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GOLD FIELDS MINERAL SERVICES LTD

Gold Production and Consumption Weighted Price Indices Show the Relative Strength of Producer Prices

■ *Since 1994, gold prices faced by producers have fallen by substantially less than both US dollar prices and those faced by consumers.*

■ *Production weighted real gold prices fell by 12% between January 1994 and June 2002, compared to a 33% fall in the real US dollar gold price and a 28% fall in the consumption weighted real price.*

■ *Weakness in the real exchange rates of key gold producing countries has led to global mine production between 1995 and 2001 being greater than that which would have occurred with stable exchange rates.*

Globally, gold production and consumption predominantly occurs in countries whose currencies are not tied to the US dollar. Price changes when measured in the currencies of these gold producing and consuming countries, and deflated by local inflation, provide an important indication of the price factors underlying trends in gold production and consumption.

As an exercise to highlight these price developments, since 1999 GFMS has published in the annual *Gold Survey* **production** and **consumption weighted price indices**.

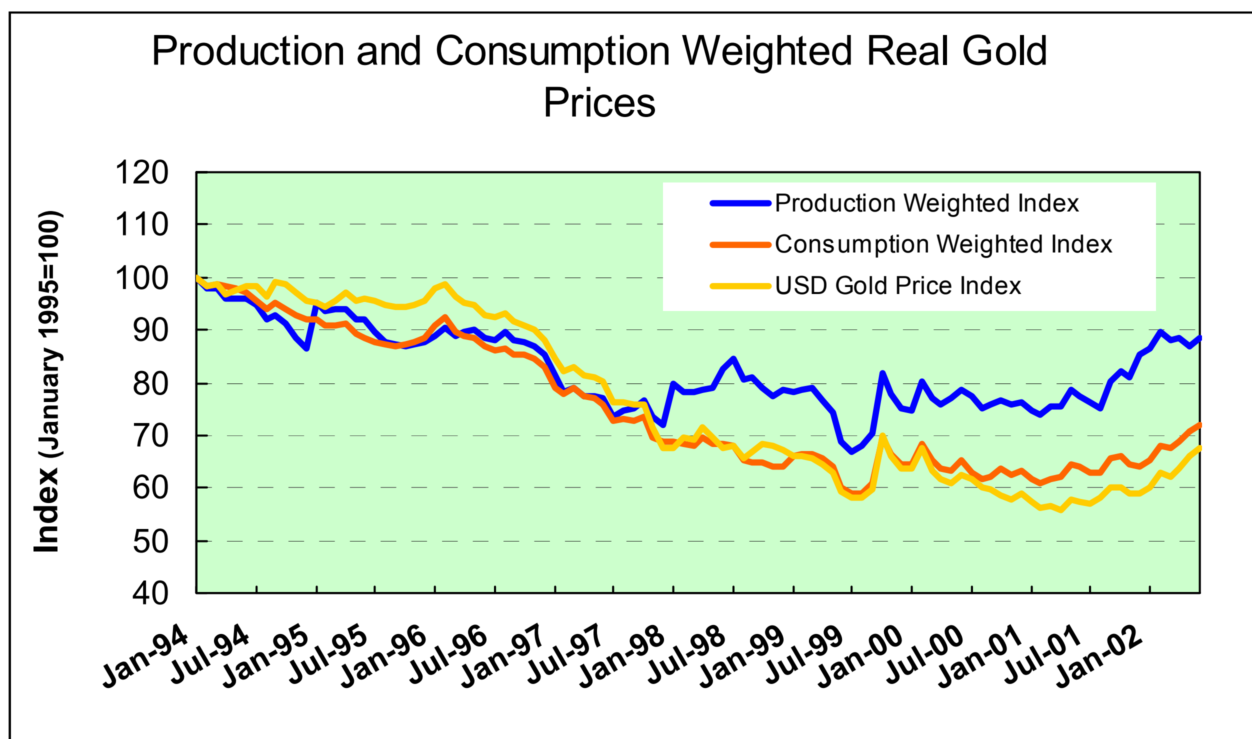
The **production weighted price index** is based on gold prices, measured in domestic currencies, for the Top 10 gold producing countries in 2001 (these countries account for around 75% of annual world mine production). Individual country indices of the gold price, expressed in each country's national currency, and deflated by that country's CPI (Consumer Price Inflation) are constructed. A weighted aggregate index is then calculated from these indices. The weights are obtained by taking each country's share in the Top 10's mine production for each year. For 2001, these weights are as follows:

Country	Weight	Country	Weight
South Africa	0.20	Russia	0.08
United States	0.17	Canada	0.08
Australia	0.14	Peru	0.07
Indonesia	0.09	Uzbekistan	0.04
China	0.09	Ghana	0.04

The **consumption weighted price index** is constructed is a similar manner. This index utilises data from the Top 19 jewellery consuming countries in 2001, which account for around 75% of annual global jewellery demand. The countries and associated weights in 2001 are shown below.

Country	Weight	Country	Weight
India	0.26	S. Korea	0.03
United States	0.16	Thailand	0.02
China	0.08	Spain	0.02
Saudi Arabia	0.07	France	0.02
Egypt	0.05	Japan	0.02
UAE	0.04	Russia	0.02
Italy	0.04	Pakistan	0.02
Indonesia	0.04	Mexico	0.02
Turkey	0.04	Iran	0.02
UK	0.03		

The Figure overleaf illustrates the evolution of the production and consumption weighted price indices from January 1994, alongside the US dollar gold price index (deflated by US CPI). Between 1994 and 1997, all three indices move in a broadly similar manner, indicating that exchange rates and inflation in the United States and producing and consuming countries followed comparable trends. However from 1998 the production index begins to diverge, rising strongly above both the US dollar and consumption weighted indices, and illustrating weakening real exchange rates in key producing countries. Moreover from January 2000, the consumption index also moves above the US dollar index, again showing a real strengthening of the dollar.



The production weighted index shows the greatest variance from the dollar price, and also experiences the greatest volatility. For example, in the first 7 months of 1998 (the point the index begins to diverge), the production weighted index increases by 6% whilst the consumption weighted index falls by 1% and the US dollar price remains flat. The increase in the production weighted price at that time can be attributed to the weakness of the rand and Australian dollar, with the real South African price increasing by 22% from January to July 1998 and the Australian real price by 10% over the same period.

Since January 2001 the production weighted index has risen by 19%, compared to 16% and 15% increases for the consumption and US dollar indices respectively. This premium in the production weighted real price is due to the increase in the South African Rand price, which climbed 45% between January 2001 and June 2002, compensating for a 5% fall in the Indonesian rupiah price and 13% increase in the Australian dollar price.

Over the same period, the modest increase in the consumption weighted price over the US dollar price reflects strong rises in Japanese, Turkish and Egyptian prices.

Turning to more recent history, the situation in 2002 has actually moved in the inverse direction to that followed over the wider period. Between January-June 2002, the producer index has risen by 2% whilst the US dollar and consumption indices have increased by 12% and 10% respectively. This divergence reflects the marked weakness of the dollar during 2002 - the Financial Times' trade weighted dollar index depreciated by 8% between January-June 2002. This has been exacerbated by an over-proportionate appreciation in the South African rand and Indonesian rupiah, which increased against the dollar by 12% and 16% respectively.

Impact on production and consumption

Over the period 1994-2001, global mine **production** increased by 14%, with rises in Indonesia, Peru and China (amongst others) outweighing a large (33%) fall in production from South Africa.

Rather paradoxically, South Africa experienced the largest rise in the real domestic price whilst recording the greatest drop in production. This reflects the mature nature of the South African gold mining industry - lower grades, an aging infrastructure and industry consolidation have all

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contributed to the decline in South African mine production.

That this occurred against the background of a 39% increase in the real domestic gold price begs the question: what would production have done had local prices followed the 33% fall in the real US dollar price? Undoubtedly, the decline in production would have been more marked as industry consolidation would have accelerated and marginal shaft sections closed earlier.

The situation in Canada, which experienced a 17% fall in the real local price against the 33% fall in the US dollar price, is similar to that of South Africa. Canadian mine production has been more robust than that of South Africa, increasing by 8% between 1994 and 2001. However, in recent years, small mines have been closing and production has fallen by 8% since 1997. Undoubtedly, the pace of these closures would have been greater had local prices fallen as much as the US dollar price. By contrast, GFMS estimate that production in Peru and Indonesia, which experienced a 22% fall and 7% rise in the domestic prices respectively, is less sensitive to price developments. Developments in Peru have been linked to mining laws encouraging foreign investment, whilst Indonesian production is dominated by production at Grasberg, where gold output is a by-product of copper production.

Australia experienced an 11% increase in mine production between 1994 and 2001, although since 1998 production has been on a downward trend. Real local prices fell by 16% over the January 1994-June 2002 period, but have increased by 15% since 1998. GFMS believe that the recent fall in Australian mine production is less related to domestic price developments than ore depletion at a number of historically important operations.

Turning to **consumption**, the story is equally divergent. Jewellery consumption between 1994 and 2001 increased by 14%. Major changes occurred in India and the Middle East on the positive side, and China on the negative side. Indian jewellery consumption increased by 289 tonnes (89%) whilst combined consumption in the UAE, Saudi Arabia, Iran and Egypt rose by 138 tonnes (51%). These are the typical price sensitive regions. Indian real prices actually declined by 37% between 1994 and 2001 (against the 33% fall in the dollar price) suggesting that domestic inflation (leading to a strengthening of the rupee in real terms) may have bolstered demand, whilst in the Middle East, with the exception on Iran, real prices fell by less than the dollar price, a factor that may have tempered offtake. The situation in China is an interesting case, although real prices fell by 41%, consumption dropped by close to 40%. This reflects the fact that the Chinese market has been experiencing a secular downward trend.

Although the sensitivity of both global demand and supply to changes in local prices is difficult to gauge, weakness in producer currencies over the last six years has undoubtedly acted to boost supply above the level that would have occurred with stable real exchange rates. The situation for demand may be less clear-cut largely as weakness in consuming countries' currencies has been less pronounced. The extension of these arguments is that in the absence of real weakness in producer currencies, global mine supply between 1995 and 2001 would have been lower, and US dollar prices therefore probably higher.

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Note: The indices used to construct the production and comsumption weighted series shown in this article can be purchased from GFMS. Please contact Laurette Perrard, e-mail: laurette.perrard@gfms.co.uk for further information.