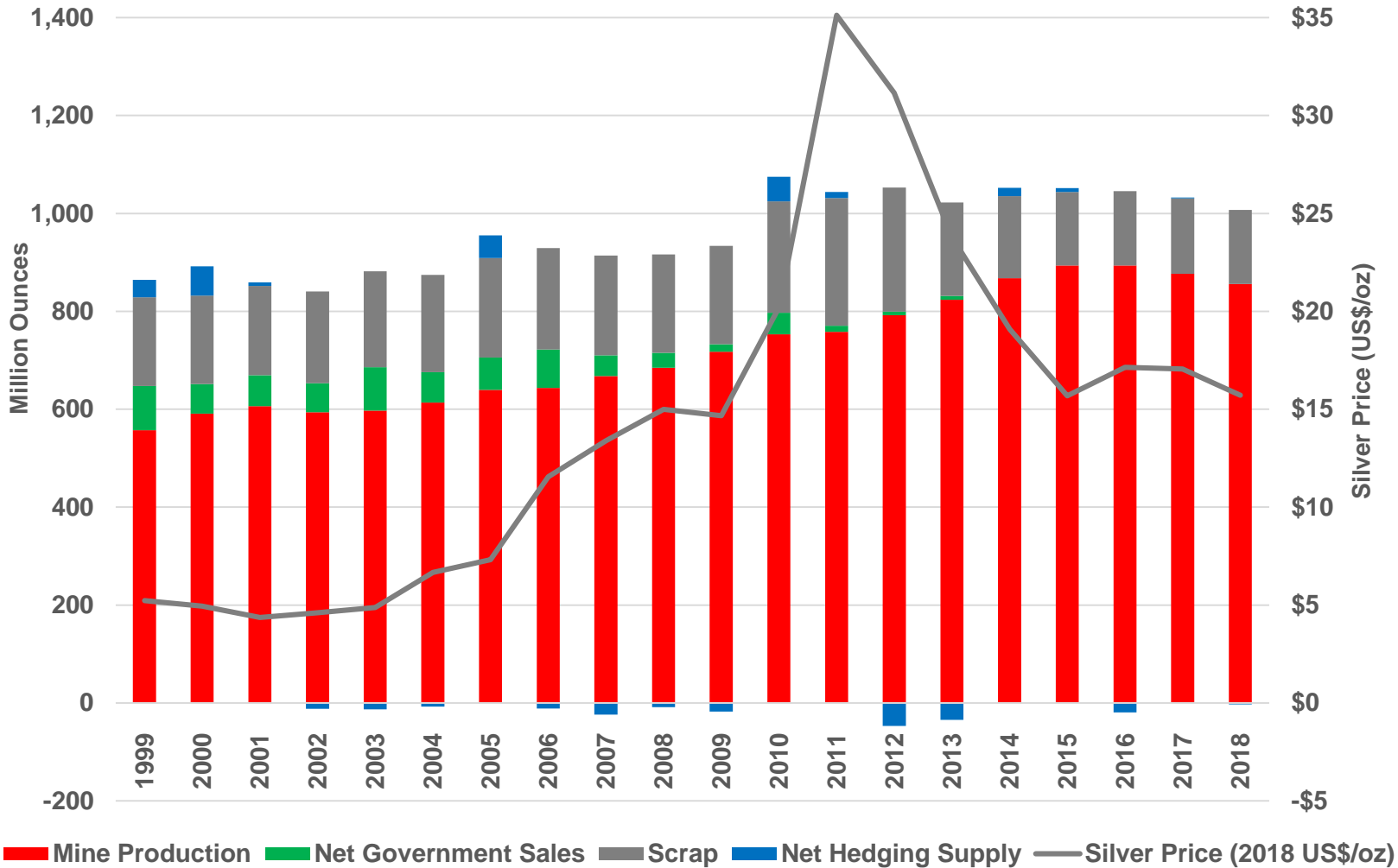
Some brief analysis of the silver market

Silver Supply and Demand



- Despite the industrial component of the silver demand, no global market trend can be defined

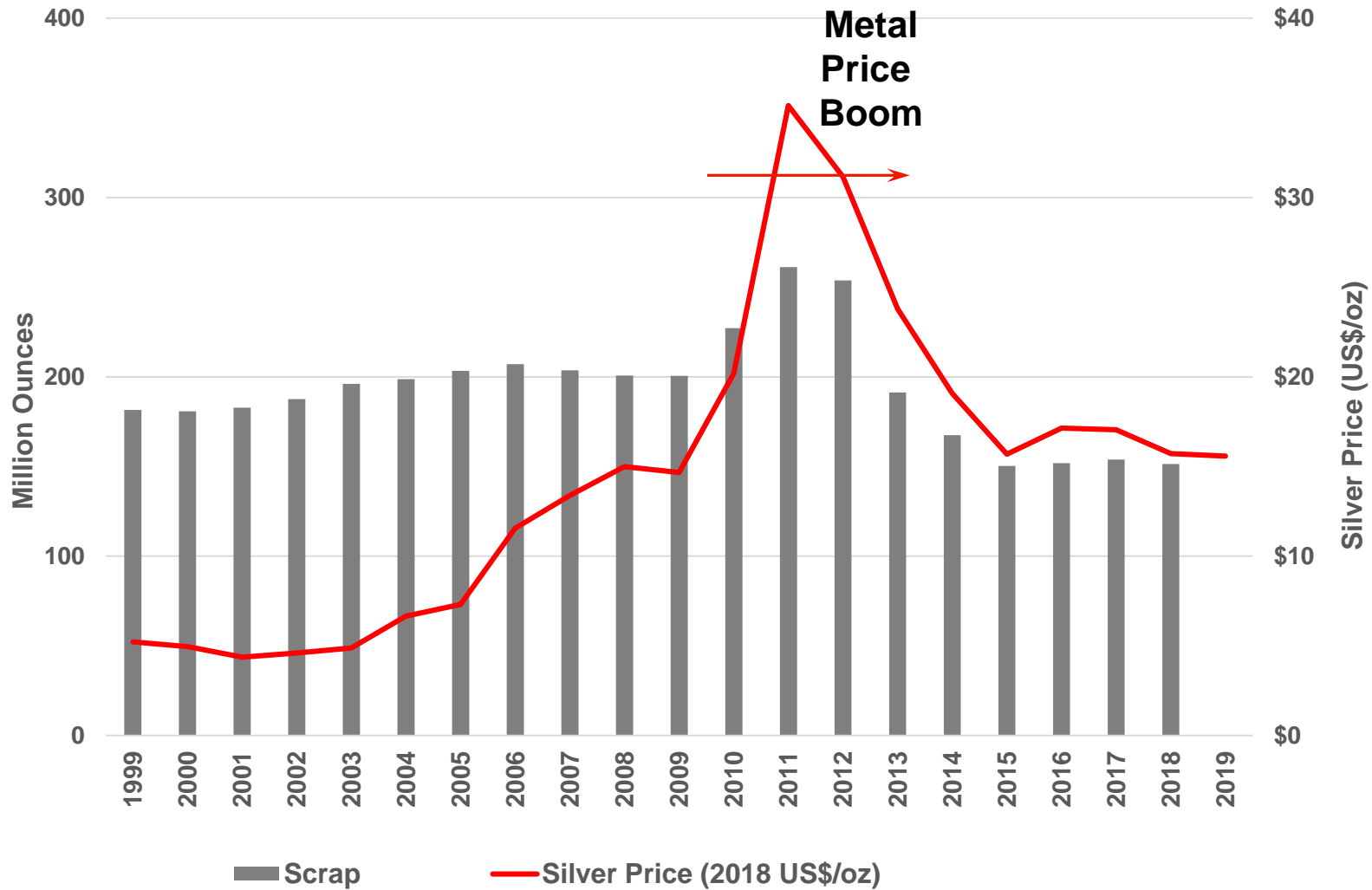
Supply Analysis



- Booming investment (178 Moz, +48%) was the prime cause of the 2010-12 price spike, helped by a strong rebound in industrial fabrication
- The price spike had the following effects in 2010:
 - Mine producers ended a four year run of de-hedging (61 Moz)
 - The government sales rebounded strongly (+183% to 45 Moz)
 - The availability of scrap reached a new record at 215 Moz (+13%)

Source: Silver Institute, Terra Studio

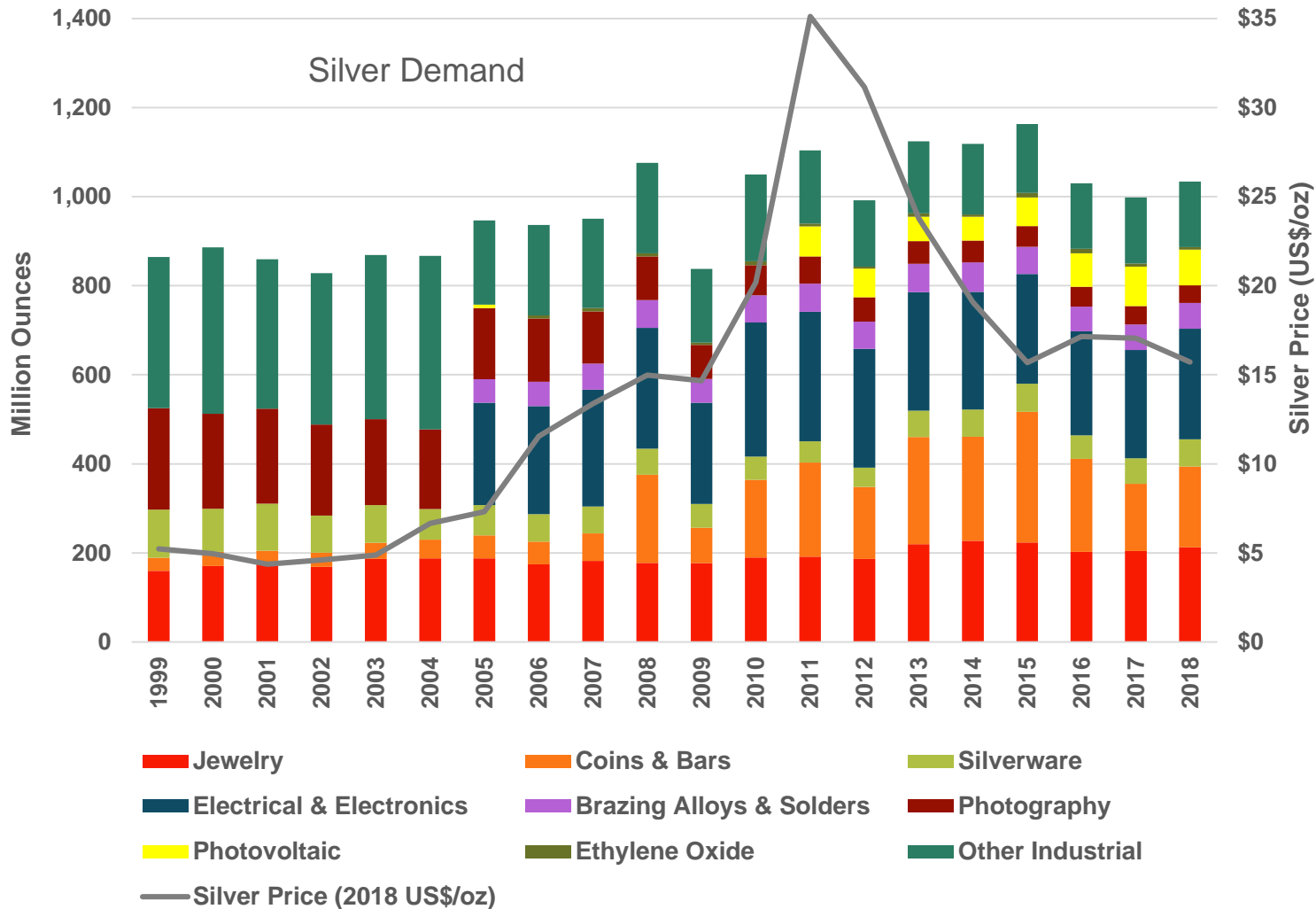
Scrap v Price



- The effect of a price spike on scrap availability is quite noticeable
- A similar effect can be expected should the silver price enter a new price boom
- Price as at 27 Sep 2019: US\$17.6/oz
- Where is that silverware from grandma?

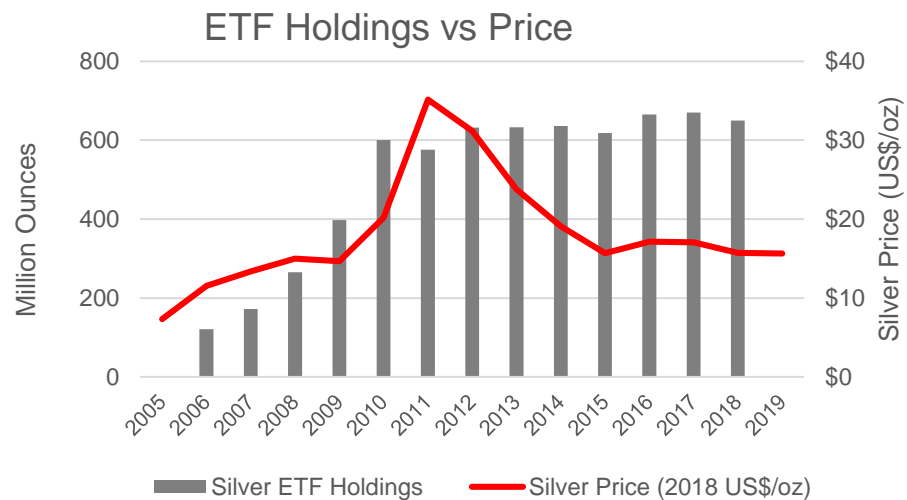
Source: Silver Institute, Terra Studio

Demand Analysis



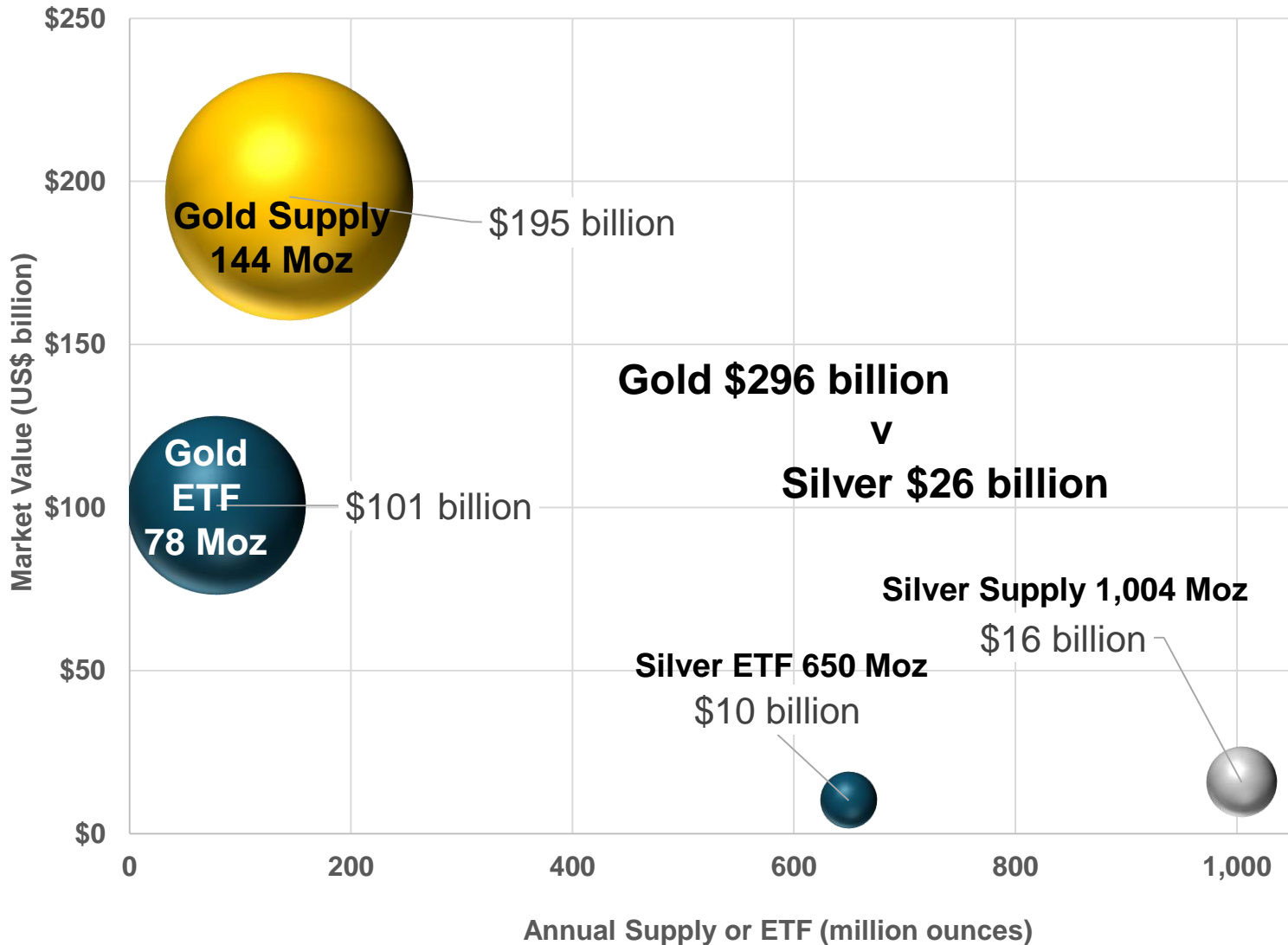
- Outside the continuous decline of silver use in the photographic industry, no trend can be clearly defined.
- Use of silver for solar panels has increased but not regularly
- Silver is used in a wide range of industries
- Nevertheless, the proportion of industrial use has reduced to 50-60% since 2010, from 60-70% in the early 2000's

Silver Price Key Driver



- In a context of stagnating global demand and based on the 2010-2012 price spike, financial investment (in gold and and silver) is likely to be the main price driver going forward
- There is some correlation between price and ETF Holdings
- Compared to 2016, the current price spike is associated with significantly higher volumes
- The iShares Silver Trust, a direct silver bullion ETF, is the largest silver ETF with nearly \$5 billion in AUM. That's more than the combined AUM of the 11 other major U.S. silver ETF

Market Size: Gold v Silver



- While one might consider that the silver market is 7x bigger due to its volume size: silver annual supply is 1 billion oz v 144 million oz for gold
- When combining annual supply and ETF holdings (at year end), the market value for gold is 11 times bigger than for silver
- This is a key factor for the higher volatility of silver compared to gold: money movements have a greater impact on the silver price than the gold price

Volatility: Gold v Silver

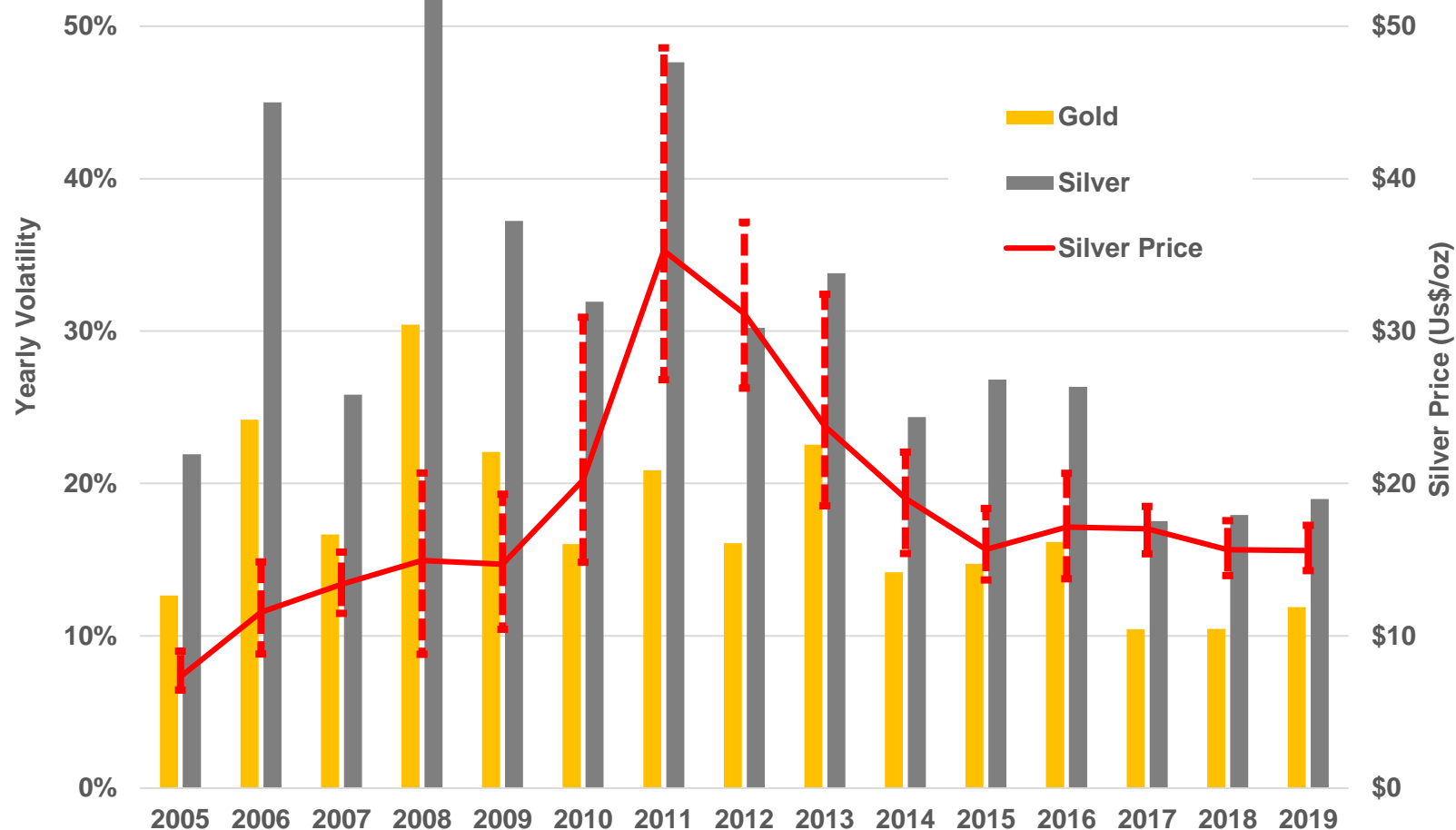
Period	Gain from 1970 low to 1980 high	Fall from 1980 high to 1985 low	Gain from 2008 low to 2011 high	Fall from 2011 low to 2016 low	Gain from 2016 low to now
Gold	2328%	-67%	168%	-43%	14%
Silver	3105%	-89%	453%	-72%	41%

Source: GoldSilver, Terra Studio

- Silver's higher volatility encourages some investors to use silver as a geared gold play
- However, higher potential return means higher risk as the volatility of silver is also high within a yearly time frame (next two slides)

Volatility: Gold v Silver

Volatility of silver prices is consistently above the volatility of gold prices



Source: Terra Studio

- In this chart, historical yearly volatility is defined by the formula below:

$$\sigma = \sqrt{\frac{\sum_{i=1}^n (r_i - m)^2}{n-1}}$$

Where:

σ = standard deviation

r_i = price returns

m = yearly average of data points

n = number of data points

- To annualize the standard deviation,

$$HV = \sigma \sqrt{T}$$

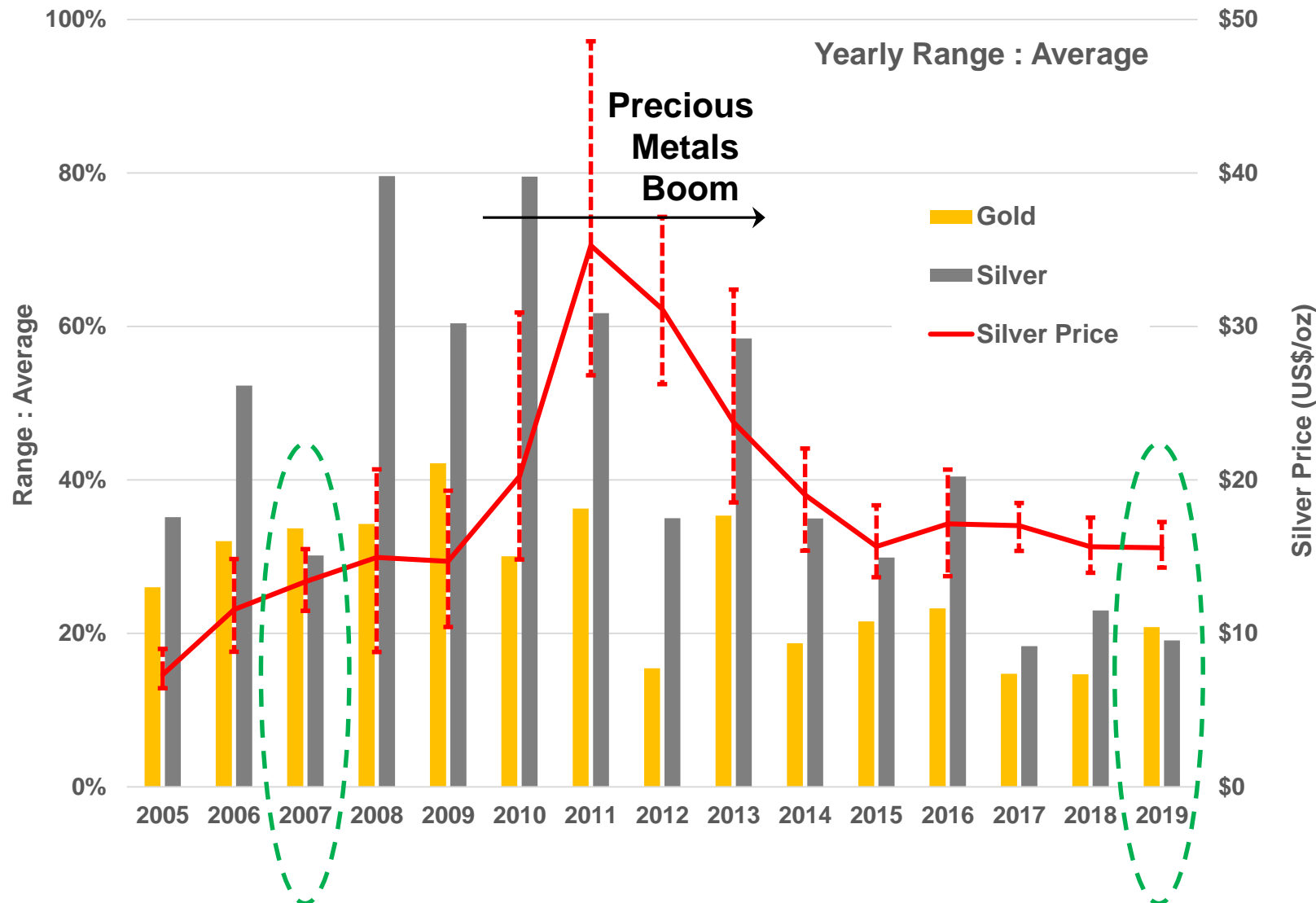
Where:

HV = historical volatility

σ = standard deviation

T = number of periods in year (252)

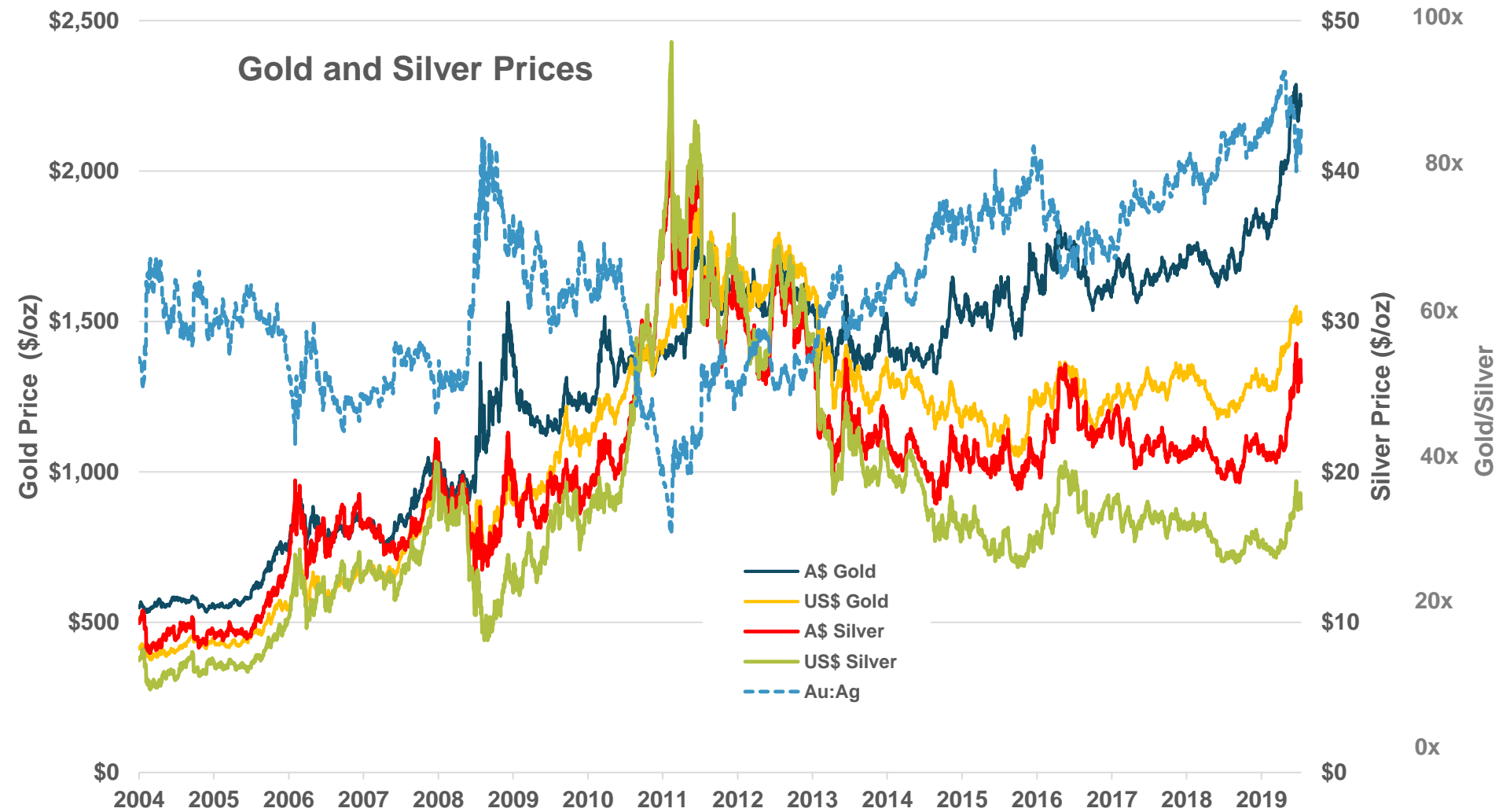
Volatility: Yearly Range : Average



- In this case, the volatility is simply expressed as the yearly range (max-min) divided by the yearly average
- Using this metric, the gold volatility is currently (2019 YTD) and exceptionally higher for gold than it is for silver
- This was observed in 2007 and was followed by a period of strong volatility for silver prices and a precious metals boom over 2010-2013

Source: Terra Studio

Gold : Silver Ratio



- The 50-year average of the gold to silver ratio is about 50x v 80x currently
- A number of commentators are of the view that silver should catch up on gold



How to leverage a potential new price boom?

Focus on the
ASX-listed companies

Selection Criteria

- Primary silver mines and projects are rare
- For this analysis, we have used the following criteria to select ASX-listed companies with significant exposure to silver:
 - More than 5,000,000 ounces of silver in attributable mineral resources
 - In-ground value of silver resource ranked 1st or 2nd among gold, silver, copper, lead, zinc (and barite)
 - In-ground value of silver resource representing in excess of 20% of total in-ground value
 - Metal prices used for in-ground value calculation are listed in the table below

Metal	Gold	Silver	Copper	Lead	Zinc
Price	\$1,400/oz	\$16/oz	\$5,700/t	\$2,000/t	\$2,250/t

NB. The ratio between the metal prices matters more than the actual prices.

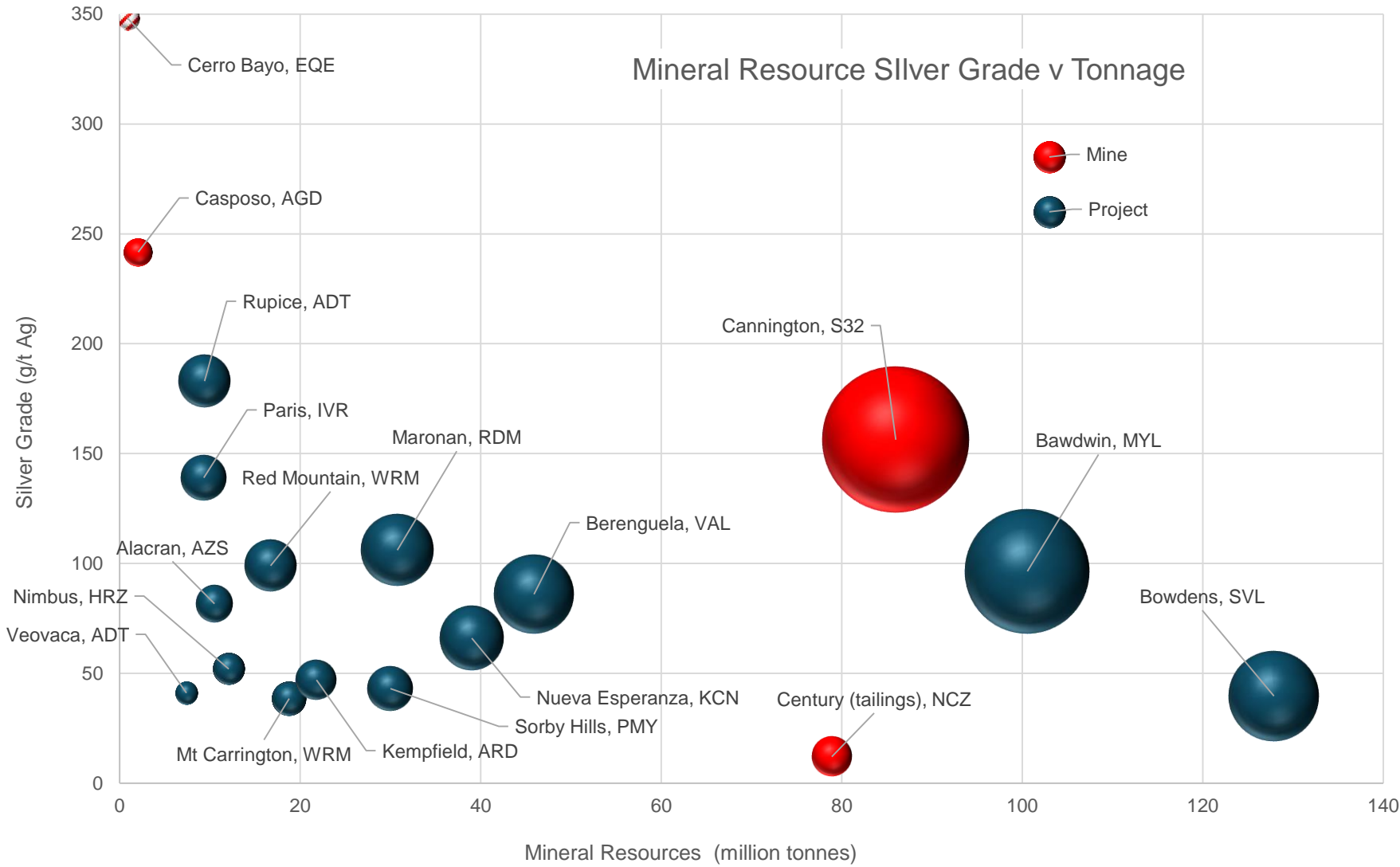
Selected ASX-Listed Companies

Code	Company	Project	Location	Stage	Own	Market Cap.	Ag exposure
IVR	Investigator Res.	Paris	SA	Working on PFS	100%	\$17.5	86%
SVL	Silver Mines	Bowdens	NSW	FS completed	100%	\$86.7	66%
EQE	Equus Mining	Cerro Bayo	Chile	Acquisition Option	100%	\$18.4	54%
VAL	Valor Resources	Berenguela	Peru	Working on PFS	100%	\$11.4	45%
WRM	White Rock Min.	Mt Carrington Red Mountain	NSW Alaska	PFS Dec 2017 Inferred Resource	100%	\$11.5	38%
ARD	Argent Minerals	Kempfield	NSW	Mineral Resource	100%	\$12.0	36%
NCZ	New Century Res.	Century	QLD	Operating	100%	\$165.7	35%
MYL	Myanmar Metals	Bawdwin	Myanmar	PFS May 2019	51%	\$75.4	34%
S32	South 32	Cannington	QLD	Operating	100%	\$12,951.0	34%*
AZS	Azure Minerals	Alacran	Mexico	Resource drilling	100%	\$33.3	34%
AGD	Austral Gold	Guanaco Casposo	Chile Argentina	Operating	100% 70%	\$42.7	27%
KCN	Kingsgate Cons.	Nueva Esperanza	Chile	PFS Apr 2016	100%	\$97.3	25%
RDM	Red Metal	Maronan	QLD	Scoping Study 2016	100%	\$20.6	22%
ADT	Adriatic Metals	Rupice + Veovaca	Bosnia	Mineral Resource	100%	\$158.2	25%
PMY	Pacifico Minerals	Sorby Hills	WA	PFS Mar 2019	75%	\$28.9	20%

- The silver exposure is defined as the ratio of the silver in-ground value vs the total in-ground value of the mineral resource
- Based on that metric, Investigator Resources, Silver Mines and Equus Mining offer the highest silver exposure
- South 32 was added to include the Cannington world class underground mine, FY2019 payable production:
 - 12,201,000 oz silver
 - 101,400 t lead
 - 51,600 t zinc
 - US\$161m EBITDA
 - US\$123/t ore processed costs

Source: Terra Studio. FS = Feasibility Study, PFS = Pre-Feasibility Study, * based on Cannington only

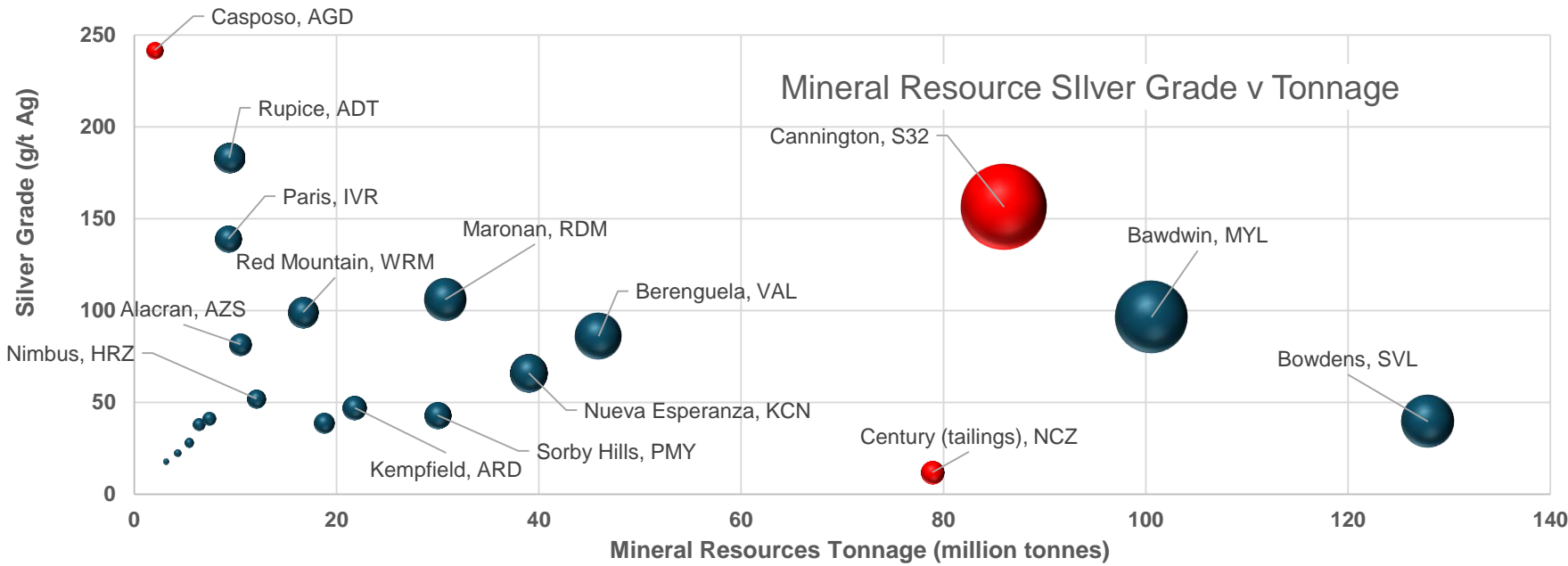
Silver Projects developed by ASX Companies



- Based on silver mineral resource size and grade, only Bawdwin and Cannington can be assigned world class status
- Berenguela and Maronan are two projects with significant silver content and grade
- Maronan is a similar type deposit to Cannington (Broken Hill type) offering significant exploration potential at depth
- Other projects tends to lack either scale or grade, with regards to silver content

Source: company announcements, Terra Studio, Cerro Bayo on care and maintenance

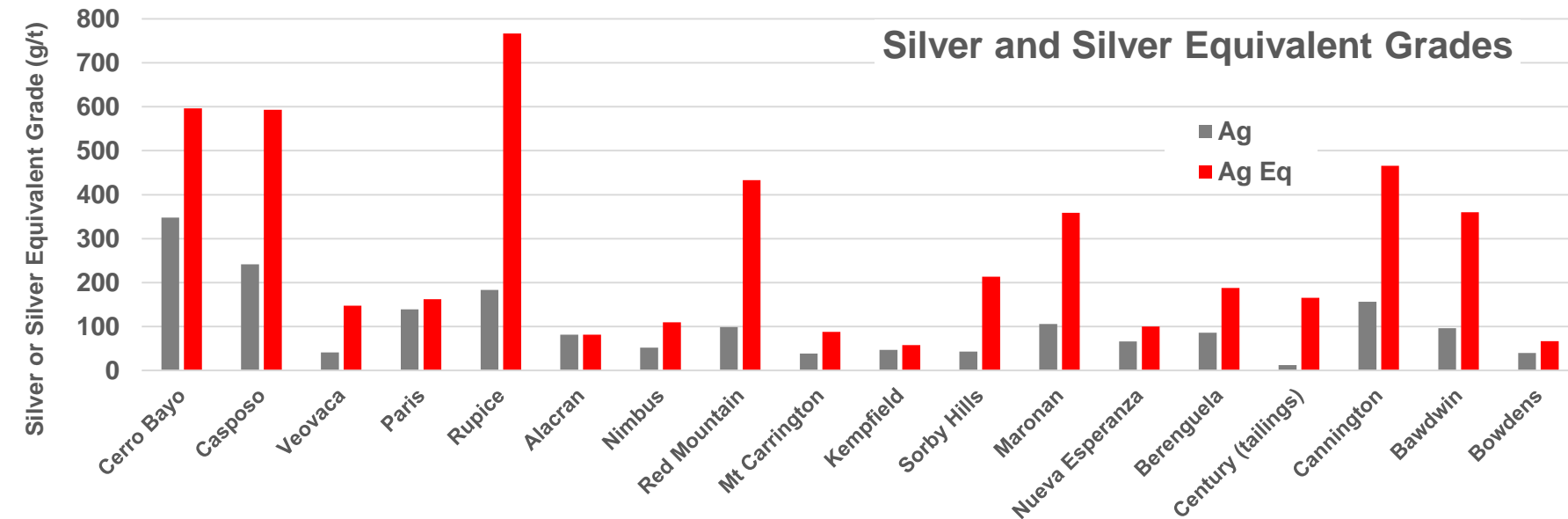
Contribution from other Metals



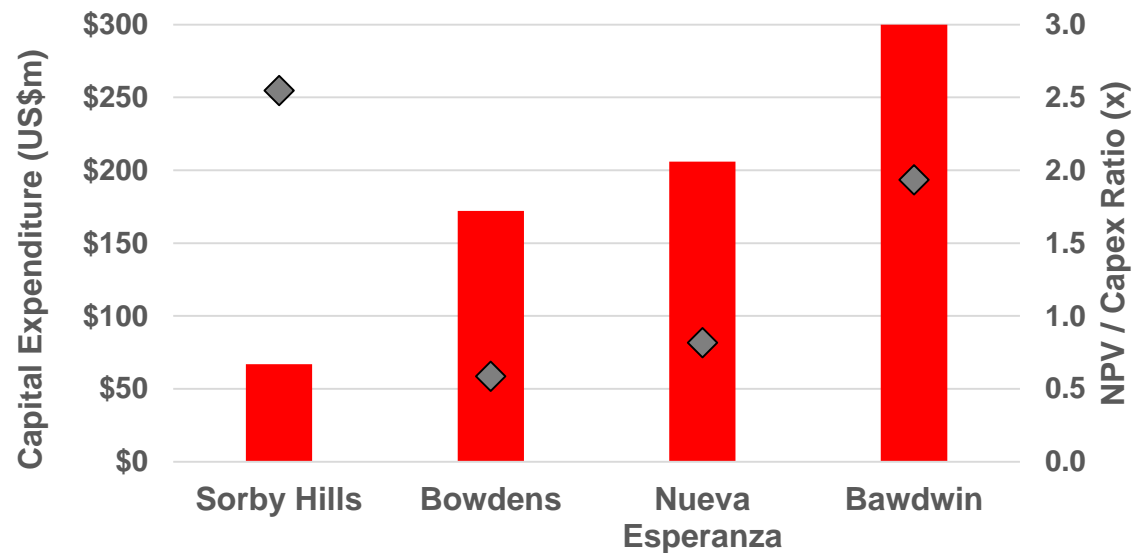
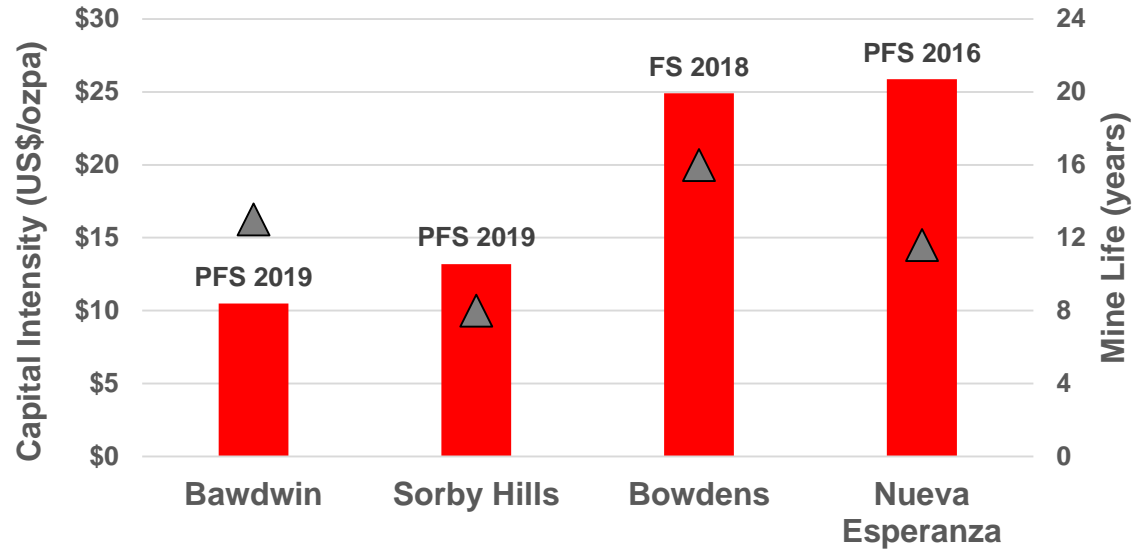
- Considering the added complexity of mining polymetallic deposits (metallurgical recoveries, shipping costs, TC/RC, payabilities), a silver grade (or silver equivalent grade) well above 100 g/t Ag is preferable.

- 100 g/t Ag is only equivalent to 1.20 g/t Au at current metal prices

- The Bawdwin, Berenguela and Maronan deposits have both size and grades



Development Studies

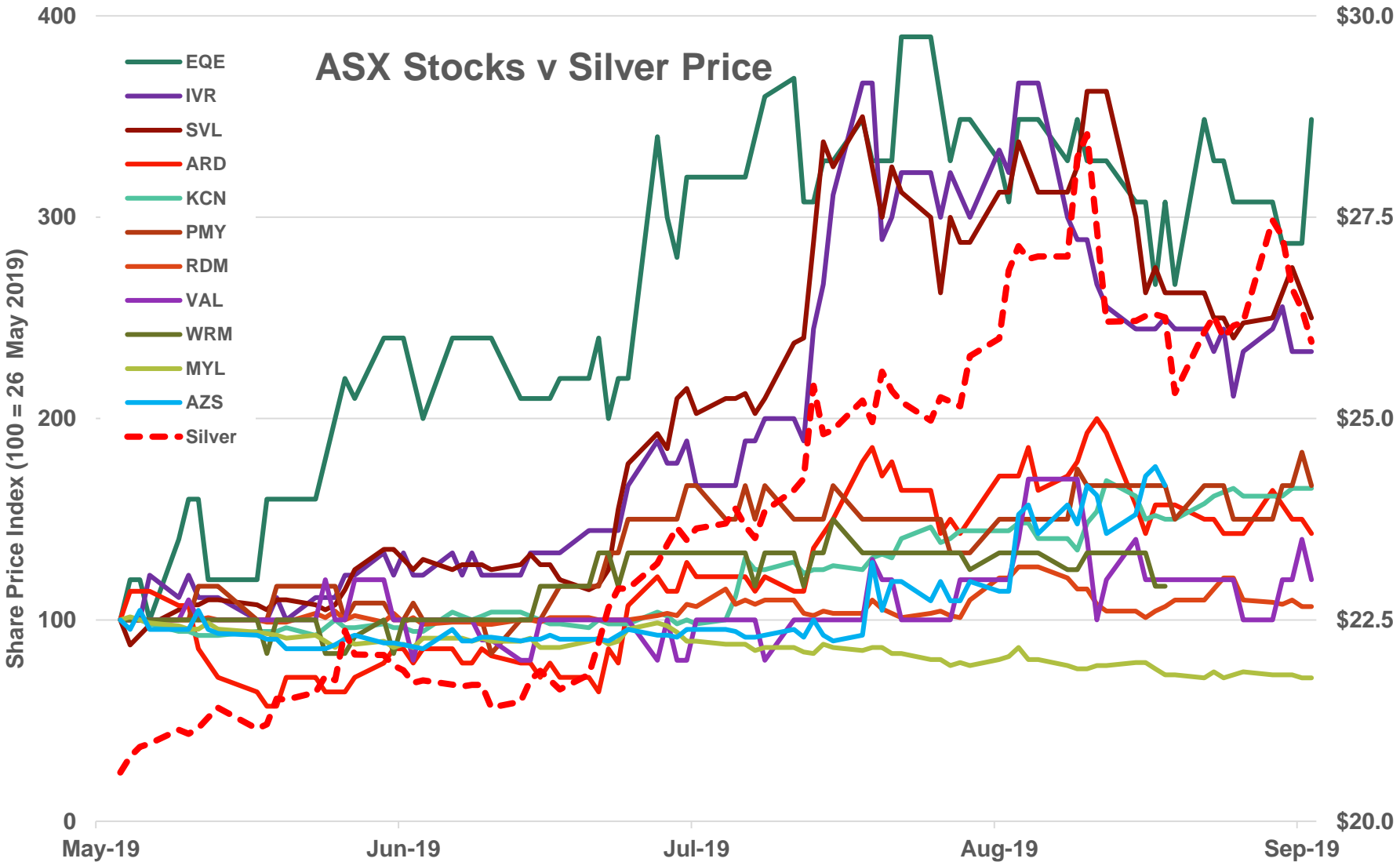


- There is a limited number of development studies available as projects are either new like Rupice (MRE* Jul-19) or have not received much attention for years such as Kempfield (MRE May-14) or Nimbus (MRE Apr-15)
- According to the results of recent feasibility studies, both Bawdwin and Sorby Hills display low capital intensity
- Sorby Hills displays the lowest capital expenditure requirement
- Finally the ratio NPV/Capex is better for Sorby Hills and Bawdwin (>2) than Bowdens and Nueva Esperanza (<1)

* MRE = Mineral Resource Estimate

Leverage through Equities

ASX Stocks v Silver Price



- IVR and SVL currently display share prices most reactive to the silver price movements
- The reactions of ARD and KCN are more subdued
- For the others, the reaction has been weak or inexistent

Share Price Performance

Code	Company	Close Price	Silver Exposure	Since 28 May	YTD	52 Week Range	Market Cap (A\$m)	Possible performance explanation or recent significant news
EQE	Equus Mining Ltd	0.017	54%	240%	9%		\$18	Cerro Bayo acquisition transaction
SVL	Silver Mines Ltd	0.100	66%	150%	79%		\$87	Silver exposure + Sprott entering register
IVR	Investigator Resources Ltd	0.021	86%	133%	31%		\$17	Silver exposure + JV with OZL on Maslins IOCG project
AZS	Azure Minerals Ltd	0.240	34%	129%	60%		\$33	Regain 100% ownership of Alacran silver project
PMY	Pacifico Minerals Ltd	0.010	20%	67%	122%		\$29	Sorby Hills drilling results
KCN	Kingsgate Consolidated Ltd	0.430	25%	65%	169%		\$97	US\$55m settlement from political risk insurers
ARD	Argent Minerals Ltd	0.020	36%	43%	33%		\$12	Drilling results at Pine Ridge gold project
AGD	Austral Gold Ltd	0.080	27%	23%	33%		\$43	Gold and silver exposure
ADT	Adriatic Metals PLC	1.045	25%	22%	82%		\$158	Continuation of positive drilling results+Resource estimate
VAL	Valor Resources Ltd	0.006	45%	20%	100%		\$11	Berenguela drilling campaign start
WRM	White Rock Minerals Ltd	0.007	38%	17%	0%		\$11	Red Mountain EM surveys
RDM	Red Metal Ltd	0.097	22%	7%	1%		\$21	Maronan deposit under the radar
MYL	Myanmar Metals Ltd	0.047	34%	(29%)	(18%)		\$75	\$20.8m placement @ \$0.065/share
NCZ	New Century Res. Ltd	0.260	35%	(62%)	(69%)		\$166	Weak economics

Conclusions

- Silver is more volatile than gold
- ASX companies (IVR and SVL) with the highest exposure to silver (based on mineral resources) have been highly reactive to recent silver price movements
- Nevertheless, the underlying assets lacks development momentum or display weak economics
- Companies with lower exposure to the silver price such as MYL and PMY appear to have more robust projects to develop
- Should the silver price continue to increase, other companies with silver exposure are likely to see their market value increase accordingly

JF @ Terra Studio

Jean-François (JF) Bertincourt

Sydney, Australia



jf@terrastudio.biz



<https://www.linkedin.com/in/jfbertincourt/>



www.terrastudio.biz

DISCLAIMER

This presentation is provided in good faith from sources believed to be accurate and reliable. Terra Studio Pty Ltd directors and employees do not accept liability for the results of any action taken on the basis of the information provided or for any errors or omissions contained therein. Readers should seek investment advice from their professional advisors before acting upon information contained herein.

The views expressed in this research report accurately reflect the personal views of Jean-François Bertincourt about the subject and its related securities.

The author do not hold any economic interest in the securities included in this presentation. This research has been sponsored by Myanmar Metals Ltd and Red Metal Ltd.