	Buy	*Sell*	*Mid-Rate*
Forward Rate			
FX Dealer 1:			
Delivery in 1 year	0.5510	0.5545	0.55275
Delivery in 2 years	0.5065	0.5140	0.51025
FX Dealer 2:			
Delivery in 1 year	0.5515	0.5570	0.55425
Delivery in 2 years	0.5055	0.5130	0.50925
FX Dealer 3:			
Delivery in 1 year	0.5520	0.5560	0.55400
Delivery in 2 years	0.5060	0.5135	0.50975

The arithmetic mean of the midpoints of the forward rates is calculated to be:

Delivery in 1 year	0.55366
Delivery in 2 years	0.50975

A suitable formula for straight line interpolation to obtain the required rate is:

$$So\ Px = P1 + \frac{(Tx - T1)}{(T2 - T1)} * (P2 - P1)$$

P1 is the mid-rate for the forward contract with the shorter term (= 0.55366).

P2 is the mid-rate for the forward contract with the longer term (= 0.50975).

Px is the required rate.

T1 is the term till delivery (expressed in days) of the forward contract with the shorter term (= 365).

T2 is the term till delivery (expressed in days) of the forward contract with the longer term (= 730).

Tx is the term till delivery of the contract held (= 398).

The required rate is therefore calculated as follows:

$$So\ Px = P1 + \frac{(Tx - T1)}{(T2 - T1)} * (P2 - P1)$$
$$= 0.55366 + \frac{(398 - 365)}{(730 - 365)} * (0.50975 - 0.55366)$$
$$= 0.55366 + \frac{33}{365} * (- 0.04391)$$
$$= 0.54969$$

The current value of the 612,000 United States Dollars receivable on 1 August 1992 is therefore 1,113,354.80 New Zealand Dollars.

This determination is signed by me on the 24th day of October in the year 1990.

R. D. ADAIR, Deputy Commissioner of Inland Revenue.
go12595

Determination G10B: Present Value Calculation Methods

This determination may be cited as "Determination G10B: Present Value Calculation Methods".

1. *Explanation* (which does not form part of the determination).

(1) This determination rescinds and replaces Determination G10A: Present Value Calculation Methods, made by the Commissioner on 23 April 1990. This determination differs from Determination G10A by modifying present value Method A to enable it to apply to perpetuities.

(2) For the purposes of the accrual tax accounting regime it may be necessary to calculate present values for a variety of reasons, for example:

(a) To calculate the yield to maturity of a financial arrangement. The yield to maturity is the interest rate at which the first amount payable under the financial arrangement is equal to the present value of all subsequent amounts payable under the financial arrangement calculated as at the due date of the first payment:

(b) To calculate present values at intermediate times during the term of a financial arrangement in order to calculate the amount of the income derived or expenditure incurred by a person in respect of the financial arrangement.

(3) The present value of a financial arrangement as at a date excludes any amounts payable under the financial arrangement on that date.

(4) This determination specifies approved methods of calculating present values for use in other determinations. These methods may be added to or removed from time to time.

Method A is a general purpose method suitable for many applications and gives very similar results to Determination G3: Yield to Maturity Method. Method A may be used on either a 360 or 365 day basis. Method A is applicable both to perpetuities in which all coupons are the same after some period, and to financial arrangements which have a final payment.

Method B is used to calculate prices of government or local authority stock, and other financial arrangements having similar characteristics, employing the formula approved by the International Association of Bond Dealers and used in calculators such as the HP12C. It differs from Method A in two respects—

(a) Coupons must be payable at regular half-yearly or quarterly intervals, and

(b) Compound interest is used in the first period, unless it is also the last period in which case simple daily interest is used (Method A always uses simple daily interest in the first period).

Both methods calculate the present value at the beginning of a period by taking the present value at the end of the period, adding or subtracting the net cashflows at the end of the period, and discounting the total at a Specified Discount Rate.

(5) Alternative approved methods may not generate exactly identical results.

(6) Once a person has elected to use an approved method of calculating the present value of a financial arrangement, that method shall be used by the person over the life of the financial arrangement unless the prior consent of the Commissioner is obtained to adopt another method.

(7) This determination is for use in conjunction with other determinations, for example Determination G11A: Present Value Based Yield to Maturity Method.

2. *Reference*—(1) This determination is made pursuant to sections 64E (1) (a) and 64E (6) of the Income Tax Act 1976.

(2) Determination G10A: Present Value Calculation Methods is hereby rescinded with effect from the day on which this Determination G10B is signed.

3. *Scope*—This determination shall be used as required by any other determination which will specify—

(a) The date at which the present value shall be calculated (the "Specified Date"); and

(b) The interest rate that shall be used in the calculation (the "Specified Discount Rate"); and

(c) The amounts and due dates for which the present value shall be calculated—

and which may specify the method to be used.

4. *Principle*—This determination specifies alternative methods for calculating the present value of a financial arrangement, equal to the sum of the values as at the Specified Date of all amounts payable under the financial arrangement after that date, discounted at the Specified Discount Rate.

5. *Interpretation*—(1) For convenience, words and phrases defined in this determination are indicated by initial capital