Corporate hedging and managerial ownership

What is the relationship between corporate hedging and managerial option or share ownership, and why is this different in the US as compared to Australia? **JEAN CANIL** and **BRUCE ROSSER** provide an explanation.

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Executives typically have a large portion of their wealth and time invested in the company they manage. Executives who are risk averse, and who hold a poorly diversified stock portfolio, have an incentive to reduce their risk exposure. When it is less costly for firms to manage this risk via corporate risk policies, than for managers to do so on their own account, hedging decisions will be a function of managerial compensation.

The relationship between hedging and managerial ownership was first examined in Smith and Stulz (1985) and Stulz (1984). Since then, managerial ownership has been found by Tufano (1996) to be an important determinant of hedging policy of gold producers.

Tufano (1996) finds that managerial stock ownership is positively associated with hedging and managerial stock option ownership is negatively associated with hedging. This suggests that managers with greater stock ownership prefer more risk management, while those with greater option holdings prefer less risk management.

Smith and Stulz (1985) explain this outcome in relation to the convexity of option contracts: convexity creates an appetite for higher volatility because this increases the expected utility of the option holder.

Interestingly, Tufano (1996) finds no relationship between risk management and firm characteristics that value-maximising risk management theories would predict. For example, he finds no association of the extent of hedging with financial leverage. 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. Thus, he concludes that executives' private preferences seem to affect risk management policy.

In this article, we examine whether Australian observed hedging levels are also influenced by managerial stock and option ownership, and if a similar relationship between stocks, options and hedging exists. If so, financial risk hedging may then be seen as an integral part of broader corporate financing decisions. This paper is a sequel to an earlier paper which examined the influence of mutual fund ownership on extant hedging policies[1].

Analysis

To analyse the relationship between managerial ownership and hedging, we selected a sample of 24 large Australian companies having significant risk management policies. Data was obtained from annual reports for the financial year ended 1999. Managerial ownership data is reported in the directors' report, while risk management data is obtained from the financial instruments note contained in the notes to the financial statements. Measurement of interest rate, currency and commodity price exposures was relatively straightforward.

For example, the percentage of

interest payments and current liabilities in USD-equivalent foreign currencies was offset against the percentage of revenue received in equivalent USD to arrive at a net FX exposure.

Likewise, the proportion of sales revenue exposed to world commodity price fluctuations can be reckoned, while interest rate exposure is proportional to the amount of debt in the company's capital structure.

To arrive at a combined hedge proportion, notional principal amounts hedged across all three risks were added and divided by the sum of the risk exposures. Variations in the mix of hedging instrument used (swaps, futures, forwards and options) were disregarded. Although the combined hedge proportion is highly aggregative, it does provide an index of hedging activity, which becomes problematic if individual risk management differences between companies require quantification.

Nominal rather than fair values of hedges are used to capture the extent of hedging activity because fair values reflect forecast accuracy as well as hedging effectiveness (i.e. not activity). All 24 companies were equally weighted for the purpose of group reporting. Interest rate hedging both ways is counted: swapping fixed for floating rate debt is given the same weight as swapping in the reverse, because hedging gains or losses are possible both ways.

Table 1 reports observed hedging proportions for each source of financial risk together with the total hedge proportion for the sample.

Of the 24 companies, only 13 engage in commodity price hedging. Not surprisingly, 10 of these may be described as resource companies. FX hedging exhibits the highest notional value and also has the highest variation, which could be due to the historical volatility of Australian dollar exchange rates.

Values in excess of unity do not necessarily indicate over-hedging because bought and sold positions were aggregated. Interest rate hedging runs at only about a third of FX hedging activity, while commodity price hedging is even lower. Hedging of commodity price exposures in revenue is specific to the resource companies included in the sample. Judging by the comparatively low hedging levels for this source of risk we conclude that most resource companies are comfortable with carrying this risk themselves. The median proportion of combined hedging activity is just over half.

Table 2 reports on the managerial ownership of outstanding stock and options issued by the sampled companies. Stock and option ownership are expressed as percentages of the total number of outstanding shares; holdings in the capacity of superannuation trustees were excluded. As the decision making process may be vested with the CEO or the Board, levels of managerial ownership are shown for both.

Since CEO ownership never exceeds corresponding Board ownership, board ownership levels are greater than those for CEOs. Both mean and median holdings are consistently small across all four definitions, with option holdings exceeding stock holdings. The degree of dispersion is highest for CEO stock ownership. Small equity positions or interests raise the possibility that hedging and other policy decisions do not accord with those that would have been adopted by owner-managers (ie CEOs with controlling or near-control stock holdings) in smaller companies.

To analyse whether a relationship exists between managerial ownership of equity interests and hedging policy, we perform OLS regressions of the combined hedge proportion on managerial ownership variables along with two control variables: earnings volatility (measuring dividend risk) and leverage (measuring financial risk).

Earnings volatility impacts on the likelihood of maintaining the dividend payout, which has direct implications for stock returns and also stock option values. For example, increased earnings volatility (for the same expected value) may lower the stock price by setting a higher required equity return, but at the same time increase the value of a stock option which is positively related to volatility in the underlying.

A variable for large equity block ownership is also included in the event that concentrated shareholdings impinge on hedging policy. For this purpose, equity block holdings above 10 percent of outstanding ordinary capital were aggregated. Large blockholdings are typically institutional but may also be held by other corporates with a long-term control interest. Depending on their identity, large blockholders may have their own

TABLE 1 **HEDGE PROPORTIONS BY SOURCE OF FINANCIAL RISK AND IN AGGREGATE**

	FX hedge proportion	Interest rate hedge proportion	Commodity price hedge proportion	Combined hedge proportion
N	24	24	13	24
Mean	1.573	.596	.264	.717
Median	1.362	.541	.007	.553
Standard deviation	1.533	.469	.385	.507

TABLE 2 **CEO AND BOARD STOCK AND OPTION OWNERSHIP (PERCENTAGES)**

	CEO stock ownership %	CEO option ownership %	Board stock ownership %	Board option ownership %
n =24				
Mean	.027	.150	.145	.186
Median	.028	.096	.088	.134
Standard deviation	.098	.194	.193	.208

TABLE 3 **OLS REGRESSIONS OF THE COMBINED HEDGE PROPORTION ON MANAGERIAL OWNERSHIP AND SELECTED CONTROL VARIABLES**

Dependent variable: total hedge proportion	(1)	(2)	(3)	(4)
No. of observations	24	24	24	24
R^2	.505	.434	.499	.446
Adjusted R^2	.400	.315	.394	.329
F-value probability	4.840 (.007) ***	3.644 (.023) **	4.737 (.008) ***	3.818 (.019) **
Intercept	–.661 (–1.614) **	.133 (.282) **	–.646 (–1.571) **	.113 (.266) **
Earnings volatility	.045 (2.352)	.045 (2.234)	.044 (2.327)	.045 (2.250)
Leverage	3.246 (3.035) ***	1.841 (1.571)	3.265 (3.009) ***	1.929 (1.764) *
Block ownership	.008 (1.733) *	.002 (.373)	.008 (1.739) *	.002 (.364)
CEO stock %				–1.239 (–1.158)
CEO option %			.923 (1.877) **	
Board stock %		–.566 (–.964)		
Board option %	.873 (1.941) **			

The numbers in parentheses are t-statistics

*** denotes two-tail significance at the 1 per cent level.

** denotes two-tail significance at the 5 per cent level.

*denotes two-tail significance at the 10 per cent level.

preference for hedging which may or may not coincide with executives' own preference.

Given high collinearity between the four managerial ownership variables, four estimations are run separately. The results are reported in Table 3. All four estimations are successful, as indicated by the F-value.

Earnings volatility is always positively significant, as expected. Leverage is nearly as prominent, and again is correctly signed. Equity block ownership is significant only when CEO or board-held stock options are included in the specification. In fact, block ownership and option ownership are positively significant together in both cases (regressions (1) and (3)).

While this regularity is interesting, it poses a problem because option ownership (whether by the CEO or the board) is positively related to hedging policy. It may be recalled that Tufano (1996) presented both theory and evidence that an inverse relation should be expected, because the value of a portfolio of options increases in the volatility of the underlying stock. CEO and board stock positions bear no relation to hedging.

Conclusion

Our analysis shows, at least for 1999 and the sample chosen, that managerial ownership of stock and options issued by their company did not impinge much on corporate hedging policy, unlike the US evidence reported by Tufano (1996).

A further regularity of interest concerns the positive association between option ownership and hedging policy, which is opposite to that expected. Very small percentages of managerial stock and option ownership (at least in the sample year) imply that managerial incentives may not perfectly be aligned with shareholders' interests.

One possibility is that executive stock options in Australia are granted as an add-on to the compensation package and not as a salary or benefits substitute, in the sense that exercise is expected. For example, options may be used to create an incentive for the board to take on riskier investments (that promise higher returns).

However, if executives are highly risk-averse, higher risk investments may induce higher levels of hedging of financial risks as executives seek to offset higher business risk. This may actually be beneficial to shareholders if debt financing is needed to fund the extra investment.

References

Canil, J. and Rosser, B. (2000), "How much to hedge – who knows? Financial risk management in Australia", *JASSA* 3, Spring, 32-33, 37.

Smith, C. and Stulz, R. (1985), The Determinants of Firms' Hedging Policies, *Journal of Financial and Quantitative Analysis*, 20, 391-405.

Stulz, R. (1996), Rethinking Risk Management, *Journal of Applied Corporate Finance*, 9, 8-24.

Tufano, P. (1996), Who Manages Risk? An Empirical Analysis of Risk Management Practices in the Gold Mining Industry, *Journal of Finance*, 51, 1097-1137.

Notes

1 See Canil, J. and Rosser, B. (2000), "How much to hedge – who knows? Financial risk management in Australia", *JASSA* 3, Spring, 32-33, 37.