Haskins and Sells Publications   Deloitte Collection

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Bonus computations

Anonymous

Bonus Computations

WHEN certain companies made arrangements to share profits, in the form of a bonus, with employes, and designated for the purpose of arriving at the amount a percentage to be applied to the net income, they did not have sufficient regard for the possibility of income and excess profits taxes.

With the income tax as one unknown quantity and the bonus as a second unknown quantity, both when ascertained to be considered as expenses, two formulae, as presented below, have been worked out by our tax department. A reliable formula, involving a third unknown quantity, namely, the excess profits tax, has not yet been worked out.

Formula for computation of bonus based on net income remaining after deduction of income tax and before bonus is deducted.

I = Net income before deducting Bonuses and Income Taxes.
B = Bonuses.
T = Income Taxes.

$B = 5\% (I - T)$
$T = 6\% (I - B)$
$B = 5\% [I - (6\% [I - B])]$
$B = 5\% [I - 6\% I + 6\% B]$
$B = 5\% I - 5\% \times 6\% I + 5\% \times 6\% B$
$B = 5\% \times 6\% B = 5\% I - 5\% \times 6\% I$
$.997 B = .047 I$

PROOF

Let $I = \$100.00$

$.997 B = .047 \times \$100 = \$4.70$

$B = \dfrac{\$4.70}{.997} = \$4.7141$

$T = 6\% (I - B)$
$= 6\% (\$100.00 - \$4.7141)$
$= 6\% \times \$95.2859 = \$5.717154$
$B = 5\% (I - T)$

$= 5\% (\$100.00 - \$5.717154)$
$= 5\% \times \$94.282846 = \$4.7141423$

Net Income (I) $\$100.00$
Taxes (T) 5.717

94.283
$.05$

$B = 5\% (I - T)$ $\$4.71415$

Formula for computation of bonus based on net income remaining after deduction of both income tax and the bonus.

$\$100.00$ = income before deducting either tax or bonus
X = amount of bonus
Y = amount of taxes

$Y = .06 (100 - X)$
$X = .05 (100 - X - Y)$

$100Y = 600 - 6X$
$100X = 500 - 5X - 5Y$

$100Y = 600 - 6X$
$100Y = 10,000 - 2100X$

$0 = 9400 - 2094X$

$X = \dfrac{94 (100)}{2094} = 4.489016$

$Y = 6 - .06X = 6 - (.06 \times 4.489016) = 6 - .26934096 = 5.73065904$

PROOF

Original Income............ $\$100.00$
Bonus 4.49

95.51
Tax @ 6%................. 5.73

89.78
Bonus @ 5%............... 4.489