

Problem 7-9

Goal: Determine net income after taxes

Given:	Fixed Capital	\$20,000,000	$i_{\text{fixed}} = \text{FCI}$
	Property taxes	0.01	$i_{\text{property tax-a}}$ of FCI
	Federal Income tax	0.35	$i_{\text{federal tax}}$ of Gross Earnings
	State Income tax	0.05	$i_{\text{state tax-a}}$ of Gross Earnings
	Net after tax income	\$2,000,000	Net Income _{after tax}
	Property taxes	0.04	$i_{\text{property tax-b}}$ of FCI
	State Income tax	0.02	$i_{\text{state tax-b}}$ of Gross Earnings

Approach:

Determine property and income taxes at original location
 Add taxes to Net Income to determine process gross profit before all taxes
 Use gross profit and deduct taxes at proposed new location

Calculations:

			3,666,666.67
(1)	Location (a) Gross Earnings	$\text{GE} - 0.05 \text{ GE} - 0.35 \text{ GE} - 0.01 \text{ FC} = \$2,000,000$	
	Annual Property Taxes	\$200,000	$= \$20,000,000 * 0.01$
	Annual Gross Earnings	\$3,333,333	$= \$2,000,000 / (1 - 0.35 - 0.05)$
	Total Income Taxes Paid	\$1,333,333	$= \$3,333,333 - \$2,000,000$
	All Taxes Total =	\$1,533,333	$= \$1,333,333 + \$200,000$
	Constant Earnings for any location =	\$3,533,333	$= [\$2,000,000] / [(1 - 0.05 - 0.35)] + \$200,000$
	This value is the same for both locations because the process results are identical and all tax effects have been considered		
(2)	Location (b) Net Income	\$1,722,000	$= (\$3,533,333 - 0.04 * \$20,000,000) / (1 - 0.35 - 0.02)$
	Annual Property Taxes	\$800,000	$= \$20,000,000 * 0.04$
	Annual Gross Earnings	\$2,733,333	$= \$3,533,333 - \$800,000$
	Total Income Taxes Paid	\$1,011,333	$= \$2,733,333 * (0.35 + 0.02)$
	All Taxes Total =	\$1,811,333	$= \$1,011,333 + \$800,000$
	Annual Net Income =	\$1,722,000	$= \$2,733,333 * (1 - 0.35 - 0.02)$

Answer

\$1,722,000 Net Income at location b

Original location is preferred because lower property taxes even with higher income tax rate

Annual tax savings =	\$278,000	13.9% savings on \$2,000,000
b pays	\$600,000	more property tax
b pays	\$322,000	less income tax

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