At present, there is no such thing as a healthy gold mine. It is like the world of the infirm: there are people who are ill and there are those who are very ill; there are the ambulatory and the non-ambulatory. It is similar in gold mining. Some companies are marginally profitable, so they have enough cash flow to stay in business, but not have enough to reinvest in mining. Some companies can reinvest on a small scale because they fare a little better but not a lot better. Some companies issue equity to raise capital, but there is not much buying interest. Therefore, mining companies do not have access to traditional financing.

In order to understand why the royalty companies are attractive investments at a time when the miners themselves are, for the most part, unappealing, it is important to understand the essential calculation of the royalty contract. Here is a simplified example. Say the present value of gold is $1,200 an ounce. A royalty buyer advances a lump sum cash payment to a miner to develop a particular resource. That entitles the miner to purchase a certain proportion of future production, say 10%, at today's price but discounted for the time value of money. That's much the same way a zero coupon bond is priced. Let's say that discount rate is 15%. If the mine were operational by the end of a year—which, in practice it would not be; several years is more like it—then the royalty company would purchase its share of the ore for 15% less, which would be $1,043. Each successive year's production would be discounted by an additional 15%.

If this particular contract is for 20 years, then the price for the 20th year's ore would be only $73, which is a 96% discount. Add up all of the payments made over the 20 years, from $1,043 all the way down to $73, and compare that with what it would have cost to pay $1,200 an ounce every year, the royalty company would end up paying—on average—only $375 an ounce, which is almost a 70% discount.

Royalty Contract Calculation Example

Current Gold Price	$1,200
Discount Rate	15%

Period	Present Value	% of Curr. Price	Current Mkt. Val.
1	$ 1,043	87%	$ 1,200
2	907	76%	1,200
3	789	66%	1,200
4	686	57%	1,200
5	597	50%	1,200
6	519	43%	1,200
7	451	38%	1,200
8	392	33%	1,200
9	341	28%	1,200
10	297	25%	1,200
11	258	21%	1,200
12	224	19%	1,200
13	195	16%	1,200
14	170	14%	1,200
15	147	12%	1,200
16	128	11%	1,200
17	112	9%	1,200
18	97	8%	1,200
19	84	7%	1,200
20	73	6%	1,200
Total	$ 7,511		$ 24,000

Cumulative as % of ($7,511 ÷ 24,000)	31%
Cumul. PV discount applied to curr gold (31% x 1,200)	$ 375

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In reality, it's more dynamic. First, the discount is not to the $1,200 fixed price used in this example; it's to the market price at the time of production or smelting. Therefore, the royalty company is leveraged on a profit basis to a rising gold price. Conversely, the discount provides an enormous margin of safety in a scenario of declining gold prices. Sticking with the same example, if the price of gold were to decline by 15% every year for 20 years, down to a price of $73 per ounce—which is nearly impossible to imagine under plausible circumstances—this contract would be breakeven.

The reason that the bank lending or public market debt model doesn't work for the gold miner is that debt typically requires ongoing interest payments; the clock starts running on day one. But the miner might require years to develop the resource and can afford neither the cash flow burden of the interest payments nor the bond maturity risk if the mine doesn't work out—sometimes there are political risks that prevent mine development. The royalty company is willing to bear some of this mine viability risk.

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Wheaton Precious Metals, formerly Silver Wheaton, is the world's largest silver and gold streaming company. It is not a miner and does not have exposure to the typical operating and financial risks of a mining company; it owns no equipment, is not responsible for mining employee pensions, environmental restoration expenses or other mine operating liabilities. In fact, it has only 35 employees.

Rather, Wheaton purchases precious metal revenue streams from miners in exchange for an upfront payment. These agreements can be structured in any number of ways, but typically allow the company to purchase future silver and gold production from its mining partners at a fraction of the prevailing spot price, typically on the order of a 65% discount.

The initial payment made by Wheaton represents the net present value of these future cash flows. Effectively, the company earns this discount rate (generally a double-digit rate), with upside related to metals prices or increases in the resource mined. For example, it might hold an option on future exploration activity at the mine, which can drastically increase Wheaton's revenue stream. Although its mining partners are not immune to the risks attending lower precious metals prices, which may ultimately impact Wheaton's revenue, the company is typically able to recover portions of its initial investment if predetermined production targets are not met. In short, the streaming business model is more akin to an annuity business and is a superior means of gaining exposure to precious metals and the mining industry.

A number of Wheaton's contracts call for it to purchase precious metals at a fixed price which, aside from the upfront payment, might be as little as 20% of the market price for each ounce produced. Further, the company's operating expenses don't amount to much more than the salaries for its employees. This provides tremendous upside leverage to the price of silver and gold, which approached $50 per ounce and $2,000 per ounce, respectively, in 2011, compared to about $16 and $1,270 today. Should prices rebound to prior levels, the company's earnings would be some multiple of where they are today.

Advocates of precious metals have long hypothesized that the economic stimulus efforts of global central banks will ultimately result in inflation, and precious metals serve as a store of value should currencies lose purchasing power. Thus far, this inflation thesis hasn't come to fruition; however, in periods of market uncertainty, investors have continued to turn to precious metals. While commodity price appreciation is not a key to the investment thesis, it is provides substantial optionality, a valuable characteristic that is not reflected in the share price. As well, silver has an industrial "utility" beyond jewelry; it is a primary ingredient of photovoltaic cells used in the solar energy industry. Of course, subdued fossil fuel prices have tempered current demand for solar, but there should be sustained industrial demand for the metal as the solar industry grows – this source of demand has already increased the proportion of global silver demand represented by industry use.

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Sandstorm Gold has an $835 million market capitalization, which is down about 66% from the price recorded in January 2013. Sandstorm is a growing royalty company that owns 171 royalty streams, of which only 20 percent of the underlying mines are operating; the balance can be considered dormant assets. Over 100 of the Sandstorm royalty streams have been acquired in the past 36 months.

The goal of the company is to associate itself with large land packages that have significant exploration upside. The idea is that as enough optionality is realized, the resulting cash flow will more than replace the existing reserve streams and growth will be realized. Of course, this entails the risk that some upside will never materialize. Presently, this optionality is very inexpensive, since the consensus is that there is little likelihood of gold price increases. Sandstorm is essentially buying optionality with the current level of cash flow, and the optionality is very inexpensive because it is presumed to have no utility and very little future.

Although Sandstorm is the smallest of the royalty companies, it has the largest acquisition and development team. Based entirely on purchases that have already been made, the company anticipates that its pro-rata royalty production should increase by 100% in the next 36 months. According to the company, at current gold prices this should result in $100 million of after-tax cash flow in 36 months. The forecast is based on a gold price of $1,260 per ounce, which is a little bit lower than the current gold price.

Every single year at Sandstorm, pro-rata production has increased over the life of the company. More ounces were discovered on Sandstorm properties than the company produced in 2016. Therefore, the upside purchased is real in the sense that it seems to occur with some degree of regularity, and much of it was on already-productive assets.

One of the challenges that Sandstorm faces is that the VanEck Vectors Junior Gold Miners ETF was redefined and Sandstorm was rebalanced to a much lower weight. The ETF needed to sell millions of shares on one day and that has apparently affected the price. Eventually that supply will be absorbed by the marketplace, not by the ETFs, but by the active manager universe. Active managers specializing in gold are themselves under pressure but, ultimately, the shares will be absorbed.

The average cost of an ounce of gold via the royalty interest optionality is $246. The company made $4.8 million in the last quarter and it is repurchasing its shares, which is very unusual for a royalty company. Its geographical distribution is noted in the table below. Substantially all are in geopolitically stable areas. In addition to gold, the company has silver, copper, and diamond streams. The balance sheet has only $18 million of cash, no debt, and $658 million of equity. It trades at 1.27x book value.

<u>Sandstorm Geographical Distribution</u>

Canada	41%
North America Excluding Canada	27%
South America	24%
Other	8%

Source: Company filings.

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Franco-Nevada Corporation (FNV) was the first precious metals royalty company. Its founders, Seymour Shulick and Pierre Lassonde, perceived the opportunity and devised the business model in the 1980s. The company generally makes a one-time minority investment in the future production of a particular mine. In return, FNV receives a payment stream in ounces of gold (or silver) over the life of that mine, usually between 20 and 30 years. Payment is calculated on the net discounted present value of the expected revenues. Since neither FNV as the buyer, nor the mining company knows what the expected cash flow on the price of gold will be, they use the current price and discount it forward using a reasonable rate of interest **(**not the current lower rate of interest), since gold is inherently volatile. Discounting at a reasonable rate of interest, say 10% or more, over a multi-decade period allows FNV to acquire its contracted gold at prices that are significantly below prevailing market prices – these can easily be on the order of 65%.

There are only three basic pricing possibilities for this discounted form of investment. First, if the price of gold were to rise, the company's cash flow would be greatly enhanced, since it has locked in the price at which it purchases this gold. Second, if the price of gold were to remain constant, the company would earn the (high) discount rate on the investment. The third possibility is that the gold price declines, but it has to fall tremendously in order to arrive at a cash flow that would be a loss relative to FNV's initial investment. For instance, if the multi-decade discount rate used to determine FNV's purchase price is 10%, then the price of gold could decline by 10% every year, yet FNV would still not recognize a loss. FNV could remain cash flow positive, even if gold were to fall to some unbelievably low price.

Because of this dynamic, the royalty companies have been very successful. Furthermore, they have changed tactics over the years and are not just acquiring interests in producing properties; they are also investing in development properties and exploration-stage properties to a much greater extent, for which the discounted rate is considerably higher. Gold miners, on the other hand, are much more sensitive to declining gold prices, and their expenses tend to rise with inflation, while FNV has a built-in profitability boost in the form of its discount rate. Even disregarding the fact that Franco-Nevada pays a higher dividend then the gold miner's index (GDX), its share price has outperformed that of the latter by a wide margin during the past five years. FNV is up 39% whereas GDX, the Van Eck Gold Miners ETF, is down 48%, and the price of gold has declined 18%. In the past ten years, FNV has returned well over 400%.

Consequently, FNV can be considered to be an unleveraged finance company or merchant bank (it carries no debt), while the relative mix of revenue and gross profit interests endow it with some of the characteristics of a general partner in a hedge fund. That is, 1) its earnings are leveraged by the investments of the primary investors, which are orders of magnitude larger than its own (FNV's interest is typically only a few percent in each mine), 2) so long as a mine is active, the company receives an ongoing revenue participation, analogous to a base fee on a hedge fund (regardless of mine profitability), as well as a profit participation in the event of higher prices, and 3) it is highly diversified, with 340 assets (or contracts, really) as of September 2017.

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