

The Bentick Corporation makes high end kitchen gadgets. The company's divisions are organized along product lines. Each division is treated as an investment center. Managers are evaluated and rewarded on the basis of return on investment (ROI) performance and residual income. Bentick's cost of capital is 10% and it uses this rate to evaluate ROI and to determine the minimum return when computing the residual income.

Jeff Eckardt, the manager of the heat products division has developed a new product: an automated, self heating tortilla maker. The business plan for the tortilla maker project called for an investment of \$48,400 in cash for working capital needs and a plant costing \$400,400. The plant will last for two years and will have a capacity of 13,000 tortilla makers each year. The division plans to use JIT methods and hence will hold no inventories. The plant will have no salvage value at the end of two years and the invested cash of \$48,400 will be recovered at that point. The variable costs total \$22.80 per tortilla maker. The plan called for the manufacture and sale of 10,000 tortilla makers each year for two years and the selling price will be \$47 per tortilla maker.

All the investment (cash and plant) will be made at the end of year zero as soon as the project gets the go ahead. The company uses the straight line method of depreciation for the plant asset. You can assume that all the future cash flows will be realized at the end of years one and two. The company uses the asset values at the end of the previous year to figure ROI and residual income (do not use the average values). Ignore all taxes. Assume that Bentick is an all equity firm.

- 1 What is the income at the end of years one and two? What is the net cash flow at the end of years zero, one and two? Using the cost of capital as the discount rate, what is the net present value of the project? Should Bentick take on the tortilla maker project?

<b>Income statement</b>	Year:	1	2
Revenue			
Earnings before interest and taxes			

<b>Cash Flow</b>	Year:	0	1	2
Net Cash Flow				
Present value factor at 10%		1.0000	0.9091	0.8264
Present value				

Net present value of the cash flows

Should the company take on the project?

- 2 What is the investment in assets at the end of years zero and one? What is the return on investment and residual income from the tortilla maker project in years one and two? What is the present value of the residual income? If Jeff plans to leave the company at the beginning of year two, will he take on the tortilla maker project, if the corporate headquarters does not know about the details of the project?

<b>Investment in assets</b>	0	1
Total investment in assets		

<b>Performance measures</b>	1	2
Return on Investment		
Residual income / EVA		
Present value factor at	0.9091	0.8264
Present value		

Present value of residual income / EVA

Will the manager take on the project?

- 3 The company has the option of spending \$99,000 towards the end of the first year, during the

holiday shopping season, on special advertising. This will increase the sales by 2,500 units in years one and two. You can assume that all the cash for this special advertising promotion will be spent at the end of year one. Should the company carry on the special advertising promotion? (Assume that there working capital need not be increased due to the increased sales).

<b>Income statement</b>	Year:	1	2
Revenue			
Earnings before interest and taxes			

<b>Cash Flow</b>	Year:	0	1	2
Net Cash Flow				
Present value factor at 10%		1.0000	0.9091	0.8264
Present value				

Net present value of cash flows

Should the company take on the special advertising promotion?

- 4** Compute the residual income for years one and two with the special advertising promotion. Left to himself, will Jeff take on special advertising? What alternate management accounting schemes will encourage the manager to take on the special advertising expenditure, if it was beneficial to the company?

<b>Performance measures</b>	1	2
Return on Investment		
Residual income / EVA		
Present value factor at	1.0000	2.0000
Present value		

Will the manager take on the special advertising promotion?

What alternate accounting methods will solve the incentive problem?

<b>Question 1</b>	Year	0	1	2
Demand units			10,000	10,000
Selling price	\$ 47.00		470,000	470,000
Variable costs	\$ (22.80)		(228,000)	(228,000)
Fixed costs (Depreciation)			(200,200)	(200,200)
EBIT			41,800	41,800

**Cash Flow**

EBIT		41,800	41,800
Depreciation		200,200	200,200
Investment in working capital		(48,400)	48,400
<b>Cash flow from operations</b>		(48,400)	242,000
<b>Cash flow from operations</b>	Investment	(400,400)	
<b>Cash Flow</b>		(448,800)	242,000
Present value factor at 10%		1	0.909
Present value at 10.00%		(448,800)	220,000
Net present value		11,200	Should take on the project

**Question 2**

Current assets	48,400	48,400
Investment at the end of the year	Plant	400,400
	Total assets	448,800
		248,600

**Q1**

Return on investment		9.31%	16.81%
EBIT		41,800	41,800
Imputed interest; capital charge	10.00%	44,880	24,860
Residual income (EVA)		(3,080)	16,940
Present value factor at 10%	1.0000	0.909	0.826
Present value		(2,800)	14,000
Present value of residual income		11,200	equals NPV of the project

The ROI is below the cost of capital and the residual income is negative in the first year. But in the second year things improve dramatically. The present value of the residual income is the net present value of the project and is positive. If the manager is highly impatient, he will reject the project.

**Question 3: With special advertising**

	Year	0	1	2
Demand			12,500	12,500
Selling price	\$47.00		587,500	587,500
Variable costs	(\$22.80)		(285,000)	(285,000)
Fixed costs (Depreciation)			(200,200)	(200,200)
Special advertising			(99,000)	
EBIT			3,300	102,300

**Cash Flow**

EBIT		3,300	102,300
Depreciation		200,200	200,200
Increase in working capital		(48,400)	48,400
<b>Cash flow from operations</b>		<b>(48,400)</b>	<b>203,500</b>
<b>Cash flow from operations</b>	Investment	<b>(400,400)</b>	
<b>Cash Flow</b>		<b>(448,800)</b>	<b>203,500</b>
Present value factor at 10%		1	0.909
Present value at 10.00%		<b>(448,800)</b>	185,000
Net present value		26,200	Should take on the project

**Question 4**

Current assets	48,400	48,400
Investment at the end of the year	Plant	400,400
	Total assets	448,800
		248,600

Return on investment		0.74%	41.15%
EBIT		3,300	102,300
Imputed interest; capital charge	10.00%	44,880	24,860
Residual income (EVA)		<b>(41,580)</b>	77,440
Present value factor at 10%	1.0000	0.909	0.826
Present value		<b>(37,800)</b>	64,000
Present value of residual income		26,200	equals NPV of the project

In the first year ROI and residual income are even worse with special advertising. But the improvement in the second year is even more dramatic. If the manager has the same discount rate as the company, he will take on the special advertising option.

**SOLUTION:**

<b>Capitalize advertising</b>		Year	1	2
Demand units			12,500	12,500
Selling price	\$ 47.00		587,500	587,500
Variable costs	\$ (22.80)		<b>(285,000)</b>	<b>(285,000)</b>
Fixed costs (Depreciation)			<b>(200,200)</b>	<b>(200,200)</b>
Special advertising			<b>(49,500)</b>	<b>(49,500)</b>
EBIT			52,800	52,800

	End of year	0	1
Current assets		48,400	48,400
Plant		400,400	200,200
Capitalized advertising			49,500
Total assets		448,800	298,100

EBIT		52,800	52,800
Imputed interest; capital charge	10.00%	44,880	29,810
Residual income (EVA)		7,920	22,990
Present value at 10.00%		\$26,200	

The manager will be motivated to take on special advertising.