Global Gold Mining

WACCed out: Some thoughts on cost of capital for Gold Miners

Industry Overview

Equity | 03 June 2016

What is the right cost of capital for a gold miner?

With real interest rates on the verge of turning negative and investor appetite for gold near all-time high, we examine our assumed 5% (real) discount rate for golds and consider the implications of gold majors trading up to 3x (our) DCF / NPV. If Beta = zero & Rf (real) -> zero, is "0%" actually the right discount rate for a gold miner? Gold has been academically proven to have a positive impact on portfolio Sharpe ratios and provides "fear" insurance. In this note, we "back out" implied WACCs for our coverage universe solving for P/DCF = 1. Implied discount rates: Majors: ABX = -4.5%, GG = -2%, NEM = -5%. Yes. Negative. "Big" Mid-caps: RRS= -7%, NCM = 7%, AEM = -7.5%.

Buy rated stocks in the global gold & silver space

Majors: Goldcorp, Kinross Gold

Mid-caps: Agnico Eagle, Tahoe Resources, Randgold Resources, SEMAFO

Royalty/Streaming: Silver Wheaton, Franco Nevada, Royal Gold

Emerging / Crossover: Polymetal, AngloGold, Sibanye, Hochschild

Gold has low/negative correlation during stress. Beta <=0?

An historic reason ("excuse") for low discount rates for gold miners was that gold (and thus gold miners) is supposed to have a negative correlation with the markets, particularly during periods of extreme market moves (think 1929, 2008). Lately, we have seen this relationship breaking down somewhat; for example in 2008, gold traded down with financial assets (initially) calling its relative "safe haven" status into question. Still, if we look at "betas", for some gold stocks we do see them at much <1, while industrial miners may be >1(e.g. Randgold/RRS Beta = 0.13; Anglo American/AAL Beta = 2). We use a 5% (real) discount rate for Randgold vs. 9% (nominal) discount rate for Anglo.

Why a premium to DCF? Part 1: Grow/replace reserves.

This is a philosophical question we often discuss / debate with clients. In short, it probably shouldn't. In practice, however, we model gold mining companies based on proven and probable "reserves". As gold companies continue to explore and replace/add to reserves, such an approach understates the "going concern" value of the company. In practice, what we see is that companies with a record of replacing reserves as they are mined and, indeed, growing them, tend to trade on a bigger premium to DCF. On a related topic, we consider "NAV/NPV revisions" – something akin to an earnings revision ratio. Companies that replace / grow NPV consistently tend to trade on a bigger premium to NPV. For miners with short mine lives, the difference can be quite large.

Why a premium to DCF? Part 2: Option value.

Another idea is that for higher cost miners, equity is more like an option. If we break an option into two parts, we have the time value of volatility vs. price (extrinsic value) and then the "in-the-money-ness" (intrinsic value). The closer to breakeven a miner is the less value may be associated with the intrinsic value of the asset and the more with the option value (to the upside). As such, at a low gold price level, we might expect a high cost gold miner to trade at a high multiple of a low absolute "NPV".

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Gold & Precious Company Valuations

Table 1: Comparable company valuations – North American Majors, intermediates, Royalty companies & Silver miners

Priced as of June 2, 2016	BofAML Sym	Share Price	Shares o/s (mn)	Market Cap (USDmn)	Rating	EPS 2016E	EPS 2017E	P/E (x) 2016E	P/E (x) 2017E	CFPS 2016E	CFPS 2017E	P/CFPS (x) 2016E	P/CFPS (x) 2017E	DCF	Net Cash	NAV	P/NAV
Senior Gold Producers[1,19]																	
Barrick Gold	ABX	16.96	1,165	19,758	C-2-8	0.54	0.70	31.4	24.2	2.08	2.15	8.2	7.9	13.10	(5.10)	8.00	2.12
Goldcorp	GG	16.95	830	14,069	C-1-8	0.22	0.24	77.0	70.6	1.70	1.79	10.0	9.5	12.60	(3.00)	9.60	1.77
Kinross Gold	KGC	4.33	1,244	5,387	C-1-9	0.04	0.13	NA	33.3	0.89	0.94	4.9	4.6	3.65	(1.10)	2.55	1.70
Newmont Mining	NEM	32.35	530	17,146	B-2-8	1.30	1.72	24.9	18.8	4.49	5.43	7.2	6.0	21.70	(6.50)	15.20	2.13
Market Cap Weighted Average								**41.8**	**35.0**			**8.0**	**7.4**				**1.99**
Mid-Tier Gold Producers																	
Agnico Eagle Mines[1,19]	AEM	45.12	220	9,926	B-1-8	0.30	0.93	NA	48.5	3.12	3.45	14.5	13.1	21.70	(4.35)	17.35	2.60
Centerra Gold[2,19]	YCG	6.46	236	1,163	C-3-7	0.24	0.34	20.5	14.5	1.07	1.11	4.6	4.5	3.90	1.55	5.45	0.87
Eldorado Gold[1,19]	EGO	4.29	717	3,076	C-3-9	0.05	0.21	85.8	20.4	0.28	0.51	15.4	8.4	1.88	0.82	2.70	1.85
IAMGOLD[1,19]	IAG	3.25	406	1,320	C-3-9	(0.09)	(0.04)	NA	NA	0.57	0.64	5.7	5.1	2.35	0.15	2.50	1.32
Tahoe Resources[1]	TAHO	11.99	297	3,560	C-1-7	0.49	0.62	24.5	19.3	1.02	1.19	11.7	10.0	6.75	0.37	7.12	1.72
Yamana Gold[1,19]	AUY	4.21	927	3,903	C-2-8	0.06	0.12	70.2	35.1	0.55	0.79	7.7	5.3	3.87	(1.65)	2.22	1.90
Market Cap Weighted Average								**55.4**	**35.5**			**12.0**	**9.8**				**2.08**
Intermediate/Junior Gold Producers[19]																	
Alacer Gold[10,20]	ALIAF	2.91	292	648	C-1-9	0.07	0.06	31.7	37.0	0.23	0.20	9.6	10.8	1.70	0.35	2.05	1.10
New Gold[1]	NGD	3.74	509	1,904	C-2-9	0.00	(0.02)	NA	NA	0.46	0.45	8.1	8.4	3.45	(0.90)	2.55	1.47
SEMAFO[2]	YSMF	5.14	323	1,268	C-1-9	0.15	0.16	26.1	24.5	0.45	0.41	8.8	9.5	2.25	0.45	2.70	1.45
Market Cap Weighted Average								**28.0**	**28.7**			**8.6**	**9.2**				**1.40**
Royalty Companies																	
Franco-Nevada[2,19]	YFNV	83.76	178	11,376	C-1-7	0.73	0.95	NA	67.3	2.36	2.58	27.0	24.8	23.70	0.00	23.70	2.70
Osisko Gold Royalties[3]	YOR	15.35	106	1,245	C-1-7	0.31	0.35	49.5	43.9	0.44	0.46	34.7	33.7	4.95	5.44	10.39	2.00
Royal Gold[1,19]	RGLD	56.29	65	3,659	C-1-7	1.01	1.40	55.7	40.2	3.28	3.78	17.2	14.9	40.30	(7.00)	33.30	1.69
Silver Wheaton[1]	SLW	18.73	441	8,260	C-1-8	0.52	0.76	36.0	24.6	1.20	1.44	15.7	13.0	14.15	(2.15)	12.00	1.56
Market Cap Weighted Average								**42.8**	**47.7**			**22.1**	**19.8**				**2.13**
Primary Silver Producers																	
Fresnillo[6]	FNLPF	1044.00	737	11,100	C-2-7	0.34	0.62	44.3	24.5	0.99	1.26	15.1	12.0	364.71	0.00	365	2.86
Hecla Mining[1]	HL	3.96	382	1,511	C-3-8	0.07	0.11	56.6	36.0	0.37	0.48	10.6	8.3	2.60	(0.90)	1.70	2.33
Hochschild Mining[6]	HCHDF	144.00	503	1,044	C-1-9	0.04	0.16	50.6	13.0	0.42	0.66	5.0	3.1	76.19	0.00	76	1.89
Pan American Silver[1]	PAAS	14.22	152	2,154	C-3-8	(0.01)	0.23	NA	61.8	0.77	1.05	18.4	13.5	6.05	1.15	7.20	2.16
Polymetal[6]	XPMYF	832.00	424	5,085	C-1-7	1.33	1.31	9.0	9.2	1.53	1.53	7.8	7.9	920.00	0.00	920.00	0.90
Market Cap Weighted Average								**36.1**	**24.9**			**12.9**	**10.4**				**2.23**

Source: BofA Merrill Lynch Global Research estimates. (1) USD; (2)stock price in CAD$, EPS, CFPS, NAV in USD$; (3) CAD$ (4) AUD$ (5) ZAR (6) stock price, NAV in pence; market cap in GBP, EPS, CFPS in USD; (7) stock price, market cap and NAV in CAD$; EPS and CFPS in USD$; (8) share price and NAV in HKD; EPS and CFPS in CNY, market cap in USD; (9) stock price, NAV in pence; market cap in USD EPS, CFPS in GBP; (10) stock price, market cap, NAV in AUD, EPS, and CFPS in USD; (11) stock price and market cap in CAD; NAV in GBp, EPS and CFPS in USD; (12) stock price, market cap, EPS, CFPS and NAV in TRY; (13) Estimates are based on Bloomberg consensus; (14) stock price, market cap and NAV in ZAR; EPS and CFPS in USD, (15) stock price, market cap in ZAR; NAV, EPS and CFPS in AUD (16) stock price and market cap in ZAR; EPS and CFPS in USD, NAV in GBP (17) stock price and market cap in ZAR; EPS, CFPS and NAV in CAD; (18) June 30th year end; (19) Real gold price deck (US$/oz): 2016=$1,250; 2017=$1,293; 2018=1,285; 2019=$1,256; 2020=$1,227; 2021= $1,199; 2022(LT)=$1,200; (20) Nominal gold price deck (US$/oz): 2016=$1,250; 2017=$1,325; 2018=1,350; 2019=$1,352; 2020=$1,354; 2021=$1,356; 2022(LT)=$1,392; (21) Nominal gold price deck based on June year end (US$/oz). Adjusted P/NAV = (share price - net cash and investments) / DCF of mining assets using a 5% discount rate.

Table 2: Comparable company valuations – International gold producers

Priced as of June 2, 2016	BofAML Sym	Share Price	Shares O/S	Market Cap (USDmn)	Rating	EPS 2016E	EPS 2017E	P/E (x) 2016E	P/E (x) 2017E	CFPS 2016E	CFPS 2017E	P/CFPS (x) 2016E	P/CFPS (x) 2017E	DCF	Net Cash	NAV	P/NAV
Australian Gold Producers[4,13,21]																	
Evolution Mining	CAHPF	2.04	1,468	2,164	C-2-7	0.18	0.24	11.1	8.5	0.37	0.48	5.5	4.3	2.17	0.00	2.17	0.94
Newcrest Mining	NCMGF	19.40	765	10,731	C-2-9	0.32	0.64	43.2	22.0	1.43	1.67	9.8	8.4	15.41	0.00	15.41	0.91
Northern Star Resources	NESRF	4.29	600	1,861	C-3-7	0.28	0.41	15.1	10.4	0.69	0.74	6.2	5.8	2.35	0.00	2.35	1.83
OceanaGold	OGDCF	4.13	609	1,816	C-3-8	0.15	0.45	19.3	6.7	0.47	0.69	6.4	4.4	2.68	0.00	2.68	1.54
Market Cap Weighted Average								**33.3**	**17.2**			**8.4**	**7.1**				**1.09**
South African Gold Producers[19]																	
AngloGold Ashanti [14]	AULGF	219.09	410	5,764	C-1-9	0.72	1.02	19.6	13.8	3.30	3.40	4.3	4.1	143.46	0.00	143.46	1.53
Harmony Gold [14,18]	HGMCF	46.63	434	1,301	C-2-9	2.85	6.34	16.4	7.4	8.35	11.97	5.6	3.9	58.52	0.00	58.52	0.80
Sibanye [5]	SBGLF	47.31	912	2,771	C-1-7	7.16	7.81	6.6	6.1	10.66	15.71	4.4	3.0	74.61	0.00	74.61	0.63
Market Cap Weighted Average								**15.5**	**10.8**			**4.5**	**3.8**				**1.18**
International Gold Producers																	
Acacia Mining[6]	ABGLF	307.10	410	1,818	C-3-7	0.26	0.34	17.2	13.0	0.68	0.80	6.5	5.5	175	0.00	174.90	1.76
Buenaventura [1]	BVN	9.70	254	2,466	C-2-7	0.20	0.53	48.5	18.3	0.68	1.03	14.2	9.4	6.67	0.00	6.67	1.46
Centamin Egypt[6,18]	CELTF	99.60	1,144	1,645	C-2-7	0.12	0.10	11.8	14.4	0.22	0.18	6.5	7.8	76	0.00	76.36	1.30
Petropavlovsk[6]	PPLKF	7.65	4,301	475	C-1-9	0.00	0.01	22.7	11.3	0.02	0.02	5.8	6.1	15	0.00	15.02	0.51
Randgold Resources[6]	RGORF	5850.00	93	7,846	B-1-7	2.68	3.05	31.6	27.7	4.41	5.10	19.1	16.5	3,104	0.00	3,104	1.88
Market Cap Weighted Average								**30.1**	**22.1**			**14.8**	**12.5**				**1.68**
PGM Producers																	
Anglo American Platinum [5]	AGPPF	360.00	270	6,235	C-2-9	16.53	18.97	21.8	19.0	29.26	34.11	12.3	10.6	272	0.00	272.11	1.32
Impala Platinum [5]	IMPUF	45.00	735	2,124	C-3-9	0.93	2.36	48.5	19.0	3.32	4.84	13.6	9.3	34.78	0.00	34.78	1.29
Lonmin [16]	LNMIF	1.76	282	717	C-3-9	(0.01)	0.18	NA	14.5	0.37	0.75	6.8	3.4	154.30	0.00	154.30	1.14
Northam Platinum [5]	NMPNF	42.00	510	1,375	C-3-9	1.52	1.97	27.6	21.3	2.26	2.82	18.6	14.9	25.97	0.00	25.97	1.62
Royal Bafokeng [5]	XRVBF	41.15	194	512	C-1-9	0.89	0.33	46.4	NA	3.40	4.27	12.1	9.6	46.39	0.00	46.39	0.89
Stillwater [1]	SWC	9.74	121	1,176	C-3-9	0.05	0.46	NA	21.2	0.50	0.87	19.5	11.1	6.10	0.00	6.10	1.60
Market Cap Weighted Average								**29.3**	**19.2**			**13.6**	**10.4**				**1.35**

Source: BofA Merrill Lynch Global Research estimates. (1) USD; (2)stock price in CAD$, EPS, CFPS, NAV in USD$; (3) CAD$ (4) AUD$ (5) ZAR (6) stock price, NAV in pence; market cap in GBP, EPS, CFPS in USD; (7) stock price, market cap and NAV in CAD$; EPS and CFPS in USD$; (8) share price and NAV in HKD; EPS and CFPS in CNY, market cap in USD; (9) stock price, NAV in pence; market cap in USD EPS, CFPS in GBP; (10) stock price, market cap, NAV in AUD, EPS, and CFPS in USD; (11) stock price and market cap in CAD; NAV in GBp, EPS and CFPS in USD; (12) stock price, market cap, EPS, CFPS and NAV in TRY; (13) Estimates are based on Bloomberg consensus; (14) stock price, market cap and NAV in ZAR; EPS and CFPS in USD, (15) stock price, market cap in ZAR; NAV, EPS and CFPS in AUD (16) stock price and market cap in ZAR; EPS and CFPS in USD, NAV in GBP (17) stock price and market cap in ZAR; EPS, CFPS and NAV in CAD; (18) June 30th year end; (19) Real gold price deck (US$/oz): 2016=$1,250; 2017=$1,293; 2018=1,285; 2019=$1,256; 2020=$1,227; 2021= $1,199; 2022(LT)=$1,200; (20) Nominal gold price deck (US$/oz): 2016=$1,250; 2017=$1,325; 2018=1,350; 2019=$1,352; 2020=$1,354; 2021=$1,356; 2022(LT)=$1,392; (21) Nominal gold price deck based on June year end (US$/oz). Adjusted P/NAV = (share price - net cash and investments) / DCF of mining assets using a 5% discount rate.

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Gold: Why a premium to NPV?

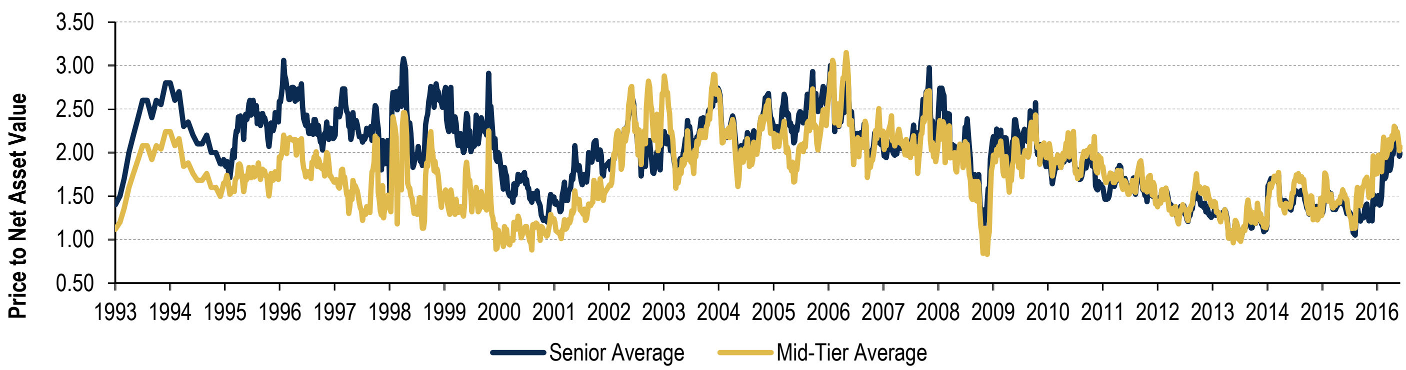
Price/NPV History

Global precious metal companies often trade on premiums to "NAV / NPV" – we use the terms somewhat interchangeable to mean a "DCF derived sum-of-parts" for the equity value of a gold miner. In general, we (our global team) calculate this using a 5% real discount rate and we model in real terms. Historically, gold (and silver – we will just say gold from now on) miners trade on multiples of NPV of between 1-3x with some more leveraged "niche" companies (silver) trading at up to 3.5x NPV at peaks. Why? For most "normal" / generalist investors these seem nonsensical. Why would you ever buy something that trades at a higher valuation than a DCF says its worth? We explore these questions and, we think, the ultimate question for gold mining companies: How should we think about cost of capital for gold mining companies and why might it make sense to pay a premium to NPV? Just to set the scene, take a look at these charts.

North American large cap gold producers

Chart 1 sets out the average P/NAV multiple history for the North American producers.

Chart 1: North American Senior and Mid-tier Gold & Precious long-term P/NPV history

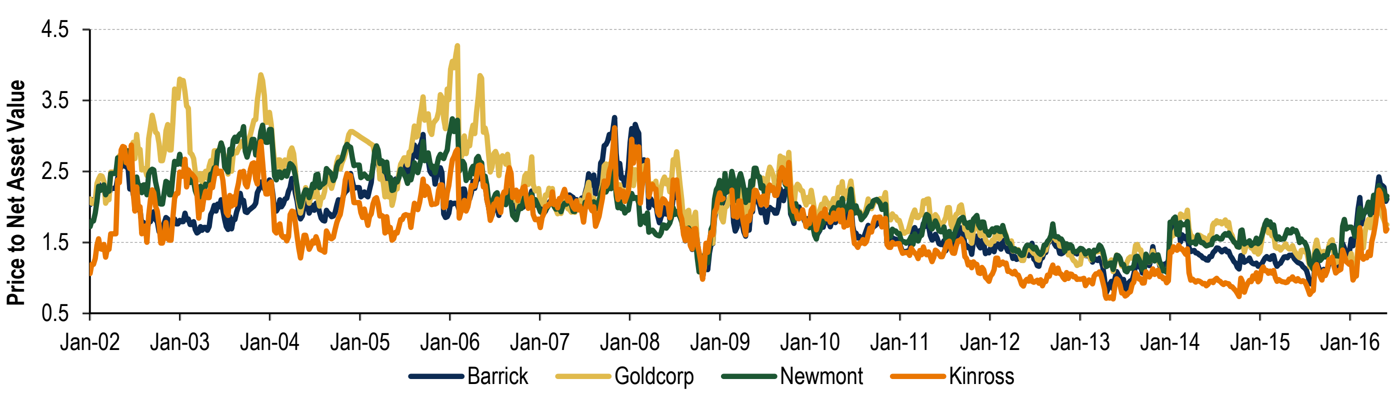


Source: BofA Merrill Lynch Global Research estimates, Company data

North American Gold Majors

As per Chart 2, the North American senior gold producers have traded within a 1.0-3.0 times range over the 2002-2016 period. Currently, the group is trading at a market capitalization weighted average P/NAV multiple is 1.99 times, thanks to year to date strength in precious metal prices.

Chart 2: North American Senior Gold & Precious P/NPV history

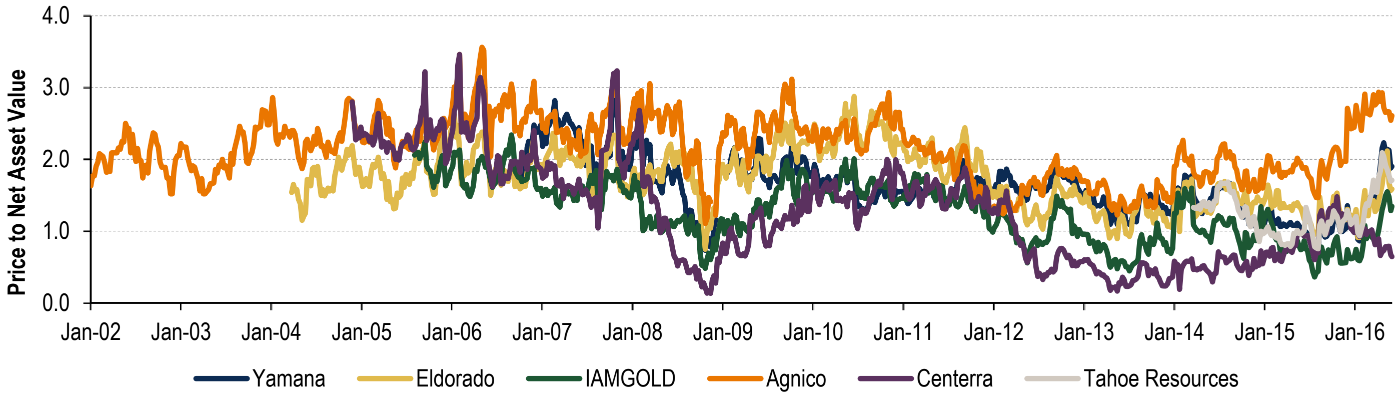


Source: BofA Merrill Lynch Global Research estimates, , Company data

North American mid-tiers

As per Chart 3, the North American mid tier gold producers have traded within a 0.5-3.0 times range over the 2002-2016 period. Currently the group is trading at a market capitalization weighted average P/NAV multiple is 2.08 times.

Chart 3: North American Mid-tier Gold & Precious P/NPV history

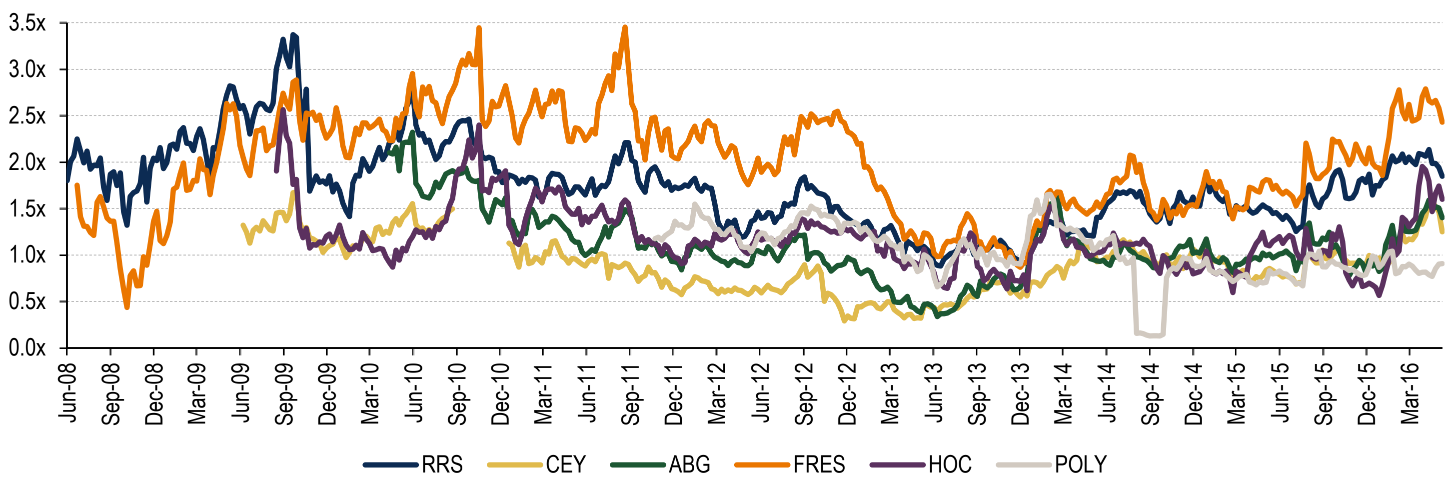


Source: BofA Merrill Lynch Global Research estimates, Company data

European Precious

Lastly, we have a similar chart from our European colleagues. Here, we see a lower "bottom" end with some stocks trading down as low as 0.5x (Centamin, during its "Egyptian Crisis") but the high end for stocks like Randgold and Fresnillo still trade > 2x with FRES sometimes touching 3.5x.

Chart 4: European Gold & Precious P/NPV history



Source: BofA Merrill Lynch Global Research estimates, Company data

So, at least based on our own datasets, we've established that equities seem to trade on a premium to calculated DCFs. Why?

Reason #1: Growth / replace reserves

In practice, however, we model gold mining companies based on proven and probable "reserves". As gold companies continue to explore and replace/add to reserves, such an approach understates the "going concern" value of the company. In practice, what we see is that companies with a record of replacing reserves as they are mined and, indeed, growing them, tend to trade on a bigger premium to DCF.

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On a related topic, we consider "NAV/NPV revisions" – something akin to an earnings revision ratio. Companies that grow NPV consistently tend to trade on a bigger premium to NPV. For miners with short mine lives, the difference can be quite large.

Reason #2: Option value

Another idea is that for higher cost miners, equity is more like an option. If we break an option into two parts, we have the time value of volatility vs. price (extrinsic value) and then the "in-the-moneyness" (intrinsic value). The closer to breakeven a miner is, the less value may be associated with the intrinsic value of the asset and the more with the option value (to the upside). As such, at a low gold price level, we might expect a high cost gold miner to trade at a very high multiple of a low absolute "NPV".

Reason #3: Discount rates too high?

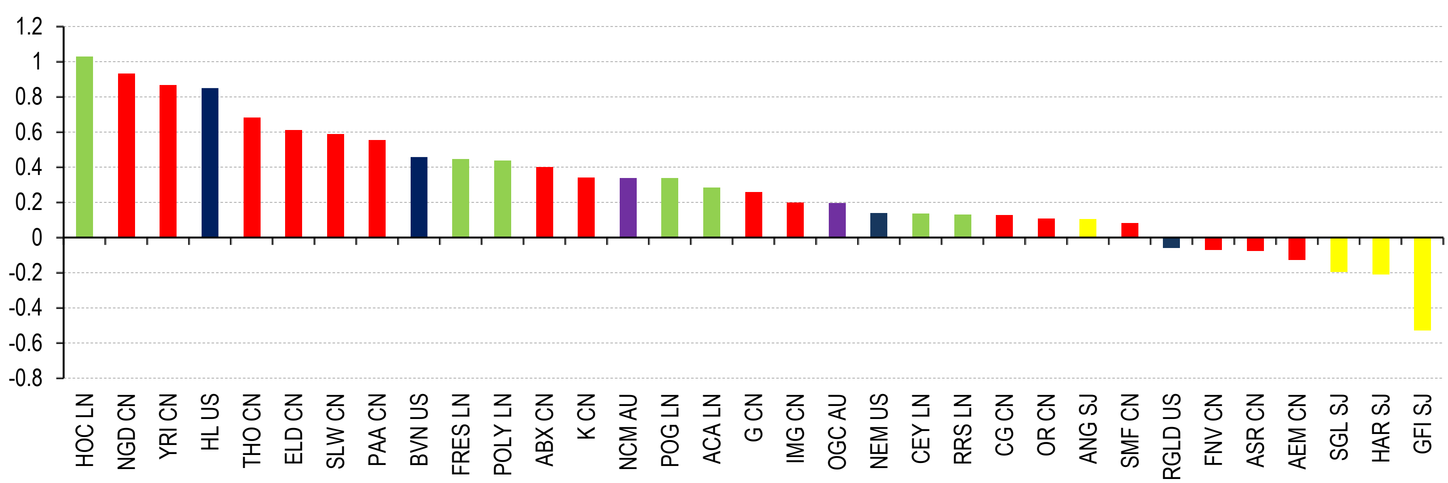
This is a key idea we've been thinking about lately. Real interest rates are close to zero. We've had QE in the US and the ECB is now buying corporate bonds.

If Beta = zero & Rf (real) -> zero, is "0%" actually the right discount rate for a gold miner? Gold been academically proven to have a positive impact on portfolio Sharpe ratios and provides "fear" insurance. So…. Let's get into it.

Gold Company Betas

We consider gold company "Betas". This is, of course, an indication of the moves in a company's share price that can be explained by moves in its "home" market thus giving a measure of "local" costs of capital. To the extent that capital markets are global, one might argue that Beta should be calculated relative to global stock markets. We acknowledge this debate but believe that it is beyond the scope of the report. Still, the data below is "interesting".

Chart 5: Gold company "Betas" relative to "Home" markets.



Source: Bloomberg, BofA Merrill Lynch Global Research estimates. Note: Colours = home market. Red Canada. Blue US. Green UK. Yellow South Africa. Purple. Australia.

Some observations:

- South Africans have the lowest, often negative Beta. Interesting! That said, if we consider Johannesburg to be a generally "high cost of capital" market (in ZAR) terms, then perhaps this is a global effect creeping in. We also consider that ZAR weakness is bad for most of the South African market EXCEPT resources. As such, resources, gold in particular, should probably outperform, in ZAR terms, when the market is under pressure.

- At the other end of the scale, we see several silver companies with higher Betas, some close to 1 (HOC). We consider silver's industrial uses / demand drivers; rather than being a pure “precious” store of value, there may be some sensitivity to industrial demand.

- In the middle of the curve we see several gold large cap “bellwethers” including Newmont Mining, Randgold and Agnico Eagle with Betas of close to zero.

NPV Sensitivity to Discount rates

Our gold team uses the same discount rate globally: 5%

Acknowledging the level of judgment there is in calculating a cost of capital, our gold team, has taken the decision to use 1 common discount rate (5% real) globally. We acknowledge the limitations of this approach but, as we use it consistently, we believe it provides a useful basis for comparison both across companies but also over time.

In the tables below, we show the sensitivity of our global gold universe NPVs / NAVs to varying discount rates.

Table 3: NAV sensitivity to varying discount rates.

	BofAML Sym	Share Price	NAV @ 0%	Implied P/NAV	NAV @ 2.5%	Implied P/NAV	Base Case NAV (5%)	P/NAV	NAV @ 7.5%	Implied P/NAV	NAV @ 10%	Implied P/NAV	Implied WACC for P/NAV = 1
Senior Gold Producers													
Barrick Gold	ABX	USD 16.9	10.3	1.6x	8.1	2.1x	8.0	2.1x	5.1	3.3x	4.2	4.1x	-4.5%
Goldcorp	GG	USD 16.83	13.6	1.2x	11.0	1.5x	9.6	1.8x	7.3	2.3x	5.9	2.8x	-2.0%
Kinross Gold	KGC	USD 4.29	3.0	1.4x	2.6	1.7x	2.6	1.7x	2.0	2.2x	1.8	2.5x	-5.0%
Newmont Mining	NEM	USD 32.66	20.0	1.6x	16.4	2.0x	15.2	2.1x	11.1	2.9x	9.1	3.5x	-5.0%
Simple average				**1.5x**		**1.8x**		**1.9x**		**2.7x**		**3.2x**	**-4.1%**
Mid-Tier Gold Producers													
Agnico Eagle Mines	AEM	USD 45.17	22.8	2.0x	19.3	2.3x	17.4	2.6x	14.5	3.1x	12.9	3.5x	-7.5%
Centerra Gold	YCG	CAD 6.62	6.5	0.7x	5.9	0.8x	5.5	0.9x	4.9	1.0x	4.6	1.1x	5.0%
Eldorado Gold	EGO	USD 4.26	3.1	1.5x	2.8	1.8x	2.7	1.8x	2.4	2.3x	2.2	2.5x	-6.0%
IAMGOLD	IAG	USD 3.28	2.8	1.2x	2.5	1.3x	2.5	1.3x	2.2	1.5x	2.1	1.6x	-4.0%
Tahoe Resources	TAHO	USD 11.92	9.1	1.3x	8.0	1.5x	7.1	1.7x	6.0	2.1x	5.2	2.4x	-3.0%
Yamana Gold	AUY	USD 4.21	2.8	1.5x	2.1	2.0x	2.2	1.9x	1.2	3.5x	0.9	4.8x	-3.7%
Simple average				**1.4x**		**1.6x**		**1.7x**		**2.3x**		**2.7x**	**-3.2%**
Intermediate/Junior Gold Producers													
Alacer Gold	ALIAF	CAD 2.93	4.2	0.5x	3.2	0.7x	2.1	1.1x	2.0	1.2x	1.6	1.5x	4.0%
New Gold	NGD	USD 3.74	3.3	1.1x	2.6	1.4x	2.6	1.5x	1.6	2.3x	1.3	2.9x	-1.3%
SEMAFO	YSMF	CAD 5.08	3.3	1.2x	2.9	1.4x	2.7	1.5x	2.3	1.7x	2.1	1.8x	3.5%
Simple average				**0.9x**		**1.1x**		**1.3x**		**1.7x**		**2.1x**	**2.1%**
Royalty Companies													
Franco-Nevada	YFNV	CAD 83.85	34.0	1.9x	27.9	2.3x	23.7	2.7x	20.1	3.2x	17.5	3.6x	-6.0%
Osisko Gold Royalties	YOR	CAD 15.48	12.2	1.5x	11.1	1.7x	10.4	2.0x	9.6	2.4x	9.1	2.7x	-5.0%
Royal Gold	RGLD	USD 56.27	50.0	1.1x	40.1	1.4x	33.3	1.7x	27.1	2.1x	22.7	2.5x	-1.0%
Silver Wheaton	SLW	USD 18.57	16.8	1.1x	14.0	1.3x	12.0	1.6x	10.5	1.8x	9.3	2.0x	-1.0%
Simple average				**1.4x**		**1.7x**		**2.0x**		**2.4x**		**2.7x**	**-3.3%**
Primary Silver Producers													
Fresnillo	FNLPF	GBP 1044	592.0	1.8x	493.7	2.1x	365.0	2.9x	359.3	2.9x	312.1	3.3x	-6.5%
Hecla Mining	HL	USD 3.98	2.3	1.7x	1.8	2.2x	1.7	2.3x	1.0	3.9x	0.8	5.3x	-6.0%
Hochschild Mining	HCHDF	GBP 144	121.0	1.2x	102.4	1.4x	76.0	1.9x	73.5	2.0x	62.1	2.3x	-2.6%
Pan American Silver	PAAS	USD 14.14	7.3	2.1x	6.4	2.5x	7.2	2.2x	5.2	3.2x	4.7	3.7x	11.0%
Simple average				**1.7x**		**2.1x**		**2.3x**		**3.0x**		**3.7x**	**-1.0%**
Australian Gold Producers													
Newcrest Mining	NCMGF	AUD 19.4	50.7	0.4x	35.1	0.6x	25.3	0.8x	18.9	1.0x	14.6	1.3x	6.9%
Simple average				**0.4x**		**0.6x**		**0.8x**		**1.0x**		**1.3x**	**6.9%**
South African Gold Producers													
AngloGold Ashanti	AULGF	ZAR 219.09	442.7	0.5x	318.8	0.7x	195.7	1.1x	186.5	1.2x	148.2	1.5x	5.9%
Goldfields	GFIOF	ZAR 56.69	162.4	0.3x	109.4	0.5x	60.3	0.9x	56.8	1.0x	43.2	1.3x	7.5%

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Table 3: NAV sensitivity to varying discount rates.

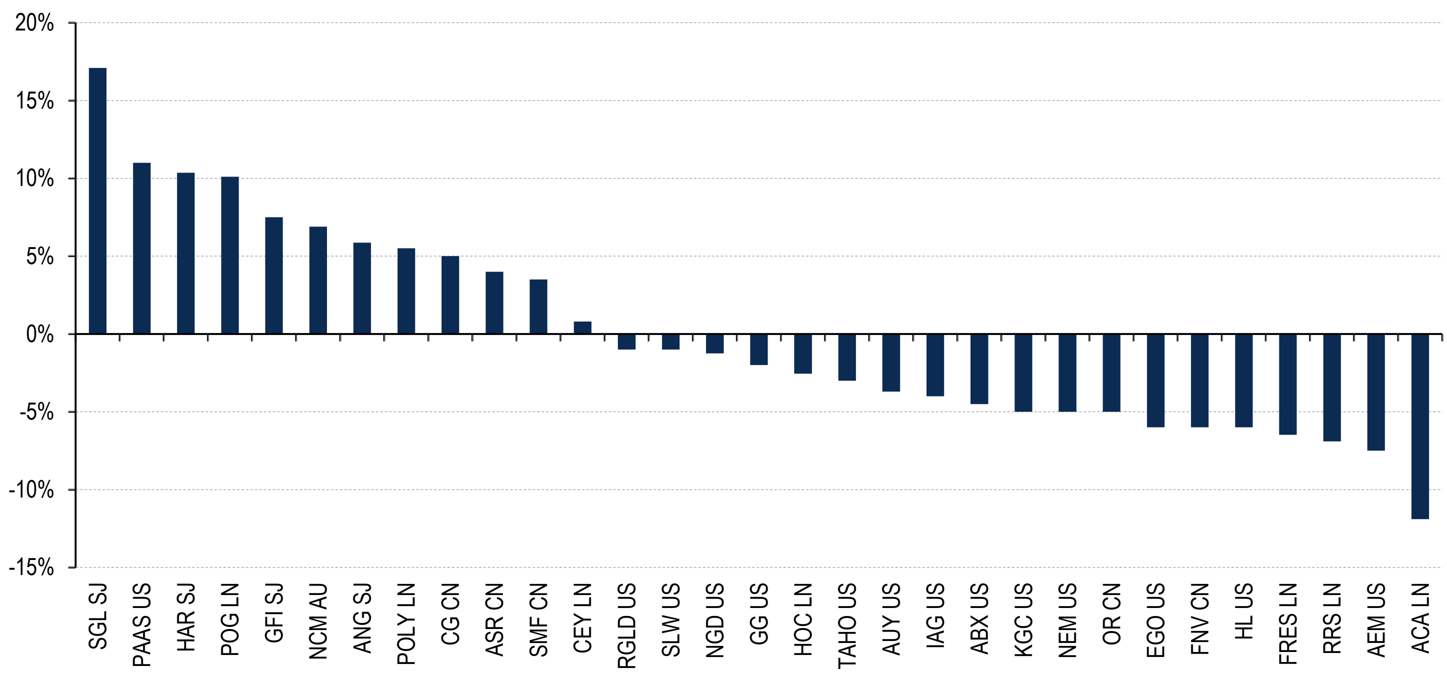
	BofAML Sym	Share Price	NAV @ 0%	Implied P/NAV	NAV @ 2.5%	Implied P/NAV	Base Case NAV (5%)	P/NAV	NAV @ 7.5%	Implied P/NAV	NAV @ 10%	Implied P/NAV	Implied WACC for P/NAV = 1
Harmony Gold	HGMCF	ZAR 46.63	112.3	0.4x	87.8	0.5x	59.7	0.8x	57.4	0.8x	47.8	1.0x	10.4%
Sibanye	SBGLF	ZAR 47.31	130.1	0.4x	104.5	0.5x	75.8	0.6x	73.5	0.6x	63.9	0.7x	17.1%
Simple average				**0.4x**		**0.5x**		**0.9x**		**0.9x**		**1.1x**	**10.2%**
International Gold Producers													
Acacia Mining	ABGLF	GBP 307.1	206.1	1.5x	190.5	1.6x	174.9	1.8x	164.9	1.9x	154.4	2.0x	-11.9%
Buenaventura	BVN	USD 9.47											
Centamin Egypt	CELTF	GBP 99.6	107.0	0.9x	89.3	1.1x	76.4	1.3x	67.1	1.5x	60.1	1.7x	0.8%
Petropavlovsk	PPLKF	GBP 7.65	35.0	0.2x	24.8	0.3x	15.0	0.5x	12.0	0.6x	7.9	1.0x	10.1%
Randgold Resources	RGORF	GBP 5850	3890.6	1.5x	3441.3	1.7x	3104.1	1.9x	3077.6	1.9x	2779.9	2.1x	-6.9%
Polymetal	XPMYF	GBP 832	1570.0	0.5x	1120.0	0.7x	900.0	0.9x	690.0	1.2x	560.0	1.5x	5.5%
Simple average				**0.9x**		**1.1x**		**1.3x**		**1.4x**		**1.6x**	**-0.5%**

Source: BofA Merrill Lynch Global Research

Backsolving for implied discount rates

In the table above, we've also backsolved our DCFs for implied discount rates. Interestingly many of the larger and/or higher quality companies are actually pricing in NEGATIVE real discount rates. Does this make sense? In theory, if real interest rates are negative & correlations (betas) are zero, negative, yes. In practice we're not sure…

Chart 6: Implied WACC solving for P/NPV = 1



Source: BofA Merrill Lynch Global Research

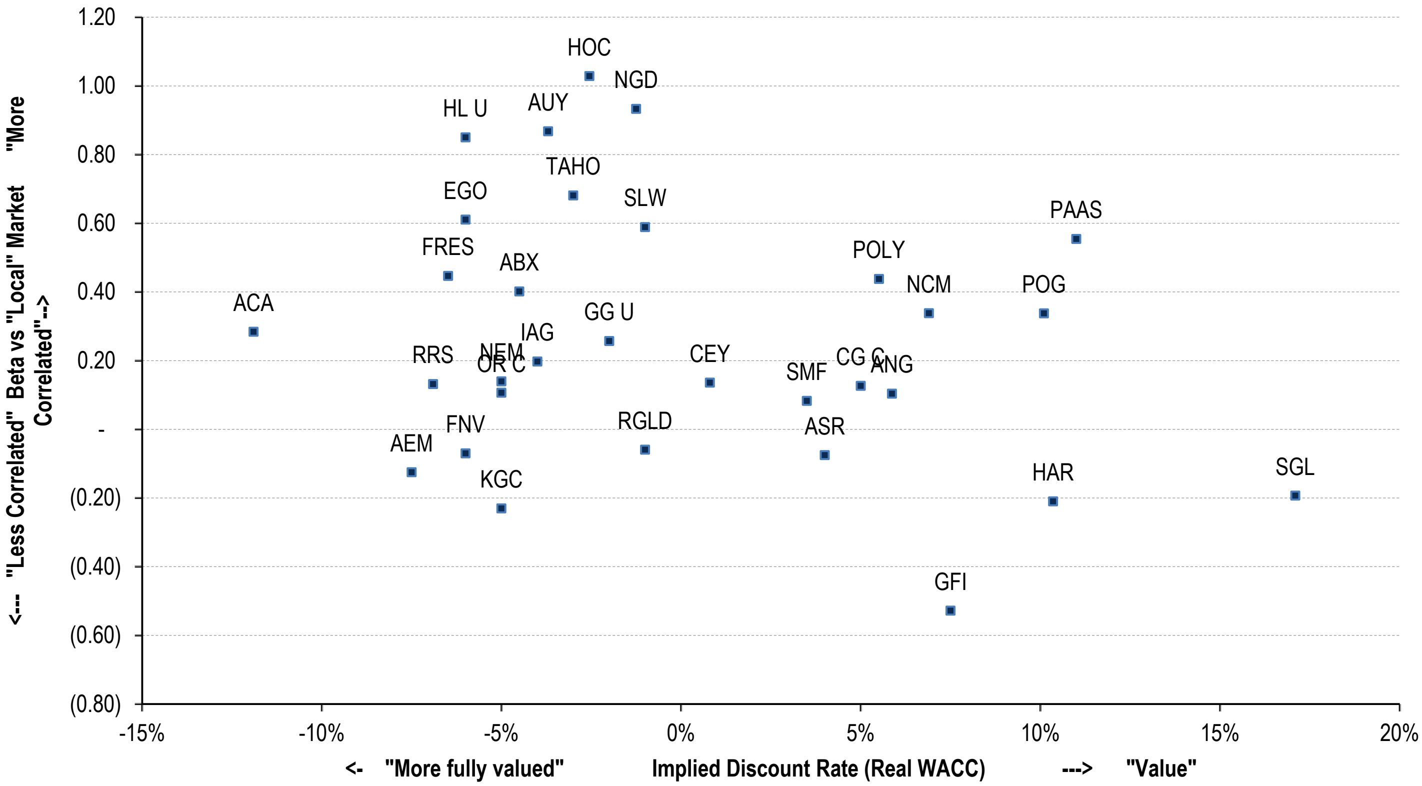
Combining implied WACC with Beta

Lastly – if we look at implied discount rate vs. Beta, we should get an interesting indication of "value" and/or opportunities.

On the vertical axis, stocks that have a low correlation with their home markets should be interesting from a risk reward and portfolio point of view. Silver stocks screen poorly here, as discussed.

On the horizontal axis, stocks with a high implied WACC should be interesting from a value point of view (think "cap" rates). The South Africans look interesting here as do the Russians. Maybe this is just emerging market risk being accurately reflected?

Chart 7: Gold (and silver) company Beta vs. implied WACC / discount rate



Source: Bloomberg, BofA Merrill Lynch Global Research estimates

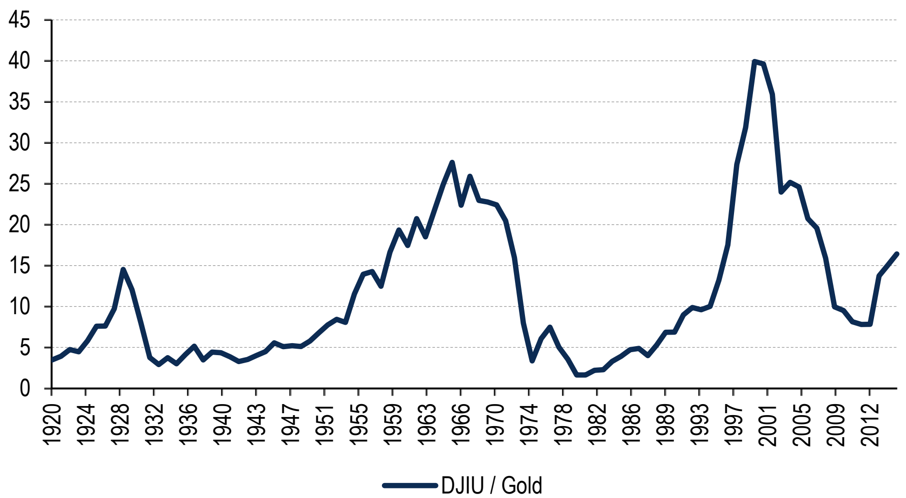
Correlation analysis

A historic reason ("excuse") for low discount rates for gold miners was that gold (and thus gold miners) is supposed to have a negative correlation with the markets, particularly during periods of extreme market moves (think 1929). Lately, we have seen this relationship breaking down somewhat; for example in 2008, gold traded down with financial assets calling its "safe haven" status into question.

Some fun charts: Dow Jones Industrial average vs. Gold

This is a favourite of our friend, Pierre Lassonde, Co-founder of Franco-Nevada & Former Vice Chairman of Newmont Mining. We plot the ratio of the Dow Jones Industrial average to the gold price. We see that during crashes & financial distress, gold holds its value better than financial assets (i.e. equities) meaning that this ratio closes up.

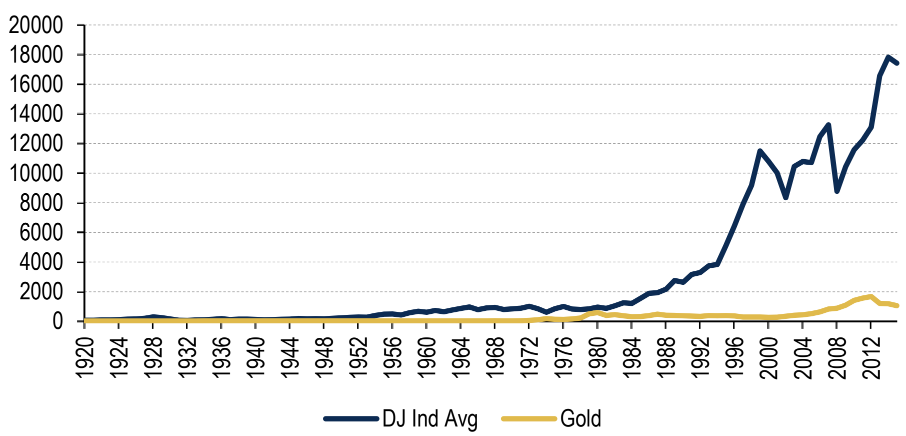
Chart 8: Dow Jones Industrial Average vs. the Gold Price



Source: Bloomberg, BofA Merrill Lynch Global Research estimates

Of course, looking at very long term charts is a little dangerous. This chart showing the relative performance of the DJIA vs. gold doesn't make you want to invest (only) in gold for the very long term…

Chart 9: Dow Jones Industrial average vs. gold



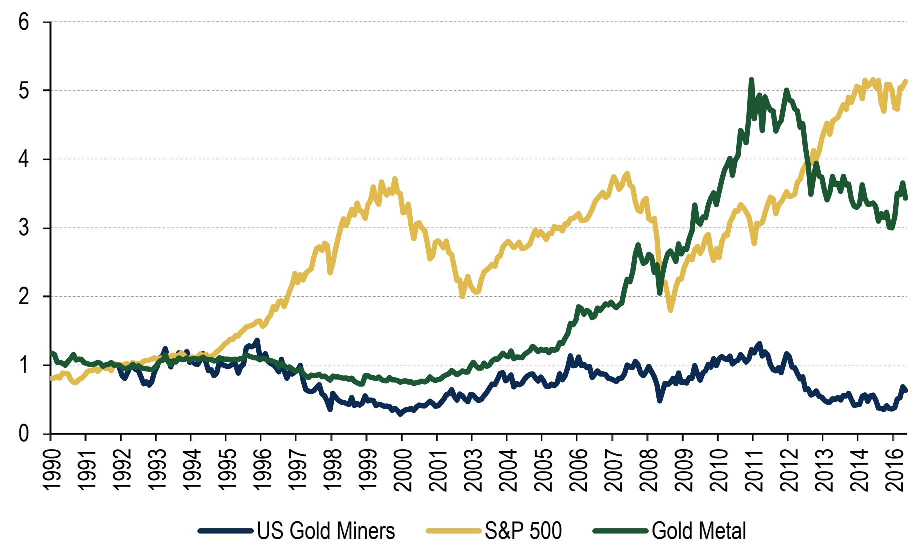
Source: Bloomberg

Of course for much of this time frame, the price of gold was fixed in US$ terms so perhaps this isn't 100% fair.

US Correlations

For those who may have a slightly shorter (post Bretton Woods) investment time horizon, we consider the following -> US Gold mining index vs. the S&P 500 vs. Gold. Looking at the correlation of monthly returns. We see a low correlation of gold and gold miners with the S&P 500 (0.003 and 0.15 respectively). We see a high correlation of returns between gold and gold miners (0.71) which makes intuitive sense.

Chart 10: US Gold Miners vs. S&P 500 vs. Gold Metal

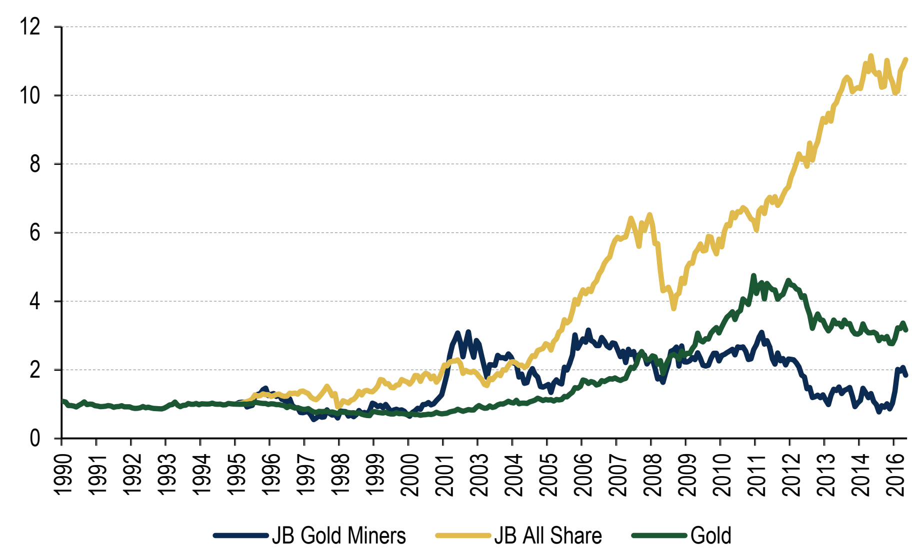


Source: Bloomberg

South African correlations

Doing a similar analysis for South African gold miners against the South African market we get to a similar result: correlation Jberg Gold miners against market, 0.36; gold against the market 0.22, Jberg gold miners vs. gold 0.6.

Chart 11: South African Miners vs. JB all share vs. gold price



Source: Bloomberg, BofA Merrill Lynch Global Research estimates

Case studies: NPV revisions

NAVs/NPVs (DCF values) for companies change mainly due to two reasons 1) Change in the market's assumed gold price "strip" and 2) Changes to expectations on volumes mined & costs. T The first of these is beyond control of management teams. The second, however, may be reflective of management delivery as management optimizes assets, adds reserves and commits capital to NPV positive projects.

Put another way, ex-gold price changes, to the extent that the market sees management teams creating value, it is willing to pay up for that in advance.

We think there is also an element of "how likely is it that metal price appreciation accrues to the bottom line?" here. If revenue goes up, does it drop through to the bottom line or does it get "consumed".

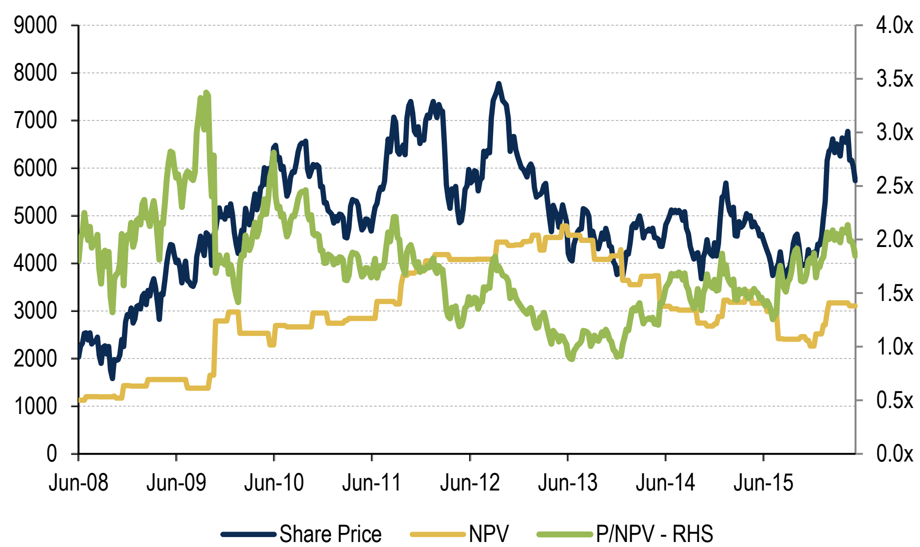
We think that there is a parallel here between NPV revisions & earnings revisions for more normal companies. We think that negative, price related NPV revisions may have bottomed, especially for higher quality stocks.

We consider two "mini-case studies": Randgold and Fresnillo. Both are seen as "blue-chip", high quality precious metal names in the European market.

Randgold: The Gold Investor's gold stock

Randgold is a London and NY listed gold mining company. The share is appreciated by investors for managements hands-on approach to project development and operational management. Capital is (and has for a long time) been allocated based on $1000/oz gold, 20% IRR, even when gold traded close to $2000/oz.

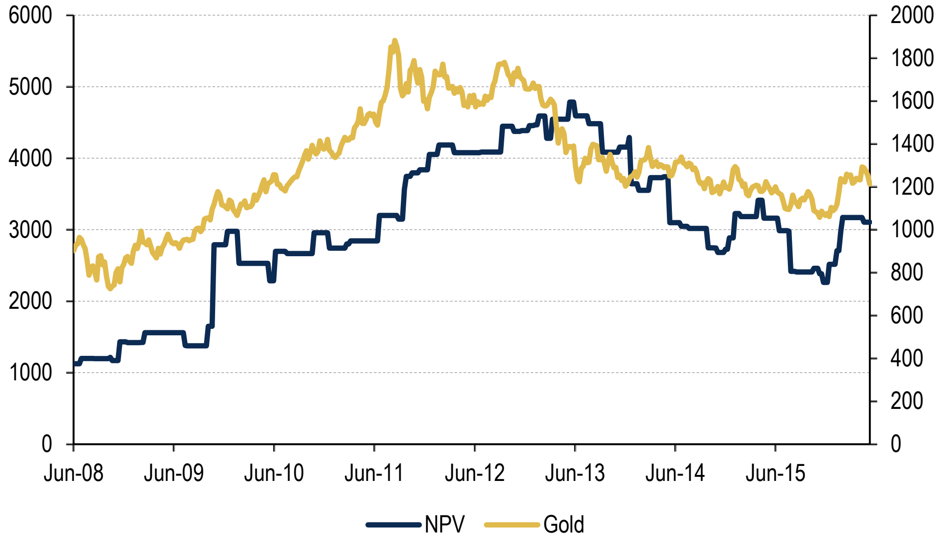
Chart 12: Randgold Share Price, NPV & P/NPV evolution



Source: BofA Merrill Lynch Global Research estimates

If we look our forecast Rangold NPV vs. the gold price we see that they track, albeit with a lag for the NPV. That said, we think that, for a given gold price, Randgold's NPV is now higher. The group's gold production is higher and reserves have continued to grow. As such, Randgold's shares have tended to trade at a high multiple of NPV as investors anticipate that management continue to "create value".

Chart 13: Randgold NPV vs. gold price

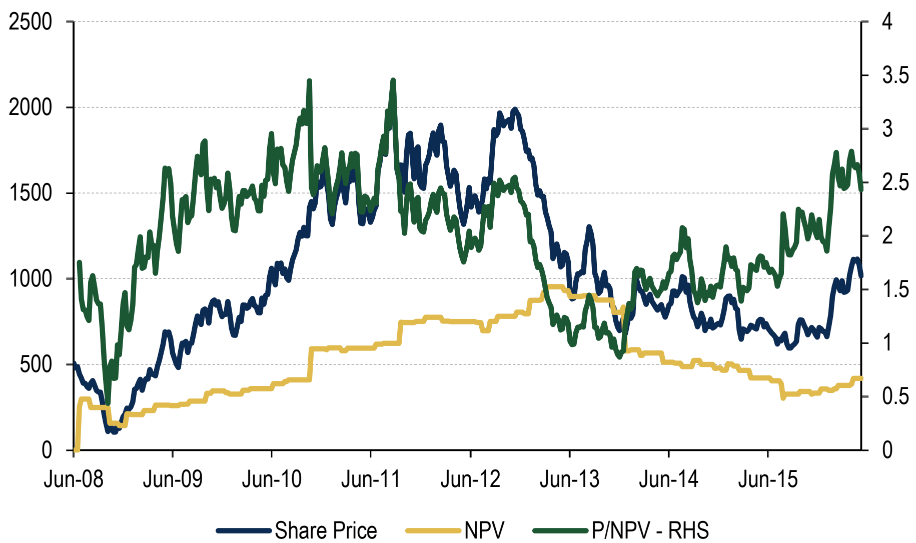


Source: BofA Merrill Lynch Global Research estimates, Bloomberg

Fresnillo: Silver Blue-chip

Fresnillo is a London listed Mexican silver company. Like Randgold, its healthy margins and prudent capital allocation have endeared it to investors. Top line growth from higher metal prices does tend to drop through to the bottom line. The group has for a long time delivered to a clearly articulated growth strategy.

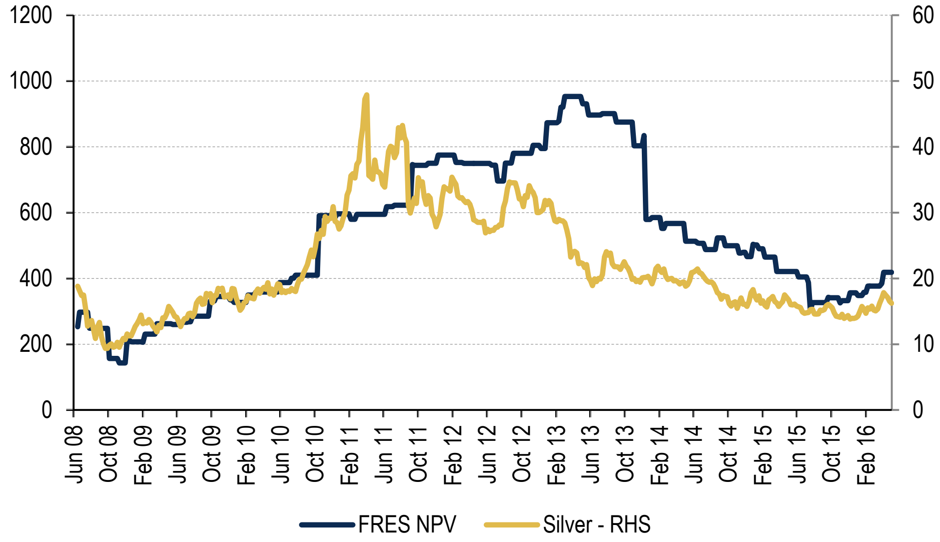
Chart 14: Fresnillo Share Price, NPV & P/NPV evolution



Source: BofA Merrill Lynch Global Research estimates, Bloomberg

Looking at Fresnillo's NPV vs. the silver price, we see that for a similar silver price, the group's NPV is higher.

Chart 15: Fresnillo NPV vs. silver price



Source: BofA Merrill Lynch Global Research estimates,

Appendix I: Gold View

From Metals Sunrise, published by Michael Widmer, March 29th, 2016.

Table 4: Gold & Silver price forecasts

		Spot	2013A	2014A	2015A	2016E	2017E	2018E	2019E	2020E	2021E	2022E
Gold - Real	US$/oz	1211	1,412	1266	1,161	1,232	1,293	1,285	1,194	1,196	1,198	1,200
Silver - Real	US$/oz	16.00	23.89	19.09	15.72	16.47	18.41	18.36	17.50	17	17	17

Source: BofA Merrill Lynch Global Research estimates

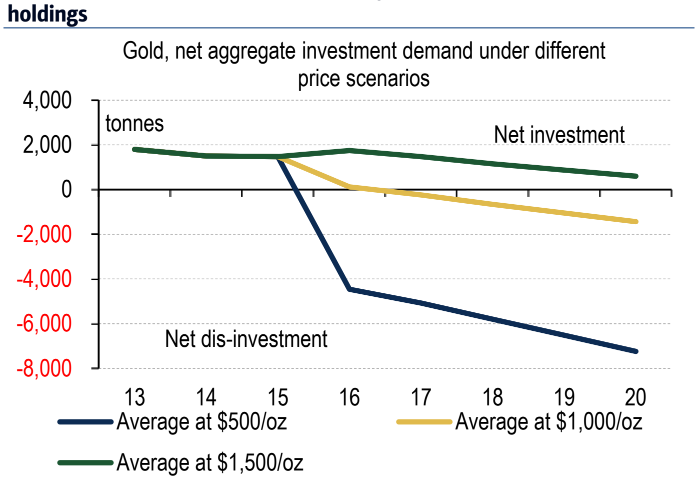
Fed in focus

Gold declined steadily in 2015 as a hawkish Fed moved towards the first rate hike in a disinflationary environment; of course, oil prices also dropped, the dollar strengthened and volatility was generally subdued, all of which provided headwinds. Yet, almost of these variables have become less of a drag on the yellow metal; most notably perhaps, expectations that the Fed may hike less aggressively and let inflation rise or potentially overshoot the 2% mark, thus keeping real rates low, should provide support to gold.

Supply/ demand: less of a drag on gold

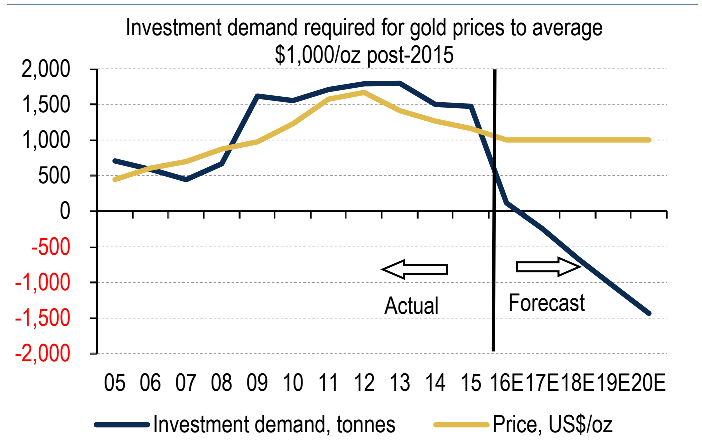
Taking a closer look at gold supply and demand, we model gold on a series of assumptions, including **mine output**, **scrap supply** and **gold fabrication/jewellery demand.** Given that some of these variables are influenced by prices, it is difficult to estimate a definite market balance. To get around this problem we ask how high **net aggregate investment** demand needs to be to balance the market. Putting it all together, our analysis suggests that gold prices could fall meaningfully below $1,000/oz only if non-commercial market participants continued to liquidate positions, which has not been the case YTD. In fact, physically backed ETFs have seen significant inflows of late, driven by the macro-economic dynamics outlined below.

Chart 16: Gold could decline further only if investors liquidated more holdings



Source: Thomson Reuters, BofA Merrill Lynch Global Commodity Research

Chart 17: Given steady investor demand, the importance of investors is set to decline



Source: Thomson Reuters, BofA Merrill Lynch Global Commodity Research

Concerns over global economic health help gold

To evaluate the direction of prices, we use another model that has captured gold's bull and bear markets well in recent years (Chart 18). This model references the **broad USD index**, **volatility**, **oil prices** and **real rates** as explaining variables, all of which were bearish for the yellow metal in the past few years. This, we believe is changing.

There are various ways to tackle the underlying dynamics. The ongoing weakness of economic growth, which has had a strong impact on many of the variables that matter for gold is a good starting point in our view. We used underlying economic activity as an access point to gold price movements in a recent note, then highlighting the high

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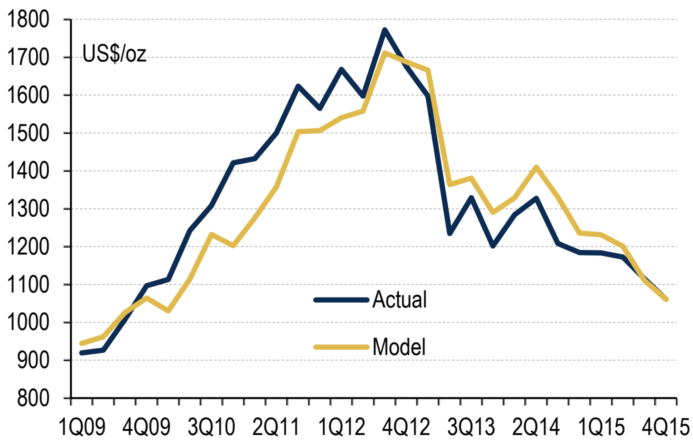
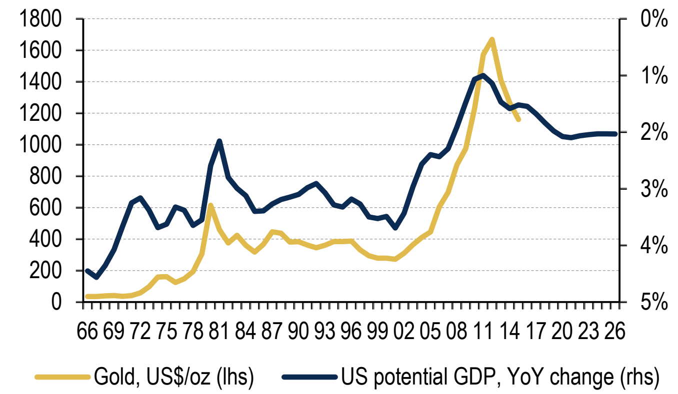
inverse correlation between potential US GDP growth[1] and quotations of the yellow metal (Chart 19). This relationship works partially because gold tends to be an anti-cyclical asset.

Chart 18: One of our models has captured gold price movements well



Source: Eviews, DataStream, Bloomberg, BofA Merrill Lynch Global Commodity Research

Chart 19: Gold and US potential GDP growth correlate closely



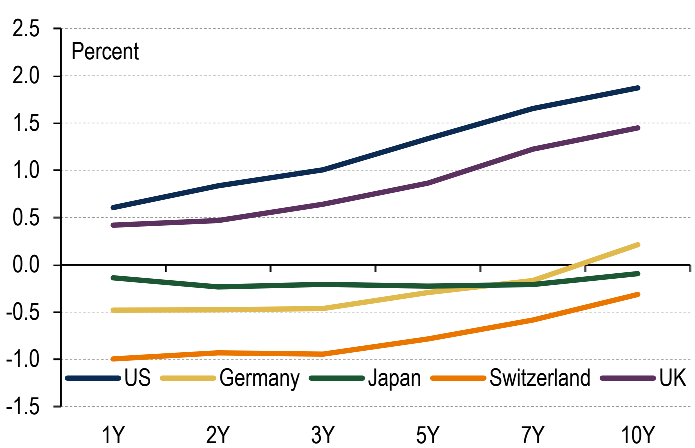
Source: CBO, Bloomberg BofA Merrill Lynch Global Commodity Research

Monetary policy divergence was a key headwind to gold

Interest rates remain very low; yield curves are negative in some countries

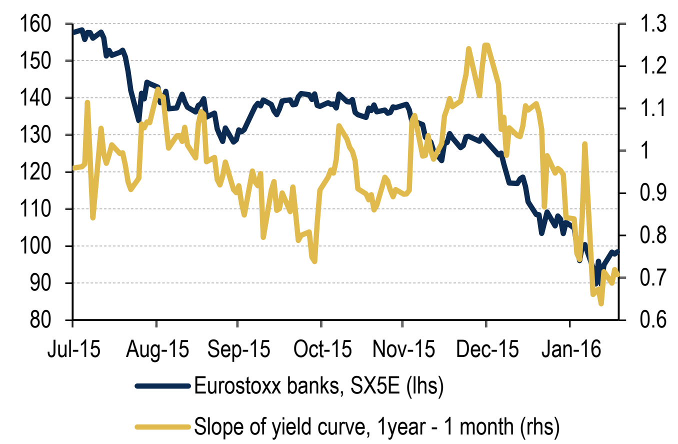
Authorities around the world have been tackling the weakness in economic growth and given relatively tight fiscal policies, central banks are in the driving seat. This is mirrored by Chart 20, which highlights that monetary authorities have kept a very loose monetary policy stance, keeping the costs of holding a non-yielding asset like gold low.

Chart 20: Yield curves are in negative territory in many DMs



Source: Bloomberg, BofA Merrill Lynch Global Commodity Research

Chart 21: Continued monetary easing in Europe has helped stabilise the economy, but banks have been under pressure



Source: Bloomberg, BofA Merrill Lynch Global Commodity Research

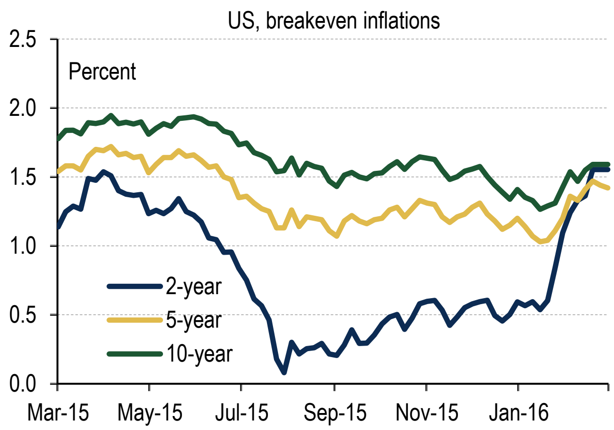
In addition, after providing stability in the wake of the Great Financial Crisis, it is worth noting that the ultra-loose monetary policy has become a source of volatility. In fact, the turmoil at European banks was heavily influenced by concerns the impact another round of easing may have on the profitability of the region's institutions (Chart 21). This contributed to the metal's rise at the beginning of the year.

[1] Potential GDP growth is driven by labor hours and contributions to growth from capital investment as well as total factor productivity. This measure captures the structural health of growth, rather than business cycles.

The Fed is not an island

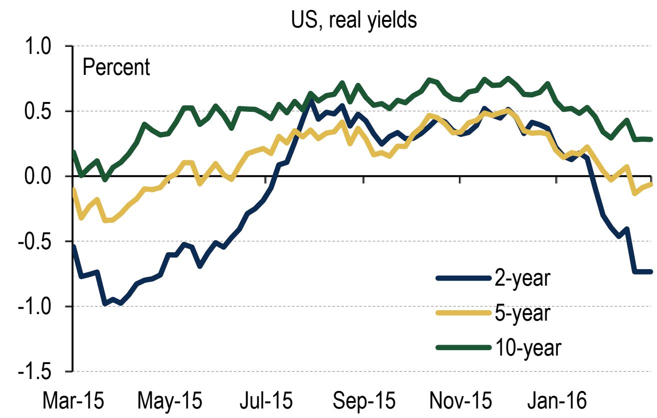
Having said that, interest rate dynamics in individual countries come with a caveat as yields between the Anglo-Saxon and non-Anglo-Saxon DMs diverged. Taking a closer look at the US, the Fed focused on the strength of the domestic economy when it moved towards the first rate hike in December 2015. As we outlined last year, the normalisation of monetary policy was one of the key obstacles to a gold rally, partially because it raised holding costs. In addition, the perception of rising policy differentials between World ex-US and US was a critical driver behind a sharp rise of USD. Dollar strength is important also when looking at the Fed's quest to hike policy rates. The weakness of the manufacturing sector has at least partially been caused by US currency strength. Or, put differently, given that the rate of economic growth has moved structurally lower (Chart 19 on page 17), not all sectors in the US economy could sustain the cyclical growth momentum as the Fed started to tighten. Linked to that, it is also worth noting that inflation expectations moved lower through 2015 (Chart 22), highlighting the Fed's difficulties to reflate the economy under a hawkish policy stance. This is an issue insofar because price stability is the second policy goal of the US central bank.

Chart 22: Inflation expectations collapsed, but have now gradually moved up...



Source: Bloomberg, BofA Merrill Lynch Global Commodity Research

Chart 23: ... which, combined with a less hawkish Fed, pushed real yields lower



Source: Bloomberg, BofA Merrill Lynch Global Commodity Research

Hence, it is perhaps not surprising that the market has re-assessed the likelihood of an accelerated rate hiking cycle (Chart 23) and the Fed followed through at the last FOMC meeting, highlighting they would hike only twice this year, while also reducing the long-term dot to 3.25% from 3.5%. **In our view, a less aggressive Fed that let inflation rise or potentially overshoot the 2% mark[2], thus keeping real rates low, is shaping up to be a sharp contrast to last year's dynamic and this is very supportive for gold.**

Non-coordination raises volatility

Changing tack slightly, central banks that eased monetary policy aggressively often also had currencies in mind as a tool to boost exports. Yet, for various reasons, including generally subdued global trade, this strategy has had its limitations. Intentions to aggressively drive a wedge between monetary policy stances have had side effects as well. EUR may have fallen meaningfully as ECB eased while the Fed looked to tighten, but that was accompanied by an increase in implied volatility. This is a point we also made when looking at competitive devaluations. These are not a zero-sum game, as more choppy FX markets make everyone worse off in the end.

While the Fed may have been forced not to be a complete outlier in monetary policy globally, we believe it unlikely that central banks around the world will coordinate their

[2] Cúrdia, Vasco; "Is there a Case for Inflation Overshooting?"; FRBSF Economic Letter, February 2016

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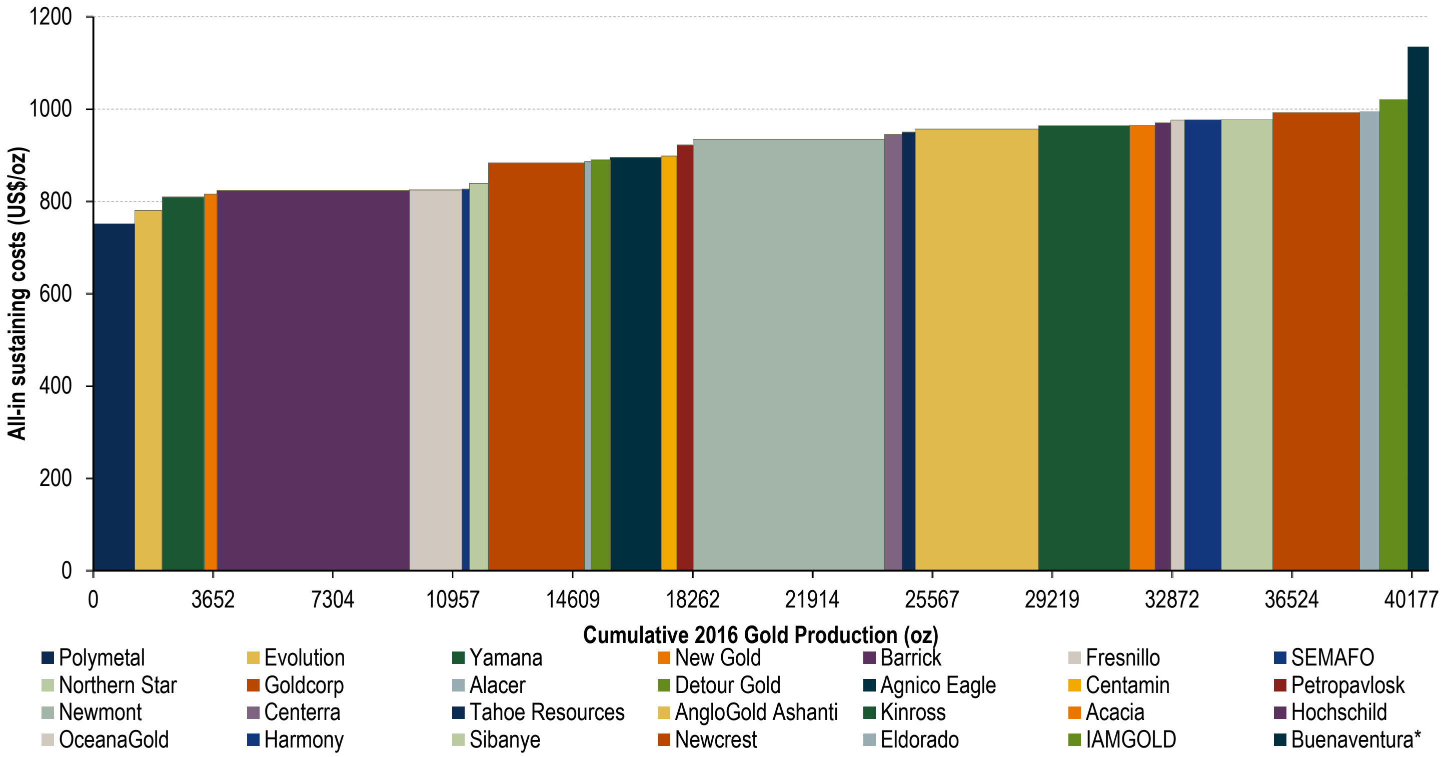
actions imminently. Against this backdrop, we think PBoC Governor Zhou Xiaochuan's recent comments are worth noting. The official suggested that major global currency co-ordination is unlikely over the next few years. Linked to that, our Asian equity strategy team also expects RMB/USD to remain volatile going forward; other currency pairs may remain equally choppy, increasing in turn the attractiveness of holding gold.

Appendix II: Gold Cost Curve (AISC)

The chart below sets our a comparison of the all-in sustaining costs (AISC) curve for the global gold stocks under coverage by BofA Merrill Lynch Global Research.

Chart 24: Global gold all-in sustaining costs (AISC) curve



Source: BofA Merrill Lynch Global Research estimates

Table 5: Stocks mentioned

BofAML Ticker	Bloomberg ticker	Company name	Price	Rating
ABGLF	ACA LN	Acacia Mining	307.1	C-3-7
AEM	AEM US	Agnico Eagle	45.12	B-1-8
ALIAF	ASR CN	Alacer Gold	2.91	C-1-9
AU	AU US	AngloGold Ashanti	13.93	C-1-9
AULGF	ANG SJ	AngloGold Ashanti	219.09	C-1-9
ABX	ABX US	Barrick Gold	16.96	C-2-8
BVN	BVN US	Buenaventura	9.7	C-2-7
CELTF	CEY LN	Centamin	99.6	C-2-7
YCEE	CEE CN	Centamin	1.89	C-2-7
YCG	CG CN	Centerra	6.46	C-3-7
EGO	EGO US	Eldorado	4.29	C-3-9
CAHPF	EVN AU	Evolution Mining	2.04	C-2-7
YFNV	FNV CN	Franco-Nevada	83.76	C-1-7
FNLPF	FRES LN	Fresnillo plc	1044	C-2-7
GFI	GFI US	Gold Fields	3.72	C-2-7
GFIOF	GFI SJ	Gold Fields	56.69	C-2-7
GG	GG US	Goldcorp Inc.	16.95	C-1-8
HGMCF	HAR SJ	Harmony	46.63	C-2-9
HMY	HMY US	Harmony	3.1	C-2-9
HL	HL US	Hecla Mining	3.96	C-3-8
HCHDF	HOC LN	Hochschild	144	C-1-9
IAG	IAG US	IAMGOLD	3.25	C-3-9
YIMG	IMG CN	IAMGOLD Corp.	4.26	C-3-9
KGC	KGC US	Kinross Gold	4.33	C-1-9
NGD	NGD US	New Gold Inc.	3.74	C-2-9
YNGD	NGD CN	New Gold Inc.	4.9	C-2-9
NCMGF	NCM AU	Newcrest	19.4	C-2-9
NEM	NEM US	Newmont Mining	32.35	B-2-8
NESRF	NST AU	Northern Star	4.29	C-3-7
OGDCF	OGC AU	OceanaGold	4.13	C-3-8
YOGC	OGC CN	OceanaGold	3.84	C-3-8
YOR	OR CN	Osisko Gold Royaltie	15.35	C-1-7
PAAS	PAAS US	Pan American	14.22	C-3-8
PPLKF	POG LN	Petropavlovsk	7.65	C-1-9
XPMYF	POLY LN	Polymetal Int	832	C-1-7
GOLD	GOLD US	Randgold	84.86	B-1-7
RGORF	RRS LN	Randgold	5850	B-1-7
RGLD	RGLD US	Royal Gold Inc	56.29	C-1-7
YSMF	SMF CN	SEMAFO	5.14	C-1-9
SBGL	SBGL US	Sibanye	11.95	C-1-7
SBGLF	SGL SJ	Sibanye	47.31	C-1-7
SLW	SLW US	Silver Wheaton	18.73	C-1-8
TAHO	TAHO US	Tahoe Resources	11.99	C-1-7
YTHO	THO CN	Tahoe Resources	15.76	C-1-7
AUY	AUY US	Yamana Gold	4.21	C-2-8
YYRI	YRI CN	Yamana Gold	5.55	C-2-8

Source: BofA Merrill Lynch Global Research

Price objective basis & risk

Acacia Mining Plc (ABGLF)

Our price objective of GBp 245 is based on c. 1.4x our sum-of-the-parts DCF valuation using a 5.5% WACC and no terminal value. This is above Acacia's historical valuation average (c. 1.0x), but at a discount to where precious metals producers have historically traded, due to Acacia's higher-cost operations, a history of operational disappointment, limited organic growth potential vs. peers, and the overhang of Barrick's 64% stake. In our view ACA shares could continue to trade at a premium to NPV if the group can meet its guidance and continue to demonstrate operational improvements aimed at lowering costs and generating sustainable FCF.

Upside risks are gold prices rising higher than our forecast and better-than-expected operational delivery and reserve additions at North Mara. Downside risks are a fall in the gold price, local cost inflation, or operational issues at key mine Bulyanhulu.

Agnico Eagle Mines (AEM)

Our $52.00 per share price objective is based on Agnico Eagle trading at 3.00 times our estimated NAV. Historically, North American gold producers have traded between 1 and 3 times NAV, with 3 times being accorded to the organically growth-oriented gold producers. Agnico Eagle expects to grow its gold output from around 1.4 million oz in 2014 to 1.6 million oz for 2015. Our NAV of $17.35/sh ($21.70/sh DCF of the mining assets and $4.35/sh net debt) is based on the mining of 20 million oz of gold, a 10-year average gold price forecast of $1,230/oz, and a 5% discount rate.

Risks of this price objective not being attained are commodity price weakness, the inability to secure financing for expansion or development projects, unforeseen operating problems, and political risk in the countries the company operates in. Upside risks are commodity price strength, better-than-forecast operating performance and favorable changes in the political environment in the regions where it operates.

Alacer Gold (ALIAF)

Our 12-month PO of C$3.75/sh (AUD $3.85/sh) is calculated using a 1.25x P/NPV after bringing in the sulfide growth option into our base-case NPV (note this is below average of the North American junior/mid tier producer group). We assume CAD and AUD exchange rates of 1.30 and 1.32 to convert our USD NAV to our two price objectives respectively. Our ten year average gold price assumption is $1,230/oz.

Our base case modelling includes Copler heap leach (to 2019) and sulfide POx (to 2034). Our base NPV is based on the current known production profile and does not incorporate terminal values. We have applied a nominal real WACC of 5.0% across our valuation.

Upside risks to our price objective: Higher gold prices, lower CADUSD FX rate, project risks and certainty as to growth projects.

Downside risks to our price objective: Lower gold prices, higher CADUSD FX rate, and project risks and uncertainty as to growth projects.

AngloGold Ashanti (AULGF / AU)

Our price objective of ZAR300 (US$ 20.83 per ADR) is based on our sum-of-the-parts DCF valuation (rolled forward by 12 months), using a discount rate of 7% (real) for the international assets and 7% (real) for the South African assets. We use no terminal value as time horizon is based on life of mines. The historical (12-year) average P/NPV for the SA gold majors is 1.50x, however, global peers trade at a premium to this (currently 1.7x). We apply a 1.5x P/NPV multiple.

The upside risks to our Price Objective are: i) Higher than expected gold prices, ii) Weaker than expected ZAR, iii) Lower than expected cost inflation. The downside risks to our Price Objective are: i) Lower than expected gold prices, ii) Stronger than expected ZAR, iii) Higher than expected cost inflation, iv) Labour unrest.

Barrick Gold (ABX)

Our price objective (PO) for Barrick Gold is $20.00 per share and is based on the stock trading at 2.50 times our estimated net asset value (NAV). Our NAV of $8.00 per share ($13.10/sh DCF of mining assets and $5.10/sh in net debt) is based on a 5 percent discount rate and a 10-year average gold and copper price forecasts of $1,230 per ounce and $2.44 per pound. Historically, North American precious metal stocks have traded between 1 and 3 times NAV, with unhedged, growth-oriented producers with assets located in relatively geopolitically safe regions occupying the upper end of the range. We do ascribe a lower target P/NAV multiple for those companies with slowly growing production bases such as Barrick Gold.

Downside risks to our price objective are, commodity price weakness, the inability to secure financing for expansion or development projects, unforeseen operating problems, political or legal challenges in the regions in which the company operates, rising capital and operating costs and delays in the development of its growth projects.

Upside risks to our price objective are, stronger-than-expected commodity prices and the possibility of paying down debt much more quickly than anticipated.

Buenaventura (BVN)

Our 12-month price objective of US$10/share for Buenaventura is based on: 1) sum-of-the- parts valuation of BVN's direct operations with a 1.5x P/NAV multiple, 43.65% stake at Yanacocha with a 1.5x P/NAV multiple and 19.6% stake at Cerro Verde at 1x P/NAV, 2) our gold price estimate at US$1,232/oz in 2016 and US$1,293/oz in 2017, and 3) our copper price estimates at US$2.21/lb in 2016 and US$2.15/lb in 2017.

Downside risks to our price objective are: 1) Metal prices: as a metals company, Buenaventura runs the risk of changes in metal prices, as it is now fully unhedged, 2) Political/social risks: all of BVN's operations are currently located in Peru, where the company has had conflicts with local communities in the past, 3) Cost inflation, given the high level of prices of materials, energy and lack of skilled labor, 4) Reserves depletion.

Upside risks to our price objective are: 1) The announcement of development on growth projects, 2) stronger government support for mining, enabling the development of new growth projects, 3) project execution faster than expected, and 4) Higher metal prices, mainly copper and gold.

Centamin Plc (CELTF / YCEE)

Our price objective of GBp 125 (YCEE: CAD 2.50/sh) is set at around 1.6x NPV valuation. We use 5% real wacc and no terminal value. We don't think further multiple expansion can be justified without 1) production beating guidance or 2) resolution of the court case against Centamin.

Downside risks to our price objective are loss of the group's Sukari license, operational setbacks at the group's Sukari mine, a change to the fiscal conditions for the group's Sukari license, a fall in the price of gold to below our base case assumptions, higher than expected cash costs vs. our estimates, or the court case ruling goes against Centamin.

Bank of America Merrill Lynch

Centerra Gold (YCG)

Our price objective for Centerra Gold is C$6.25 per share, and is based on the stock trading at 0.75 times our estimated net asset value (NAV) on a cash-adjusted basis. Our NAV of US$5.45 per share ($3.90 per share DCF of mining assets and $1.55 per share net cash) is based on a 10% discount rate and a 10-year average gold price forecast of $1,231 per ounce. To convert our USD NAV to a CAD PO we assume a USDCAD exchange rate of 1.40. Historically North American precious metal stocks have traded between 1 and 3 times NAV, with a median of 1.50 times over the past three years (and 2.00 times longer-term), with unhedged, growth-oriented producers occupying the upper end of the range. We are concerned about the political and legal uncertainty in the countries in which it operates, namely Mongolia and the Kyrgyz Republic. The 0.75 times multiple reflects this risk.

Downside risks to our price objective for Centerra Gold are commodity price weakness, a conclusion to the current negotiations with the Kyrgyz government that is worse than anticipated, the inability to secure financing for expansion or development projects, and delays in the development of its growth projects. Upside risks to our price objective are a conclusion to the current negotiations with the Kyrgyz government that is better than anticipated, permits being issued for the Boroo and/or Gatsuurt mines and exploration success through Centerra's aggressive exploration program.

Eldorado Gold (EGO)

Our price objective for Eldorado Gold is $4.10 per share, and is based on the stock trading at 1.50 times its estimated net asset value (NAV). Our NAV estimate of $2.30 per share ($2.75/sh DCF of mining assets and $0.45/sh for net debt) is based on a 5 percent discount rate and a 10 year average gold price forecast of $1,230 per ounce. Historically, North American precious metal stocks have traded between 1 and 3 times NAV, with a median of 1.50 times over the last 3 years (and 2.00 times longer-term), and with unhedged, growth-oriented producers occupying the upper end of the range.

Risks to our price objective for Eldorado Gold are commodity price weakness, the inability to secure financing for expansion or development projects, unforeseen operating problems, political, legal or permitting challenges in the regions in which the company operates, rising capital and operating costs and delays in the development of its growth projects.

Evolution Mining Limited (CAHPF)

Our 12 month PO of $2.20ps factors in the following assumptions:1) Discount rate of 11.5%, which reflects EVN's mine risk, commodity and currency risk. 2) 2017 valuation to accurately reflect its financial position post La Mancha, Cowal and Phoenix acquisitions.3) Mine life primarily driven by reserve exhaustion with limited exploration upside. Our 12 month PO of $2.20/sh reflects our DCF valuation. No terminal growth rate is applied. Risks to our PO are aggressive interest rate hikes, operational and safety concerns and an increase in AUDUSD.

Franco-Nevada Corporation (YFNV)

Our price objective for Franco-Nevada is C$92.50 per share, and is based on the stock trading at 3.00 times our estimated net asset value (NAV) on a cash-adjusted basis and a USD/CAD FX rate of 1.30. Our NAV estimate of US$23.70 ($23.70 per share discounted cash flow of royalty assets) is based on a 5 percent discount rate and 10 year average gold price forecast of $1,230 per ounce. Historically, North American precious metal stocks have traded between 1 and 3 times NAV, with unhedged, growth-oriented producers occupying the upper end of the range. Based on its strong balance sheet and low-cost asset base, we believe Franco-Nevada deserves a premium multiple. Franco-Nevada also benefits from an experienced management team.

Risks to our price objective for Franco-Nevada are commodity price weakness, unforeseen operating problems at the mines on which its royalties

Fresnillo plc (FNLPF)

We set our PO of GBp 1,200 at 2.85x our 2017 NPV estimate, above the long-run average P/NPV multiple for Fresnillo due to the company's near term production growth profile that sees ounces grow with an 11% 2015-2018E CAGR.

Downside risks are that the share price could decline below our price objective if the global demand for commodities slows, leading to lower metal prices, or if speculative investors exit the commodity market, leading to lower metal prices. The group also faces operational risk at its existing mines and execution risk on its growth projects. The group also faces currency risk by virtue of incurring costs in Mexican pesos but selling in US$. If the peso were to strengthen vs. the US$, the group's profitability would be negatively impacted, which might lead to negative share price performance. However, if silver and gold prices continue to rally, shares could continue to rise. We use a 5% real WACC and no terminal value.

Gold Fields (GFIOF / GFI)

Our price objective of ZAR70 (US$4.86 per ADR) is based on our sum-of-the-parts DCF valuation (rolled forward by 12 months), using a discount rate of 7% (real) for the international assets and 7% (real) for the South African assets. We use no terminal value as time horizon is based on life of mines. The historical (12-year) average P/NPV for the SA gold majors is 1.50x, however, given the increased SA and Deep South mine risk profile, we only apply a 1.2x P/NPV multiple.

The upside risks to our Price Objective are: i) Higher than expected gold price, ii) Weaker than expected ZAR and AUD, iii) Lower than expected cost inflation, iv) Upward revision of South Deep production guidance above our expectations. The downside risks to our Price Objective are: i) Lower than expected gold price, ii) Stronger than expected ZAR and AUD, iii) Higher than expected cost inflation, iv) Downward revision of South Deep production guidance below our expectations, v) Labour unrest.

Goldcorp (GG)

Our price objective for Goldcorp is $24.00 per share, and is based on the stock trading at 2.50 times our estimated net asset value (NAV). Our NAV of $9.60 per share ($12.60 per share DCF of mining assets and $3.00 per share in net debt) is based on a 5 percent discount rate and 10 year average gold and silver price forecasts of $1,230 and $17.33 per ounce respectively. Historically, North American precious metal stocks have traded between 1 and 3 times NAV, with a median of 2.00 times long-term, and with unhedged, growth-oriented producers such as Goldcorp occupying the upper end of the range.

Risks to our price objective for Goldcorp are commodity price weakness, the inability to secure financing for expansion or development projects, unforeseen operating problems, political, legal or permitting challenges in the regions in which the company operates, rising capital and operating costs and delays in the development of its growth projects.

Harmony (HGMCF / HMY)

Our PO of ZAR56.00 (ADR: US$3.89) is derived from our sum-of-the-parts DCF valuation (rolled forward by 12 months), using a discount rate of 7% (real) and no terminal value as time horizon is based on life of mines. The historical (12-year) median P/NPV for the SA gold majors is 1.50x, however, given the increased SA risk profile for Harmony relative to peers, we apply a 0.9x P/NPV multiple.

The upside risks to our Price Objective are: i) Higher than expected gold and copper prices, ii) Weaker than expected ZAR, iii) Lower than expected cost inflation, iv) PNG Government exercises its option in Golpu project. The downside risks to our Price

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Objective are: i) Lower than expected gold and coppers prices, ii) Stronger than expected ZAR, iii) Higher than expected cost inflation, iv) Extended labour unrest.

Hecla Mining (HL)

Our price objective for Hecla Mining is $3.20 per share, and is based on the stock trading at 1.875 times our estimated net asset value (NAV). Our NAV of $1.70 per share ($2.60 dcf and $0.90/sh net debt) is based on a 5 percent discount rate and 10 year average silver and gold price forecasts of $17.33 and $1,230 per ounce respectively. Historically, North American precious metal stocks have traded between 1 and 3 times NAV, with a median of 1.50 times over the last three years (and 2.00 times longer-term), and with unhedged, growth-oriented producers occupying the upper end of the range. The discount to the peak valuation multiple reflects our forecast for Hecla's silver production to be relatively static over the next several years.

Upside risks are a recovery in precious and base metal prices and finding new and unexpected silver reserves. Downside risks are commodity price weakness, the inability to secure financing for expansion or development projects, unforeseen operating problems, political, legal or permitting challenges in the regions in which the company operates, rising capital and operating costs and delays in the development of its growth projects.

Hochschild Mining plc (HCHDF)

Our price objective of GB 165p is based on a 1.8x NPV multiple of our estimated pro forma NPV, above its historical average due to strong FCF generation and ounce growth. Our assumed WACC is 5% real with no terminal value. Downside risks to our price objective are: risks to silver prices, operational risk, political risk in South America, risks to company guidance on mine life and project execution risk on Inmaculada. Upside risks to our price objective other than commodity price are better than nameplate throughput at Inmaculada, higher-than-expected grades at legacy mines, and positive exploration results.

IAMGOLD Corp. (IAG / YIMG)

Our price objective for IAMGOLD is US$2.50/C$3.25 per share, and is based on the stock trading at 1.00 times our estimated net asset value (NAV) on a cash-adjusted basis. Our NAV of US$2.50 per share ($2.35 per share DCF of mining assets and $0.15 per share for net cash) is based on a 5 percent discount rate and a 10 year average gold price forecast of $1,230 per ounce. Historically, North American precious metal stocks have traded between 1 and 3 times NAV, with a median of 2.00 times over the long-term, and with unhedged, growth-oriented producers occupying the upper end of the range. We ascribe a lower than peak value P/NAV multiple to IAMGOLD to reflect our forecast for higher than average political risk and rising cash costs.

Downside risks to our price objective for IAMGOLD are commodity price weakness, unforeseen operating problems, the inability to secure financing for expansion or development projects, political, legal or permitting challenges in the regions in which the company operates, rising capital and operating costs and delays in the development of its growth projects. Upside risks to our price objective are stronger-than-expected commodity prices, growth projects that prove to have economics that exceed our expectations, a cost-cutting program at the operations that exceeds our expectations in terms of timing and magnitude and unforeseen concessions from governments in the regions IAMGOLD operates (that lead to improved economics).

Kinross Gold (KGC)

Our price objective for Kinross Gold is $5.75 per share, and is based on the stock trading at 2.25 times our net asset value (NAV) estimate, reflecting production growth lower than the senior/mid-tier average. Our NAV of $2.55 per share ($3.65/sh DCF of mining assets and -$1.10/sh net debt) is based on a 5 percent discount rate and 10-year average gold and silver price forecasts of $1,230 and $17.33 per ounce. Historically, North American precious metal stocks have traded between 1 and 3 times NAV, with unhedged, growth-oriented producers such as Kinross Gold occupying the upper end of the range.

Risks to our price objective for Kinross Gold are commodity price weakness, the inability to secure financing for expansion or development projects, unforeseen operating problems, political or legal challenges in the regions in which the company operates, rising capital and operating costs and delays in the development of its growth projects or current mine expansions. On the upside the key risks are stronger than expected commodity prices and an operating turnaround that exceeds our expectations in terms of timing and magnitude.

New Gold Inc. (YNGD / NGD)

Our price objective for New Gold of C$6.65/US$5.10 is based on the shares trading at 2.0x its estimated net asset value (NAV), appropriately reflecting our outlook for the company relative to its peers, in our view. Our NAV estimate of US$2.55 per share ($3.45/sh DCF of mining assets and $0.90/sh of net debt) is based on a 5 percent discount rate and 10 year average gold, silver and copper price forecasts of $1,230/oz, 17.33/oz and $2.44/lb respectively. Historically, North American precious metal stocks have traded between 1.0x and 3.0x NAV, with a median of 1.50 times in the past three years (and 2.00 times longer-term), and with unhedged, growth-oriented producers occupying the upper end of the range. We assume a USDCAD exchange rate of 1.30.

Downside risks to our price objective for New Gold are commodity price weakness, unforeseen operating problems, political, legal or permitting challenges in the regions in which the company operates, rising capital and operating costs and delays in the development of its growth projects. Potential upside risks to our price objective are better than expected co-product basis cost control, and higher than expected commodity prices.

Newcrest Mining Limited (NCMGF)

Our 12-month PO of $20.50/share represents our 30-year DCF valuation. Our NPV is based on a known production profile and does not incorporate terminal values.

We have applied a WACC of approximately 9.4% across our valuation, which is based on (Rf = 5%, MRP = 5%, Beta = 1.25x, D/E of 40%).

Risks: Operational performance, Gold prices, exchange-rate movements, copper prices, and project risks.

Newmont Mining (NEM)

Our price objective for Newmont Mining is $38.00 per share, and is based on the stock trading at 2.50 times our estimated net asset value (NAV). Our NAV of $15.20 per share ($21.70/sh DCF of mining assets and $6.50/sh net debt) is based on a 5 percent discount rate and a 10-year average gold and copper price forecasts of $1,230 per ounce and $2.44 per pound respectively. Historically, North American precious metal stocks have traded between 1 and 3 times NAV, with a median of 1.50 times over the past three years (2.00 times longer-term), and with unhedged, growth-oriented producers with solid balance sheets occupying the upper end of the range. The discount to the peak valuation multiple reflects our forecast for Newmont's gold production to be relatively static over the next several years.

Upside risks to our price objective are stronger than forecast commodity prices, better than expected success at reducing costs and positive regulatory, permitting or operating developments. Downside risks to our price objective for Newmont Mining are the inability to secure financing for expansion or development projects, unforeseen operating problems, political, legal or permitting challenges in the regions in which the company operates, rising capital and operating costs and delays in the development of its growth projects.

Northern Star (NESRF)

Our 12 month NAV based PO of $2.30ps, factors in the following assumptions: 1) Discount rate of 11.5%, which reflects NST's underground mine risk, commodity and currency risk. 2) Mine life driven by potential exploration success given the nature of underground narrow-vein mining.3) Central Tanami included in our base case at 60% ownership vs 25% of JV currently. NST is sole-funding the drilling program, in addition to refurbishing the processing plant, to earn 60% of the Project. Upside risks to our PO include higher gold price assumptions, higher than expected gold volumes, lower operating costs, exploration success above modelling assumptions. Downside risks are aggressive interest rate hikes, operational and safety concerns and an increase in AUDUSD.

OceanaGold Corporation (OGDCF / YOGC)

Our 12 month NAV based PO of $3.50ps (ASX) / $3.40ps (TSX), factors in the following assumptions:1) Discount rate of 11.5%, which reflects OGC's mine risk, global portfolio, commodity and currency risk. 2) Our Didipio valuation consists of the open pit transitioning to the underground late 2017. 3) Zero valuation for El Dorado. Upside risks to our PO are higher gold price assumptions, higher than expected gold volumes, lower operating costs, exploration success above modelling assumptions. Downside risks are aggressive interest rate hikes, operational and safety concerns and an increase in AUDUSD.

Osisko Gold Royalties (YOR)

Our price objective for Osisko Gold Royalties is C$17.80 per share, and is based on the stock trading at 2.50 times our estimated net asset value on a cash-adjusted basis. Our NAV estimate of C$10.90 (C$4.95/sh dcf of royalty assets and C$5.95 cash and investments) is based on a 5 percent discount rate and 10-year average gold price forecast of US$1,230 per ounce. To calculate our PO, we multiply the DCF of royalty assets by 2.25 times and then add in cash and investments per share.

Historically, North American precious metal stocks have traded between 1 and 3 times NAV, with unhedged, growth-oriented producers occupying the upper end of the range. Based on its strong balance sheet and low-cost asset base, we believe Osisko deserves a premium multiple.

Risks to our price objective for Osisko are commodity price weakness, unforeseen operating problems at the mines on which its royalties are based, financing challenges, political and/or legal challenges in the regions in which the mines operate, and delays in the development of projects for which the company owns royalties.

Pan American Silver (PAAS)

Our price objective for Pan American Silver is $13.25 per share, and is based on the stock trading at 2.00 times our estimated net asset value (NAV) on a net cash-adjusted basis. Our NAV of $7.20 per share ($6.05 DCF of mining assets and $1.15/sh net cash) is based on a 5 percent discount rate and 10 year average gold and silver price forecasts of $1,230 and $17.33 per ounce respectively. Historically, North American precious metal stocks have traded between 1 and 3 times NAV, with companies with higher costs such as Pan American Silver occupying the lower end of the range.

Upside risks to our price objective are a rebound in the price of base metals such as lead and zinc, and a change in the regulatory/permitting environment in the Chubut province of Argentina.

Additional upside risks to our price objective for Pan American Silver are unexpected commodity price strength, easier than expected ability to secure financing for expansion or development projects, operations that exceed expectations, positive political or legal changes in the regions in which the company operates, and lower than expected capital and higher operating costs. Downside risks are unforeseen operating issues, realized commodity prices that are below our forecast and regulatory issues that cause financial result to differ from our forecast.

Petropavlovsk (PPLKF)
Our 9.5p price objective is based on c. 0.7x our DCF derived NPV adding the group's stake in IRC at market value. Our multiple for precious metals assets is at the lower end of the 0.5-3x trading range for global peers. We see potential for shares to re-rate on deleveraging and a transfer of value from debt to equity. We use a low P/NPV multiple due to high perceived political risk for the company's Russian assets, concerns on project execution, and concerns over a high level of gearing. The group has just completed a capital raise. We use 6% real discount rate, no terminal value.

Upside/downside risks to our price objective are: Adverse movements in the gold price, appreciation in the Russian Rouble, change in market sentiment to stocks with emerging market assets, Russian political risk, project execution, operational risk.

Polymetal International Plc (XPMYF)
Our price objective is GBp870/sh. We arrive at our price objective by applying a 1.5x P/NPV multiple (based on DCF till 2030E, discounted at 5%), to account for growth potential outside of the existing assets. Upside risks: 1) higher gold and silver prices, 2) rouble depreciation, 3) better than expected project execution. Downside risks: 1) project over-runs, 2) higher than expected cost inflation, 3) lower gold and silver prices.

Randgold Resources (RGORF / GOLD)
Our price objective of GBp 7100 (US$110) is based on 2.3x our sum-of-the-parts/DCF driven NPV valuation. We assume 5% real WACC, no terminal value, and $1,200/oz long-term gold price forecast, in line with global peers. Randgold's underlying quality is high. This includes a track record on delivery, good cost control, experience of building mines in Africa, and exploration success.

Risks to our price objective are: gold prices falling below our forecast, unforeseen operating problems at the mines, higher-than-expected cost or capex inflation, delays to bringing growth projects online, and political or legal challenges in the regions in which the company operates.

Royal Gold (RGLD)
Our price objective for Royal Gold is $75.00 per share, and is based on the stock trading at 2.25 times our estimated net asset value (NAV). Our NAV of $33.30 per share ($40.30 discounted cash flow of royalty assets less $7.00 for net debt) is based on a 5 percent discount rate and 10-year average gold and silver price forecasts of $1,230 and $17.33 per ounce respectively. Historically, North American precious metal stocks have traded between 1 and 3 times NAV, with unhedged, growth-oriented producers occupying the upper end of the range. Given Royal Gold's status as a royalty company as opposed to an operator, we value the company using a multiple of 2.00 times to reflect its strong cash flow generating ability, balanced by significant exposure to one asset (Mt. Milligan).

Risks to our price objective for Royal Gold are commodity price weakness, unforeseen operating problems at the mines on which its royalties are based, financing challenges, political and/or legal challenges in the regions in which the mines operate, and delays in the development of projects for which the company owns royalties. Upside risks are substantially higher commodity prices, higher-than-expected output at the royalty assets, and/or higher reserves at the royalty assets.

SEMAFO (YSMF)

Our C$6.15/sh price objective (PO) on SEMAFO shares is based on the shares trading at 1.75x our estimated net asset value (NAV), and a 1.30 CAD/USD exchange rate. Our estimated NAV of US$2.70/sh consists of US$2.25/sh for the DCF of the mining assets plus US$0.45/sh in net cash. We use a 5% discount rate (in line with our entire North American precious metals coverage universe) and a US$1,230/oz 10 average real gold price, with a US$1,200/oz long-term gold price starting in 2022. The 1.75x target multiple is above with the six-year average P/NAV trading multiple for junior/intermediate gold producers. Historically, growth-oriented junior /intermediate gold producers with solid balance sheets and low costs such as SEMAFO have traded at the higher end of the 0.70 - 1.85x range. We conservatively apply the 1.75x multiple, partly to reflect its geographic asset concentration in one country, Burkina Faso, in West Africa.

Downside risks to our PO are lower than forecast gold prices and mined ore grades, unplanned operational disruptions, unforeseen politically-related disruptions, changes in the regulatory and tax regime and higher than expected costs from a range of factors including, weather, higher EUR/USD exchange rates, harder ore, higher commodity input costs and labor inflation.
Upside risks to our price objectively are higher than expected gold prices and mined grades and lower than expected costs.

Sibanye (SBGLF / SBGL)

Our price objective of ZAR66 (US$18.33 per ADR) is based on our sum-of-the-parts DCF valuation (rolled forward by 12 months), using a discount rate of 7% (real) and no terminal value as time horizon is based on life-of mines. The historical (12-year) average P/NPV for the SA gold majors is 1.5x, however, given the increased SA risk profile for Sibanye relative to peers, we apply a 0.9x P/NPV multiple.

The upside risks to our Price Objective are: i) Higher than expected gold and PGM prices, ii) Weaker than expected ZAR, iii) Lower than expected cost inflation. The downside risks to our Price Objective are: i) Lower than expected gold and PGM prices, ii) Stronger than expected ZAR, iii) Higher than expected cost inflation, iv) Labour unrest.

Silver Wheaton (SLW)

Our price objective for Silver Wheaton is $24.00 per share, and is based on the stock trading at 2.00 times our estimated net asset value (NAV). Our NAV of $12.00 per share ($14.15 DCF less $2.15/sh net debt) is based on a 5 percent discount rate and a 10-year average silver and gold price forecast of $17.33 per ounce and $1,230/oz. Historically, North American precious metal stocks have traded between 1 and 3 times NAV, with a median of 2.00 times longer-term (1.50 times in the last three years), and with unhedged, growth-oriented producers occupying the upper end of the range.

Risks to our price objective for Silver Wheaton are continued commodity price weakness, unforeseen operating problems at the mines on which its silver streams are based, financing challenges, political or legal challenges in the regions in which the mines operate, and delays in the development of projects for which the company silver streams.

Tahoe Resources (TAHO / YTHO)

Our price objective (PO) for Tahoe Resources (TAHO on NYSE, THO on TSX) is US$17.25 (C$22.40) based on the stock trading at 2.50x our estimated net asset value (NAV) on a cash/debt-adjusted basis. Our NAV for Tahoe is $7.12/share ($6.75/sh for the DCF of the mining assets and $0.37/sh for net cash) and is based on 10-year average gold and silver prices of $1,230/oz and $17.33/oz (our long-term real prices of $1,200/oz and$17.00/oz start in 2022) and a 5% discount rate for its current operations. Historically, North American precious metal stocks have traded between 1x and 3x NAV, a median of 2 times, with unhedged, growth-oriented producers occupying the upper end of the range. We use a 2.50x NAV multiple for Tahoe, inline to the group average (and the target used for the senior gold producers). The inline to the average target multiple reflects Tahoe's low costs, strong balance sheet and experienced management, balanced by the potential downside risks (listed below):

Downside risks to our Tahoe price objective are: 1) country risk (Guatemala, Peru), 2) Shahuindo project development risk, and 3) large relative proportion of metal production derived from silver (approximately 38% for 2016) which traditionally exhibits greater price volatility.

Yamana Gold (AUY / YYRI)
Our price objective for Yamana Gold is $5.00 per share (C$6.50/sh), and is based on the stock trading at 2.25 times our estimated net asset value (NAV). Our NAV of $2.22 per share ($3.87/sh DCF of mining assets and net debt of $1.65/sh) is based on a 5 percent discount rate and 10-year average gold and silver price forecasts of $1,230 and $17.33 per ounce, respectively, and a ten year average copper price forecast of $2.44 per pound. In order to derive our CAD price objective we assume a CAD/USD FX rate of 1.30. Historically, North American precious metal stocks have traded between 1 and 3 times NAV, with unhedged, growth-oriented producers occupying the upper end of the range.

Risks to our price objective for Yamana Gold are commodity price weakness, unforeseen operating problems, the inability to secure financing for expansion or development projects, political or legal challenges in the regions in which the company operates, rising capital and operating costs and delays in the development of its growth projects or current mine expansions.

Analyst Certification

We, Michael Jalonen, CFA, Eduard Faritov, CFA, Felipe Hirai, CFA, James Bell, Lawson Winder, CFA and Sophie Spartalis, hereby certify that the views each of us has expressed in this research report accurately reflect each of our respective personal views about the subject securities and issuers. We also certify that no part of our respective compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

Latin America - Mining, Steel, and P&P Coverage Cluster

Investment rating	Company	BofA Merrill Lynch ticker	Bloomberg symbol	Analyst
BUY				
	CMPC	XEMCF	CMPC CI	Karel Luketic
	Duratex S.A.	DURXF	DTEX3 BZ	Karel Luketic
	Fibria	FBR	FBR US	Felipe Hirai, CFA
	Fibria	XFRBF	FIBR3 BZ	Felipe Hirai, CFA
	Klabin	XLWDF	KLBN11 BZ	Felipe Hirai, CFA
	Suzano	XWWLF	SUZB5 BZ	Felipe Hirai, CFA
	Ternium SA-ADR	TX	TX US	Karel Luketic
	Vale SA.	VALE	VALE US	Felipe Hirai, CFA
	Vale SA.	VALEP	VALE/P US	Felipe Hirai, CFA
	Vale SA.	VALEF	VALE3 BZ	Felipe Hirai, CFA
	Vale SA.	RIODF	VALE5 BZ	Felipe Hirai, CFA
NEUTRAL				
	Buenaventura	BVN	BVN US	Felipe Hirai, CFA
	Gerdau S. A.	GGBUF	GGBR4 BZ	Felipe Hirai, CFA
	Gerdau S.A.	GGB	GGB US	Felipe Hirai, CFA
	Grupo Mexico	GMBXF	GMEXICOB MM	Felipe Hirai, CFA
	Metalurgica Gerdau S.A.	MZGPF	GOAU4 BZ	Felipe Hirai, CFA
	Southern Copper	SCCO	SCCO US	Felipe Hirai, CFA
	Usiminas SA	USSPF	USIM5 BZ	Felipe Hirai, CFA
UNDERPERFORM				
	Bradespar	BRDQF	BRAP4 BZ	Karel Luketic
	CAP	XKUDF	CAP CI	Karel Luketic
	CSN	SIDHF	CSNA3 BZ	Felipe Hirai, CFA
	CSN	SID	SID US	Felipe Hirai, CFA
	Empresas COPEC	PZDCF	COPEC CI	Karel Luketic
	Magnesita Refratários	MFRSF	MAGG3 BZ	Karel Luketic
	Usiminas SA	USNMF	USIM3 BZ	Felipe Hirai, CFA

Australia - Metals, Mining & Steel Coverage Cluster

Investment rating	Company	BofA Merrill Lynch ticker	Bloomberg symbol	Analyst
BUY				
	BHP Billiton Ltd	BHPLF	BHP AU	Duncan Simmonds, CFA
	BHP Billiton-ADR	BHP	BHP US	Duncan Simmonds, CFA
	BlueScope Steel Limited	BLSFF	BSL AU	John Hynd
	Iluka Resources Limited	ILKAF	ILU AU	Duncan Simmonds, CFA
	Independence Group	IPGDF	IGO AU	Sophie Spartalis
	Sandfire Resources	SFRRF	SFR AU	Sophie Spartalis
	South32 Ltd	SHTLF	S32 AU	Duncan Simmonds, CFA
	South32 Ltd	XKTPF	S32 LN	Duncan Simmonds, CFA
	South32 Ltd	XMWTF	S32 SJ	Duncan Simmonds, CFA
NEUTRAL				
	Alumina Limited	AWCMF	AWC AU	Michael Bradshaw, CFA
	Evolution Mining Limited	CAHPF	EVN AU	Sophie Spartalis
	Newcrest Mining Limited	NCMGF	NCM AU	Sophie Spartalis
	Whitehaven Coal Limited	WHITF	WHC AU	Michael Bradshaw, CFA
UNDERPERFORM				
	Fortescue Metals Group Ltd.	FSUMF	FMG AU	Duncan Simmonds, CFA
	Northern Star	NESRF	NST AU	Sophie Spartalis
	OceanaGold	YOGC	OGC CN	Sophie Spartalis
	OceanaGold Corporation	OGDCF	OGC AU	Sophie Spartalis
	Oz Minerals Ltd	OZMLF	OZL AU	Sophie Spartalis
	Rio Tinto Ltd	RTNTF	RIO AU	Duncan Simmonds, CFA
	Sims Metal Management Limited	SMUPF	SGM AU	John Hynd
	Western Areas Limited	WNARF	WSA AU	Sophie Spartalis

EMEA - Metals & Mining, Steel, Paper Coverage Cluster

Investment rating	Company	BofA Merrill Lynch ticker	Bloomberg symbol	Analyst
BUY				
	Anglo American	AAUKF	AAL LN	Jason Fairclough
	Aperam	XPMEF	APAM NA	Cedar Ekblom, CFA
	ArcelorMittal	AMSYF	MT NA	Cedar Ekblom, CFA
	ArcelorMittal	MT	MT US	Cedar Ekblom, CFA
	Aurubis	AIAGF	NDA GR	Cedar Ekblom, CFA
	BHP Billiton PLC	BHPBF	BLT LN	Jason Fairclough
	BHP Billiton PLC	BBL	BBL US	Jason Fairclough
	DS Smith	DITHF	SMDS LN	Thomas Burlton
	Eramet	ERMAF	ERA FP	Jason Fairclough
	Hochschild Mining plc	HCHDF	HOC LN	James Bell
	Lucara Diamond Corporation	XDVAF	LUC SS	Sophie Park
	Lucara Diamond Corporation	LUCRF	LUC CN	Sophie Park
	Lundin Mining Corp	LUNMF	LUN CN	James Bell
	Lundin Mining Corp	LUNCF	LUMI SS	James Bell
	Nyrstar	NYRSF	NYR BB	Jason Fairclough
	Petra Diamonds	PDMDF	PDL LN	Sophie Park
	Petropavlovsk	PPLKF	POG LN	James Bell
	Randgold Resources	RGORF	RRS LN	James Bell
	Randgold Resources	GOLD	GOLD US	James Bell
NEUTRAL				
	Boliden	BDNNF	BOL SS	Jason Fairclough
	Centamin Plc	CELTF	CEY LN	James Bell
	Centamin Plc	YCEE	CEE CN	James Bell
	Fresnillo plc	FNLPF	FRES LN	James Bell
	Gem Diamonds	GMDMF	GEMD LN	Sophie Park
	Glencore	GLCNF	GLEN LN	Jason Fairclough
	Glencore	XGLNF	GLN SJ	Jason Fairclough
	Smurfit Kappa	SMFTF	SKG ID	Thomas Burlton
	Smurfit Kappa	SMFLF	SKG LN	Thomas Burlton
	thyssenkrupp	TYEKF	TKA GR	Cedar Ekblom, CFA
	Voestalpine	VLPNF	VOE AV	Cedar Ekblom, CFA
UNDERPERFORM				
	Acacia Mining Plc	ABGLF	ACA LN	James Bell
	Acerinox	ANIOF	ACX SM	Cedar Ekblom, CFA
	Anglo Pacific Group Plc	AGPIF	APF LN	Jason Fairclough
	Antofagasta	ANFGF	ANTO LN	Jason Fairclough
	Ferrexpo plc	FEEXF	FXPO LN	Jason Fairclough
	KAZ Minerals Plc	KZMYF	KAZ LN	Cedar Ekblom, CFA
	Mondi Plc	MONDF	MNDI LN	Thomas Burlton
	Mondi Plc	XDPMF	MNP SJ	Thomas Burlton
	Norsk Hydro	NHYDY	NHYDY US	Jason Fairclough
	Norsk Hydro	NHYKF	NHY NO	Jason Fairclough
	Outokumpu	OUTKF	OUT1V FH	Cedar Ekblom, CFA
	Rio Tinto Plc	RIO	RIO US	Jason Fairclough
	Rio Tinto Plc	RTPPF	RIO LN	Jason Fairclough
	Salzgitter	SZGPF	SZG GR	Cedar Ekblom, CFA
	SSAB	SSAAF	SSABA SS	Cedar Ekblom, CFA
	Stora Enso	SEOJF	STERV FH	Thomas Burlton
	Stora Enso	SEOAY	SEOAY US	Thomas Burlton
	UPM	UPMKF	UPM1V FH	Thomas Burlton
	UPM	UPMKY	UPMKY US	Thomas Burlton
	Vedanta	VDNRF	VED LN	Cedar Ekblom, CFA

Canada Metals and Mining Coverage Cluster

Investment rating	Company	BofA Merrill Lynch ticker	Bloomberg symbol	Analyst
BUY				
	Agnico Eagle Mines	AEM	AEM US	Michael Jalonen, CFA
	Alacer Gold	ALACF	AQG AU	Michael Jalonen, CFA
	Alacer Gold	ALIAF	ASR CN	Michael Jalonen, CFA
	Franco-Nevada Corporation	YFNV	FNV CN	Michael Jalonen, CFA
	Goldcorp	GG	GG US	Michael Jalonen, CFA
	Kinross Gold	KGC	KGC US	Michael Jalonen, CFA
	Osisko Gold Royalties	YOR	OR CN	Michael Jalonen, CFA
	Royal Gold	RGLD	RGLD US	Michael Jalonen, CFA
	SEMAFO	YSMF	SMF CN	Lawson Winder, CFA
	Silver Wheaton	SLW	SLW US	Michael Jalonen, CFA
	Tahoe Resources	YTHO	THO CN	Michael Jalonen, CFA
	Tahoe Resources	TAHO	TAHO US	Michael Jalonen, CFA
NEUTRAL				
	Barrick Gold	ABX	ABX US	Michael Jalonen, CFA
	New Gold Inc.	YNGD	NGD CN	Michael Jalonen, CFA
	New Gold Inc.	NGD	NGD US	Michael Jalonen, CFA
	Newmont Mining	NEM	NEM US	Michael Jalonen, CFA
	Yamana Gold	AUY	AUY US	Michael Jalonen, CFA
	Yamana Gold	YYRI	YRI CN	Michael Jalonen, CFA
UNDERPERFORM				
	Centerra Gold	YCG	CG CN	Michael Jalonen, CFA
	Eldorado Gold	EGO	EGO US	Michael Jalonen, CFA
	Hecla Mining	HL	HL US	Michael Jalonen, CFA
	IAMGOLD	YIMG	IMG CN	Michael Jalonen, CFA
	IAMGOLD Corp.	IAG	IAG US	Michael Jalonen, CFA
	Pan American Silver	PAAS	PAAS US	Lawson Winder, CFA

EEMEA - Materials Coverage Cluster

Investment rating	Company	BofA Merrill Lynch ticker	Bloomberg symbol	Analyst
BUY				
	African Rainbow Minerals	AFBOF	ARI SJ	Cedar Ekblom, CFA
	AngloGold Ashanti	AULGF	ANG SJ	James Bell
	AngloGold Ashanti	AU	AU US	James Bell
	ArcelorMittal South Africa	ARCXF	ACL SJ	Cedar Ekblom, CFA
	Kumba Iron Ore	KUMBF	KIO SJ	Cedar Ekblom, CFA
	NLMK	XKOVF	NLMK LI	Eduard Faritov, CFA
	NLMK	XNVLF	NLMK RM	Eduard Faritov, CFA
	Norilsk Nickel	NILSY	MNOD LI	Eduard Faritov, CFA
	Norilsk Nickel	XNRLF	GMKN RM	Eduard Faritov, CFA
	Phosagro OAO	XTAZF	PHOR LI	Eduard Faritov, CFA
	Polymetal International Plc	XPMYF	POLY LN	Eduard Faritov, CFA
	Royal Bafokeng Platinum	XRVBF	RBP SJ	Cedar Ekblom, CFA
	SeverStal	SVJTY	SVST LI	Eduard Faritov, CFA
	SeverStal	JSCCF	CHMF RM	Eduard Faritov, CFA
	Sibanye	SBGLF	SGL SJ	James Bell
	Sibanye	SBGL	SBGL US	James Bell
NEUTRAL				
	Anglo Platinum	AGPPF	AMS SJ	Cedar Ekblom, CFA
	Anglo Platinum	AGPPY	AGPPY US	Cedar Ekblom, CFA
	Exxaro Resources	EXXAF	EXX SJ	Cedar Ekblom, CFA
	Gold Fields	GFI	GFI US	James Bell
	Gold Fields	GFIOF	GFI SJ	James Bell
	Harmony	HGMCF	HAR SJ	James Bell
	Harmony	HMY	HMY US	James Bell
UNDERPERFORM				
	ALROSA	XCFFF	ALRS RM	Eduard Faritov, CFA
	Erdemir	ERELF	EREGL TI	Eduard Faritov, CFA
	Evraz Plc	EVRZF	EVR LN	Eduard Faritov, CFA
	Impala Platinum	IMPUF	IMP SJ	Cedar Ekblom, CFA
	Impala Platinum	IMPUY	IMPUY US	Cedar Ekblom, CFA
	KGHM Polska Miedz	KGHPF	KGH PW	Eduard Faritov, CFA
	Lonmin Plc	LNMIF	LMI LN	Cedar Ekblom, CFA
	Lonmin Plc	XWDRF	LON SJ	Cedar Ekblom, CFA
	Northam Platinum	NMPNF	NHM SJ	Cedar Ekblom, CFA
	UC Rusal	RUALF	486 HK	Eduard Faritov, CFA
	UC Rusal	XRURF	RUSAL FP	Eduard Faritov, CFA

Disclosures

Important Disclosures

Equity Investment Rating Distribution: Non-Ferrous Metals/Mining & Minerals Group (as of 31 Mar 2016)

Coverage Universe	Count	Percent	Inv. Banking Relationships*	Count	Percent
Buy	31	27.93%	Buy	22	70.97%
Hold	32	28.83%	Hold	24	75.00%
Sell	48	43.24%	Sell	22	45.83%

Equity Investment Rating Distribution: Global Group (as of 31 Mar 2016)

Coverage Universe	Count	Percent	Inv. Banking Relationships*	Count	Percent
Buy	1602	49.61%	Buy	1195	74.59%
Hold	754	23.35%	Hold	563	74.67%
Sell	873	27.04%	Sell	552	63.23%

* Issuers that were investment banking clients of BofA Merrill Lynch or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.

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Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster*
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

* Ratings dispersions may vary from time to time where BofA Merrill Lynch Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

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