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EXCHANGE RATE MOVEMENTS -
HOW DO THEY AFFECT AUSTRALIAN
MINING COMPANIES?

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METHOD OF ANALYSIS

To maintain objectivity in this examination of the effects of exchange rate changes on the mining industry, the study is based on an empirical assessment of published and freely available statistical information. Company balance sheets and industry average data collected by the Australian Bureau of Statistics have been used as a base for calculation and interpretation.

The method of analysis closely parallels that adopted by Gillies and Thomas (1977) in a study of the effects of taxation legislation changes on mining company profitability. Data from published annual reports and financial statements of eight significant Australian mining companies have been examined. This representative group is based largely on the selection used by Fitzgerald (1974).

The yardstick used for the comparison of profitability results within the study is cashflow rate of return on company equity investment. In adopting a profitability index based on equity yield rather than the yield on total funds employed or on capital expenditure, the practices advocated by Merrett and Sykes (1973) have been followed. The calculation of profitability indices in terms of equity investment reflects the attractiveness to shareholders of a project or company. Furthermore, with the complex and changing patterns of geared finance experienced by most companies, an analysis in terms of the total funds employed or the capital invested in a project is likely to seriously distort the perspective to shareholders. Merrett and Sykes emphasise that in industries such as mining, the peculiarities of gearing are such that there is no alternative to the detailed calculation of returns on a basis of equity cashflow.

EFFECTS OF EXCHANGE RATE CHANGES

The effect of an exchange rate movement on company profitability can be estimated through the analysis of induced changes in the various parameters which aggregate to form the accounting statement. For this study, these significant factors are revenue generation, loan repayment commitments, operating costs and capital write-off deductions. These will be examined in turn for sensitivity to currency fluctuations. The overall effects on company profitability can be estimated through aggregating relevant component results.

The effects of currency movement on company accounts are illustrated by the imposition of an assumed 20 per cent devaluation of the Australian dollar. A change of this magnitude has been selected as it is large enough to cause readily discernable changes in the parameters which influence profitability while being of size which could reasonably be expected to prevail in the future.

REVENUE

While Australia as a nation is a major exporter of many mineral products, the mining industry also supplies a large home consumer market. In this study, these two markets have been treated separately and in different ways.

Overseas trade can be negotiated on a spot price basis for small quantity sales or through written contracts for larger deliveries. In the long term, contract prices mirror tendencies exhibited by spot sale indicators. Contracts may be written in one or more international currencies and may introduce provisions to allow for exchange rate movements. In this study, it has been assumed that commodity price levels immediately reflect the full effect of a currency change. Moreover, the contract currency is not the Australian dollar and no provisions for exchange rate movement adjustment have been included.

Prices for mineral products sold within Australia are influenced by many factors. Although international price levels would have some long term influence on the prices of commodity transactions within Australia, the present study has been performed on the basis that prices are independent of overseas effects.

Mining companies within Australia vary in the detail of statistical information published on their operations. With regard to sales of mineral products, many print information in their annual reports detailing production and revenue data for each product mined and give a breakdown showing the proportion exported. Some companies, however, do not give full details of this information in which case, average statistics for the industry or a specific commodity group as compiled by Australia - Bureau of Mineral Resources, Geology and Geophysics (1976) have been used in the calculations.

Within this study, the question arises as to how company royalty payments should be handled under varying conditions of profitability. Royalty imposition within Australia is complex, the royalty payments varying on a state by state and product by product basis. Royalty calculation typically takes one of three forms, i.e. based on tonnage produced, revenue generated or annual profit level. Due to the complexities involved in calculating royalty liability for a company mining a number of different minerals and because the royalty levels in most cases are low in comparison with other forms of taxation, in this study royalty liability has been assumed to be generally unaffected by changes in company profitability. This simplification, however, has not been maintained in the examination of the profitability of North Broken Hill Limited and adjustments have been made to royalty liability as profit levels change. Royalty calculation for the Broken Hill mines is on a progressive profit basis and liability can be significant at high levels of profit. To have ignored this would have produced serious distortions in the comparative results of the effects of currency movements on this company's profitability.

In Table 1, the effect on the eight companies of a 20 per cent devaluation on revenue generation is shown.

Table 1

Effects of currency devaluation by 20 per cent on revenue generation for selected mining companies as indicated by variation of cashflow rate of return*

Company	1975 actual result - cashflow rate of return at 42.5% tax rate - %	Result after 20% devaluation on revenue devaluation - %	Percentage change - %
Comalco Limited	12.6	23.7	88
Consolidated Gold Fields Australia Limited	28.5	36.9	23
Hamersley Holdings Limited	29.7	46.8	58
MIM Holdings Limited	29.6	41.5	40
North Broken Hill Limited	7.9	10.0	27
Peko Wallsend Limited	15.6	17.6	13
Utah Development Limited	89.3	130.3	46
Western Mining Corporation Limited	17.3	25.0	45

* Base data from 1975 published annual reports. Where appropriate, accounts referred to are those prepared on a consolidated group basis.

From Table 1, relative profit sensitivity of companies to an increase in export revenue caused by a currency movement can be seen. Companies supplying export markets, experience a significant increase in profitability. A simple average of the increase in company rate of return values indicates that a 20 per cent devaluation of the Australian dollar leads to an almost 50 per cent increase in profitability resulting from the generation of extra export revenue.

LOAN REPAYMENT COMMITMENTS

Australian mining projects are considerably financed through loans from both overseas and local sources. Statistics collected by the Industries Assistance Commission (1976) indicate that in the decade to 1973/74, capital for Australian mining projects was obtained from

1. share issues - 30 per cent of the total
2. foreign loans - 40 per cent of the total
3. local loans - 30 per cent of the total.

For a company with loan obligations written in a foreign currency, an exchange rate movement will lead to a variation in both capital and interest repayment commitments. In this section, the effect on capital repayments is analysed while the importance of interest charges is examined in a later section on the influence of operating costs.

The significance of exchange rate movements on loan obligations is recognized by many mining companies with the inclusion in their accounts of an exchange fluctuation provision to reduce the short term impact of changes.

Most companies within the present study include details as to the country of origin of loans. However, three companies in the year 1975 did not include this information. For Consolidated Gold Fields Australia Limited, the calculation on the effects of currency movement on loans has been undertaken over a range to give maximum and minimum sensitivity. In the instance of two other companies with low levels of indebtedness, namely Peko Wallsend Limited and North Broken Hill Limited, it has been assumed that they had no overseas loan liability.

In Table 2, the effects of a 20 per cent devaluation on company loan liability and the resultant relative change in profitability are shown.

Table 2
Effects of a currency devaluation by 20 per cent on
company loan liability

Company	1975 actual result - cashflow rate of return at 42.5% tax rate - %	Result after 20% devaluation loan liability - %	Percentage change - %
Comalco Limited	12.6	6.2	51
Consolidated Gold Fields Australia Limited	28.5	27.8 - 28.5	0 - 3
Hammersley Holdings Limited	29.7	20.7	30
MIM Holdings Limited	29.6	27.4	7
North Broken Hill Limited	7.9	7.9	0
Peko Wallsend Limited	15.6	15.6	0
Utah Development Company	89.3	80.1	10
Western Mining Corporation Limited	17.3	14.7	15

The results indicate that some companies are very much more sensitive to this change than others. A simple averaging of the company results indicates a 15 per cent decrease in profitability over this sample of the Australian mining industry. However, from the spread of the relative effects of overseas loan liability resulting from a 20 per cent devaluation, it is difficult to accept this figure for generalized application without further investigation.

OPERATING EXPENSES

Consideration of the effects of currency movement on the operating costs of the sample of Australian mining companies has been directed at examining effects on the imported component of expendable costs. Initially it was necessary for a realistic estimate of the value of the imported component of costs appropriate for the different sections of the mining industry to be calculated.

Company annual reports provide little detailed information in this area. Statistical data on mining industry operating expenses obtained from material collected by the Australian Bureau of Statistics (1977) have been used. Indices on the imported component of operating expenses for the mining industry as a whole and for commodity groupings within it have been obtained and employed appropriately in the study. For example, the index of imported content, calculated for the metallic minerals sector of the industry was 11.2 per cent.

The effects of loan interest costs have been calculated separately and then combined with the value obtained from other direct costs.

The recent second Ranger uranium environmental inquiry report by Fox (1977) made some relevant comments concerning operating costs associated with uranium mining. The report states on page 353

"Since about 15-20 per cent of costs associated with uranium production seem likely to be spent directly and indirectly on imported goods, which is similar to the average import content of total expenditure in Australia "

The estimates made from the Australian Bureau of Statistics data on the imported content of direct costs compare favourably with the findings in the Fox report.

In Table 3, the influence of a 20 per cent devaluation on operating costs is shown.

Table 3

Effects of currency devaluation by 20 per cent on company operating costs

Company	1975 actual result - cashflow rate of return at 42.5% tax rate - %	Result after 20% devaluation on operating expenses - %	Percentage change - %
Comalco Limited	12.6	10.1	20
Consolidated Gold Fields Australia Limited	28.5	27.1 - 27.2	4
Hamersley Holdings Limited	29.7	27.4	8
MIM Holdings Limited	29.6	28.0	5
North Broken Hill Limited	7.9	7.7	3
Peko Wallsend Limited	15.6	14.6	6
Utah Development Company	89.3	86.7	3
Western Mining Corporation Limited	17.3	16.2	9

A simple average of these results indicates a seven per cent decrease in company profitability from the influence of a 20 per cent devaluation on the imported content of the operating costs.

CAPITAL EXPENDITURE

For a new or expanding mining operation, the effects of a currency variation on anticipated capital expenditure are immediate and frequently outstanding. For an on going operation, however, the change is felt somewhat later, when capital assets of imported origin have to be replaced. It is this latter aspect which will be considered here.

The effect on capital expenditure caused by currency movement can be considered in much the same way as inflation can be taken into account in the indexing of capital write off provisions. Without changes in depreciation schedules following exchange rate variations, the book and replacement values for assets purchased overseas will move out of line. The situation will then arise, where company accounts will be over or under providing write off provision leading to a distorted indication of profitability. The implications of these effects are to long term company prospects.

In this section of the study, an index for the imported content of each industry sector has been applied to company annual write off provisions. These indices have been calculated in the same way as those used to estimate the influence of operating costs. As an example, the index calculated for metallic minerals industry sector was 27.5 per cent.

In Table 4, the decrease in profitability caused by a 20 per cent devaluation on capital expenditure write off provisions is shown.

Table 4
Effects of currency devaluation by 20 per cent on
company capital expenditure write off provisions

Company	1975 actual result - cashflow rate of return at 42.5% tax rate - %	Result after 20% devaluation on capital expenditure write-off - %	Percentage change - %
Comalco Limited	12.6	11.6	8
Consolidated Gold Fields Australia Limited	28.5	27.6	3
Hamersley Holdings Limited	29.7	29.2	2
MIM Holdings Limited	29.6	29.4	1
North Broken Hill Limited	7.9	7.9	0
Peko Wallsend Limited	15.6	15.4	1
Utah Development Company	89.3	88.9	0
Western Mining Corporation Limited	17.3	17.0	2

From the results in Table 4, it can be seen that profitability is less sensitive to this factor than the others examined earlier. A simple average indicates a decrease in the rate of return by two per cent.

COMBINED EFFECTS OF THE COMPONENTS

Four component parameters of a profitability study which are significantly affected by currency variation have been examined. Aggregation of these results gives the combined effects on company profitability. The results are shown in Table 5.

Table 5

Combined effects of currency devaluation by 20 per cent on company profitability

Company	1975 actual result - cashflow rate of return at 42.5% tax rate - %	Result after 20% devaluation - combined effects - %	Percentage change - %
Comalco Limited	12.6	14.3	14
Consolidated Gold Fields Australia Limited	28.5	33.2 - 34.0	16 - 19
Hamersley Holdings Limited	29.7	36.2	22
MIM Holdings Limited	29.6	37.5	27
North Broken Hill Limited	7.9	9.8	24
Peko Wallsend Limited	15.6	15.8	1
Utah Development Company	89.3	124.3	39
Western Mining Corporation Limited	17.3	20.7	20

A simple average of the eight company results shows that for a 20 per cent currency devaluation, a 20 per cent increase in profitability occurs. Further, six of the eight company results are clustered relatively closely around this mean, the two outliers being the Utah Development Company and Peko Wallsend Limited.

The basis and operation of the Utah Development Company differs in a number of respects from many other Australian mining companies. Company production is almost wholly mined for the export market. Loan financing is largely from overseas. Moreover, an extremely high degree of profitability such as their's is unusual. These contribute to an increase in the sensitivity of the company's profitability to exchange rate movements.

Peko Wallsend Limited on the other hand, recorded poor results in 1975 with an income at a level which incurred no tax liability. The influence of the imported content of operating costs and capital expenditure write off provisions was almost sufficient to negate any increase in profitability through increased revenue caused by a currency devaluation.

CONCLUSIONS

This study has attempted to examine the effects of exchange rate movements on the profitability of Australian mining companies. This has entailed examination of the accounts of a cross section of significant mining companies to determine the sensitivity of a number of factors to currency variation.

It has been found that the combined effect of a 20 per cent devaluation leads to an approximate increase of 20 per cent in company profitability. As the significant component parameters of a profitability study form a directly proportional relationship one to another, it would not be an oversimplification to interpret that this particular case can be generalised to conclude that a currency change up or down of "x" per cent leads to an inverse shift in profitability of the same "x" per cent. The question remains unanswered as to whether the companies under study mirror the reaction of the total Australian mining industry to exchange rate movements, both for the year under review and more importantly, over the long term into the future.

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