

Looking for Leverage to Gold; Reviewing Common Metrics Used for Equity Selection

Adam Graf, CFA | 646-885-5424

agraf@brileyfbr.com

Summary and Recommendation

As we wrote in our March 24 [industry note](#), we see extreme monetary and fiscal stimulus leading to dollar deflation. In this environment, similar to the set up in 2008, we expect gold price to trade materially higher and we have raised our gold price forecast to \$2,500/oz. With higher prices, gold miners stand to benefit from substantial margin growth, assuming that industry-specific cost inflation remains low. In our opinion, investors should be looking to build positions in gold-related equities that give them exposure to gold. In our experience, investors will gravitate to large-cap producers and select those with the largest annual production of gold. Investors will also look to published gold reserves (and resources) in the ground, and selecting those equities with the largest accumulation. While neither of these selection methods is without its flaws, we have reviewed our coverage and aggregated this data. As we indicated in our January 30 gold industry note ("[Strategies for Outperforming the Gold Miner ETFs](#)"), we continue to recommend investors build a concentrated portfolio of our favorite names that offer gold leverage, but also minimize exposure to production interruptions and provide exposure to the M&A cycle that historically accompanies a gold bull market.

Key Points

- **Reserves and Resources.** Otherwise known as "gold in the ground," reserves and resources estimate the total gold yet to be mined. Reserves underpin the latest mine plan, while resources indicate an estimated pool of gold that may be eventually converted to reserves and added to the mine plan with additional definition drilling and/or changing economic inputs. Not surprisingly, Newmont (NEM—Buy, \$98 PT) has the largest aggregate gold reserves and resources of any producer within our coverage (Exhibit 1). Even on a per-share basis, NEM shows well with RGLD (Buy, \$148 PT) at a distant second. Among the pre-producers, Seabridge Gold (SA—Buy, \$41 PT) has far and away the largest gold reserve base on both an absolute and per share basis. While this metric is indicative of gold leverage, it does not tell the whole story, as this metric does not account for cost structure, mine life, development risk, future share dilution, etc.
- **Annual Production.** Another way of judging gold leverage is by annual gold production and annual gold production per share. Again, as the world's largest gold producer, NEM looks strong on this metric (Exhibit 2). RGLD again comes up a distant second on annual gold production per share. For pre-producers, we have used the company's projected average annual production for comparison. Again, Seabridge Gold shows well due to the large size of the project and the low share count that management has maintained. Looking at annual gold production per USD\$ invested per share takes into account share price into this process. Here, the low current share price of small-cap gold producers (and pre-producers) makes them appear attractive from a gold leverage point of view.
- **These metrics do not tell the whole story.** While investors will seek equity vehicles that provide leverage to gold price, they will often rely on simple gold reserve and annual production metrics. These metrics are indicative, but can also be misleading. These metrics do not incorporate important factors, such as operating cost structure, capital cost structure, mine life, grade & production profile, etc. Also, aggregate company numbers don't tell the whole story, as operations have varying mine lives. We do not recommend using historical comparisons between equity price and gold price, as many gold equities have fundamentally changed vs. prior periods of gold price movements.
- **Recommended portfolio.** We continue to recommend a portfolio our favorite gold names, which we believe provide: 1) gold leverage, 2) defensive balance sheets, 3) operational diversification, and 4) exposure to the M&A wave that usually accompanies a gold bull market. We recommend to overweight the sector and the larger-cap producers that are likely to benefit from fund flows and fundamental margin expansion. Our favorite names include NEM, RGLD, PVG (Buy, \$27 PT), SSRM (Buy, \$44 PT), and CDE (Buy, \$11 PT). We also continue to like small-cap pre-producers SA, GSV-US (Buy, \$3 PT), and SILV-US (Buy, \$9.50 PT).

Analyst certification and important disclosures can be found on pages 4 - 7 of this report.

This document represents an abbreviated discussion of the subject issuer and should not be used as the sole basis for an investment decision. Contact your B. Riley FBR representative for complete research concerning the subject issuers, including research briefs and reports.

Exhibit 1. Reserves and Resources

		Shares out (M)	Market Price (\$US) 3/31 close	2019 Reserves & Resources		Reserves & Resources per share		Annual Production (1)		Years of Production	
				Gold ounces (k)	Silver ounces (k)	Gold oz/sh	Silver oz/sh	Gold ounces (k)	Silver ounces (k)	Gold	Silver
Newmont	2P Reserves	820	45.28	95730	652420	0.117	0.80	6500	40049	15	16
	M&I Resources	820	45.28	74150	481450	0.090	0.59	6500	40049	11	12
Royal Gold	2P Reserves	66	87.71	3800	50000	0.058	0.76	292	2267	13	22
	M&I Resources	66	87.71	NA	NA	NA	NA	292	2267	NA	NA
Pan American Silver	2P Reserves	211	14.33	5121	557200	0.024	2.64	606	23879	8	23
	M&I Resources	211	14.33	10635	797000	0.050	3.78	606	23879	18	33
Coeur Mining	2P Reserves	241	3.21	2564	182941	0.011	0.76	354	12032	7	15
	M&I Resources	241	3.21	2594	244340	0.011	1.01	354	12032	7	20
Hecla Mining	2P Reserves	522	1.82	2712	212151	0.005	0.41	212	10523	13	20
	M&I Resources	522	1.82	5805	217388	0.011	0.42	212	10523	27	21
SSR Mining	2P Reserves	123	11.38	4387	49710	0.036	0.40	352	6239	12	8
	M&I Resources	123	11.38	2781	601231	0.023	4.89	352	6239	8	96
McEwen Mining	2P Reserves	400	0.66	740	8966	0.002	0.02	140	3073	5	3
	M&I Resources	400	0.66	6904	2094	0.017	0.01	140	3073	49	1
SilverCrest Metals (1)	2P Reserves	115	5.22	0	0	0.000	0.00	76	7369	0	0
	M&I Resources	115	5.22	225	22894	0.002	0.20	76	7369	3	3
Gold Standard (1)	2P Reserves	272	0.50	1246	2705	0.005	0.01	123	174	10	16
	M&I Resources	272	0.50	309	1224	0.001	0.00	123	174	3	7
Seabridge Gold (1)	2P Reserves	63	9.35	45300	183000	0.721	2.91	723	3052	63	60
	M&I Resources	63	9.35	16229	95506	0.258	1.52	723	3052	22	31
Pretium Resources	2P Reserves	196	5.67	4200	30100	0.021	0.15	339	522	12	58
	M&I Resources	196	5.67	3400	19000	0.017	0.10	339	522	10	36
First Majestic Silver	2P Reserves	216	6.19	733	85050	0.003	0.39	119	13185	6	6
	M&I Resources	216	6.19	647	58630	0.003	0.27	119	13185	5	4

Notes: Resources are exclusive of reserves; (1) Annual production the projected average production for pre-operating assets; Producing assets, 2020 E production is used.

Proprietary to B. Riley FBR, Inc. April 1, 2020

Adam Graf. 646-885-5424. agraf@brileyfbr.com

Source: Company reports and B. Riley FBR Research

Exhibit 2. Annual Production (gross, per share, per US\$)

	Annual Production (1)		Annual Production oz/sh		Annual Production oz/US\$	
	Gold ounces (k)	Silver ounces (k)	Gold oz/sh	Silver oz/sh	Gold oz/US\$	Silver oz/US\$
Newmont	6500	40049	0.008	0.05	0.00018	0.00108
Royal Gold	292	2267	0.004	0.03	0.00005	0.00039
Pan American Silver	606	23879	0.003	0.11	0.00020	0.00790
Coeur Mining	354	12032	0.001	0.05	0.00046	0.01557
Hecla Mining	212	10523	0.000	0.02	0.00022	0.01108
SSR Mining	352	6239	0.003	0.05	0.00025	0.00446
McEwen Mining	140	3073	0.000	0.01	0.00053	0.01164
SilverCrest Metals (1)	76	7369	0.001	0.06	0.00013	0.01232
Gold Standard (1)	123	174	0.000	0.00	0.00091	0.00128
Seabridge Gold (1)	723	3052	0.012	0.05	0.00123	0.00520
Pretium Resources	339	522	0.002	0.00	0.00031	0.00047
First Majestic Silver	119	13185	0.001	0.06	0.00009	0.00987

Notes: Resources are exclusive of reserves; (1) Annual production the projected average production for pre-operating assets; Producing assets, 2020 E production is used.

Proprietary to B. Riley FBR, Inc. April 1, 2020

Adam Graf. 646-885-5424. agraf@brileyfbr.com

Source: Company reports and B. Riley FBR Research

Exhibit 3. Comp Table

Ticker	Company Name	Price (\$US)	Exchange	Rating	Shares (M)	M.Cap	Debt (US\$M)	Cash (US\$M)	EV (US\$M)	Revenues (US\$M)				EBITDA (US\$M)				Operating CF (US\$M)			
										close 3/31/2020	2019	2019	2018	2019	2020 E	2021 E	2018	2019	2020 E	2021 E	2018
RGLD	Royal Gold	\$87.71	NASDAQ	Buy	65.5	\$5,746	\$215	\$119	\$5,842	\$459	\$423	\$522	\$791	\$329	\$304	\$392	\$632	\$329	\$253	\$353	\$553
NEM	Newmont Corporation	\$45.28	NYSE	Buy	819.9	\$37,125	\$6,138	\$2,243	\$41,020	\$7,253	\$9,740	\$14,687	\$19,201	\$1,966	\$3,158	\$8,161	\$12,481	\$1,827	\$2,630	\$7,141	\$10,756
AG	First Majestic Silver Corp.	\$6.19	NYSE	Neutral	215.8	\$1,336	\$162	\$169	\$1,329	\$301	\$364	\$362	\$525	\$46	\$100	\$147	\$288	\$33	\$140	\$140	\$281
CDE	Coeur Mining Inc.	\$3.21	NYSE	Buy	240.8	\$773	\$295	\$56	\$1,013	\$626	\$712	\$911	\$1,061	\$120	\$124	\$338	\$493	\$84	\$98	\$280	\$390
PVG	Pretium Resources Inc.	\$5.67	NYSE	Buy	195.9	\$1,111	\$464	\$23	\$1,551	\$455	\$485	\$716	\$883	\$202	\$209	\$452	\$606	\$195	\$224	\$440	\$596
SSRM	SSR Mining Inc.	\$11.38	NASDAQ	Buy	123.1	\$1,400	\$284	\$504	\$1,181	\$421	\$607	\$855	\$1,045	\$130	\$228	\$491	\$722	\$89	\$134	\$369	\$538
HL	Hecla Mining Company	\$1.82	NYSE	Neutral	522.1	\$950	\$510	\$62	\$1,398	\$567	\$673	\$717	\$846	\$123	\$170	\$211	\$363	\$94	\$121	\$157	\$263
PAAS	Pan American Silver Corp.	\$14.33	NASDAQ	Neutral	210.9	\$3,023	\$341	\$121	\$3,243	\$784	\$1,351	\$1,814	\$2,177	\$189	\$371	\$750	\$971	\$230	\$282	\$727	\$948
SA	Seabridge Gold	\$9.35	NYSE	Buy	62.8	\$587	\$0	\$19	\$568	\$0	\$0	\$0	\$0	-\$15	-\$7	-\$7	-\$8	-\$9	-\$6	-\$6	-\$7
GSV	Gold Standard Ventures	\$0.50	NYSE	Buy	272.0	\$136	\$0	\$20	\$116	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
MUX	McEwen Mining	\$0.66	NYSE	Buy	400.0	\$264	\$40	\$46	\$257	\$128	\$117	\$202	\$291	-\$45	-\$40	\$52	\$158	-\$36	-\$40	-\$45	\$111
SILV	SilverCrest Metals	\$5.22	NYSE	Buy	114.6	\$598	\$0	\$96	\$502	\$0	\$0	\$0	\$24	-\$6	-\$10	-\$9	\$1	-\$5	-\$5	\$4	\$4

Ticker	Company Name	Price (\$US)	Exchange	Rating	Shares (M)	M.Cap	Debt (US\$M)	Cash (US\$M)	EV (US\$M)	EV to Revenues				EV to EBITDA				EV to Operating CF			
										close 3/31/2020	2019	2019	2018	2019	2020 E	2021 E	2018	2019	2020 E	2021 E	2018
RGLD	Royal Gold	\$87.71	NASDAQ	Buy	65.5	\$5,746	\$215	\$119	\$5,842	12.7x	13.8x	11.2x	7.4x	17.8x	19.2x	14.9x	9.2x	17.8x	23.1x	16.5x	10.6x
NEM	Newmont Corporation	\$45.28	NYSE	Buy	819.9	\$37,125	\$6,138	\$2,243	\$41,020	5.7x	4.2x	2.8x	2.1x	20.9x	13.0x	5.0x	3.3x	22.5x	15.6x	5.7x	3.8x
AG	First Majestic Silver Corp.	\$6.19	NYSE	Neutral	215.8	\$1,336	\$162	\$169	\$1,329	4.4x	3.7x	3.7x	2.5x	28.9x	13.2x	9.1x	4.6x	39.9x	9.5x	9.5x	4.7x
CDE	Coeur Mining Inc.	\$3.21	NYSE	Buy	240.8	\$773	\$295	\$56	\$1,013	1.6x	1.4x	1.1x	1.0x	8.4x	8.2x	3.0x	2.1x	12.0x	10.3x	3.6x	2.6x
PVG	Pretium Resources Inc.	\$5.67	NYSE	Buy	195.9	\$1,111	\$464	\$23	\$1,551	3.4x	3.2x	2.2x	1.8x	7.7x	7.4x	3.4x	2.6x	8.0x	6.9x	3.5x	2.6x
SSRM	SSR Mining Inc.	\$11.38	NASDAQ	Buy	123.1	\$1,400	\$284	\$504	\$1,181	2.8x	1.9x	1.4x	1.1x	9.1x	5.2x	2.4x	1.6x	13.3x	8.8x	3.2x	2.2x
HL	Hecla Mining Company	\$1.82	NYSE	Neutral	522.1	\$950	\$510	\$62	\$1,398	2.5x	2.1x	2.0x	1.7x	11.4x	8.2x	6.6x	3.8x	14.8x	11.6x	8.9x	5.3x
PAAS	Pan American Silver Corp.	\$14.33	NASDAQ	Neutral	210.9	\$3,023	\$341	\$121	\$3,243	4.1x	2.4x	1.8x	1.5x	17.1x	8.7x	4.3x	3.3x	14.1x	11.5x	4.5x	3.4x
SA	Seabridge Gold	\$9.35	NYSE	Buy	62.8	\$587	\$0	\$19	\$568	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GSV	Gold Standard Ventures	\$0.50	NYSE	Buy	272.0	\$136	\$0	\$22	\$116	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MUX	McEwen Mining	\$0.66	NYSE	Buy	400.0	\$264	\$40	\$46	\$257	2.0x	2.2x	1.3x	0.9x	-5.7x	-6.4x	4.9x	1.6x	-7.1x	-6.5x	5.7x	2.3x
SILV	SilverCrest Metals	\$5.22	NYSE	Buy	114.6	\$598	\$0	\$96	\$502	NA	NA	NA	21.3x	NA	NA	NA	NA	NA	NA	NA	NA

Proprietary to B. Riley FBR, Inc. April 1, 2020

Adam Graf. 646-885-5424. agraf@brileyfbr.com

Source: Company reports and B. Riley FBR Research

Exhibit 4. Target Prices, NAVs, Adj NAVs, Valuation Methods

Ticker	Company Name	Price (\$US)	Exchange	Rating	Target Price	Est. Dividend	Shares	M. Cap	Raw NAV	Adj NAV	Adj NAV	Valuation	
													close 3/31/2020
RGLD	Royal Gold	\$87.71	NASDAQ	Buy	\$148.00	69%	1.3%	65.5	\$5,746	\$179.58	\$148.26	0.59x	NAV
NEM	Newmont Corporation	\$45.28	NYSE	Buy	\$98.00	116%	2.0%	819.9	\$37,125	\$104.88	\$97.58	0.46x	NAV
AG	First Majestic Silver Corp.	\$6.19	NYSE	Neutral	\$6.00	-3%	0.0%	215.8	\$1,336	\$5.72	\$5.72	1.08x	NAV
CDE	Coeur Mining Inc.	\$3.21	NYSE	Buy	\$11.00	243%	0.0%	240.8	\$773	\$11.51	\$11.09	0.29x	NAV
PVG	Pretium Resources Inc.	\$5.67	NYSE	Buy	\$27.00	376%	0.0%	195.9	\$1,111	\$46.43	\$27.30	0.21x	NAV
SSRM	SSR Mining Inc.	\$11.38	NASDAQ	Buy	\$44.00	162%	0.0%	123.1	\$1,400	\$39.04	\$36.75	0.46x	EV/EBITDA
HL	Hecla Mining Company	\$1.82	NYSE	Neutral	\$5.00	175%	0.5%	522.1	\$950	\$6.56	\$5.42	0.34x	NAV
PAAS	Pan American Silver Corp.	\$14.33	NASDAQ	Neutral	\$27.00	88%	1.4%	210.9	\$3,023	\$34.10	\$26.64	0.54x	NAV
SA	Seabridge Gold	\$9.35	NYSE	Buy	\$41.00	339%	0.0%	62.8	\$587	\$61.97	\$40.84	0.23x	NAV
GSV	Gold Standard Ventures	\$0.50	NYSE	Buy	\$3.00	500%	0.0%	272.0	\$136	\$9.03	\$3.16	0.16x	NAV
MUX	McEwen Mining	\$0.66	NYSE	Buy	\$3.45	423%	0.0%	400.0	\$264	\$6.85	\$5.65	0.12x	EV/EBITDA
SILV	SilverCrest Metals	\$5.22	NYSE	Buy	\$9.50	82%	0.0%	114.6	\$598	\$9.46	\$9.46	0.55x	NAV

Proprietary to B. Riley FBR, Inc. April 1, 2020

Adam Graf. 646-885-5424. agraf@brileyfbr.com

Source: Company reports and B. Riley FBR Research

*Closing price of last trading day immediately prior to the date of this publication unless otherwise indicated.

Important Information

This report is prepared by B. Riley FBR, Inc. (“B. Riley FBR” or the “Firm”) and may be distributed by B. Riley Wealth Management, Inc. (BRWM) as a third-party research report under FINRA Rule 2241.

B. Riley FBR and BRWM are broker-dealers registered with the SEC and are members of FINRA, SIPC, and the NASDAQ Stock Market. The principal business address of each of B. Riley FBR and BRWM is:

11100 Santa Monica Blvd., Suite 800, Los Angeles, CA 90025

40 S. Main Street, Suite 1800, Memphis, TN 38103

B. Riley FBR and BRWM are affiliated companies. The relationship between B. Riley FBR and BRWM is a factor considered by BRWM when deciding to distribute each other’s research.

Company-Specific Disclosures

B. Riley FBR acts as a market maker or liquidity provider for Coeur Mining, Inc., Pan American Silver Corp., Royal Gold, Inc. and SSR Mining Inc.'s securities.

B. Riley FBR, or any of its affiliates, expects to receive or intend to seek compensation for investment banking services from Hecla Mining Company and Seabridge Gold Inc. in the next 3 months.

B. Riley FBR, or any of its affiliates, has managed or co-managed a public offering of securities for Hecla Mining Company and has received compensation for investment banking services from Hecla Mining Company in the past 12 months.

Hecla Mining Company and Seabridge Gold Inc. currently is, or within the past 12 months was, a client of B. Riley FBR. The services provided were Investment Banking Services.

For up-to-date B. Riley FBR company disclosures, please click on the following link or paste the URL in a web browser:
www.brileyfbr.com/legal/disclosures.

General Disclosures

Information about the Research Analyst Responsible for this report:

The primary analyst(s) covering the issuer(s), Adam Graf, CFA, certifies (certify) that the views expressed herein accurately reflect the analyst’s personal views as to the subject securities and issuers and further certifies that no part of such analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed by the analyst in the report. The analyst(s) responsible for this research report has received and is eligible to receive compensation, including bonus compensation, based on B. Riley FBR’s overall operating revenues, including revenues generated by its investment banking activities.

Information about B. Riley FBR's Conflicts Management Policy:

B. Riley FBR’s Research conflicts management policy is available at: <https://brileyfbr.com/conflicts-management-policy/>

Information about investment banking:

In the normal course of its business, B. Riley FBR, or any of their affiliates seek to perform investment banking and other services for various companies and to receive compensation in connection with such services. As such, investors should assume that B. Riley FBR, or any of their affiliates intend to seek investment banking or other business relationships with the companies covered in their research reports.

Information about our recommendations, holdings and investment decisions:

The information and rating(s) included in this report represent the long-term view as described more fully below. The analyst may have different views regarding short-term trading strategies with respect to the stocks covered by the rating(s), options on such stocks, and/or other securities or financial instruments issued by the company, and such views may be made available to all

or some of our clients from time to time. Our brokers also may make recommendations to their clients, and our affiliates may make investment decisions that are contrary to the recommendations contained in this research report. Such recommendations or investment decisions may be based on the particular investment strategies, risk tolerances, and other investment factors of that particular client or affiliate. From time to time, B. Riley FBR its affiliated entities, or their respective directors, officers, employees, or members of their immediate families may have a long or short position in the securities or other financial instruments mentioned in this report.

We provide to certain customers on request specialized research products or services that focus on covered stocks from a particular perspective. These products or services include, but are not limited to, compilations, reviews, and analysis that may use different research methodologies or focus on the prospects for individual stocks as compared to other covered stocks or over differing time horizons or under assumed market events or conditions. Readers should be aware that we may issue investment research on the subject companies from a technical perspective and/or include in this report discussions about options on stocks covered in this report and/or other securities or financial instruments issued by the company. These analyses are different from fundamental analysis, and the conclusions reached may differ. Technical research and the discussions concerning options and other securities and financial instruments issued by the company do not represent a rating or coverage of any discussed issuer(s). The disclosures concerning distribution of ratings and price charts refer to fundamental research and do not include reference to technical recommendations or discussions concerning options and other securities and financial instruments issued by the company.

Our analysts' short-term views, recommendations by our brokers, views contained in products and services provided to customers on an individualized basis, and/or strategies, analysis, or decisions made by B. Riley FBR or its affiliates and their respective directors, officers, employees, or members of their immediate families may be different from those published by the analyst in this report and could impact the price of the securities mentioned in this report.

Information about our rating system:

B. Riley FBR uses the following three-tiered rating system for securities covered in their research reports:

- **Buy:** We generally expect "Buy" rated stocks to have an above-average risk-adjusted total return over the next 12 months. We recommend that investors buy the securities at the current valuation.
- **Neutral:** We generally believe "Neutral" rated stocks will have an average risk-adjusted total return over the next 12 months.
- **Sell:** We generally expect "Sell" rated stocks to have a below-average risk-adjusted total return over the next 12 months. We recommend that investors reduce their positions until the valuation or fundamentals become more compelling.

B. Riley & Co., LLC and FBR Capital Markets & Co. (before the merger of the broker dealers) adopted this rating system on August 9, 2017. A description of the prior ratings system for each Firm can be found at <http://www.brileyfbr.com/fbr-ratings-system-from-1072002-to-882017/>.

Rating	B. Riley FBR Research Distribution ¹	B. Riley FBR Banking Services in the past 12 months ¹
BUY [Buy]	70.16%	30.90%
HOLD [Neutral]	28.21%	24.79%
SELL [Sell]	1.63%	0.00%

(1) As of midnight on the business day immediately prior to the date of this publication.

General Information about B. Riley FBR Research:

Additional information on the securities mentioned in this report is available upon request. This report is based on data obtained from sources we believe to be reliable but is not guaranteed as to accuracy and does not purport to be complete. Opinions are as of the date of the report unless labeled otherwise and are subject to change without notice. Updates may be provided based on developments and events and as otherwise appropriate. Updates may be restricted based on regulatory requirements or other considerations. Consequently, there should be no assumption that updates will be made. B. Riley FBR or any of their affiliates disclaim any warranty of any kind, whether express or implied, as to any matter whatsoever relating to this research report and any analysis, discussion, or trade ideas contained herein. This research report is provided on an "as is" basis for use

at your own risk, and B. Riley FBR or any of their affiliates are not liable for any damages or injury resulting from use of this information. This report should not be construed as advice designed to meet the particular investment needs of any investor or as an offer or solicitation to buy or sell the securities or financial instruments mentioned herein, and any opinions expressed herein are subject to change. Some or all of the securities and financial instruments discussed in this report may be speculative, high risk, and unsuitable or inappropriate for many investors. B. Riley FBR or any of their affiliates make no representation as to the suitability or appropriateness of these securities or financial instruments for individual investors. Investors must make their own determination, either alone or in consultation with their own advisors, as to the suitability or appropriateness of such investments based upon factors including their investment objectives, financial position, liquidity needs, tax status, and level of risk tolerance. These securities and financial instruments may be sold to or purchased from customers or others by B. Riley FBR or any of their affiliates acting as principal or agent.

Securities and financial instruments issued by foreign companies and/or issued overseas may involve certain risks, including differences in accounting, reporting, and registration, as well as foreign currency, economic, and political risks.

This report and the securities and financial instruments discussed herein may not be eligible for distribution or sale in all jurisdictions and/or to all types of investors. This report is provided for information purposes only and does not represent an offer or solicitation in any jurisdiction where such offer would be prohibited. Commentary regarding the future direction of financial markets is illustrative and is not intended to predict actual results, which may differ substantially from the opinions expressed herein.

B. Riley FBR utilizes a tiered approach to service its clients. The services provided by B. Riley FBR's research analysts to clients vary based upon a variety of factors, including, but not limited to, client preferences and the extent of a client's total relationship with the Firm. B. Riley FBR does not provide any of the Firm's clients with access to unpublished research opinions. B. Riley FBR provides clients across all tiers equal access to research reports.

Paired Trade Disclaimer

From time to time, B. Riley FBR Research Analysts will offer short-term trading ideas, including identifying a paired trade. In a paired trade, an investor buys the securities of one company and sells the securities of another company. The idea to buy the securities of one company and sell the securities of the other company is based on the expected short-term price move or relative value between the two companies mentioned in the paired trade, not between the companies and any other companies. In contrast, the recommendations in a Research Analyst's published report reflect the Research Analyst's views on a company over the long term (i.e., the next 12 months) relative to other companies covered by the Research Analyst. The trade idea in a paired trade is unrelated to the Research Analyst's long-term view of the companies as expressed in the Research Analyst's most recently published research report. A paired trade idea to sell a company that is rated as Neutral or higher, or to buy a security that is rated Neutral or lower, is not inconsistent because the call to sell or buy the company is relative to the other company mentioned in the paired trade over the short term; it is not a long-term view relative to other companies covered by the Research Analyst.

Important information for B. Riley FBR Clients with French Addresses and Potential Investors:

Addresses and potential investors based in France expressly acknowledge that they have not been subject to any kind of solicitation by B. Riley FBR or its affiliates, as defined under Article L.341-1 and seq. of the French Monetary and Financial code.

The above analyses have not been prepared in the context of a public offering of financial instruments in France within the meaning of Article L.411-1 and seq. of the French Monetary and Financial code and shall not be deemed to be drawn up for the purpose of providing investment services as defined under Article L.321-1 and seq. of the French Monetary and Financial code. In this respect, the above analyses shall not be qualified as personalized investment advice related to financial instruments under French law and shall, therefore, not be deemed to be qualified as investment advice provided by B. Riley FBR or its affiliates.

Addresses and potential investors based in France may initiate the first contact with B. Riley FBR in order to get additional information on financial analyses and services provided by the latter. By doing so, addresses and potential investors based in France expressly acknowledge that the banking and financial solicitation regime as defined under Article L.341-1 and seq. of the French Monetary and Financial code shall not be applicable.

Information for Clients of B. Riley FBR:

This publication has been approved by B. Riley FBR which accepts responsibility for its contents and its distribution to our clients.

Any B. Riley FBR client who receives this research and wishes to effect a transaction in the securities or financial instruments discussed should contact and place orders with a B. Riley FBR Sales representative.

Copyright 2020 B. Riley FBR, Inc.