

Suppose the company decided to buy back 10 percent of its equity on the last day of the previous year.  
 Assume that it finances the all of the equity purchase with debt which will carry the same interest rate as the current debt.  
 Assume that all operations, other financing decisions and the total cash dividends will remain the same.  
 How will the ratios change ?

**80128**

Percent of Equity bought back	10.00%	Book value of equity purchased	10.00% x 8,810	=	881
Market to book ratio	4	Market value of equity purchased	4 x 881	=	3,524
		But the reduction in equity will also be (through treasury stock)			3,524
		Dividend reduction	x 1,222	=	

<b>Summary Balance Sheet</b>				<b>After Buyback</b>			
	<b>1999</b>	<b>1998</b>	<b>Average</b>	<b>Change</b>	<b>1999</b>	<b>1998</b>	<b>Average</b>
Operating liabilities	6,161	6,236	6,199		6,161	6,236	6,199
Debt	5,526	3,256	4,391	3,524	9,050	6,780	7,915
Equity	8,887	8,810	8,849	3,524	5,363	5,286	5,325
<b>Total Capital</b>	14,413	12,066	13,240		14,413	12,066	13,240
<b>Assets</b>	20,574	18,302	19,438		20,574	18,302	19,438
<b>Additional interest expense</b>		5.37% x 3,524	=	189			
<b>Tax effect</b>		189 x 28.00%	=	53			

<b>Consolidated Statements of Income</b>		<b>After Buyback</b>	<b>Before buyback</b>
Earnings before Interest and Taxes		4,679	4,679
Interest Expense		425	236
Income before taxes		4,254	4,443
Provision for taxes on income	<u>28.0%</u>	1,191	1,244
Income from continuing operations		3,063	3,199

<b>Long-Term Debt and Solvency Analysis</b>						<b>After Buybac</b>	<b>Before buyback</b>	<b>80128</b>
<b>Leverage</b>	Assets ÷ Equity	19,438 ÷ 5,325	8,849	=	3.651	2.197	<b>Increase</b>	
	Operating liabilities ÷ Equity	6,199 ÷ 5,325	8,849	=	1.164	0.701	<b>Increase</b>	
	Operating liabilities ÷ Total Capital	6,199 ÷ 13,240		=	0.468	0.468	<b>Same</b>	
<b>Debt to equity</b>	<i>Average</i>	7,915 ÷ 5,325		=	1.487	0.496	<b>Increase</b>	
<b>Debt to capital</b>	<i>Average</i>	7,915 ÷ 13,240		=	0.598	0.332	<b>Increase</b>	
<b>Times Interest Earned</b>	EBIT ÷ Interest expense	4,679 ÷ 425		=	10.999	19.826	<b>Decrease</b>	
<b>Total Assets Turnover</b>	Sales ÷ Average assets	16,204 ÷ 19,438			83.36%	83.36%	<b>Same</b>	
<b>Profitability Analysis</b>						<b>After Buybac</b>	<b>Before buyback</b>	
<b>Gross Margin %</b>		11,605 ÷ 14,133			82.11%	82.11%	<b>Same</b>	
<b>Operating Margin</b>	Operating income ÷ Sales	4,549 ÷ 16,204			28.07%	28.07%	<b>Same</b>	
<b>Profit Margin</b>	Net income ÷ Sales	3,063 ÷ 16,204			18.90%	19.74%	<b>Decrease</b>	
<b>Margin before Interest &amp; Taxes</b>	EBIT ÷ Sales	4,679 ÷ 16,204			28.88%	28.88%	<b>Same</b>	
<b>ROA [Pre tax]</b>	EBIT + Minority interests ÷ Average assets	4,684 ÷ 19,438			24.10%	24.10%	<b>Same</b>	
	OR	EBIT ÷ Average assets						
	as in book	4,679 ÷ 19,438			24.07%	24.07%	<b>Same</b>	
<b>NOPAT</b>	EBIT x (1-tax)	4,679 x 72.00%	=	3,369				
<b>NOPAT</b>	Net Income + Inter. Exp. x (1-tax)	3,063 + 425 x 72.00%	=	3,369				
<b>ROA</b>	NOPAT ÷ Average assets	3,369 ÷ 19,438			17.33%	17.33%	<b>Same</b>	
<b>ROE (Pre tax)</b>	Income before taxes ÷ Average Equity	4,254 ÷ 5,325			79.89%	50.21%	<b>Increase</b>	
<b>ROE</b>	Net Income ÷ Average Equity	3,063 ÷ 5,325			57.52%	36.15%	<b>Increase</b>	
<b>ROTC</b>	NOPAT ÷ Average total capital	3,369 ÷ 13,240			25.45%	25.45%	<b>Same</b>	



		ROA	+	[	ROA	]	x	Operating liability to Equity c	=	ROE	80128	
After Buyback		17.33%	+	[	17.33%	]	x	1.164	=	37.51%		
	<b>MROA</b>		+	[	ROA	]	x	Debt to equity b	=			
After Buyback		17.33%	+	[	17.33%	-	3.87%	]	x	1.487	=	20.01%
								After tax cost of debt				57.52%
Before buyback		17.33%	+	[	17.33%	]	x	0.701	=	29.47%		
Before buyback	<b>MROA</b>		+	[	17.33%	-	3.87%	]	x	0.496	=	6.68%
												36.15%

**Earnings per share**

Before buyback	3,199	÷	3,884		=	\$ 0.82	
After Buyback	3,063	÷	( 3,884	x	90.00% )	=	\$ 0.88

**Short cut**

- 1 Compute the revised debt/equity ratio 1.487 0.496
- 2 Do disaggregation MROTC to compute ROE
- 3 Use revised ROE and Equity to compute Net Income

**Disaggregations of ROA into basic components (Exh 4-13)**

	Margin before Interest & Taxes	x	Total Assets Turnover	x	(1-tax)	=	ROA
After Buyback	28.88%	x	0.834	x	72.00%	=	17.33%
Before buyback	28.88%	x	0.834	x	72.00%	=	17.33%