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# Acquisition Valuation

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# Issues in Acquisition Valuation

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- Acquisition valuations are complex, because the valuation often involved issues like synergy and control, which go beyond just valuing a target firm. It is important on the right sequence, including
  - When should you consider synergy?
  - Where does the method of payment enter the process.
- Can synergy be valued, and if so, how?
- What is the value of control? How can you estimate the value?

# Steps involved in an Acquisition Valuation

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- *Step 1:* Establish a **motive** for the acquisition
- *Step 2:* Choose a **target**
- *Step 3:* **Value** the target with the **acquisition motive** built in.
- *Step 4:* Decide on the **mode of payment** - cash or stock, and if cash, arrange for financing - debt or equity.
- *Step 5:* Choose the **accounting method** for the merger/acquisition - purchase or pooling.

# Step 1: Motives behind acquisitions

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- (1) Simplest rationale is **undervaluation**, i.e., that firms that are undervalued by financial markets, relative to true value, will be targeted for acquisition by those who recognize this anomaly.
- (2) A more controversial reason is **diversification**, with the intent of stabilizing earnings and reducing risk.
- (3) **Synergy** refers to the potential additional value from combining two firms, either from operational or financial sources.
  - Operating Synergy can come from *higher growth* or *lower costs*
  - Financial Synergy can come from *tax savings*, *increased debt capacity* or *cash slack*.
- (4) **Poorly managed firms are taken over and restructured** by the new owners, who lay claim to the additional value.
- (5) **Managerial self-interest** and hubris are the primary, though unstated, reasons for many takeovers.

## Step 2: Choose a target firm for the acquisition

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<i>If motive is</i>	<i>Target firm</i>
Undervaluation	trades at a price below the estimated value
Diversification	is in a business which is different from the acquiring firm's business
Operating Synergy	have the characteristics that create the operating synergy <i>Cost Savings</i> : in same business to create economies of scale. <i>Higher growth</i> : should have potential for higher growth.
Financial Synergy	<i>Tax Savings</i> : provides a tax benefit to acquirer <i>Debt Capacity</i> : is unable to borrow money or pay high rates <i>Cash slack</i> : has great projects/ no funds
Control	badly managed firm whose stock has underperformed the market.
Manager's Interests	has characteristics that best meet CEO's ego and power needs.

## Step 3: Value Target Firm with motive built in

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<i>If motive is</i>	<i>Target firm</i>
Undervaluation	Value target firm as stand-alone entity: No extra premium
Diversification	Value target firm as stand-alone entity: No extra premium
Operating Synergy	Value the firms independently. Value the combined firm with the operating synergy Synergy is the difference between the latter and former Target Firm Value = Independent Value + Synergy
Financial Synergy	Tax Benefits: Value of Target Firm + PV of Tax Benefits Debt Capacity: Value of Target Firm + Increase in Value from Debt Cash Slack: Value of Target Firm + NPV of Projects/ Target
Control	Value of Target Firm run optimally
Manager's Interest	Value of Target Firm: No additional premium

# The Valuation Process

VALUING AN ACQUISITION		
Component	Valuation Guidelines	Should you pay?
Synergy	<p>Value the combined firm with synergy built in . This may include</p> <ul style="list-style-type: none"> <li>a. a higher growth rate in revenues: <i>growth synergy</i></li> <li>b. higher margins, because of <i>economies of scale</i></li> <li>c. lower taxes, because of tax benefits: <i>tax synergy</i></li> <li>d. lower cost of debt: <i>financing synergy</i></li> <li>e. higher debt ratio because of lower risk: <i>debt capacity</i></li> </ul> <p>Subtract the value of the target firm (with control premium) + value of the bidding firm (pre-acquisition). This is the value of the synergy.</p>	<p>Which firm is indispensable for the synergy?</p> <p>If it is the target, you should be willing to pay up to the synergy.</p> <p>If it is the bidder, you should not.</p>
Control Premium	<p>Value the company as if optimally managed. This will usually mean that investment, financing and dividend policy will be altered:</p> <p>Investment Policy: Higher returns on projects and divesting unproductive projects.</p> <p>Financing Policy: Move to a better financing structure; eg. optimal capital structure</p> <p>Dividend Policy: Return unused cash</p> <p>Practically,</p> <ol style="list-style-type: none"> <li>1. Look at industry averages for optimal (if lazy)</li> <li>2. Do a full-fledged corporate financial analysis</li> </ol>	<p>If motive is control or in a stand-alone valuation, this is the maximum you should pay.</p>
Status Quo Valuation	<p>Value the company as is, with existing inputs for investment, financing and dividend policy.</p>	<p>If motive is undervaluation, this is the maximum you should pay.</p>

# Valuing NCR for AT & T

VALUING NCR for AT & T		
Component	Valuation Guidelines	Value
Synergy	<p>Value the combined firm with synergy built in . This may include</p> <ul style="list-style-type: none"> <li>a. a higher growth rate in revenues: <i>growth synergy</i></li> <li>b. higher margins, because of <i>economies of scale</i></li> <li>c. lower taxes, because of tax benefits: <i>tax synergy</i></li> <li>d. lower cost of debt: <i>financing synergy</i></li> <li>e. higher debt ratio because of lower risk: <i>debt capacity</i></li> </ul> <p>Subtract the value of the target firm (with control premium) + value of the bidding firm (pre-acquisition). This is the value of the synergy.</p>	<p>\$ 11,278 million                      - \$ 6,723 million                      = \$ 4,552 million</p>
Control Premium	<p>Value the company as if optimally managed. This will usually mean that investment, financing and dividend policy will be altered:</p> <p>Investment Policy: Higher returns on projects and divesting unproductive projects.</p> <p>Financing Policy: Move to a better financing structure; eg. optimal capital structure</p> <p>Dividend Policy: Return unused cash</p> <p>Practically,</p> <ol style="list-style-type: none"> <li>1. Look at industry averages for optimal (if lazy)</li> <li>2. Do a full-fledged corporate financial analysis</li> </ol>	<p>\$ 6,723 million -                      \$ 5,949 million                      = \$ 774 million</p>
Status Quo Valuation	<p>Value the company as is, with existing inputs for investment, financing and dividend policy.</p>	<p>\$ 5,949 million</p>

## Step 4: Decide on payment mechanism: Cash versus Stock

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- Generally speaking, firms which **believe that their stock is under valued** will not use stock to do acquisitions.
- Conversely, firms which believe that their stock is **over or correctly valued will use stock** to do acquisitions.
- Not surprisingly, the **premium paid is larger** when an acquisition is **financed with stock** rather than cash.
- There might be an **accounting rationale** for using **stock** as opposed to cash. You are allowed to use pooling instead of purchase.
- There might also be a **tax rationale** for using stock. Cash acquisitions create tax liabilities to the selling firm's stockholders.

# The Exchange Ratio in a Stock for Stock Exchange

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- **Correct Exchange Ratio** to use in a Valuation = Value per Share of Target Firm (with control premium and target-controlled synergies) / Value per Share of Bidding Firm
- If the exchange ratio is set **too high**, there will be a **transfer of wealth from the bidding firm's stockholders** to the target firm's stockholders.
- If the exchange ratio is set **too low**, there will be **transfer of wealth from the target firm** to the bidding firm's stockholders.

## Step 5: Choose an accounting method for the merger

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### ■ *Purchase Method:*

- The acquiring firm records the assets and liabilities of the acquired firm at market value, with *goodwill* capturing the difference between market value and the value of the assets acquired.
- This goodwill will then be amortized, though the amortization is not tax deductible. If a firm pays cash on an acquisition, it has to use the purchase method to record the transaction.

### ■ *Pooling of Interests:*

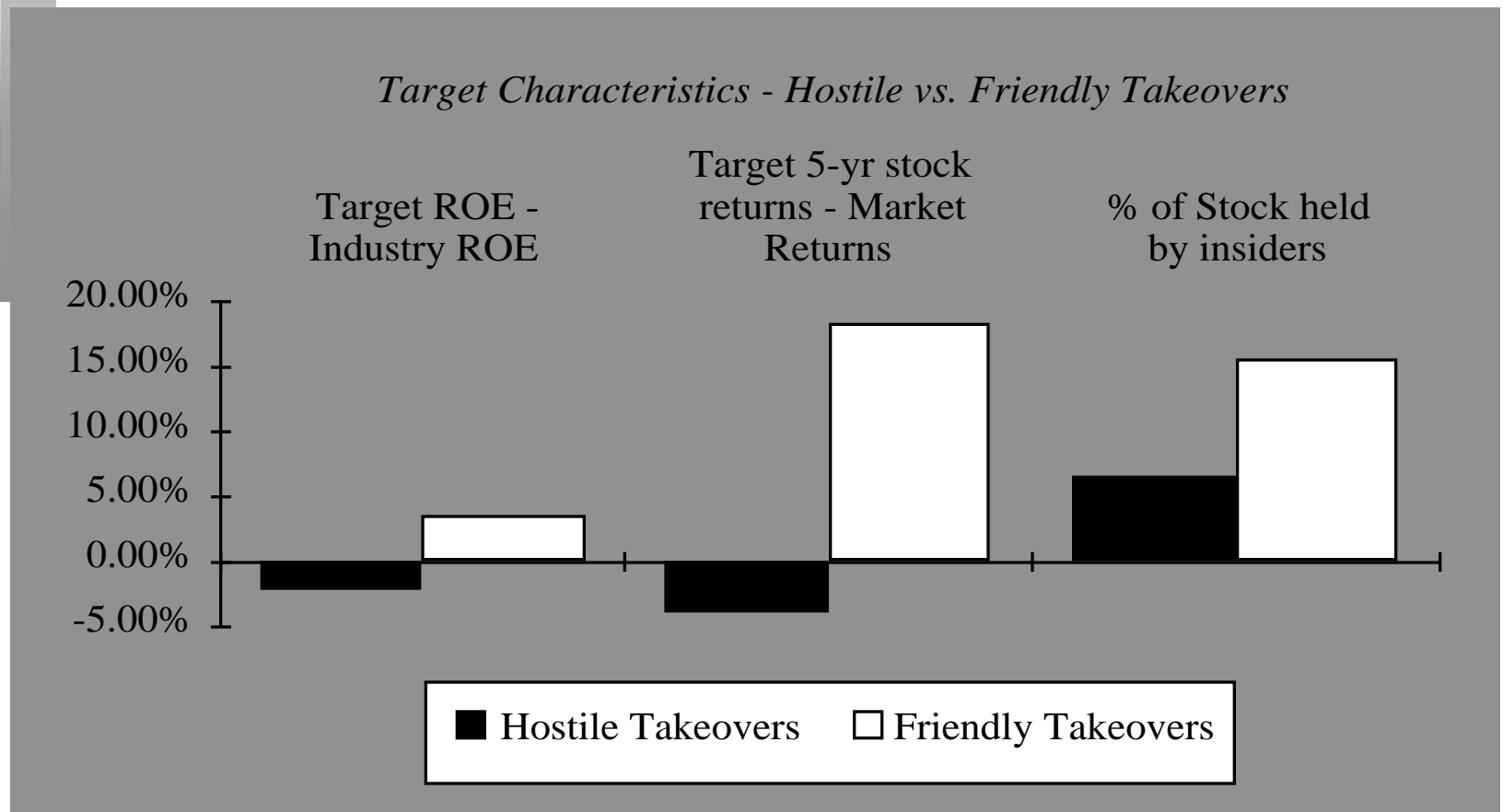
- The book values of the assets and liabilities of the merging firms are added to arrive at values for the combined firm. Since the market value of the transaction is not recognized, no goodwill is created or amortized.
- This approach is allowed only if the acquiring firm exchanges its common stock for common stock of the acquired firm.
- Since earnings are not affected by the amortization of goodwill, the reported earnings per share under this approach will be greater than the reported earnings per share in the purchase approach.

# The Value of Control

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- The value of control should be **inversely proportional to the perceived quality** of that management and its capacity to maximize firm value.
- **Value of control will be much greater for a poorly managed firm** that operates at below optimum capacity than it is for a well managed firm.
- Value of Control = Value of firm, with restructuring - Value of firm, without restructuring
- Negligible or firms which are operating at or close to their optimal value

# Empirical Evidence on the Value of Control



## After the hostile takeover..

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- Many of the hostile takeovers were followed by an **increase in leverage**, which resulted in a downgrading of the debt. The leverage was quickly reduced, however, with proceeds from sale of assets.
- There was **no significant change in the amount of capital investment** in these firms, but investment was more focused on core business.
- Almost 60% of the takeovers were followed by **significant divestitures**, where half or more of the firm was divested. The overwhelming majority of the divestitures were of units which were in business areas **unrelated to the company's core business**, i.e., they constituted reversal of earlier corporate diversification.
- There were **significant management changes** in 17 of the 19 hostile takeovers, with the entire corporate management team replaced in 7 of the takeovers.

## Stand Alone Valuation: Digital - Status Quo

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- Digital had earning before interest and taxes of \$391.38 million in 1997, which translated into a
  - A pre-tax operating margin of 3% on its revenues of \$13,046 million
  - An after-tax return on capital of 8.51%
- Based upon its beta of 1.15, an after-tax cost of borrowing of 5% and a debt ratio of approximately 10%, the cost of capital for Digital in 1997 was
  - Cost of Equity =  $6\% + 1.15 (5.5\%) = 12.33\%$
  - Cost of Capital =  $12.33\% (.9) + 5\% (.1) = 11.59\%$
- Digital had capital expenditures of \$475 million, depreciation of \$ 461 million and working capital was 15% of revenues.
- Operating income, net cap ex and revenues are expected to grow 6% a year for the next 5 years, and 5% thereafter.

## Digital: Status Quo Valuation

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Year	FCFF	Terminal Value	PV
1	\$133.26		\$119.42
2	\$141.25		\$113.43
3	\$149.73		\$107.75
4	\$158.71		\$102.35
5	\$168.24	\$2,717.35	\$1,667.47
Terminal Year	\$156.25		

Firm Value = **\$2,110.41**

- The capital expenditures are assumed to be 110% of revenues in stable growth; working capital remains 15%;
- Debt ratio remains at 10%, but after-tax cost of debt drops to 4%. Beta declines to 1.

## Digital: Change in Control

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- Digital will raise its debt ratio to 20%. The beta will increase, but the cost of capital will decrease.
  - New Beta = 1.25 (Unlevered Beta = 1.07; Debt/Equity Ratio = 25%)
  - Cost of Equity = 6% + 1.25 (5.5%) = 12.88%
  - New After-tax Cost of Debt = 5.25%
  - Cost of Capital = 12.88% (0.8) + 5.25% (0.2) = 11.35%
- Digital will raise its return on capital to 11.35%, which is its cost of capital. (Pre-tax Operating margin will go up to 4%)
- The reinvestment rate remains unchanged, but the increase in the return on capital will increase the expected growth rate in the next 5 years to 10%.
- After year 5, the beta will drop to 1, and the after-tax cost of debt will decline to 4%.

## Digital Valuation: Change in Control

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Year	FCFF	Terminal Value	PV
1	\$156.29		\$140.36
2	\$171.91		\$138.65
3	\$189.11		\$136.97
4	\$208.02		\$135.31
5	\$228.82	\$6,584.62	\$3,980.29
Terminal Year	\$329.23		
Value of the Firm: with Control Change			= \$ <b>4,531 million</b>
Value of the Firm: Status Quo			= \$ <b>2,110 million</b>
Value of Control			= \$ <b>2,421 million</b>

# Valuing Synergy

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- The key to the existence of synergy is that the **target firm controls a specialized resource** that becomes more valuable if combined with the bidding firm's resources. The specialized resource will vary depending upon the merger:
  - *In horizontal mergers:* economies of scale, which reduce costs, or from increased market power, which increases profit margins and sales. (Examples: Bank of America and Security Pacific, Chase and Chemical)
  - *In vertical integration:* Primary source of synergy here comes from controlling the chain of production much more completely.
  - *In functional integration:* When a firm with strengths in one functional area acquires another firm with strengths in a different functional area, the potential synergy gains arise from exploiting the strengths in these areas.

## Valuing operating synergy

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- (a) What **form** is the synergy expected to take? Will it **reduce costs** as a percentage of sales and increase profit margins (as is the case when there are economies of scale)? Will it **increase future growth** (as is the case when there is increased market power)? )
- (b) **When can the synergy be reasonably expected to start** affecting cashflows? (Will the gains from synergy show up instantaneously after the takeover? If it will take time, when can the gains be expected to start showing up? )

## A procedure for valuing synergy

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- (1) the firms involved in the merger are **valued independently**, by discounting expected cash flows to each firm at the weighted average cost of capital for that firm.
- (2) the **value of the combined firm, with no synergy**, is obtained by adding the values obtained for each firm in the first step.
- (3) The **effects of synergy are built into expected growth rates and cashflows**, and the combined firm is re-valued with synergy.

Value of Synergy = Value of the combined firm, with synergy - Value of the combined firm, without synergy

# Synergy Effects in Valuation Inputs

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<i>If synergy is</i>	<i>Valuation Inputs that will be affected are</i>
Economies of Scale	<i>Operating Margin</i> of combined firm will be greater than the revenue-weighted operating margin of individual firms.
Growth Synergy	More projects: <i>Higher Reinvestment Rate</i> (Retention) Better projects: <i>Higher Return on Capital</i> (ROE) <i>Longer Growth Period</i> Again, these inputs will be estimated for the combined firm.

## Valuing Synergy: Compaq and Digital

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- In 1997, Compaq acquired Digital for \$ 30 per share + 0.945 Compaq shares for every Digital share. (\$ 53-60 per share) The acquisition was motivated by the belief that the combined firm would be able to find investment opportunities and compete better than the firms individually could.

## Background Data

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	<i>Compaq</i>	<i>Digital: Opt Mgd</i>
Current EBIT	\$ 2,987 million	\$ 522 million
Current Revenues	\$25,484 mil	\$13,046 mil
Capital Expenditures - Depreciation	\$ 184 million	\$ 14 (offset)
Expected growth rate -next 5 years	10%	10%
Expected growth rate after year 5	5%	5%
Debt /(Debt + Equity)	10%	20%
After-tax cost of debt	5%	5.25%
Beta for equity - next 5 years	1.25	1.25
Beta for equity - after year 5	1.00	1.0
Working Capital/Revenues	15%	15%
Tax rate is 36% for both companies		

## Valuing Compaq

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Year	FCFF	Terminal Value	PV
1	\$1,518.19		\$1,354.47
2	\$1,670.01		\$1,329.24
3	\$1,837.01		\$1,304.49
4	\$2,020.71		\$1,280.19
5	\$2,222.78	\$56,654.81	\$33,278.53
Terminal Year	\$2,832.74		\$38,546.91

- Value of Compaq = \$ 38,547 million
- After year 5, capital expenditures will be 110% of depreciation.

# Combined Firm Valuation

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- The Combined firm will have some economies of scale, allowing it to increase its current after-tax operating margin slightly. The dollar savings will be approximately \$ 100 million.
  - Current Operating Margin =  $(2987+522)/(25484+13046) = 9.11\%$
  - New Operating Margin =  $(2987+522+100)/(25484+13046) = 9.36\%$
- The combined firm will also have a slightly higher growth rate of 10.50% over the next 5 years, because of operating synergies.
- The beta of the combined firm is computed in two steps:
  - Digital's Unlevered Beta = 1.07; Compaq's Unlevered Beta=1.17
  - Digital's Firm Value = 4.5; Compaq's Firm Value = 38.6
  - Unlevered Beta =  $1.07 * (4.5/43.1) + 1.17 (38.6/43.1) = 1.16$
  - Combined Firm's Debt/Equity Ratio = 13.64%
  - New Levered Beta =  $1.16 (1+(1-0.36)(.1364)) = 1.26$
  - Cost of Capital =  $12.93\% (.88) + 5\% (.12) = 11.98\%$

## Combined Firm Valuation

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Year	FCFF	Terminal Value	PV
1	\$1,726.65		\$1,541.95
2	\$1,907.95		\$1,521.59
3	\$2,108.28		\$1,501.50
4	\$2,329.65		\$1,481.68
5	\$2,574.26	\$66,907.52	\$39,463.87
Terminal Year	\$3,345.38		
Value of Combined Firm			= <b>\$ 45,511</b>

# The Value of Synergy

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- Value of Combined Firm wit Synergy = \$45,511 million
- Value of Compaq + Value of Digital  
= 38,547 + 4532 = \$ 43,079 million
- Total Value of Synergy = \$ 2,432 million

## Digital: Valuation Blocks

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<b>Value of Firm - Status Quo</b>	<b>= \$ 2,110 million</b>
+ Value of Control	= \$ 2,521 million
<b>Value of Firm - Change of Control</b>	<b>= \$ 4,531 million</b>
+ Value of Synergy	= \$ 2,432 million
<b>Total Value of Digital with Synergy</b>	<b>= \$ 6,963 million</b>

# Estimating Offer Prices and Exchange Ratios

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- There are 146.789 million Digital shares outstanding, and Digital had \$1,006 million in debt outstanding. Estimate that maximum price you would be willing to offer on this deal.
  
- Assume that Compaq wanted to do an exchange offer, where it would exchange its shares for Digital shares. Assuming that Compaq stock is valued at \$27 per share, what would be the exchange ratio?

## Evaluating Compaq's Offer

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Value of Digital with Synergy	=	\$6,963 mil
- Value of Cash paid in deal = \$ 30 * 146.789 mil shrs =		\$4,403 mil
- Digital's Outstanding Debt (assumed by Compaq)		\$1,006 mil
Remaining Value		\$ 1,554 mil
/ number of Shares outstanding		146.789
= Remaining Value per Share		\$ 10.59
Compaq's value per share at time of Exchange Offer		\$ 27
Appropriate Exchange Ratio = $10.59/27 = 0.39$ Compaq shares for every Digital share		
Actual Exchange Ratio = 0.945 Compaq shares/Digital Share		

# Citicorp + Travelers = ?

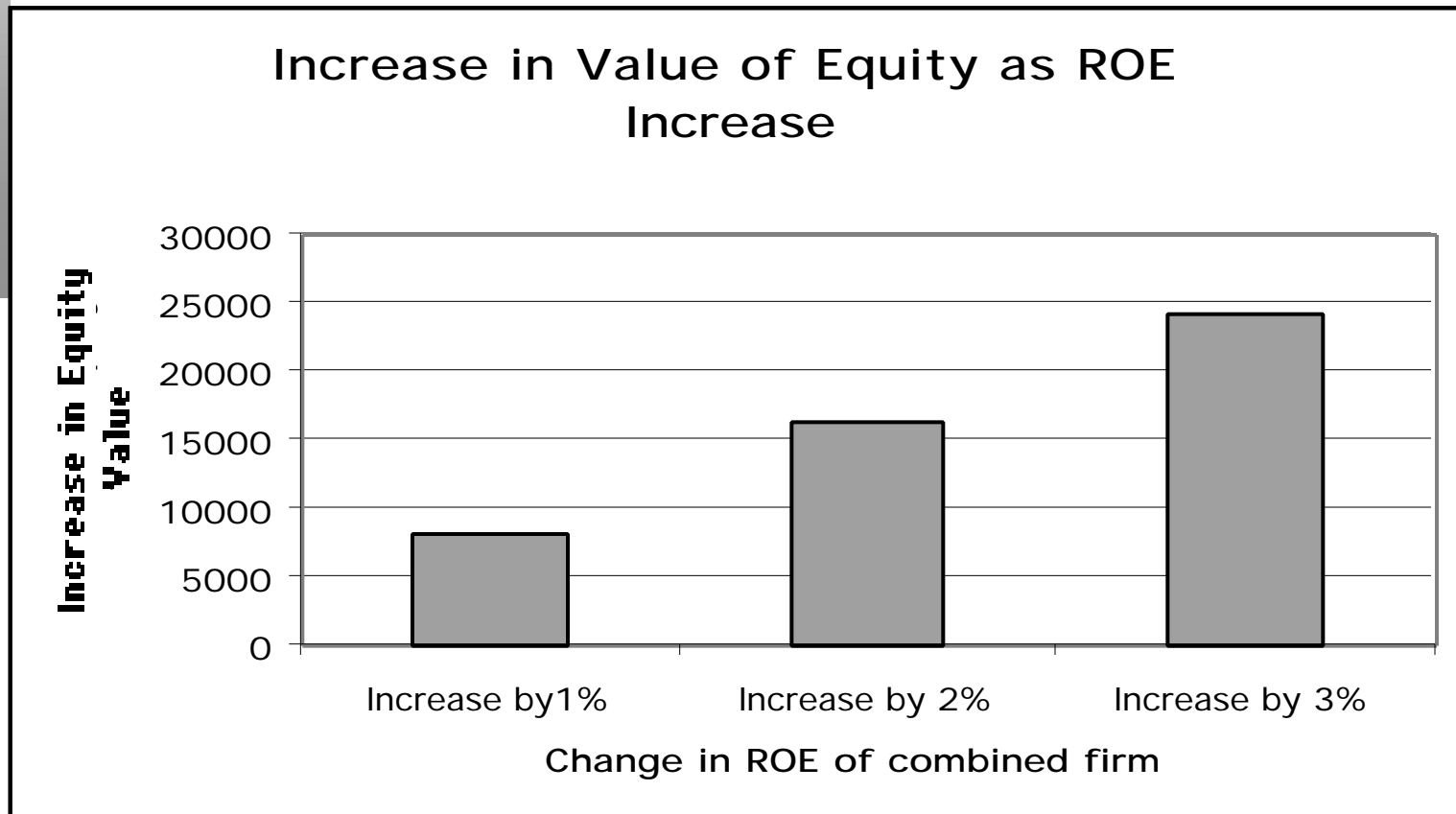
	Citicorp	Travelers	Citigroup
Net Income	\$ 3,591	\$ 3,104	\$ 6,695
BV of Equity	\$ 20,722	\$ 20,736	\$ 41,458
ROE	17.33%	14.97%	16.15%
Dividends	\$ 1,104	\$ 587	\$ 1,691
Payout Ratio	30.74%	18.91%	25.27%
Retention Ratio	69.26%	81.09%	74.73%
Expected growth	12.00%	12.14%	12.07%
Growth Period	5	5	5
Beta	1.25	1.40	1.33
Risk Premium	4.00%	4.00%	4.00%
MV of Equity (bil)	81	84	165.00
Cost of Equity	11.00%	11.60%	11.31%
Beta - stable	1.00	1.00	1.00
Growth-stable	6.00%	6.00%	6.00%
Payout-stable	65.38%	59.92%	62.85%
DDM	\$ 70,743	\$ 53,464	\$ 124,009
DDM/share	155.84	46.38	

# The Right Exchange Ratio

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- Based upon these numbers, what exchange ratio would you agree to as a Citicorp stockholder?
  
- The actual exchange ratio was 2.5 shares of Travelers for every share of Citicorp. As a Citicorp stockholder, do you think that this is a reasonable exchange ratio?

# The Value of Synergy



# Financial Synergy

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## ■ Sources of Financial Synergy

- *Diversification*: Acquiring another firm as a way of reducing risk cannot create wealth for two publicly traded firms, with diversified stockholders, but it could create wealth for private firms or closely held publicly traded firms.
- *Cash Slack*: When a firm with significant excess cash acquires a firm, with great projects but insufficient capital, the combination can create value.
- *Tax Benefits*: The tax paid by two firms combined together may be lower than the taxes paid by them as individual firms.
- *Debt Capacity*: By combining two firms, each of which has little or no capacity to carry debt, it is possible to create a firm that may have the capacity to borrow money and create value.

# I. Diversification: No Value Creation?

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- A takeover, motivated only by diversification considerations, has no effect on the combined value of the two firms involved in the takeover. The value of the combined firms will always be the sum of the values of the independent firms.
- In the case of private firms or closely held firms, where the owners may not be diversified personally, there might be a potential value gain from diversification.

## II. Cash Slack

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- Managers **may reject profitable investment opportunities** if they have to raise new capital to finance them.
- It may therefore make sense for a company with **excess cash and no investment opportunities** to take over a cash-poor firm with good investment opportunities, or vice versa.
- The **additional value** of combining these two firms lies in the **present value of the projects** that would not have been taken if they had stayed apart, but can now be taken because of the availability of cash.

# Valuing Cash Slack

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- Assume that Netscape has a severe capital rationing problem, that results in approximately \$500 million of investments, with a cumulative net present value of \$100 million, being rejected.
- IBM has far more cash than promising projects, and has accumulated \$4 billion in cash that it is trying to invest. It is under pressure to return the cash to the owners.
- If IBM takes over Netscape Inc, it can be argued that the value of the combined firm will increase by the synergy benefit of \$100 million, which is the net present value of the projects possessed by the latter that can now be taken with the excess cash from the former.

### III. Tax Benefits

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- (1) If one of the firms has tax deductions that it cannot use because it is losing money, while the other firm has income on which it pays significant taxes, the combining of the two firms can lead to tax benefits that can be shared by the two firms. The value of this synergy is the present value of the tax savings that accrue because of this merger.
- (2) The assets of the firm being taken over can be written up to reflect new market value, in some forms of mergers, leading to higher tax savings from depreciation in future years.

## Valuing Tax Benefits: Tax Losses

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- Assume that you are Best Buys, the electronics retailer, and that you would like to enter the hardware component of the market. You have been approached by investment bankers for Zenith, which while still a recognized brand name, is on its last legs financially. The firm has net operating losses of \$ 2 billion. If your tax rate is 36%, estimate the tax benefits from this acquisition.
- If Best Buys had only \$500 million in taxable income, how would you compute the tax benefits?
- If the market value of Zenith is \$800 million, would you pay this tax benefit as a premium on the market value?

# Valuing Tax Benefits: Asset Write Up

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- One of the earliest leveraged buyouts was done on Congoleum Inc., a diversified firm in ship building, flooring and automotive accessories, in 1979 by the firm's own management.
  - After the takeover, estimated to cost \$400 million, the firm would be allowed to write up its assets to reflect their new market values, and claim depreciation on the new values.
  - The estimated change in depreciation and the present value effect of this depreciation, discounted at the firm's cost of capital of 14.5% is shown below:

## Congoleum's Tax Benefits

<i>Year</i>	<i>Deprec'n before</i>	<i>Deprec'n after</i>	<i>Change in Deprec'n</i>	<i>Tax Savings</i>	<i>PV</i>
1980	\$8.00	\$35.51	\$27.51	\$13.20	\$11.53
1981	\$8.80	\$36.26	\$27.46	\$13.18	\$10.05
1982	\$9.68	\$37.07	\$27.39	\$13.15	\$8.76
1983	\$10.65	\$37.95	\$27.30	\$13.10	\$7.62
1984	\$11.71	\$21.23	\$9.52	\$4.57	\$2.32
1985	\$12.65	\$17.50	\$4.85	\$2.33	\$1.03
1986	\$13.66	\$16.00	\$2.34	\$1.12	\$0.43
1987	\$14.75	\$14.75	\$0.00	\$0.00	\$0.00
1988	\$15.94	\$15.94	\$0.00	\$0.00	\$0.00
1989	\$17.21	\$17.21	\$0.00	\$0.00	\$0.00
<i>1980-89</i>	<i>\$123.05</i>	<i>\$249.42</i>	<i>\$126.37</i>	<i>\$60.66</i>	<i>\$41.76</i>

## IV. Debt Capacity

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- Diversification will lead to an **increase in debt capacity** and an **increase in the value of the firm**.
- Has to be weighed against the immediate transfer of wealth that occurs to existing bondholders in both firms from the stockholders.

# Valuing Debt Capacity

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- When two firms in different businesses merge, the combined firm will have less variable earnings, and may be able to borrow more (have a higher debt ratio) than the individual firms.
- In the following example, we will combine two firms, with optimal debt ratios of 30% each, and end up with a firm with an optimal debt ratio of 40%.

## Effect on Costs of Capital of Added debt

	Firm A	Firm B New Debt	AB -No Debt	AB - Added
Debt (%)	30%	30%	30%	40%
Cost of debt	6.00%	5.40%	5.65%	5.65%
Equity(%)	70%	70%	70%	60%
Cost of equity	13.60%	12.50%	12.95%	13.65%
WACC - Year 1	11.32%	10.37%	10.76%	10.45%
WACC- Year 2	11.32%	10.37%	10.76%	10.45%
WACC- Year 3	11.32%	10.37%	10.77%	10.45%
WACC-Year 4	11.32%	10.37%	10.77%	10.45%
WACC-Year 5	11.32%	10.37%	10.77%	10.45%
WACC-after year 5	10.55%	10.37%	10.45%	9.76%

## Effect on Value of Added Debt

	Firm A	Firm B Debt	AB -No new Debt	AB - Added
FCFF in year 1	\$120.00	\$220.00	\$340.00	\$340.00
FCFF in year 2	\$144.00	\$242.00	\$386.00	\$386.00
FCFF in year 3	\$172.80	\$266.20	\$439.00	\$439.00
FCFF in year 4	\$207.36	\$292.82	\$500.18	\$500.18
FCFF in year 5	\$248.83	\$322.10	\$570.93	\$570.93
Terminal Value	\$5,796.97	\$7,813.00	\$13,609.97	\$16,101.22
<b>Present Value</b>	<b>\$4,020.91</b>	<b>\$5,760.47</b>	<b>\$9,781.38</b>	<b>\$11,429.35</b>

- The value of the firm, as a consequence of the added debt, will increase from \$9,781.38 million to \$11,429.35 million.

## Empirical Evidence on Synergy

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- If synergy is perceived to exist in a takeover, the value of the combined firm should be greater than the sum of the values of the bidding and target firms, operating independently.

$$V(AB) > V(A) + V(B)$$

- Bradley, Desai and Kim (1988) use a sample of 236 inter-firm tender offers between 1963 and 1984 and report that the **combined value of the target and bidder firms increases 7.48%** (\$117 million in 1984 dollars), on average, on the announcement of the merger.
- **Operating synergy** was the primary motive in **one-third of hostile takeovers**. (Bhide)

# Operational Evidence on Synergy

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- A stronger test of synergy is to **evaluate whether merged firms improve their performance (profitability and growth)**, relative to their competitors, after takeovers.
  - McKinsey and Co. examined 58 acquisition programs between 1972 and 1983 for evidence on two questions -
    - Did the return on the amount invested in the acquisitions exceed the cost of capital?
    - Did the acquisitions help the parent companies outperform the competition?
  - They concluded that **28 of the 58 programs failed both tests**, and 6 failed at least one test.
- **Large number of acquisitions that are reversed within fairly short time periods.** About 20.2% of the acquisitions made between 1982 and 1986 were divested by 1988. In studies that have tracked acquisitions for longer time periods (ten years or more) the **divestiture rate of acquisitions rises to almost 50%.**

## Who gets the benefits of synergy?

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- The sharing of the benefits of synergy among the two players will depend in large part on whether the bidding firm's contribution to the **creation of the synergy is unique or easily replaced**. If it can be easily replaced, the bulk of the synergy benefits will accrue to the target firm. If it is unique, the sharing of benefits will be much more equitable.
- Bradley, Desai and Kim (1988) conclude that the benefits of synergy accrue primarily to the target firms when there are **multiple** bidders involved in the takeover. They estimate that the market-adjusted stock returns around the announcement of the takeover for the successful bidder to be 2%, in single bidder takeovers, and -1.33%, in contested takeovers.