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## Contribution: The uneconomic production of gold in South Africa\*

by P.J.D. LLOYD†

This fascinating paper deserves study by all who are interested in the economics of gold production.

The argument in the paper that price is determined by the balance between supply and demand may be thought to be obvious. However, correlation analysis presumes causality, and there is some evidence in the paper to suggest that causality is absent in this market. For instance, one could apply Monro's argument for a cut in supply to cause an increase in price, and thus a maximization of profit, to Latin America rather than to South Africa.

His model for the Latin American supply,

$$S = 1,52 S_{t-1}^{0,945} P^{0,127},$$

can be inverted to yield  $1/P = 27,03 \left( \frac{S_{t-1}^{7,44}}{S^{7,87}} \right)$ .

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From the data for 1981-82, when  $S_{t-1} = 100$ ,  $S = 105$ ,  $P = 0,40$ . If the Latin American production in 1982 had been cut to 90 t, this equation would predict  $P = 0,12$ ; if it had been increased to 120 t,  $P$  would rise to 1,14. Very similar remarks apply to the other models for supply and demand.

This is far higher sensitivity of price to supply than shown by the South African production, where a swing of 1300 t in the 1972-1982 production (or 130 t/a) 'causes' a shift of only 10 per cent in the normalized price.

It is most unlikely that different sectors of the supply could have such a different effect upon the price — they must surely have identical effects in the absence of buyer preferences (which are notably absent in the gold market).

It is, therefore, apparent that the relation between supply and price is not direct, but an artefact of modelling. In this light, the thesis that profitability can be maximized by a significant cut in production must remain in question.