How much to hedge – who knows?

Financial risk management in Australian companies

Large Australian companies, including both resource and industrial stocks, exhibit apparent clustering of financial risk hedging activity around the 50% mark which is puzzling because industry and firm differences in financial risk exposures would suggest more observed variation. However, report JEAN CANIL and BRUCE ROSSER, some common strands emerge, and surprisingly underlying risk exposure is not the whole story.

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Managing financial risks is not just a question of reducing or minimising financial risks through derivative instruments, but as Stulz (1996) and other corporate finance specialists argue, both operating and financial risks should be actively managed to *increase* shareholder wealth. Seen this way, managing financial risk forms an integral part of the broader investment decision-making process.

Hedging financial risks (commodity prices, interest and foreign exchange rates) adds value principally by reducing the likelihood of financial distress from having mismatched cashflows. Financial distress increases borrowing costs and hence increases the likelihood of passing up good investment opportunities in "bad" years. Stulz argues that financial risk hedging should increase (decrease) as the risk of financial distress increases (decreases). If this approach were adopted, then price hedging would be inversely related to profitability, ie, a profitable company would not need to hedge financial risks as much as an unprofitable company. In contrast, value-at-risk eschews firm profitability and relies instead on industry-based volatility which may from year to year be unrelated to a given firm's performance.

Unlike management of operating risks, financial risk hedging is typically heavily dependent on readily accessible derivatives markets but may also be achieved through capital structure adjustments, executive incentive contracts and even through integrating operating and financial risk management. On balance, management of operating risks is expected to return more than hedging financial risks because the latter do not impinge on efficiency whereas the former do.

Given that risk management is costly (if only in terms of transaction costs, but also recognising that profits from exposures may be capped), shareholders are worse off if there is too little or too much financial risk hedging. Incentives for risk management are highlighted in recent American empirical research.

Two of these articles look at the determinants of the extent of corporate financial risk hedging for resource stocks, as distinct from the decision to hedge in the first place. Haushalter (2000) documents wide variation in hedging policies among oil and gas producers, while Tufano (1996) reports that risk management practices in the gold mining industry appear more associated with manager risk aversion than shareholder wealth maximisation.

Haushalter finds that production hedged against price risk is greater for firms having little financial flexibility, and firms in industries where suitable hedging instruments are available. In contrast, Tufano finds that managers who own more options manage less risk, whereas those who own more stock manage more risk. In addition, firms with lower cash balances manage more gold price risk, firms with a greater percentage of outside blockholders tend to manage less gold price risk, and firms with CEOs who are newer in their jobs manage a larger proportion of gold price risk.

This paper draws together some threads of these arguments and looks at 13 large

Australian companies, made up of six international resource stocks and seven industrial stocks, all headquartered in Australia. The resource stocks include gold, iron ore, base metals, coal, and oil and gas. An overall hedge proportion for each firm's latest financial year is determined. The measure aggregates the nominal amounts of commodity price, currency and interest rate hedging in relation to the total exposure for each class of risk.

Some adjustments or estimates were necessary. Natural hedging (ie, the matching of assets and liabilities having the same risk exposure) of foreign currency exposure is recognised. For instance, common practice is to borrow in USD once operating income and capital expenditure are also denominated in USD. Trading and investment transactions in USD are excluded from the calculation of the natural hedge because hedging requires risk-shedding to a third party.

A subset of the explanatory variables commonly tested in the empirical literature is employed to reduce collinearity. All data were obtained from company annual reports. They are revenue volatility, financial risks (as measured by interest coverage), the percentage of fund managers represented in the 20 largest shareholders, and firm size (ln[book value of assets]). A dummy variable for industrial/resources sector membership (resource = 1, industrial = 0) is added. To simplify, managerial ownership variables were excluded altogether because of their extremely poor showing. Hedging should be positively related to revenue volatility and financial risks. A positive association between the degree of hedging and fund ownership is expected because large fund managers typically favour stable (investment grade) stocks. Fund ownership is measured by the percentage of outstanding ordinary shares owned by managed funds and the like. Firm size, measured by the log of the book value of total assets, is expected to be positively associated, reflecting the presence of economies of scale. Owing to volatile commodity prices, resource stocks should have an incentive to hedge more than industrial stocks, but only if access to debt capital adds value, for volatility per se does not destroy shareholder wealth.

Table 1	**Overall hedging proportions**		
	Industrial firms	**Resource firms**	**Whole sample**
n	7	6	13
Mean	.567	.563	.565
Median	.606	.573	.600
Standard deviation	.288	.166	.235
Minimum	.172	.406	.172
Maximum	.887	.748	.887

Table 2	**OLS regression of overall hedge proportion on selected explanatory variables (numbers in parentheses are probabilities)**
Dependent variable: overall hedge proportion	
No. of observations	13
R²	.646
Adjusted R²	.425
F-value	2.919
probability	(.086)
Intercept	1.567
	(.152)
Revenue volatility	.902
	(.050)**
Interest coverage	-.085
	(.035)**
Fund ownership	.010
	(.018)**
Firm size	-.162
	(.130)
Resource/industrial dummy	-.130
	(.246)

** denotes one-tail significance at the 5% level

Descriptive statistics are presented in Table 1, which shows remarkable consistency in both mean and median levels of hedging activity across the two sectors. However, the minimum and maximum values reveal some dispersion, which surprisingly is greater for industrial firms than resource firms. Given our predisposition to double-counting, a strong result is that hedging activity appears clustered around the 50% level of combined financial risk exposures.

Successful ordinary least squares regression results are presented in Table 2, which indicates that revenue volatility, interest coverage and fund ownership determine observed overall hedging levels. While all are statistically significant and are correctly signed, revenue volatility has by far the largest impact on hedging policy. Size and the sector dummy fail to achieve

significance. These results make sense: revenue volatility and financial risks should be fundamental drivers of hedging policy. Fund ownership reflects the importance of superannuation and other funds in the Australian institutional environment.

CONCLUSION
The apparent clustering of hedging activity around the 50% mark is puzzling because industry and firm differences in financial risk exposures would suggest more observed variation. We cannot say whether hedging activity is too high or too low without additional information on each firm's situation. Firms may be using a 50% benchmark as a rule of thumb without necessarily addressing the question of what is optimal for their shareholders, or it could be that fund managers are asking for more-or-

year. It is estimated that customers using their support Web page will save the company around $US600 million. In addition, IBM expects that purchasing supplies by the Web will eliminate five million paper invoices.

The lesson is that investing in the electronic economy should be done on a company-by-company basis. Reserve Bank of Australia deputy governor Stephen Grenville pointed out in an address that fund managers had treated the whole of Asia as one investment class rather than analysing each country and indeed each company in turn, and this had contributed to the Asian financial crisis. He noted that a sell-off of Asian equities as a whole followed the crisis, with little consideration of the fundamentals underlying each investment. This lesson needs to be applied when evaluating Internet stocks.

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less consistent hedging policies across industries. Even so, we observe some variation in hedging practices between the industrial and resource sectors, with industrial firms exhibiting more dispersion in their hedging activity than resource firms. Such differences could be attributable to firms using different risk management techniques, or also to different risk management objectives — some firms may be trying to lock in future earnings to maintain a stable dividend policy. What we are suggesting is that some inter-firm differences should also be driven by financial performance, once firms are prepared to carry some financial risks when this is in shareholders' interest. The authors are in the process of developing a model to provide such insights.

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statutory regulators in this new environment, than by a profit-seeking exchange.

My sixth and penultimate point is that regulators will need to be even more international in their outlook in the future, and will be bound to place more reliance on each other. There is no possible way, in this new environment, of hoping to police all investment activity on a host-state basis. How does one hope to impose one's own conduct of business requirements on a website based in another jurisdiction? In Europe, we will face a particular version of this problem as exchanges consolidate, and as the trading in the stocks of a particular country is increasingly undertaken outside its boundaries.

My last, seventh, point is of a slightly different character to the others. My interpretation of this new and more flexible world suggests that firms, intermediaries and investors will have far more choice about how and where they transact their business than they have had in the past. If they wish to deal through an unregulated broker, in a weakly regulated offshore centre, and buy into a wholly unregulated investment fund, for example, they are free to do so. Of course, high-net-worth individuals have always been free to do that, but that freedom will now in practice be extended to a much larger proportion of the population.

We as regulators may think that it would be highly unwise for many of these investors to manage their finances in that way — that they are exposing themselves to unreasonable levels of risk, and they will live to regret it. We may well think that, and we may well be right. But one thing we will no longer be able to do is to legislate and regulate in such a way that we impose that judgment on investors. It just will not be possible in a web-based world. **J**