

# Gold – still aping the 1970s

*"If you don't trust gold, do you trust the logic of taking a beautiful pine tree, worth about \$4,000 - \$5,000, cutting it up, turning it into pulp and then paper, putting some ink on it and then calling it one billion dollars?"*

*Kenneth J Gerbino*

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## Gold poised for second leg of bull run

In our April 2009 report, *Gold - a return to the 1970s*, we posited a theory that if gold repeats the same performance in the current cycle as it did during the 1970s re-inflation, it would hit US\$1,567/oz 'in the near term'. In this follow-up report we argue that, with the world still facing deflationary forces in the near term, gold's peak is likely to be delayed to 2013, but that its peak will be correspondingly higher at US\$1,879/oz.

## Indicated ounces outperform measured and inferred

In addition to our views on the gold price, we have re-run our analysis to differentiate between 'measured', 'indicated' and 'inferred' resource ounces and to define a value for each. Whereas the value of an average resource ounce has increased by 35% from US\$33.59/oz to US\$45.33/oz since April, the value of an 'inferred' ounce has actually decreased and is now negative. The value of an 'indicated' ounce has increased 155% from US\$12.05/oz to US\$30.74/oz and the value of a 'measured' ounce has increased 102% from US\$187.73/oz to US\$380.66/oz.

## 42 companies profiled; 28 cheap; three stand out

Valuing companies using these differentiated benchmarks to adjust for the different resource categories reveals that, out of a universe of 42 companies, 28 are cheap in relation to the size and mix of their resource bases. Screening further to identify historic profitability highlights three companies – Avocet Mining, Vatukoula Gold Mines and Pan African Resources – as attractive investment targets.

## COMPANIES IN THIS REPORT

Archipelago Resources	Leyshon Resources
Allied Gold	Medoro Resources
Ariana Resources	Medusa Mining
Avocet Mining	Metals Exploration
Centamin Egypt	Moto Goldmines
Central African Gold	Norseman Gold
Central Rand Gold	Orsu
Chaarat Gold	Oxus Gold
China Goldmines	Pan African Resources
Cluff Gold	Patagonia Gold
Condor Resources	Peninsular Gold
Conroy	Peter Hambro*
European Goldfields	Randgold Resources
Galantas Gold	Serabi Mining
GMA Resources	Shanta Gold
Greatland Gold	Stratex International
Greystar Resources	Tianshan Goldfields
Hambledon Mining	Trans-Siberian Gold
Highland Gold	Uruguay Minerals
Kirkland Lake	Vatukoula Gold
Kryso Resources	Wits Gold
<i>*renamed Petropavlovsk</i>	

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## **Investment summary: Deferred gold price peak**

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The passage of gold through US\$1,000/oz we believe vindicates our note of earlier this year (*Gold – a return to the 1970s*, April 2009). We reiterate our belief that gold is in the second phase of its bull run and that it has the potential to spike higher – especially if, as economists say, the current crisis is ‘the worst since the Second World War’ and therefore by extension worse than the 1970s. In light of the deflationary headwinds facing the US and western economies generally, however, we believe that it will take longer than we had previously anticipated for quantitative easing and loose monetary policy to express themselves in the inflation statistics. Nevertheless, as a result of the delay (to 2013) we estimate the eventual gold price peak will be correspondingly higher, at US\$1,879/oz.

### **Differential resource analysis re-run: Three companies identified as being cheap**

In addition to the adjustment to our gold price expectations, we have also re-run our analysis of the London-centric gold sector in order to determine which companies are cheap on the basis of the size and mix of their resource ounces, and which are also historically profitable. The results of this screen are shown in Exhibit 1.

Of these, we would highlight Avocet, Pan African Resources and Vatukoula in particular as cheap relative to the size and mix of their resource ounces as well as being historically profitable and therefore potentially attractive investment propositions.

### **Summary observations and conclusions**

Assuming a US\$35/oz cost of discovering ounces, in general terms, it is a value-adding proposition to raise funds on the London equity market in order to discover average ounces. However, it is only worth discovering ‘indicated’ and ‘inferred’ ounces if also accompanied by ‘measured’ ounces as well. In this case, exploration will in general be value adding as long as one measured ounce is discovered for each 10 ‘inferred’ ounces discovered or for each 69 ‘indicated’ ounces (or some combination of the two). By contrast, it is not a value adding proposition simply to discover ‘indicated’ and ‘inferred’ ounces unless it can be shown to be done at an especially cheap price.

### **Operational consequences**

Whereas in April, valuations supported full exploration programmes at only 11 companies, this has now increased to 21 companies out of a total of 42 profiled. However, it remains potentially value destroying for 10 companies (subject to the provisos set out on page 12).

**Exhibit 1: Gold companies ranked by implied value of 'top' category of resources (US\$)**

Note: Randgold Resources is considered before its bid for Moto Goldmines.

Companies identified as cheap are in bold.

Company	'Top' resource category	Implied value of ounces in 'top' category	Weighted average value of 'top' resource oz category	Historic P/E ratio (x)
China Goldmines	Inferred	-4.39	-1.31	-ve
Condor Res.	Inferred	2.19	-1.31	-ve
Greatland Gold	Inferred	30.95	-1.31	-ve
<b>Central Rand Gold</b>	<b>Indicated</b>	<b>0.45</b>	<b>30.74</b>	<b>-ve</b>
<b>Wits Gold</b>	<b>Indicated</b>	<b>16.80</b>	<b>30.74</b>	<b>-ve</b>
<b>Orsu</b>	<b>Indicated</b>	<b>20.32</b>	<b>30.74</b>	<b>-ve</b>
<b>Conroy Diam&amp;Gld</b>	<b>Indicated</b>	<b>25.09</b>	<b>30.74</b>	<b>-ve</b>
<b>Chaarat Gold</b>	<b>Indicated</b>	<b>29.28</b>	<b>30.74</b>	<b>-ve</b>
Hambledon Minig Plc	Indicated	57.37	30.74	-ve
Moto Goldmines	Indicated	72.41	30.74	-ve
Medusa Mining	Indicated	794.84	30.74	-ve
<b>Medoro Resources</b>	<b>Measured</b>	<b>-60.98</b>	<b>380.66</b>	<b>-ve</b>
<b>Tianshan Goldfields</b>	<b>Measured</b>	<b>-60.69</b>	<b>380.66</b>	<b>-ve</b>
<b>Greystar Resources</b>	<b>Measured</b>	<b>-21.75</b>	<b>380.66</b>	<b>-ve</b>
<b>Central African Gold</b>	<b>Measured</b>	<b>-8.85</b>	<b>380.66</b>	<b>-ve</b>
<b>Uruguay Mineral</b>	<b>Measured</b>	<b>-8.55</b>	<b>380.66</b>	<b>-ve</b>
<b>Shanta Gold</b>	<b>Measured</b>	<b>-0.29</b>	<b>380.66</b>	<b>-ve</b>
<b>Serabi Mining</b>	<b>Measured</b>	<b>0.00</b>	<b>380.66</b>	<b>-ve</b>
<b>Kryso Resources</b>	<b>Measured</b>	<b>9.77</b>	<b>380.66</b>	<b>-ve</b>
<b>Vatukoula Gold Mines</b>	<b>Measured</b>	<b>11.85</b>	<b>380.66</b>	<b>2.8</b>
<b>Leyshon Resources Ltd</b>	<b>Measured</b>	<b>16.42</b>	<b>380.66</b>	<b>-ve</b>
<b>Stratex International</b>	<b>Measured</b>	<b>17.38</b>	<b>380.66</b>	<b>-ve</b>
<b>European Goldfields</b>	<b>Measured</b>	<b>57.06</b>	<b>380.66</b>	<b>-ve</b>
<b>Oxus Gold</b>	<b>Measured</b>	<b>94.70</b>	<b>380.66</b>	<b>-ve</b>
<b>Avocet Mining</b>	<b>Measured</b>	<b>102.25</b>	<b>380.66</b>	<b>5.7</b>
<b>Ariana Resources Plc</b>	<b>Measured</b>	<b>108.98</b>	<b>380.66</b>	<b>-ve</b>
<b>Pan African Resources</b>	<b>Measured</b>	<b>117.91</b>	<b>380.66</b>	<b>17.2</b>
<b>Cluff Gold</b>	<b>Measured</b>	<b>139.00</b>	<b>380.66</b>	<b>-ve</b>
<b>Trans Siberian Gold</b>	<b>Measured</b>	<b>175.52</b>	<b>380.66</b>	<b>-ve</b>
<b>Peninsular Gold Ltd</b>	<b>Measured</b>	<b>194.67</b>	<b>380.66</b>	<b>-ve</b>
<b>Metals Exploration</b>	<b>Measured</b>	<b>218.30</b>	<b>380.66</b>	<b>-ve</b>
<b>Highland Gold</b>	<b>Measured</b>	<b>276.02</b>	<b>380.66</b>	<b>-ve</b>
<b>Allied Gold Ltd</b>	<b>Measured</b>	<b>288.86</b>	<b>380.66</b>	<b>-ve</b>
<b>Centamin Egypt</b>	<b>Measured</b>	<b>409.56</b>	<b>380.66</b>	<b>-ve</b>
<b>Norseman Gold Plc</b>	<b>Measured</b>	<b>485.34</b>	<b>380.66</b>	<b>4.9</b>
<b>Kirkland Lake</b>	<b>Measured</b>	<b>574.89</b>	<b>380.66</b>	<b>-ve</b>
<b>Archipelago Resources</b>	<b>Measured</b>	<b>695.07</b>	<b>380.66</b>	<b>-ve</b>
<b>Galantas Gold Corp.</b>	<b>Measured</b>	<b>1,104.33</b>	<b>380.66</b>	<b>-ve</b>
<b>Peter Hambro</b>	<b>Measured</b>	<b>1,510.69</b>	<b>380.66</b>	<b>19.7</b>
<b>Gma Resources</b>	<b>Measured</b>	<b>1,839.22</b>	<b>380.66</b>	<b>-ve</b>
<b>Randgold Resources</b>	<b>Measured</b>	<b>2,909.41</b>	<b>380.66</b>	<b>153.7</b>
<b>Patagonia Gold</b>	<b>Measured</b>	<b>3,089.08</b>	<b>380.66</b>	<b>-ve</b>

Source: Edison Investment Research

## Sensitivities

Our analysis of the gold market in particular is dependent upon a number of key macro-economic variables, including real US interest rates and the oil price. In particular, we assume the continuation of an environment of very low and/or negative real US interest rates and a relatively well-supported oil price. While we believe that gold prices above US\$900/oz would still be justified by a return to more normal economic conditions, a rapid increase in real dollar rates of interest in particular would mean that there is unlikely to be a short-term speculative spike in the price of gold. Similarly, a long-term oil price of US\$75/bbl would support a gold price of US\$835/oz. In the event that the oil price falls for a sustained period of time, it is likely to undermine gold both relative to our assumed scenario and its current price.

Given that this report concerns itself with the value of ounces in the ground and not the economics of mining, the lowest possible cut-off grade has been used to determine resources. Where possible

therefore a cut-off grade of 0.5g/t has been used with respect to each company's resource base or a cut-off grade as close as possible to this figure as reported by the company. Nevertheless, exceptions to this inevitably occur.

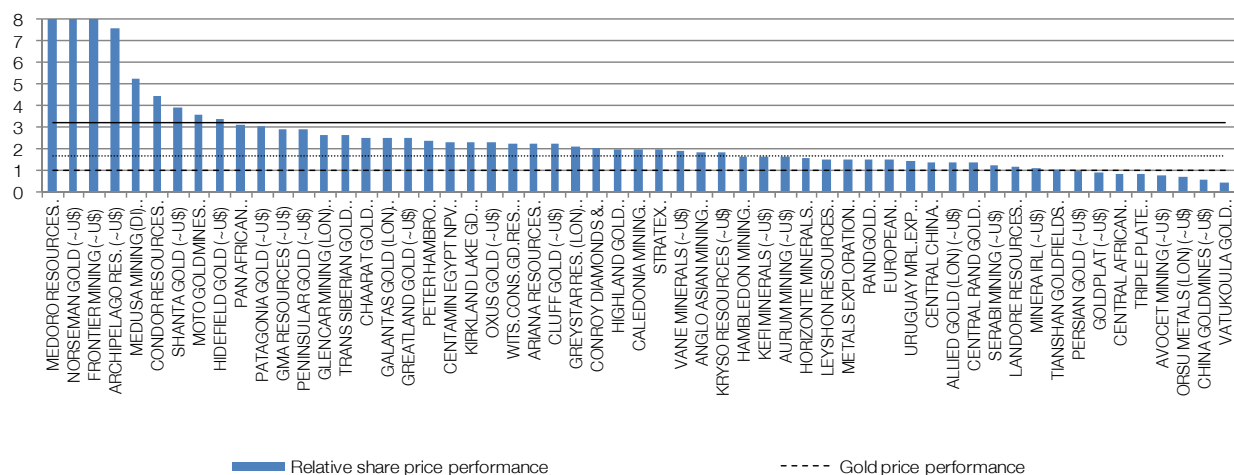
## The universe of listed gold companies in London

We have re-run our analysis of the London-centric gold sector in order to determine in which companies value has been created and why and in which companies value now exists.

### What has changed

Inevitably, a number of factors have changed since April 2009 – most notably the valuations of the gold companies in question. This is demonstrated in the graph below, which shows the year-to-date share price performances of London's gold mining companies relative to the gold price.

**Exhibit 2: Year-to-date share price performance of gold companies (in US\$) relative to gold price (=1)**



Source: Thomson Datastream, Edison Investment Research

A number of points are of interest:

- 1) The average (ie mean) outperformance of gold companies relative to gold itself is 224% (ie a factor of 3.24 in the chart above). Only nine companies have performed better than the average, being Medoro Resources, Norseman Gold, Frontier Mining, Archipelago Resources, Medusa Mining, Condor Resources, Shanta Gold, Moto Goldmines and Hidefield Gold.
- 2) While the mean outperformance was 224%, the more representative mode was 69% (ie a factor of 1.69 on the graph above). A total of 36 companies outperformed the mode (from Medoro to Aurum Mining), while 22 (from Horizonte Minerals to Vatukoula Gold) underperformed it.
- 3) Eight companies – Persian Gold, Goldplat, Central African Gold, Triple Plate Junction, Avocet Mining, Orsu Metals, China Goldmines and Vatukoula Gold Mines – underperformed not only their peers, but also the gold price.

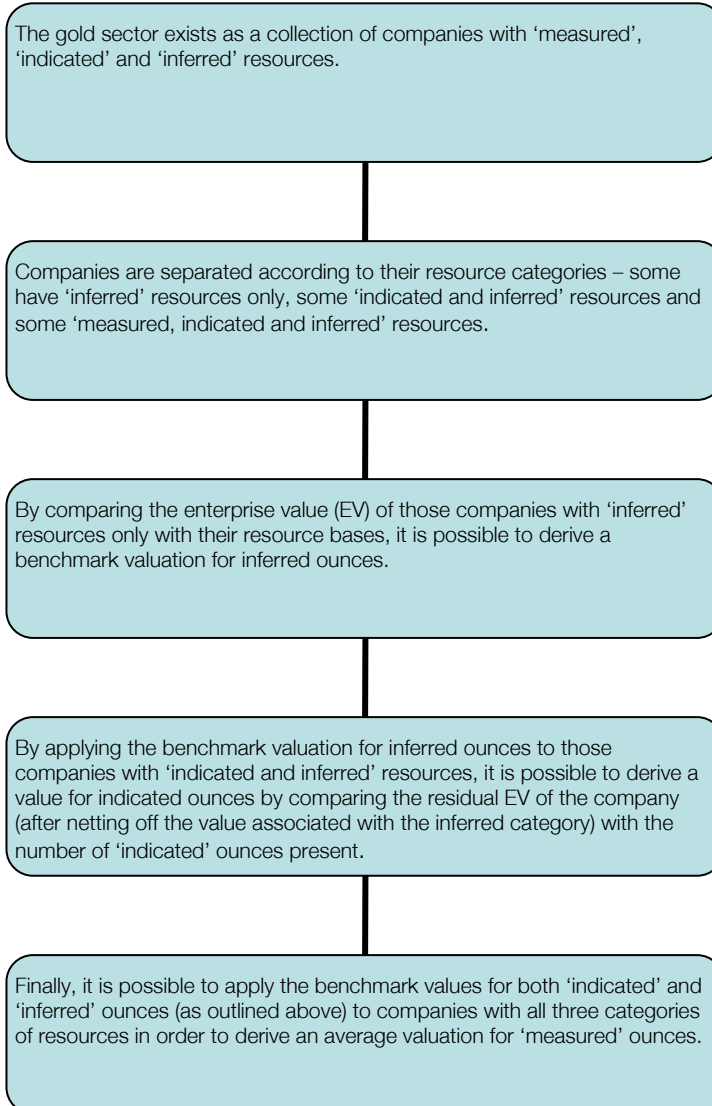
When looked at within the context of the number of each company's ounces in each resource category (ie 'measured', 'indicated' or 'inferred'), however, the overall picture changes.

A recap of the methodology used to derive separate valuations for each category of resource ounces is given below.

## The method used to value distinct resource categories

Under JORC-style reporting standards, resources are sub-divided into three categories, according to the level of confidence and knowledge in their geology. In ascending order, these categories are 'inferred', 'indicated' and 'measured'. While historically these have often been considered together and companies valued with respect to the total number of ounces in their resource bases, there is a considerable degree of difference in the geological confidence imputed to each category. The schematic depiction below demonstrates the methodology that we have used in order to determine the differences in the implied valuations of these ounces with respect to their categorisation.

### Exhibit 3: Schematic representation of methodology used



Source: Edison Investment Research

As well as offering new benchmarks for the industry, the valuation differentials for each category of resource ounce highlight a number of operational issues for the gold companies profiled, including the identification of those companies that have little scope to add value to shareholders via their exploration activities.

## Results and discussion

Whereas we analysed 41 companies in April 2009, we have analysed 42 in this report. Three new companies have been included in the analysis, namely Archipelago Resources, GMA Resources

and Central African Gold. Two have been excluding, being Glencar (on account of its takeover by Gold Fields, which became unconditional in August) and Frontier (which we now deem to be predominantly a copper company, rather than a gold one). A summary of the results by resource category sub-sector is given in the table below.

#### Exhibit 4: Gold sector summary valuation according to resource category

Note: Totals may not add up owing to rounding. Prices as at September 2009.

Resource category	No. of co's	%	Market cap (US\$m)	%	Net cash (US\$m)	%	EV (US\$m)	%	Total oz (m)	%	Mkt cap/oz (US\$)	EV/oz (US\$)
Inferred only	3		23		26		(4)		2.7		8.50	(1.31)
Indicated & inferred	8		1,458		83		1,375		207.0		7.04	6.64
Measured, indicated & inferred	30		14,228		294		13,934		128.0		111.17	108.87
<b>Totals/average</b>	<b>42</b>		<b>15,709</b>		<b>404</b>		<b>15,306</b>		<b>337.6</b>		<b>46.21</b>	<b>45.33</b>

Source: Edison Investment Research, Thomson Datastream, Company sources

A number of features are immediately apparent from this summary:

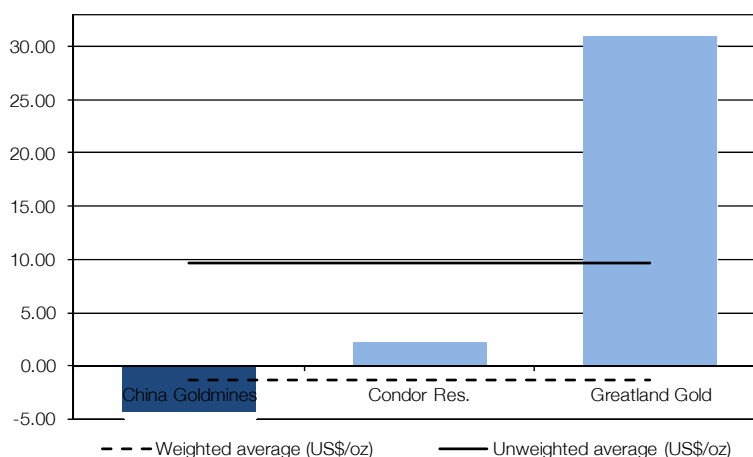
- 1) Firstly, the total number of gold resource ounces has increased by half from 215.7Moz in April to 337.6Moz currently. While ounces in the ground were fairly stable for companies with 'inferred' ounces only and also for those companies with all three resource categories, they increased sharply for companies with 'inferred' and 'indicated' ounces. Much of the increase could be put down to work done by companies operating in the Witwatersrand basin. Nevertheless, almost all of the eight companies in this category increased their resource ounces to some extent.
- 2) The weighted average enterprise value of the sector per total resource ounce has increased 35% from US\$33.59/oz to US\$45.33/oz.
- 3) Whereas the market capitalisation of companies with 'inferred' ounces only has increased by just 15%, the market capitalisations of companies in the other two sub-sectors have approximately doubled.
- 4) By contrast, aggregate net cash has decreased by 41% for companies with 'measured' ounces, by 9% for companies with both 'indicated' and 'inferred' ounces and has increased by 53% for companies with 'inferred' ounces.

### The value of 'inferred' ounces

Considering the three companies with 'inferred' ounces only, it can be immediately seen that the weighted average value of an 'inferred' resource ounce has fallen from US\$1.05/oz to negative US\$1.31/oz. While this is unwelcome for the companies in question, it is very far from being without precedent in the mining industry, in which 'inferred' resources generally are accorded little or no value by the market. An alternative explanation, however, would be that the market is assuming that the companies in question will expend their cash resources on further exploration. This being the case, a better guide to the valuation of 'inferred' ounces might be provided by using market capitalisation, rather than enterprise value. This approach yields a valuation of US\$8.50/oz. However, this too is unsatisfactory in that if such a valuation is used for 'inferred' ounces, then the average implied valuation of 'indicated' ounces (see below) drops below that of 'inferred' ounces, which is counter-intuitive. For this to be avoided, the valuation of 'inferred' ounces must be below US\$6.63/oz. A summary of the per ounce valuations of the three companies with 'inferred' ounces is given in the graph below.

**Exhibit 5: Implied value per 'inferred' resource ounce (US\$)**

Note: Producers are shown in dark blue, explorers in light blue



Source: Edison Investment Research

The overall negative valuation of 'inferred' ounces is therefore attributable to the negative valuation implied by the negative enterprise value of China Goldmines. By contrast, the valuation implied by Greatland Gold is on a par with the valuation that we ultimately calculate for 'indicated' ounces (see below), which must suggest that the market is discounting future exploration success at the company's prospects – probably in the form of resources being upgraded from the 'inferred' into the 'measured' and 'indicated' categories. At US\$2.19/oz, Condor's valuation lies between the two.

Given our observation above that the valuation of 'inferred' ounces must be below US\$6.63/oz in order to make sense of the subsequent valuation of 'indicated' ounces, whatever approach is taken in interpreting the valuation of 'inferred' resource ounces, the outcome is inevitably low, negligible or even negative. As such, for the purposes of our subsequent valuation of 'indicated' and 'measured' ounces, we have accepted the overall, weighted average valuation implied by the above analysis of minus US\$1.31/oz.

**The value of an 'indicated' ounce**

A summary of those companies with 'indicated' and 'inferred' ounces only is given in the table below. It should be noted that approximately 140Moz of the 156Moz shown in the 'inferred' resource category is attributable to the two Witwatersrand companies represented in the category, Central Rand Gold and Wits Gold.

**Exhibit 6: Sub-sector summary of companies with 'indicated' and 'inferred' resource ounces only**

Note: Totals may not add up owing to rounding. Prices as at September 2009.

Resource category	No. of co's	Market cap (US\$m)	Net cash (US\$m)	EV (US\$m)	Resources (Moz of gold)			Total oz (m)	EV per total oz (US\$)
					Measured	Indicated	Inferred		
Indicated & inferred	8	1,458	83	1,375	0.0	51.4	155.8	207.0	6.64

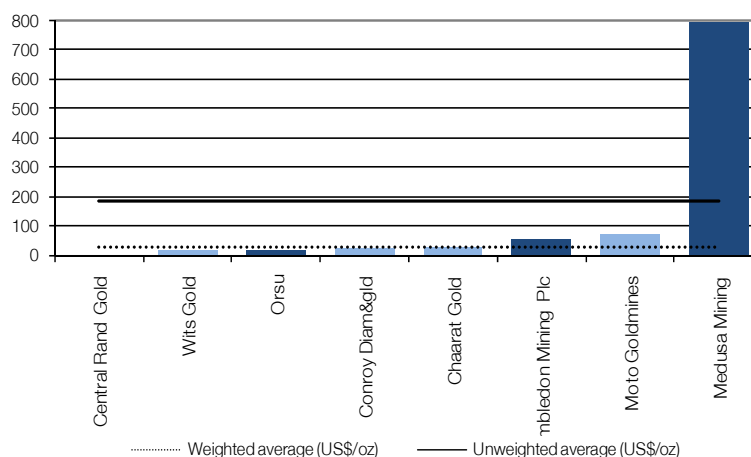
Source: Edison Investment Research, Thomson Datastream, Company sources

Having established the value of an 'inferred' ounce, it is then possible to derive the average value of an 'indicated' ounce by considering those companies with 'indicated' and 'inferred' ounces only and netting off the implied value of 'inferred' ounces (at the average valuation) from a company's enterprise value. Pursuing this approach for the eight companies with 'indicated' and 'inferred' ounces only yields an average value for each 'indicated' ounce of US\$30.74/oz, compared to a

value of US\$12.05/oz in April – a 235% uplift. A graph of the actual implied values for ‘indicated’ resource ounces for each of the companies in this category is given below.

#### **Exhibit 7: Implied value per ‘indicated’ resource ounce (US\$)**

Note: Producing companies are shown in dark blue, explorers in light blue.



Source: Edison Investment Research

Several features are of note relative to the above analysis. In particular, the implied valuations of all of the companies in this category fall within one standard deviation of the mean, with the exception of Medusa. As such, Medusa is an obvious outlier and excluding it from the analysis reduces the weighted average implied valuation of ‘indicated’ ounces from US\$30.74/oz to US\$21.67/oz.

However, it stands as an example of the sort of valuation that companies with only ‘indicated’ and ‘inferred’ ounces can achieve if they are able to develop those ounces to the satisfaction of the market and turn them to good account. As a result, for the purposes of the valuation of ‘measured’ ounces (below) we have accepted the higher, weighted average implied valuation of ‘indicative’ ounces of US\$30.74/oz.

### The value of a ‘measured’ ounce

A summary of those companies with ‘measured’, ‘indicated’ and ‘inferred’ ounces is given in the table below. Of note is the fact that the number of aggregate ‘indicated’ ounces in this sub-sector is approximately the same as that noted in the sub-sector with ‘indicated’ and ‘inferred’ ounces only, yet the aggregate market capitalisation of these companies is approximately 10 times as much. If investors accept the value of ‘inferred’ ounces as negligible, then it stands to reason that the US\$12.7m uplift in value of the ‘measured’ sub-sector compared to the ‘indicated’ sub-sector must be attributable to the 32.4 million ounces recorded in the ‘measured’ category.

#### **Exhibit 8: Sub-sector summary of companies with ‘measured’, ‘indicated’ and ‘inferred’ resource ounces**

Note: Totals may not add up owing to rounding. Prices as at September 2009.

Resource category	No. of co's	Market cap (US\$m)	Net cash (US\$m)	EV (US\$m)	Resources (Moz of gold)			Total oz (m)	EV per total oz (US\$)
					Measured	Indicated	Inferred		
Measured, indicated & inferred	31	14,228	294	13,934	32.4	53.4	42.1	128.0	108.87

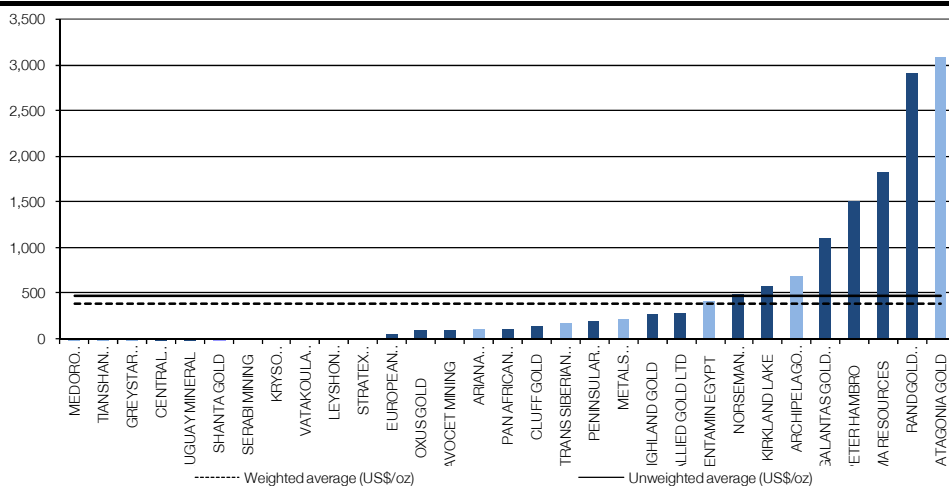
Source: Edison Investment Research, Thomson Datastream, Company sources

More specifically, using the approach outlined above, the value of a ‘measured’ ounce can be determined to be US\$381/oz – an 107% uplift from the US\$188/oz value we calculated in April. Exhibit 9 illustrates the implied valuations for ‘measured’ ounces for each individual company.



**Exhibit 9: Implied value per ‘measured’ resource ounce (US\$)**

Note: Randgold Resources is considered exclusive of its bid for Moto Goldmines; Leyshon is considered prior to the sale of Zheng Guang; producers are shown in dark blue, explorers in light blue.



Source: Edison Investment Research

Clearly it is non-sensical for resource ounces to be valued at more than the price of gold. In the case of Patagonia, Randgold Resources, GMA, Peter Hambro and Galantas, therefore, the market is self-evidently discounting either the discovery of additional resource ounces or the conversion of a portion of the current resource base from the ‘indicated’ and ‘inferred’ categories into the ‘measured’ category (or some combination of the two) or the profitable development of the resources as they stand.

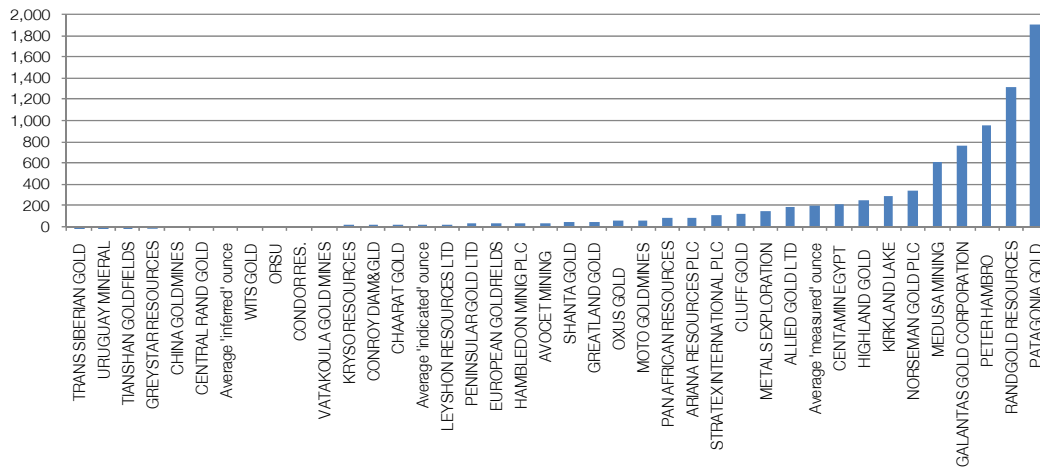
## Value creation and destruction

Apart from the differential valuations of ‘measured’, ‘indicated’ and ‘inferred’ ounces, our analysis also demonstrates in which companies value has been created or destroyed relative to the size and mix of their resource bases.

A graph of the change in the implied valuation of each company’s top category of resource ounces compared to our analysis in April is given in the table below (where applicable). This differs from changes in the share prices over the equivalent time period in that it reflects not only changes in the companies’ enterprise values, but also the valuation changes of the lower categories of resource ounces plus any changes in the size and mix of the resource categories. Nevertheless, it can be said to be a fair estimate of the amount of value created or destroyed within a company over the last six months relative to changes in the size and mix of each company’s resource base with respect to changes in the implied average valuations of those resources.

### Exhibit 10: Change in the implied valuation of ‘top’ resource category ounces since April (US\$/oz)

Note: Randgold Resources is considered exclusive of its bid for Moto Goldmines; Leyshon is considered prior to the sale of Zheng Guang.



Source: Edison Investment Research

From this it can be seen that one company in the ‘inferred’ only sub-sector (China Goldmines) has underperformed the change in valuation of average ‘inferred’ ounces, while the other two, Condor and Greatland, have outperformed. In the meantime, five companies in the ‘indicated’ sub-sector (Central Rand Gold, Wits Gold, Orsu, Conroy and Chaarat) have underperformed the figure for an average ‘indicated’ ounce and three (Hambledon, Moto and Medusa) have outperformed. In the ‘measured’ sub-sector, eight companies (Patagonia, Randgold, Peter Hambro, Galantas, Norseman, Kirkland, Highland and Centamin) have outperformed the average ‘measured’ ounce and 18 have underperformed. Comparison could not be made in the case of the three companies new to the analysis, namely Central African Gold, Archipelago and GMA, nor to Serabi, which had previously been in the ‘indicated’ sub-sector but has moved itself into the ‘measured’ sub-category as a consequence of its exploration activity.

## Operational consequences of valuations

As noted previously, this distinction in the valuation of resource ounces has certain consequences with respect to companies' operations and whether it is value-adding to continue to pursue their exploration programmes in particular, given the costs involved. In this instance our analysis is based on the oft-repeated assertion that it costs US\$35 to discover an ounce of gold. At the time of our April note, the aggregate enterprise value of the sector was close to US\$35/oz. That it has now risen to US\$45.33 per ounce could be seen in terms of value added to the sector; it could also be interpreted as reflecting higher future costs of discovering gold ounces and could therefore be seen as a harbinger of general inflation.

Nevertheless, maintaining our US\$35/oz cost assumption, it therefore follows that it is not worth a company pursuing a general exploration programme unless the average value of the resources that it is going to find – which we assume to be in proportion to those that it has already found – is at least US\$35/oz, subject to certain provisos (see below). In addition, assuming that it costs about the same to upgrade an ounce as it does to discover it in the first place (given that this is usually determined by drill spacings), it is also not worth a company pursuing a strategy of upgrading its resource ounces from one category to the next unless the valuation differential between those two categories exceeds US\$35/oz.

With this in mind, it can be seen that, of the 42 companies that we have analysed in this way, it is value adding for 21 of them to conduct full exploration programmes (cf 11 at the time of our note in April). Notable additions to this group, from last time, are Cluff, Ariana and European Goldfields. There are then three companies for which it is definitely worth upgrading their resources (cf seven in April), being Oxus (which was also in this group in April), Serabi and Hambledon. There are a further five companies for which it may be worth upgrading their resources (cf 12 in April), depending on the value the upgraded category delivers to the company. Finally, there are 10 companies for which it is apparently neither worth upgrading existing resources, nor discovering new ones. Of these 10, eight were in the same position in April; they have now been joined by Central African Gold and Uruguay.

A summary of the companies and the groups into which they apparently fall in respect of their exploration activities is shown in Exhibit 11.

**Exhibit 11: Implications of resource category valuation differential on companies' operations**

Note: \* Leyshon is considered prior to the sale of Zheng Guang.

Companies worth full exploration programme	Companies worth upgrading resources only	Companies worth upgrading into 'measured' category	Companies not worth exploring (subject to the provisos)
Patagonia	Oxus	Conroy	Stratex International
Randgold Resources	Serabi	Chaarat	Leyshon*
GMA Resources	Hambledon	Orsu	Uruguay
Peter Hambro Mining		Wits Gold	Vatukoula
Galantas		Central Rand Gold	Kryso
Kirkland Lake		Greatland Gold	Shanta
Allied Gold		Condor	Central African Gold
Norseman		China Goldmines	Greystar
Centamin			Tianshan
Highland Gold			Medoro
Metals Exploration			
Peninsular Gold			
Trans-Siberian Gold			
Cluff Gold			
Pan-African Mining			
Ariana			
Avocet			
European Goldfields			
Medusa			
Moto			
Archipelago			

Source: Edison Investment Research

The companies for which it is apparently neither worth upgrading existing resources nor discovering new ones have six options (which may also be regarded as provisos upon which this conclusion is reached):

- 1) To cease exploration activity and to develop their assets as they stand in order to bring their ounces to account profitably.
- 2) To demonstrate that they are able to add value by discovering new ounces cheaply.
- 3) To demonstrate that they are able to add value by upgrading existing ounces cheaply.
- 4) To sell the company.
- 5) To sell (or part sell) their assets.
- 6) To cease exploration activity and mothball operations.

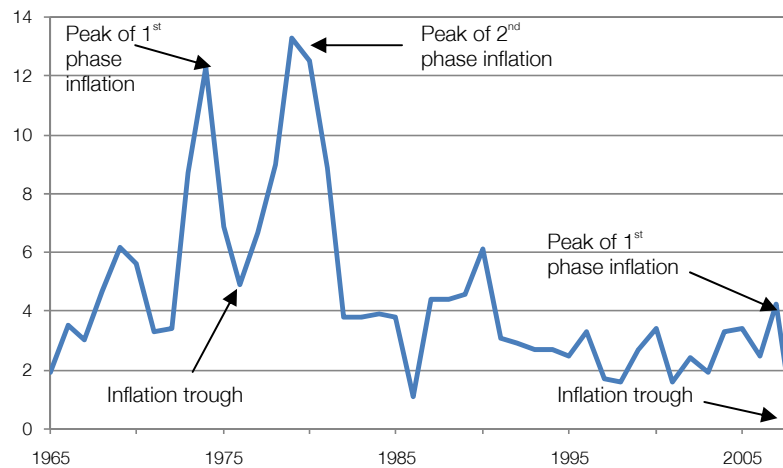
Assuming that future share price movements reflect the extent to which value is either added or destroyed at these companies, the degree to which they are successfully able to achieve any one or all of the above imperatives will determine the extent to which their future share prices will either appreciate or depreciate.

## The gold market

The passage of gold through US\$1,000/oz we believe vindicates our note of earlier this year (*Gold – a return to the 1970s*, April 2009). We reiterate our belief that gold is in the second phase of its bull run and that it has the potential to spike higher in the near term – especially if, as economists say, the current crisis is ‘the worst since the Second World War’ and therefore by extension worse than the 1970s when gold experienced its most famous bull run.

Our previous analysis described the parallels between the situation in the 1970s and the situation today. In broad terms, we observed that the crisis of the 1970s proceeded in two distinct phases. In the first, burgeoning inflation (caused by the first oil shock) combined with a global economy dominated by twin US deficits to suck financial markets into a debilitating debt-deflation spiral in 1973-1974. During this period, the Dow Jones Industrials average lost 45% of its value, while the US economy slowed from 7.2% real GDP growth in 1972 to a 2.1% contraction in 1974. The world’s authorities then reacted to the crisis by adopting an excessively stimulative monetary policy to counteract the resulting recession and thereby created a runaway wage-price spiral and a second peak in inflation later in the decade (see Exhibit 12).

**Exhibit 12: US consumer price index, percent change year-on-year, 1965-2008**



Source: US Department of Labor

We continue to believe in the economic parallels between now and the 1970s. Nevertheless, it is worth being aware of the fact that gold’s trajectory during the 1970s was not that of a smooth upward trend.

In particular, it is worth noting the progression of events in the 1970s and how they may relate in time to the parallel events of the 2000s, as shown in Exhibit 13.

**Exhibit 13: 1970s and 2000s timeline with respect to inflation, gold and the Dow Jones Industrials Average**

Note: All \$ are US\$; inflation numbers are December to December; gold price numbers are annual averages; DJIA = Dow Jones Industrials Average December close.

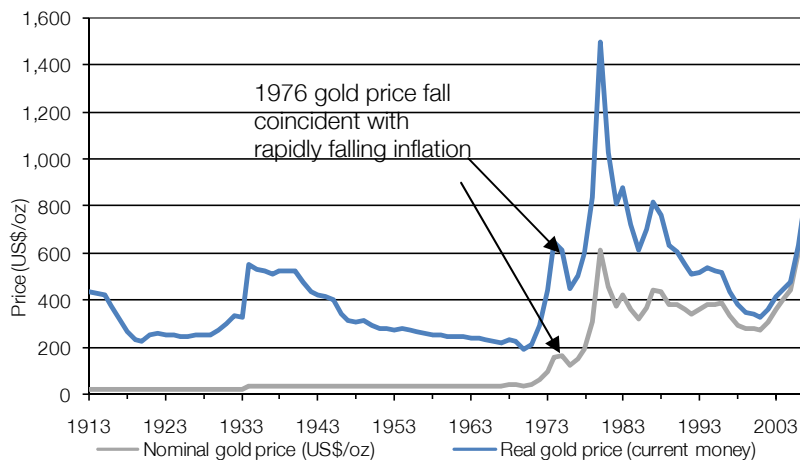
Date	Inflation (%)	Gold (\$/oz)	DJIA	Comment	Date	Inflation (%)	Gold (\$/oz)	DJIA	Comment
1971	3.3	41.17	890		2001	1.6	272.67	10,022	Localised gold price low
1972	3.4	59.00	1,020		2002	2.4	309.66	8,342	
1973	8.7	97.84	851		2003	1.9	364	10,454	
1974	12.3	158.96	616	Peak of 1st phase inflation; DJIA trough	2004	3.3	409	10,783	
1975	6.9	160.91	852	Gold price peak in phase 1	2005	3.4	445	10,718	
1976	4.9	124.71	1,005	Inflation trough; gold falls; DJIA recovers	2006	2.5	604	12,463	
1977	6.7	147.78	831		2007	4.3	697.5	13,265	Peak of 1st phase inflation
1978	9.0	193.39	805		2008	0.1	871	8,776	DJIA trough
1979	13.3	304.83	839	Peak of 2nd phase inflation	2009				Inflation trough? DJIA recovers
1980	12.5	614.61	964	Peak of gold price	2010				
					2011				
					2012				Peak of 2nd phase inflation?
					2013				Peak of gold price

Source: US Dept of Labor, South African Chamber of Mines, Edison Investment Research, Thomson Datastream

What is apparent is that, while there is an analogous progression of events between the 1970s and the 2000s, in the latter case, it appears as if the cycle has been prolonged compared to the former. As such, the coincident trough of the Dow Jones, which occurred in 1974 in the previous cycle, has only just occurred in 2008 in the current one. Since then, the Dow Jones has recovered and inflation has fallen. Again, this experience is analogous to 1976, reflecting as it does the deflationary headwinds that are assailing the economy. However, it is worth noting that this phase of the global economic crisis in 1976 also coincided with a period of weakness in the gold market in 1976, when it fell by almost 25%, as depicted in the graph below.

**Exhibit 14: The gold price, nominal and real (US\$/oz), 1913-2008**

Note: Prices are annual averages.



Source: Edison Investment Research, South African Chamber of Mines, US Department of Labor

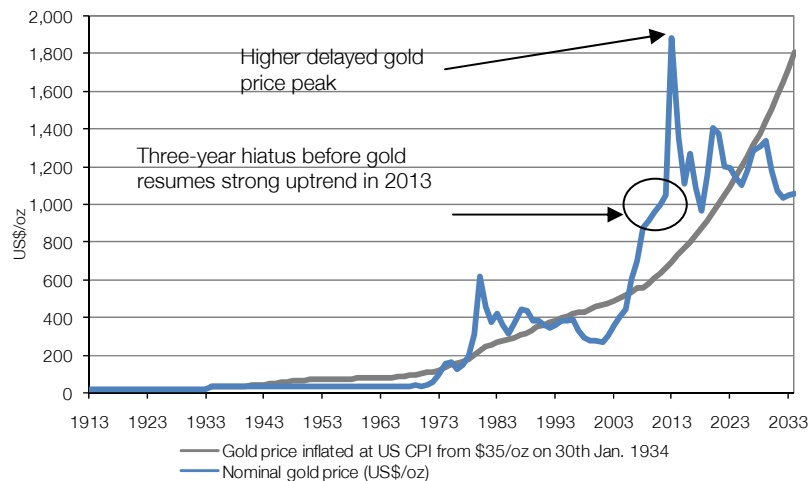
The peak of second phase inflation then occurred three years after its earlier trough (ie in 1979), which correlates closely to Alan Greenspan's assertion that it takes approximately three and a half years for the effects of quantitative easing to become apparent in inflationary statistics (*Financial*

*Times* article, 26 June). If 2009 therefore represents the trough in inflation in the current cycle, then it is likely that the peak of second phase inflation will be in 2012 and that the gold price will peak one year after that in 2013.

We continue to believe in the medium-term potential of gold to exceed US\$1,500/oz (according to the graph below). However, given the deflationary forces currently being experienced by the world economy we note that there is short-term potential for a hiatus before gold resumes its uptrend.

#### **Exhibit 15: Effect of repetition of the 1980-2001 gold price cycle in 2009-2030**

Note: Prices are annual averages.



Source: Edison Investment Research, South African Chamber of Mines, US Department of Labor

In particular, we would posit the following milestones for investor perception to switch from a deflationary mindset into an inflationary one (in approximate chronological order):

- 1) Unemployment to improve.
- 2) House prices to stabilise.
- 3) Bank bad debts to fall.
- 4) Bank lending to the real economy to increase.
- 5) Capacity utilisation to increase such that the output gap between the actual and theoretical output of economy closes.

In respect of the last point we would make one final observation. A large part of the reason for monetary over-expansion in the 1970s was the over-estimation of the so-called output gap. This progressively beguiled policymakers into believing that the deflationary headwinds were stronger than they were and encouraged them to continue to pursue expansionist policies for longer than they were appropriate. This gap is notoriously difficult to quantify with accuracy and with hindsight it became apparent that the reason for its over-estimation was a consequence of policymakers failing to appreciate the amount of capacity which had been destroyed in the preceding recession.

Of course, it is possible that, this time around, central bankers will behave with perfect judgement with respect to the re-inflation of the global (and particularly the US) economy. Otherwise, they will once again prove to be human and fallible and thereby condemn us to repeat history's precedents for one more inflationary cycle – in which case we continue to believe that our medium-term US\$1,879/oz gold thesis and our long-term US\$1,177/oz gold thesis remain intact.

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