Investment Decisions:
A New Approach

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This paper is the first of two printed in this issue of the Journal based on the application of Discounted Cash Flow concepts to analysis of security investment decisions. The return to the investor is taken as the basic criteria for investment decision.

It is concluded that D.C.F. analysis offers an excellent means of determining a comprehensive index for a security's past performance. A method of calculating this index is explained.

The problem of seeing the comparative effect of investment decisions for future holdings is discussed in the following second paper. A method giving guidance for decisions on comparative investment in fixed income and shares is discussed and demonstrated in this second paper.

A review of publications aimed at reviewing the growth performance of Australian stocks and shares shows that there is a need for a comprehensive index of a company's past performance. An index which can combine dividend growth and market growth to give a measure of the stocks performance as applied to an investor therefore appears to have interest to brokers and the investing public. This paper explains what appears to be an adequate index.

Adopting the stand that the investment in stocks and securities is for the investor to maximise his income and gain over the period under consideration one can eliminate from the discussion all items such as potential gains to the investor coming outside the period under review and all quasi items of psychological value to the investor.

Having selected a past period (say 5 years) then we are concerned with the outlays and incomes to the investor generated by this investment (excluding taxation). This is a typical cash flow situation; cash flows out of the investor's hands in the first instance and then flows back again over a period of time. Given a tabulation of the movement of cash over the period we can calculate the true return the hypothetical investor would have received **on the cash he had outlaid at any time.**

What do we want to know then?

A.	Period of review	— (Selected as required. Say take 5 years)
B.	Initial cash outlay (negative cash flow)	— (Cost of a parcel of the securities under consideration to the investor, including brokerage and stamp duty)
C.	Incomes over the period when they came (positive cash flows) (dividends, capital repayments)	— (These will be all the flows of cash coming to the investor from investment. The most normal being dividends. For the case of issues it appears best to assume no cash **inflow** during the period. Look to the selling of sufficient rights to make reinvestment without further capital outflow. The treatment of issues should be to suit the circumstances. It may be better to treat them as an inflow by sale of all rights, in the example no inflow from rights sale is included)
D.	Net value of the investment at the end of the period (positive cash flow)	— (Accounting for brokerage and charges. This would take into account new issues as described above)

Having this tabulation of cash flows, it is then a simple matter of determining the true return to the hypothetical investor.

The aim is to determine the rate of return such that by charging this rate of interest on any capital outstanding through the period no funds are left after repaying principal and the interest charges. Putting this another way, we are trying to find an interest rate such that by applying this interest rate to capital outstanding in any period, the funds inflow will be just sufficient to pay these interest charges and to repay all the principal. (This is the reverse calculation to that of a mortgage transaction with interest payable on decreasing principal.) In the case of a mortgage **we know the:—**

—Principal
    (cash outflow to lender)

—Interest rate
    (rate of return to the lender on principal outstanding)

—Term
    (periods of repayments or times of cash inflows for lender)

and we calculate the

— Repayments
    (cash inflows for the lender)

In our case **we know the**

— cash outflows
— cash inflows
— timing of flows

and we calculate the

— rate of return on the investment.

This calculation of rate of return is a simple computation program on a computer. Without a computer a trial and error process of

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calculation can be tedious. Fortunately the rate of return can be approximated to by a very simple technique. By interpolating between a too high rate of return and a too low rate of return to find the rate of return which will give zero cash flow a close approximation can be made to the required answer.

Appendix 1 shows this technique applied to a hypothetical security. In this case three discount rates (4, 8 and 12%) are used as a base. It is expected that the true rate will be somewhere in this range.

It will be noted in the example that a 4% discounting rate ended up with funds left over. This indicated that the true rate of return was in excess of 4%, i.e., the cash inflow could support higher interest charges on outstanding principal, 8% on the other hand showed a negative total flow indicating insufficient positive cash flow to support an 8% earning rate. By graphing these and seeing at what rate of return we have approximate balance of positive and negative cash flow we obtain a true rate of return on the investment in this security of approx. 6.5%.

The value of this index becomes apparent when its advantages are reviewed.

— It deals only in the movement of funds with respect to the investor over the period.
— It can bring into the one index
  • Capital appreciation
  • Funds received from sale of rights
  • Dividends
  • Return of capital
(and accounts for the timing of these flows).
— It allows easy handling of companies where the period of their existence is shorter than the review period.
— It accounts for the changes of dividend levels throughout the period, i.e., takes into account when flow transactions take place.

The criticisms that could be levelled at the index are:—

— Difficult for the investor to understand. (Explanation in terms of well-known mortgage transactions would lead to rapid understanding.)
— Difficult to compute. (Example shows ease of approximation and computers make simple task of a mass calculation.)

It is concluded that if you believe there is value in an index of a company's past performance, then a comprehensive index as discussed above seems to give the desired objective of a simple comparative measure.

Should a broking house be interested in using this index for the review of a number of securities it would be recommended that—

(a) Monthly Cash Flows be used.
(b) A computer be used for computation.
(c) Monthly Discounting be used.

The program for this calculation is short and simple.

APPENDIX 1

SECURITY: Hypothetical Corporation.
PERIOD OF REVIEW: 1.4.59 — 1.4.63
TRUE RATE OF RETURN: = 6.5% (Yearly Discounting and Cash Flow to the nearest year)

Year of Cash Flow	Cost of Parcel	Divi-dends	Return of Capital	Value of Parcel at end of period	Total Cash Flow	4% Discount Factor	4% Discounted Value of Cash Flow	8% Discount Factor	8% Discounted Value of Cash Flow	12% Discount Factor	12% Discounted Value of Cash Flow
0	—1100				—1100	1.000	—1100	1.000	—1100	1.000	—1100
1		40			+40	.962	+38	.926	+37	.893	+36
2		40			+40	.925	+37	.857	+34	.797	+32
3		40			+40	.889	+36	.794	+32	.712	+28
4		50			+50	.855	+42	.735	+37	.636	+32
5		50		1260	+1310	.822	+1076	.681	+892	.567	+742
6						.790		.630		.507	
7						.760		.584		.452	
8						.731		.540		.404	
9						.703		.500		.361	
10						.676		.463		.322	
TOTALS	—1100	+220	—	+1260	+380	X	+129	X	—68	X	—230