

DIVIDENDS BY COMPUTER

IMPUTATION QUESTIONS ANSWERED

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Tax reforms have created a range of new influences on the management of company earnings and dividends. The implications have led two authorities to construct a computer model which will help company and financial analysts to exploit the vital factors.

Current changes to personal and corporate tax rates, capital gains tax, dividend imputation, foreign tax credit and the removal of the differential tax status of private and public companies have important implications for investors, owners of public and private companies, and for corporate treasurers. The changes, and the intricate interaction between the different tax considerations, add to the existing difficulty of decisions such as: ■ how much dividend to pay out and how much earnings to retain ■ how to finance new expansion ■ what type of shares to issue with what kind of dividend entitlement.

For example, a public company with high dividend payout, where most of its shares are held by non-taxpaying institutions, may not be concerned about the tax implications of its low effective tax rate under the new dividend imputation provisions. Nevertheless, the most favourable mix of dividend payment and retained earnings is still an important question for these companies. On the other hand, a public and most private companies with many individual shareholders would certainly have to consider the "optimal" dividend payout for the company.

The primary objective of this paper is to explain a computer model (or "expert system") developed by the authors to enable personal computers to determine these questions for both private and public companies. This expert system estimates the optimal dividend policy and financing policy for a specific company, given its tax position, and estimates the after-tax return

to shareholders under the reformed corporate and personal tax system. Further, the model helps to evaluate the sensitivity of these estimates under different financing and dividend policies.

The expert system is based on a dividend valuation model. It maximises the net present value of the after-tax dividend and the capital gain return to shareholders for a five-year time horizon. Users of the expert system are required to supply estimates of the debt-and-equity mix of their initial funds, the expected rate of return on their funds, their current and expected effective tax rate, the marginal tax rate on dividend income and capital gain for their shareholders, the expected interest rate and the inflation rate. These variables are crucial to the estimation of the optimal dividend policy: any change in the variables may lead to a completely different optimal position.

The model computes the net present value of returns to shareholders with respect to different dividend payout ratios and debt-to-equity ratios and identifies the optimal ranges. In addition, it estimates the market value of the company, the corporate tax, the amount of franked and unfranked dividend, the state of the qualified dividend account (QDA) and the proforma profit and loss statements of the company for five years.

To illustrate the expert system, the following assumptions have been made

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about a fictitious company and the economy:

Initial value of the company	\$1,000
Expected pre-tax rate of return on funds	40%
Debt-to-asset ratio	0 and 50%
After-tax return required by shareholders	10% if debt/asset 0% 15% if debt/asset 50%
Expected rate of inflation	10%

The following variable assumptions have been made about the corporate and personal tax rates:

Corporate effective tax rate	0 or 49%
Personal income tax rate	0 or 49%
Personal capital gains tax rate	0 or 49%

The results are reported in two sections: (i) Assume 49 per cent effective corporate tax rate and variable personal tax rates, and (ii) Assume 0 per cent effective corporate tax rate and variable personal tax rates.

ASSUME 49 PER CENT CORPORATE TAX RATE AND VARIABLE PERSONAL TAX RATES

CASE 1: Both the personal income tax rate and capital gains tax rate are 49 per cent.

Under these assumptions, the company can pursue a "high" dividend payout policy because much, if not all, of the dividend payments received by the investors will be franked (tax-free) dividend. However, 100 per cent dividend payout would not be the optimal policy, because such a dividend payout would include some unfranked dividend which would be taxed at the marginal tax rate of the investors. To find the optimal dividend payout ratio, the expert system has to evaluate all possible combinations. Graph 1 shows the results of the alternative dividend policies for companies with zero debt and 50 per cent debt. On the horizontal axis the dividend payout ratios are shown from zero to 200 per cent. On the vertical axis, the after tax net present values (NPVs) of the five-year dividend stream and capital gains are shown.

Superannuation funds do not benefit from dividend imputation hence they are likely to invest in low effective tax rate companies (or debt instruments).

The results indicate that the optimal dividend payout is approximately 50 per cent for the company with no debt and 70 per cent for the company with 50 per cent debt, given the above assumptions about profitability, interest rates, taxation and inflation. Furthermore the net present value of the equity of the geared company is higher than expected in all instances, but at very low dividend payout ratios.

CASE 2: Both the personal income tax rate and capital gains tax rate are 0%

Under these assumptions, investors (like many superannuation funds) do not benefit from dividend imputation. In fact, as Graph 2 indicates, as long as the company can earn 40 per cent on its funds, the optimal dividend payout is zero for both the geared and non-geared companies.

ASSUME 0 PER CENT CORPORATE TAX RATE AND VARIABLE PERSONAL TAX RATES

CASE 3: Both the personal income tax rate and the capital gains tax rate are 49 per cent.

These assumptions represent the other extreme of the corporate sector — those companies which pay very little or no tax. Under these assumptions, investors do not benefit from the introduction of dividend imputation. Most of the dividends received will be unfranked dividends, taxable at the personal marginal tax rate. Graph 3 indicates that in this instance a zero dividend payment is the optimal policy because it is assumed that the company can earn 40 per cent on its funds and capital gains tax is based on the indexed costs.

Similarly, sensitivity analysis of the model indicates that even if the personal tax rate were zero, the optimal dividend payout would still be zero.

CASE 4: Personal income tax rate is 0 per cent, capital gains tax rate is 49 per cent.

This scenario represents the position of some low-income individual and certain financial institutions.

In this instance the optimal dividend payout is approximately 50-70 per cent for the non-geared company and 70-80 per cent for the geared company, as indicated in Graph 4.

The main reason for this result is that

current dividend incomes are received tax free, while the capital gain at the end of the five years will be taxed. However, it is noteworthy that even with this tax break, 100 per cent dividend payout would not be optimal because of the company's ability to earn 40 per cent on its retained funds.

The objective of this paper is to describe an expert system, developed by the authors, which helps to identify the optimal dividend policy from both the company's and the shareholder's points of view. Sensitivity analysis indicates that the optimal dividend policy is quite sensitive to estimates of expected rates of profitability, inflation and interest rates; hence each company requires individual evaluation.

Nevertheless, there are a number of general implications which investors, company treasurers and officials and corporate advisers should keep in mind:

- Public and private companies need to consider explicitly the effect of dividend imputation and capital gains tax to determine the optimal mix of dividend payout and retained earnings;

- In general, the differential marginal tax rate on income and on capital gains of investors will require different dividend policies for each type of investor;

- Investors with high marginal income tax rates should invest in companies with high dividend payout, if the companies have high effective corporate tax rates. Otherwise, they will have to pay a personal tax on dividend received;

- Superannuation funds do not benefit from dividend imputation hence they are likely to invest in low effective tax rate companies (or debt instruments);

- Private and public companies raising new equity funds should issue different classes of ordinary shares with different dividend entitlements to maximise the returns of all tax classes of shareholders;

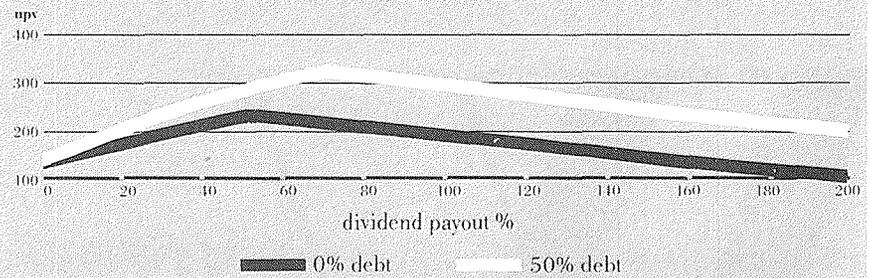
- Public listed companies on the main board should be able to issue and trade different classes of ordinary shares with different dividend entitlements;

- Corporate advisers have an incentive to develop new, exotic financial instruments to take advantage of the tax arbitrage opportunities;

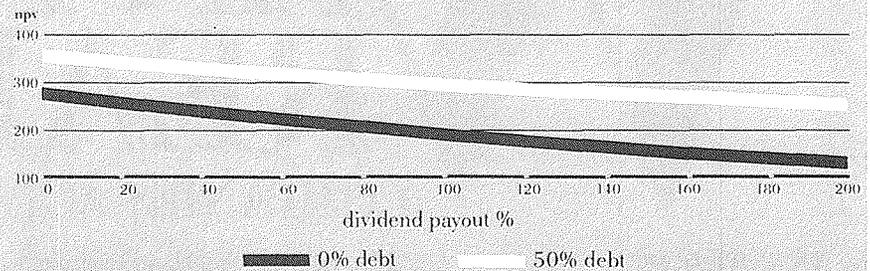
- The optimal dividend policy can be determined only on a company-by-company basis.

The above implications are applicable only to a company with domestic (Australian) income. The authors are developing an expert system which incorporates both international and domestic income and the implications of the new foreign tax legislation for the optimal dividend policy. □

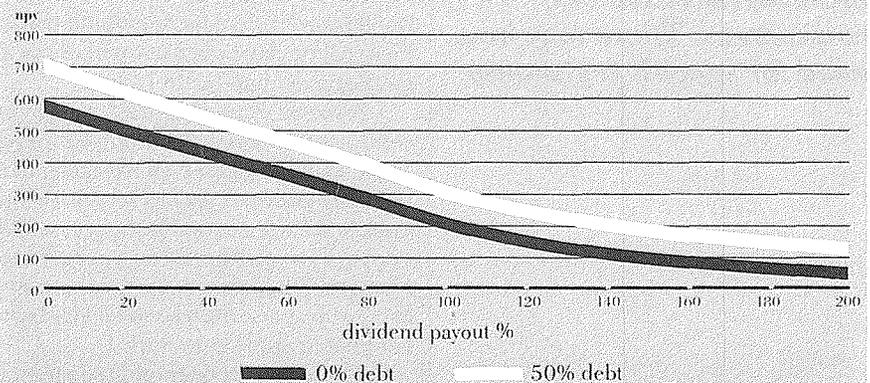
**GRAPH 1: COMPANY TAX RATE (EFFECTIVE) 49%
INVESTOR RATE %, INCOME 49, CGT 49**



**GRAPH 2: COMPANY TAX RATE (EFFECTIVE) 49%
INVESTOR RATE %, INCOME 0, CGT 0**



**GRAPH 3: COMPANY TAX RATE (EFFECTIVE) 0%
INVESTOR RATE %, INCOME 49, CGT 49**



**GRAPH 4: COMPANY TAX RATE (EFFECTIVE) 0%
INVESTOR RATE %, INCOME 0, CGT 49**

