

(b) Present Worth and the Time Factor

The sale arrangement will provide for the United States buyer to receive amounts of power as it is produced downstream over a period of 30 years. Such a sales contract could involve a series of annual cash payments for the power sold each year. Instead, British Columbia preferred to receive a single lump sum in advance equivalent in value to such future payments. This arrangement has been agreed to. To determine the appropriate value to be placed upon such a lump sum, each of the future annual payments was discounted at 4 1/2 per cent (the appropriate rate of interest applicable to the purchaser in the United States) over the appropriate number of years. This means, for example, that if a single payment of, say, \$10 million happened to be owing on 1st October 1974, a payment of \$6,439,000 on 1st October 1964, would be equally satisfactory, since this amount invested at 4 1/2 per cent and compounded, would be equal to a payment of \$10 million in ten years. And similarly for the other annual payments. In this way the Canadian entitlement to downstream power benefits over a 30-year period has been calculated as having the same value as a payment of \$254.4 million (United States funds) paid in the form of a lump sum on 1st October 1964. By the same token, if one wishes to calculate the value of this and other lump-sum payments (flood control benefits) to British Columbia expressed in terms of a single future date, the payment amounts must be "invested" at an appropriate rate of interest (compound) for the appropriate number of years.

(c) The appropriate interest rate

In reducing future payments to their "present worth" or in raising a figure of present worth to its value at a future date, a rate of interest which is appropriate to the circumstances must be selected. In determining the "present worth" of a series of annual revenues which the United States expected to earn from the disposal of Canada's power entitlement the United States used a rate of 4 1/2 per cent. This was deemed to be the approximate rate at which the agencies concerned in the United States could borrow or invest funds over a long term. The lower the interest rate chosen, the larger will be the "present worth".

If we wish to evaluate the future worth (say in 1973) to British Columbia of lump-sum payments to be received in 1964, 1968, 1969 and 1973, as is done below, it is appropriate to use a rate of, say, 5 per cent, this being a conservative estimate of what it might cost British Columbia to borrow funds, or what might be earned by investing any surplus funds. The larger the rate of interest used, the larger will be the future value.