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# **Are Internet Stocks Over-Valued?**

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INTERNET ADDRESS: <http://wsj.com>



**INTERNET STOCKS: WHAT A RIDE IT HAS BEEN!**



## Can we justify its value?

	1998	1999	2000	2001	2002	2003	2004
Sales	\$610.0	\$2,135.0	\$6,938.8	\$20,816.3	\$62,448.8	\$187,346.3	\$562,038.8
Net Income	-\$125.5	-\$550.9	-\$514.2	-\$60.7	\$1,892.8	\$9,367.3	\$28,101.9
Net Margin	-21%	-26%	-7%	0%	3%	5%	5%
Assets (NWC + FA)	-\$75.0	\$106.8	\$346.9	\$1,040.8	\$3,122.4	\$9,367.3	\$28,101.9
Change in Assets (NWC + FA)		\$181.8	\$240.2	\$693.9	\$2,081.6	\$6,244.9	\$18,734.6
Free Cash Flow		-\$732.7	-\$754.3	-\$754.5	-\$188.8	\$3,122.4	\$9,367.3
Present Value at:	\$30,608.00						
Discount Rate	18%						
Growth rate after 2008	10%						
<b>Assumption:</b>							
Sales Growth Rate		250%	225%	200%	200%	200%	200%
NWC+FA/Sales		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Assume no significant depreciation							
Aggressive growth assumptions							
Same Margins as Base Case							

# Agenda

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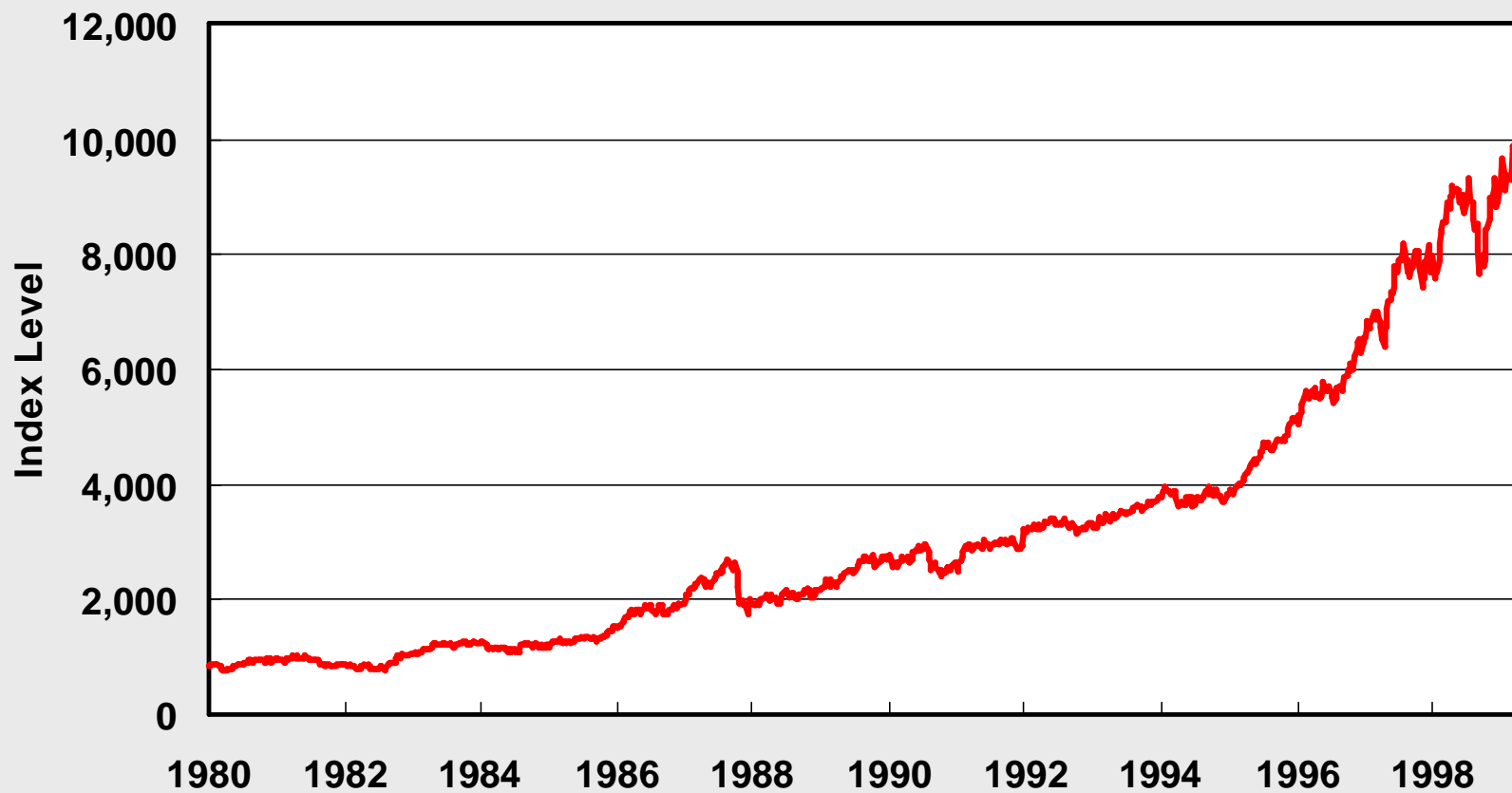
- **Is the stock market overvalued?**
  - Can it help explain Internet Stocks.
- **Explanations.**
  - Lower risk.
  - New Business Model.
  - New Economy.
  - The Internet “Gorilla.”
- **Lessons.**

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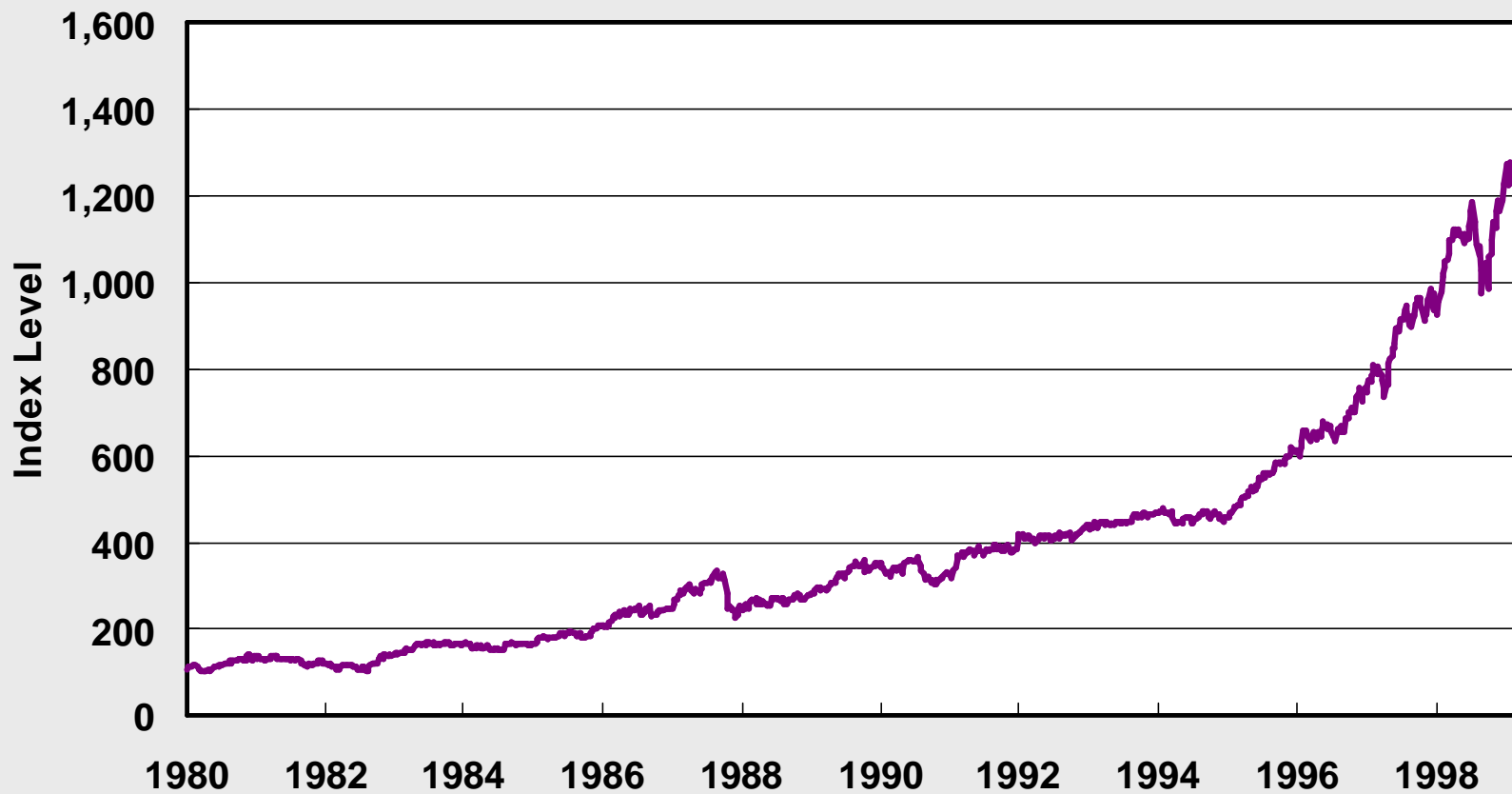
**Is the Stock Market Overvalued?**

# Dow Jones Industrial Average 1980 - 1999

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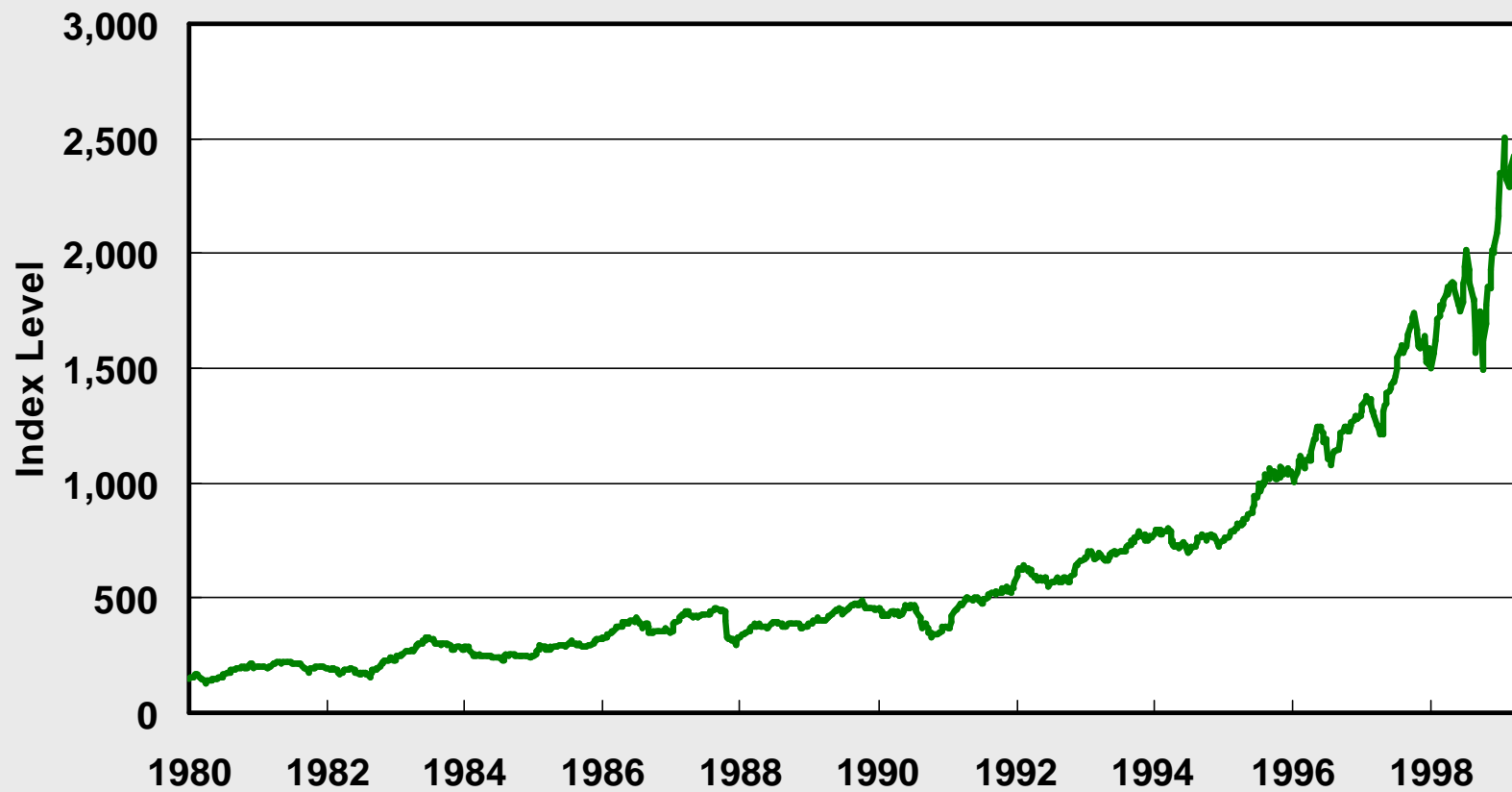


# Standard & Poor's 500 Index 1980 - 1999



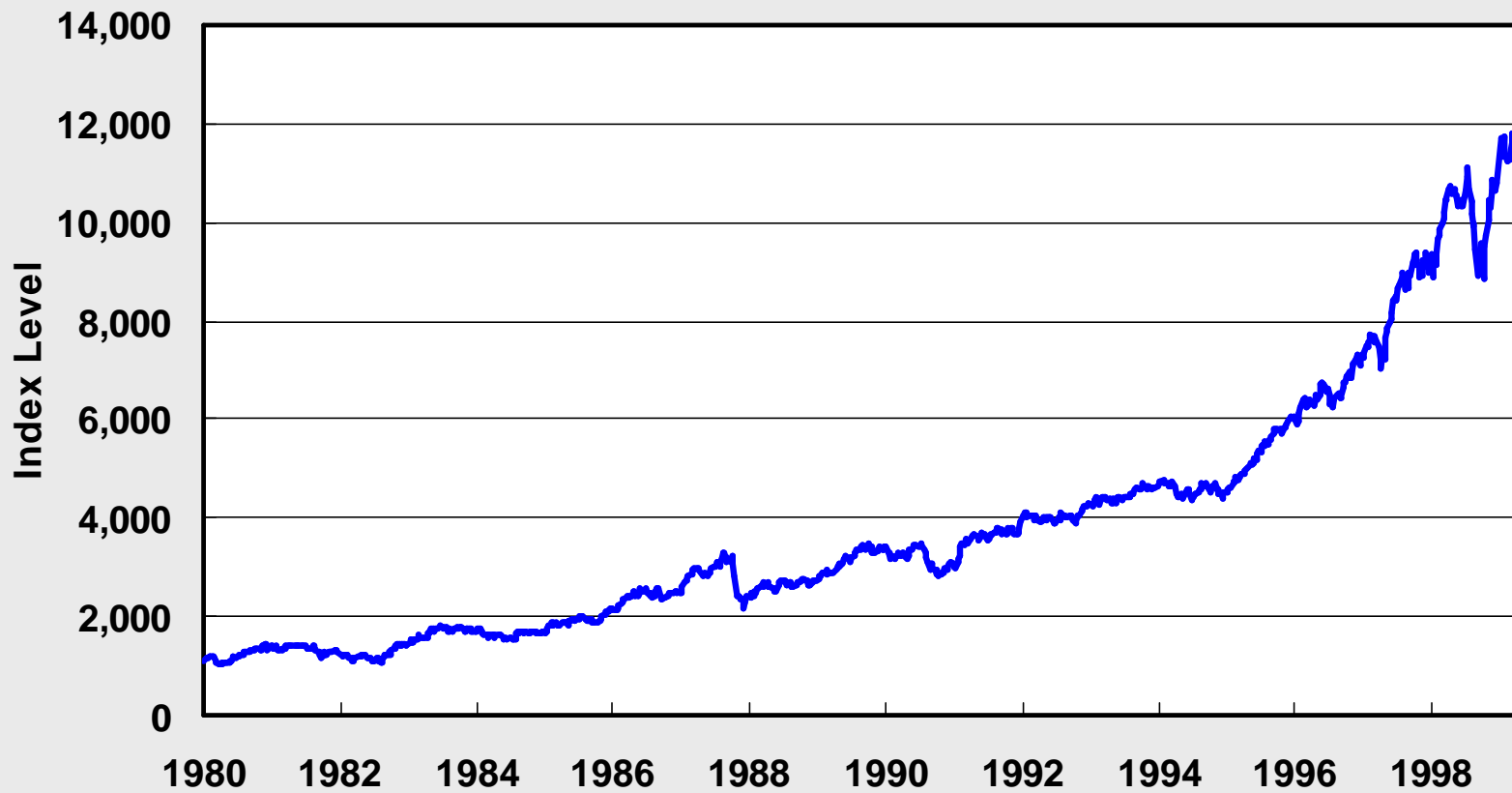
# NASDAQ Composite Index 1980 - 1999

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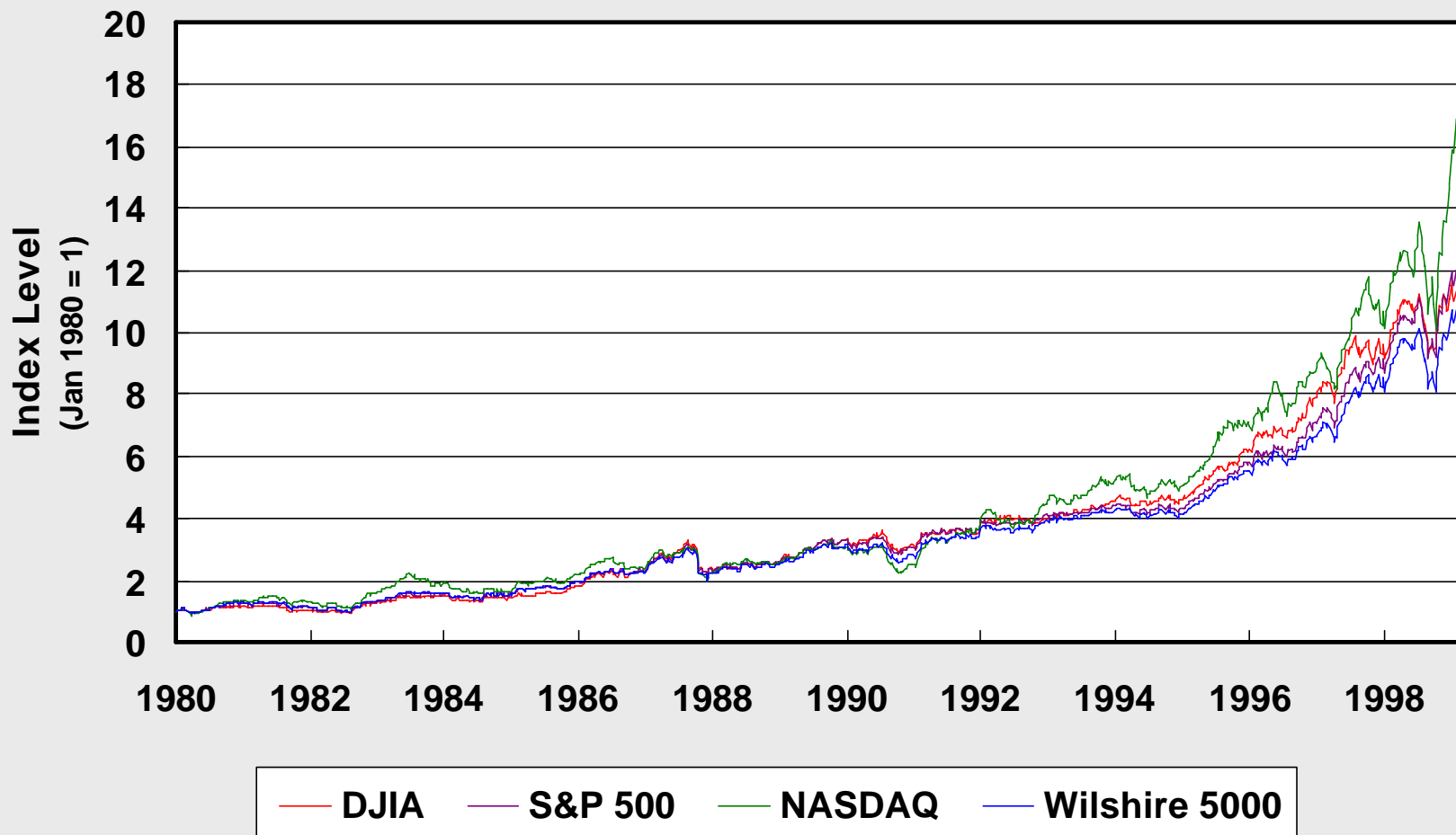




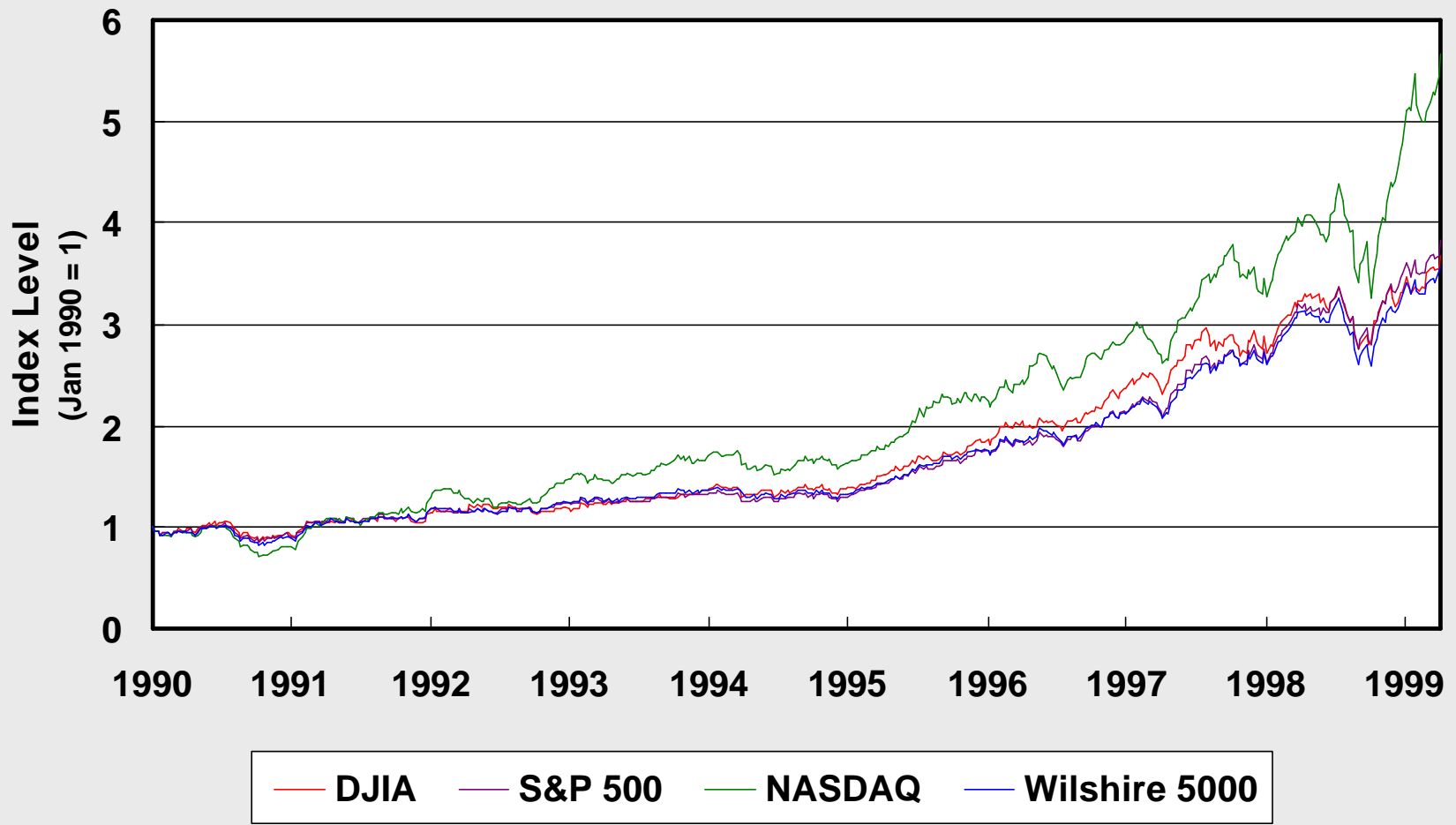
# Wilshire 5000 Index 1980 - 1999



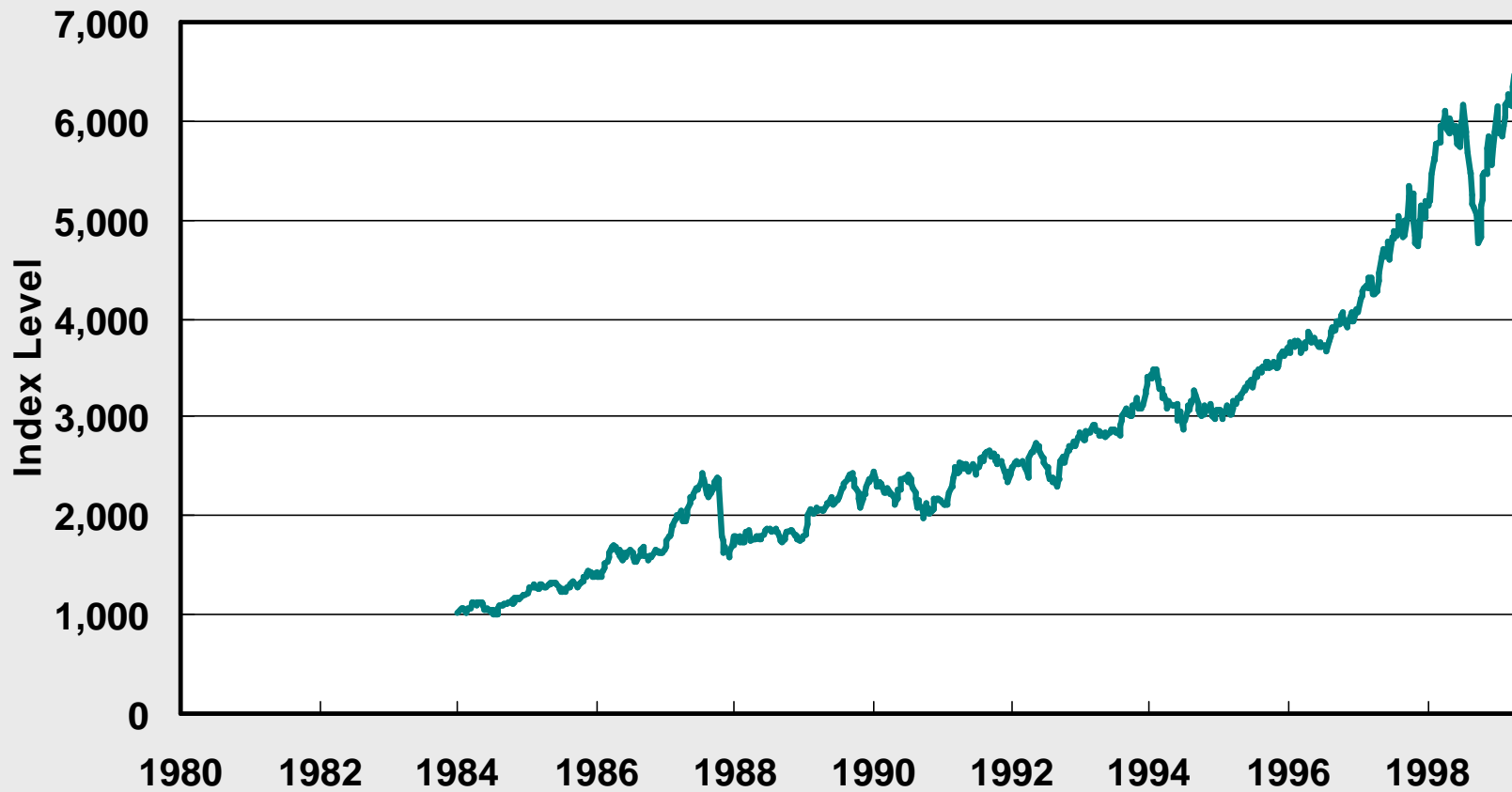
# Various U.S. Stock Market Indices 1980 - 1999



# Various U.S. Stock Market Indices 1990 - 1999

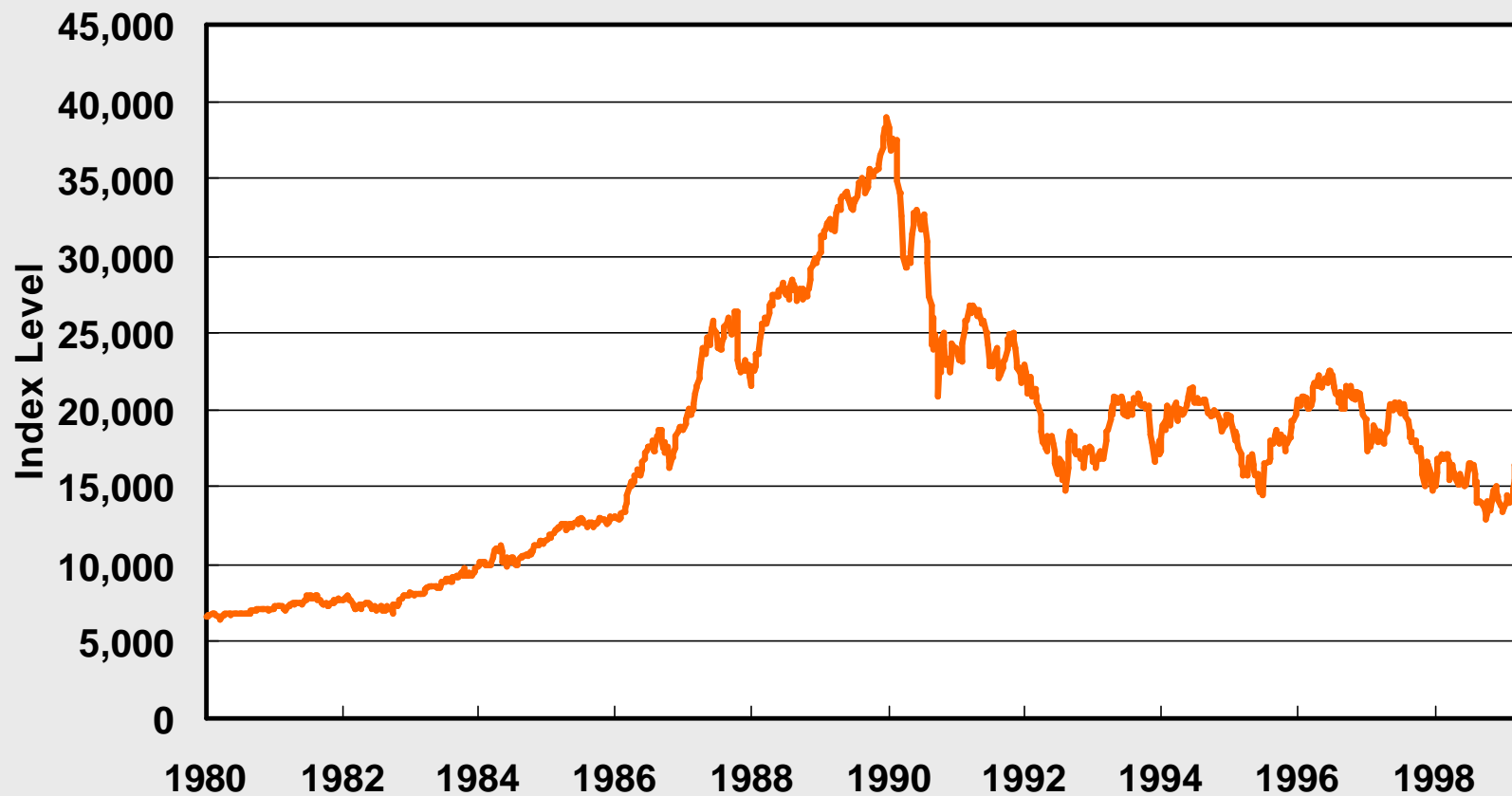


# FTSE 100 Index 1984 - 1999

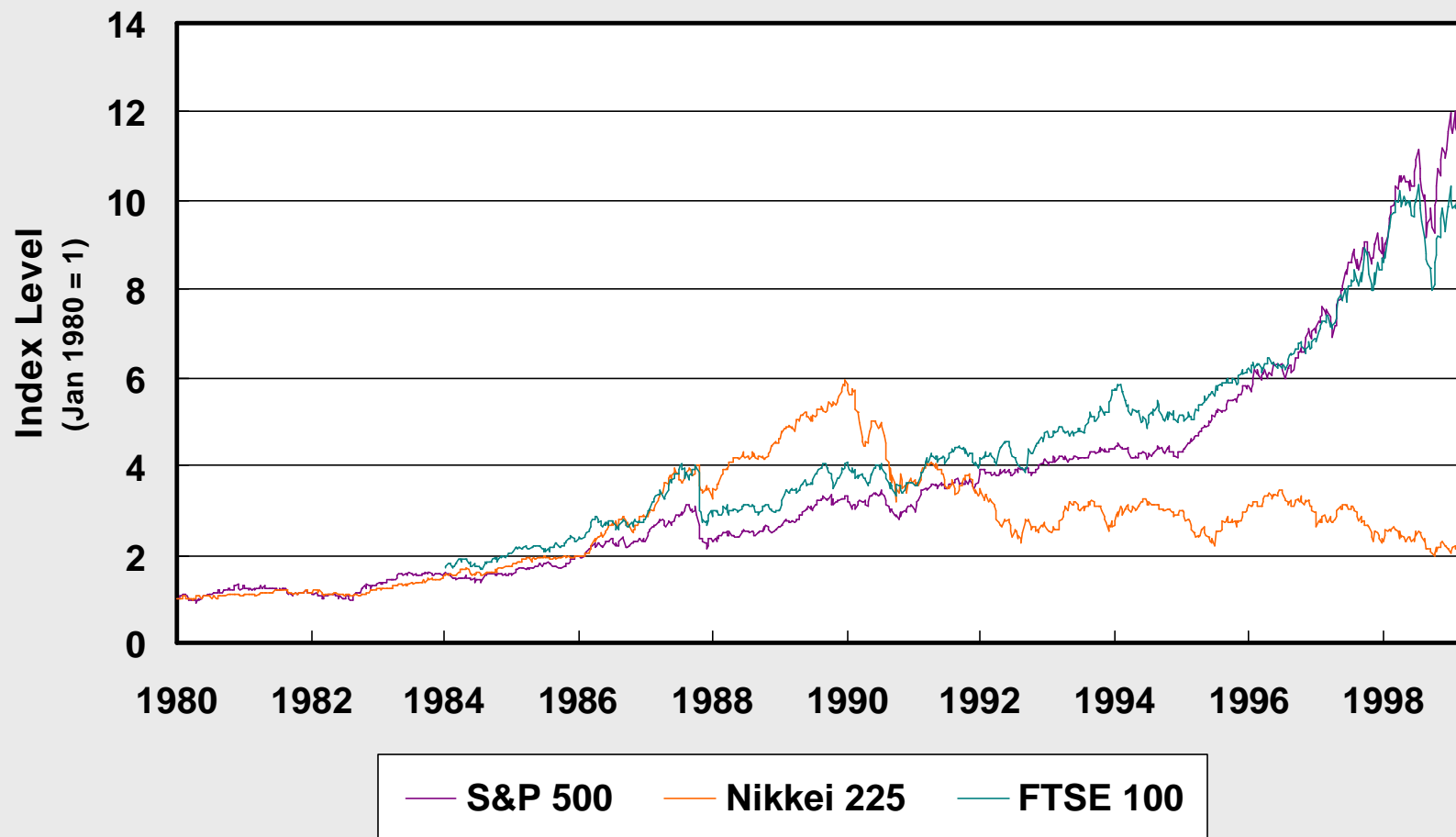


# Nikkei 225 Index

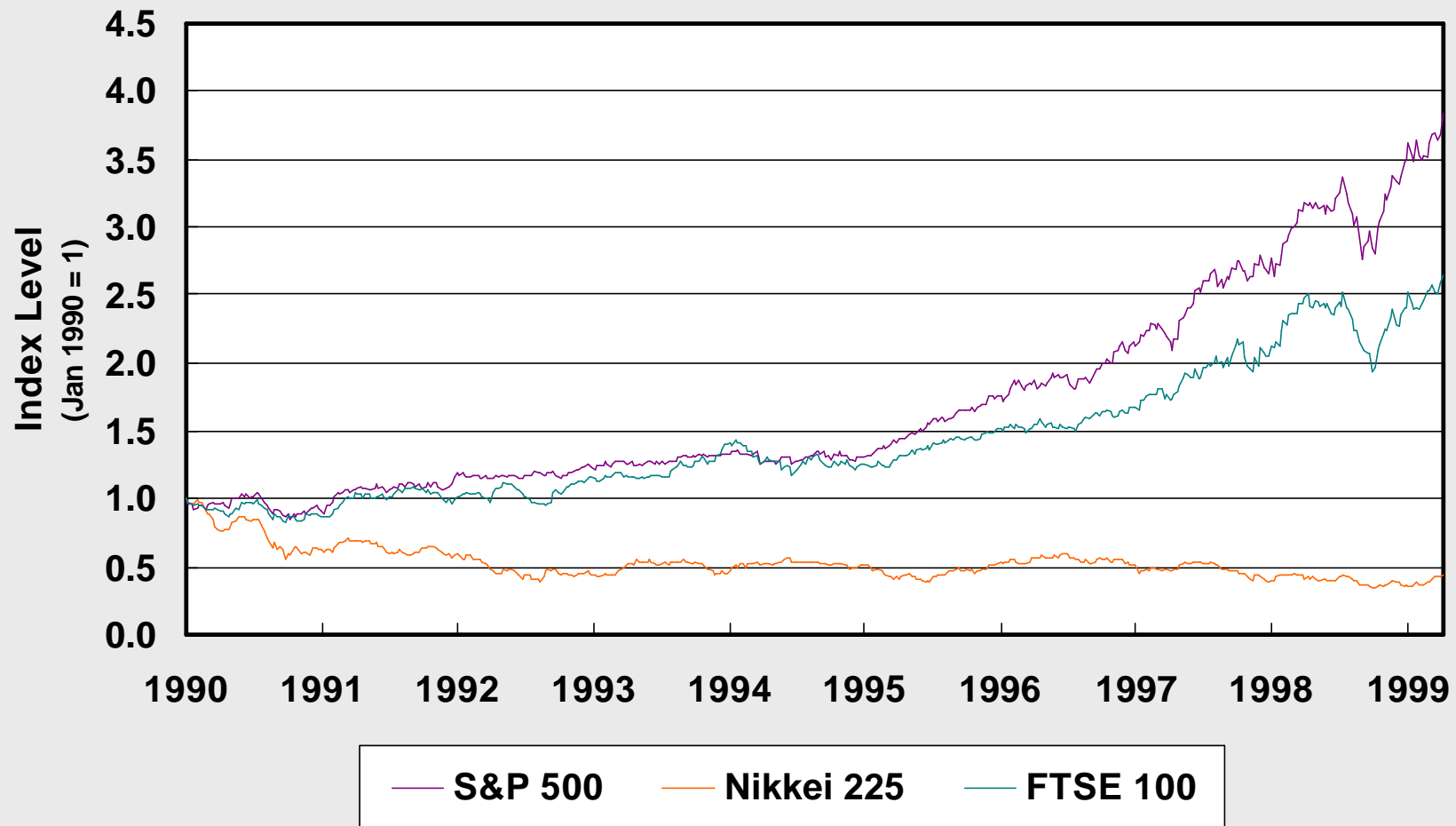
## 1980 - 1999



# S&P 500, Nikkei 225, and FTSE 100 1980 - 1999



# S&P 500, Nikkei 225, and FTSE 100 1990 - 1999





# **Value Drivers**



## Glossary of Terms

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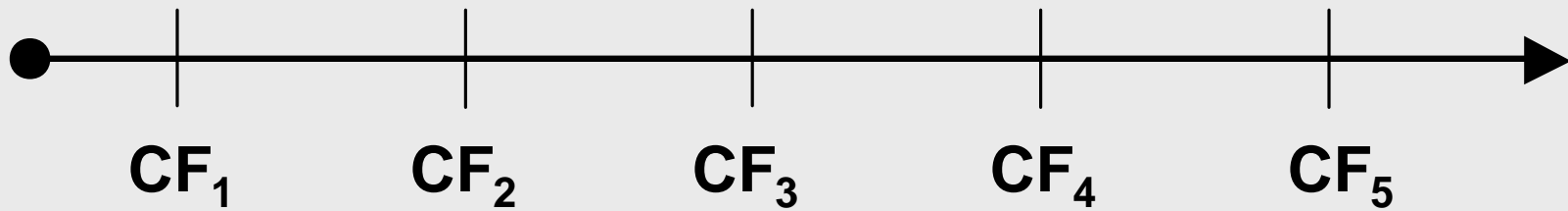
**V = Market value of equity**

**CF = Cash flow**

**t = Time Period**

**K = Discount rate**

# Valuing a Firm



$$V = \sum_{t=1}^{\infty} \frac{CF_t}{(1 + K)^t}$$

# Valuing a Firm

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- **Three rules of valuation:**
  - More cash is preferred to less cash.
  - Cash sooner is preferred to cash later.
  - Less risky cash is preferred to more risky cash.
- **Combination of the three determine the value of any opportunity.**

# Explanations for High Valuations

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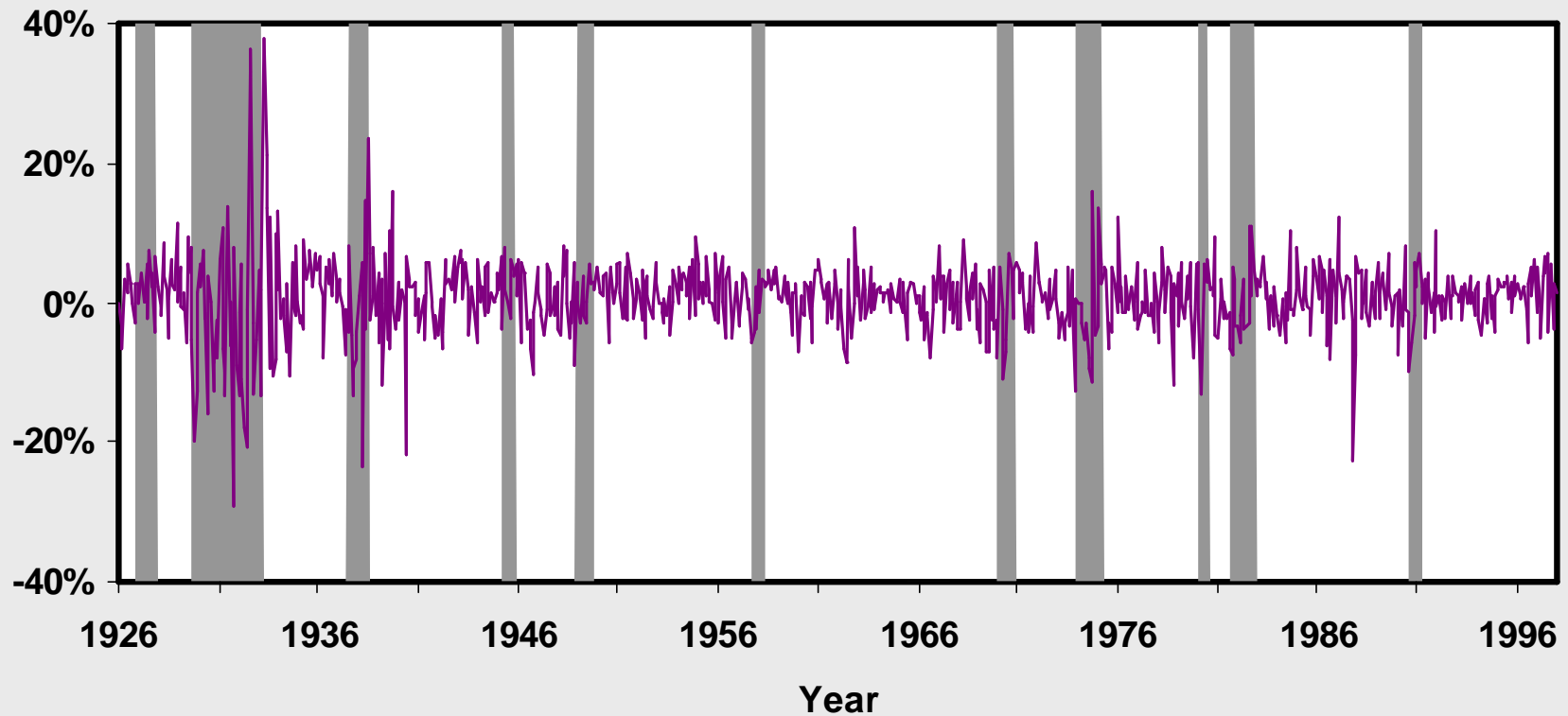
- **Less Risk**
- **The New Business Model**
- **The New Economy**
- **The Internet “Gorilla.”**



**Less Risk**

# Is Market Risk Constant?

Excess Market Returns: 1926 to 1997\*



\*Shaded areas identify NBER business cycle contraction periods.

## Is the Risk Premium Constant?

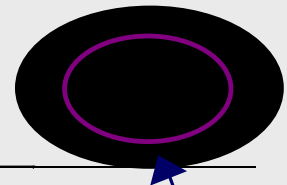
	Likelihood	Duration (Years)	Risk Premium
Low-Risk Periods	87%	7.2	2.9%
High-Risk Periods	13%	1.0	37.2%
All Periods	100%		7.4%

What you learned  
in First Year Finance

Source: Mayfield (1999) "State-Dependent Volatility and the Market Risk Premium."

# Has the Risk Premium Changed Over Time?

	1926 to 1939			1940 to 1997		
	Likelihood	Duration (Years)	Risk Premium	Likelihood	Duration (Years)	Risk Premium
<b>Low-Risk Periods</b>	65%	4.0	2.5%	95%	4.1	2.5%
<b>High-Risk Periods</b>	35%	1.9	35.3%	5%	0.2	35.3%
<b>All Periods</b>	100%		14.0%	100%		



Source: Mayfield (1999) "State-Dependent Volatility and the Market Risk Premium."

**Lower Equity Risk Premium**



# Lessons

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- **Equity risk premium seems to be lower.**
  - 4.2% versus 7.5%.
  - Lower risk economy.
  - More interest in investing in stocks.
    - Baby boomers have seen appreciation of stocks over past 70 years relative to bonds.
- **Lower risk premium can help to explain.**
  - High overall stock market.
  - Very high Internet valuations.

# Why so Important to Internet Firms

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- **Payoff to Internet stocks in the distant future.**
- **Low equity risk premium would:**
  - **Greatly decrease the discounting of those future cash flows.**
  - **Make Internet stocks look attractive.**

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# **The New Business Model**

# The New Business Model

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- **Amazon.com**

- Receives money, and then acquires books
- The larger the company grows, the more money it generates

- **Dell**

- Receives money, and then builds computer
- Cash generation more limited due to higher receivables

**amazon.com** and  
**1997 Cash Flow**

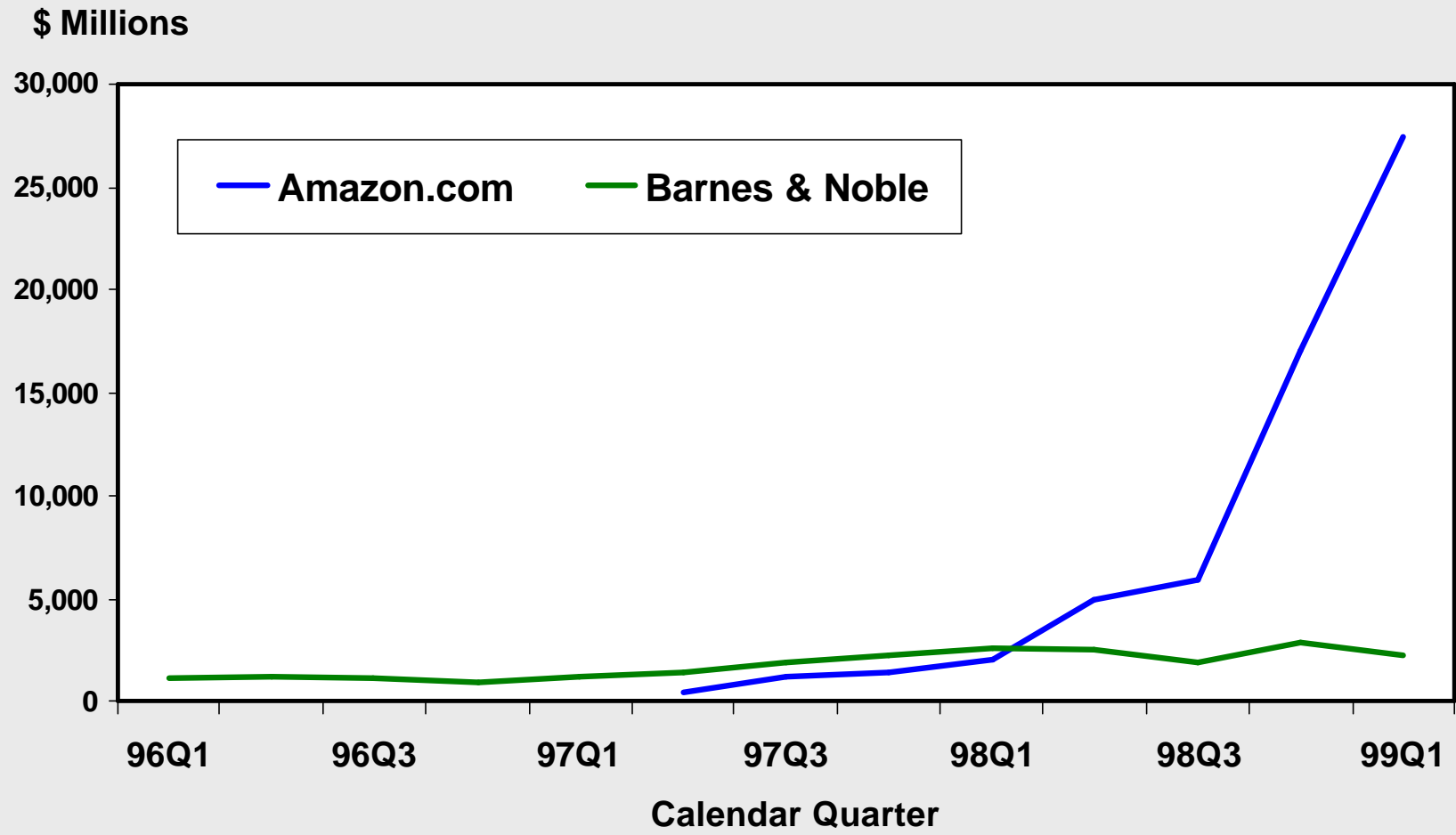


	<b>Amazon.com</b>	<b>Barnes &amp; Noble</b>
<b>Payables</b>	<b>0.22</b>	<b>0.16</b>
<b>Receivables</b>	<b>0.00</b>	<b>0.02</b>
<b>Inventories</b>	<b>0.06</b>	<b>0.30</b>
<b>Net Working Capital</b>	<b><u>0.16</u></b>	<b><u>(0.16)</u></b>
<b>Net Plant, Property &amp; Equipment</b>	<b>0.06</b>	<b>0.17</b>
<b>Cash per \$ of Sales</b>	<b>0.10</b>	<b>(0.33)</b>

**Amazon.com generates 43¢ more cash per dollar of sales than Barnes & Noble**

# Market Capitalization

## Amazon.com and Barnes & Noble



# **DELL** and **COMPAQ**

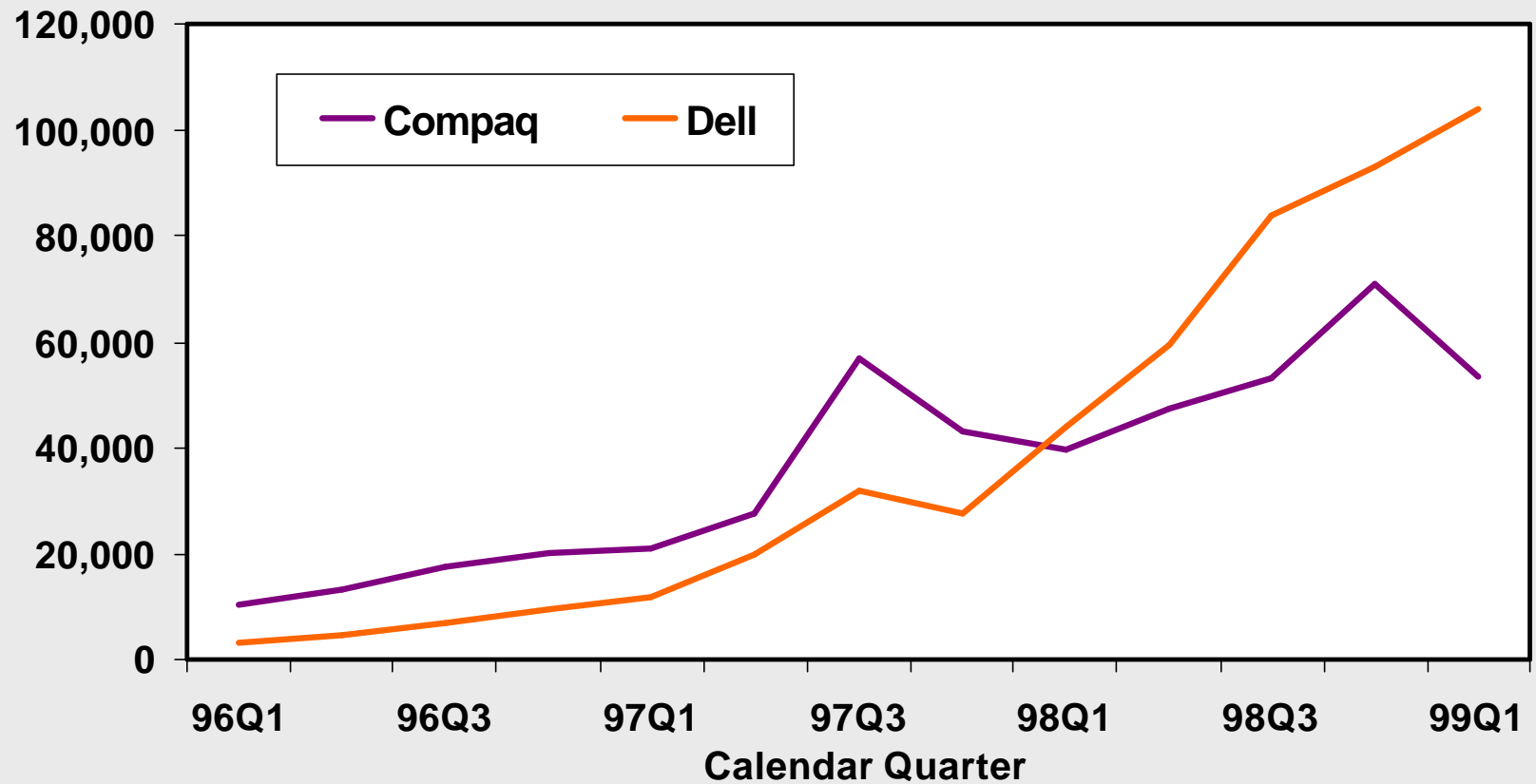
## 1998 Cash Flow

	<b>Dell</b>	<b>Compaq</b>
<b>Payables</b>	<b>0.13</b>	<b>0.14</b>
<b>Receivables</b>	<b>0.11</b>	<b>0.22</b>
<b>Inventories</b>	<b>0.01</b>	<b>0.06</b>
<b>Net Working Capital</b>	<b><u>0.00</u></b>	<b><u>(0.15)</u></b>
<b>Net Plant, Property &amp; Equipment</b>	<b>0.03</b>	<b>0.09</b>
<b>Cash per \$ of Sales</b>	<b>(0.03)</b>	<b>(0.25)</b>

**Dell generates 22¢ more cash per dollar of sales than Compaq**

# Market Capitalization Dell and Compaq

\$ Millions



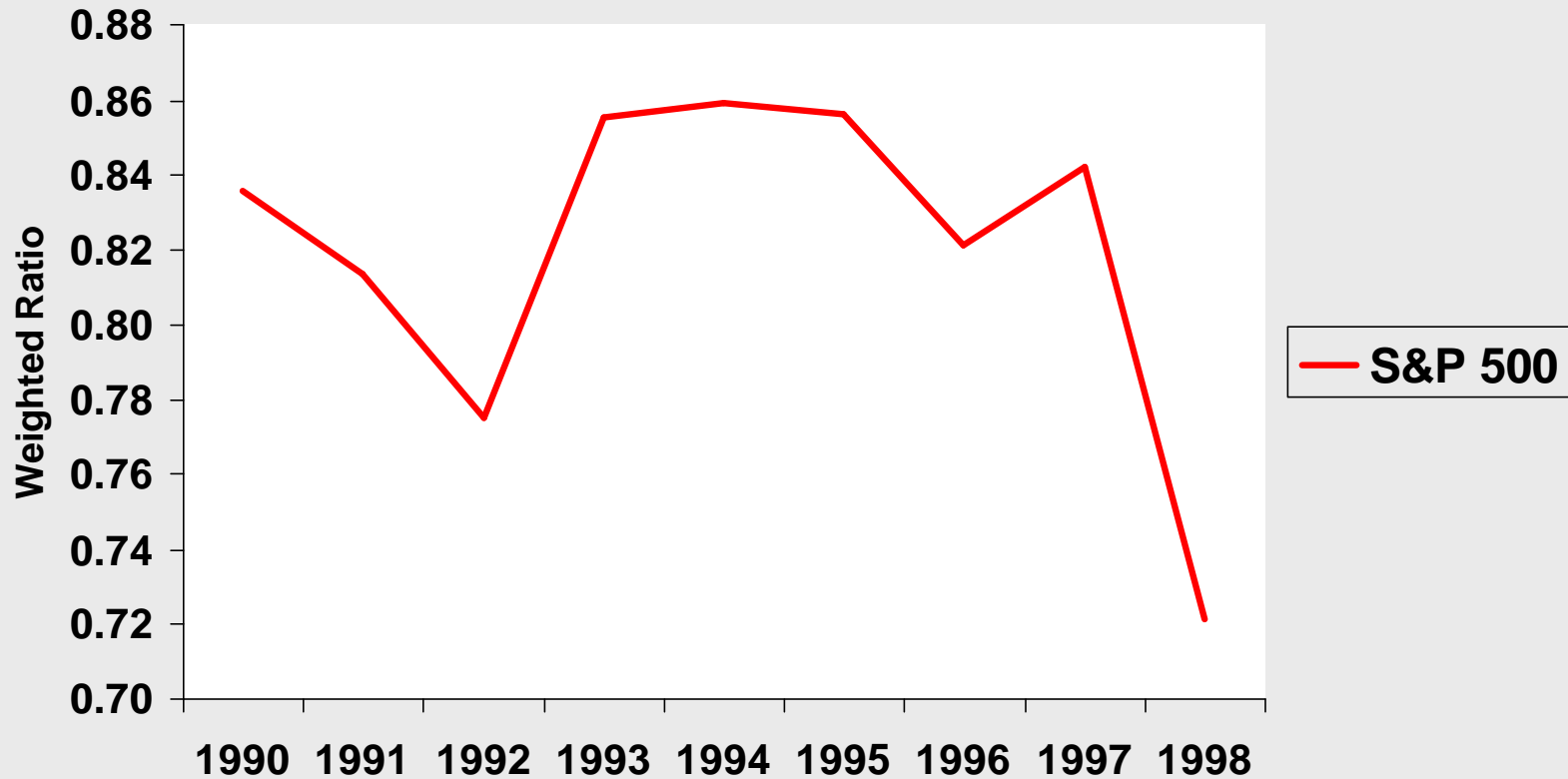


# The New Business Model

## Cash Intensity for S&P500 Companies

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Cash Intensity = (Net PPE + Working Capital)/Sales



# Effects of New Business Model

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- **Lower cash needs.**
  - Lower working capital requirements.
- **Lower asset intensity.**
  - Produce only as needed.
  - Need less inventory.
  - Need less PPE.
- **Effects of New Business Model.**
  - Higher ROE.
  - Higher cash flows.
  - Greater value creation.

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# The New Economy

# The New Economy

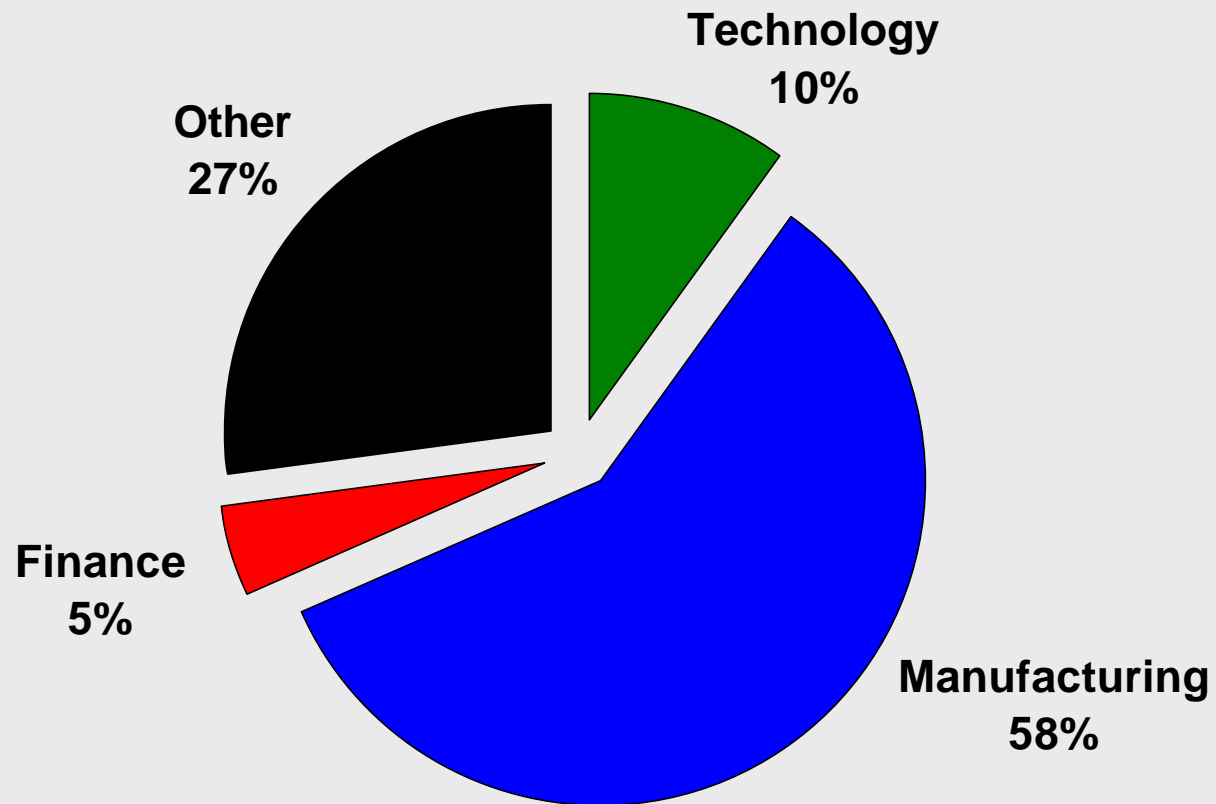
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- **The economy is increasingly dominated by technology.**
- **Computer hardware and software were the first phase of the economic transformation.**
- **Information and connectivity will be the second phase.**
- **The shifts are fundamental in nature.**

# The New Economy

1980 Market Value of 1999 S&P500 Companies,  
by Business Segment

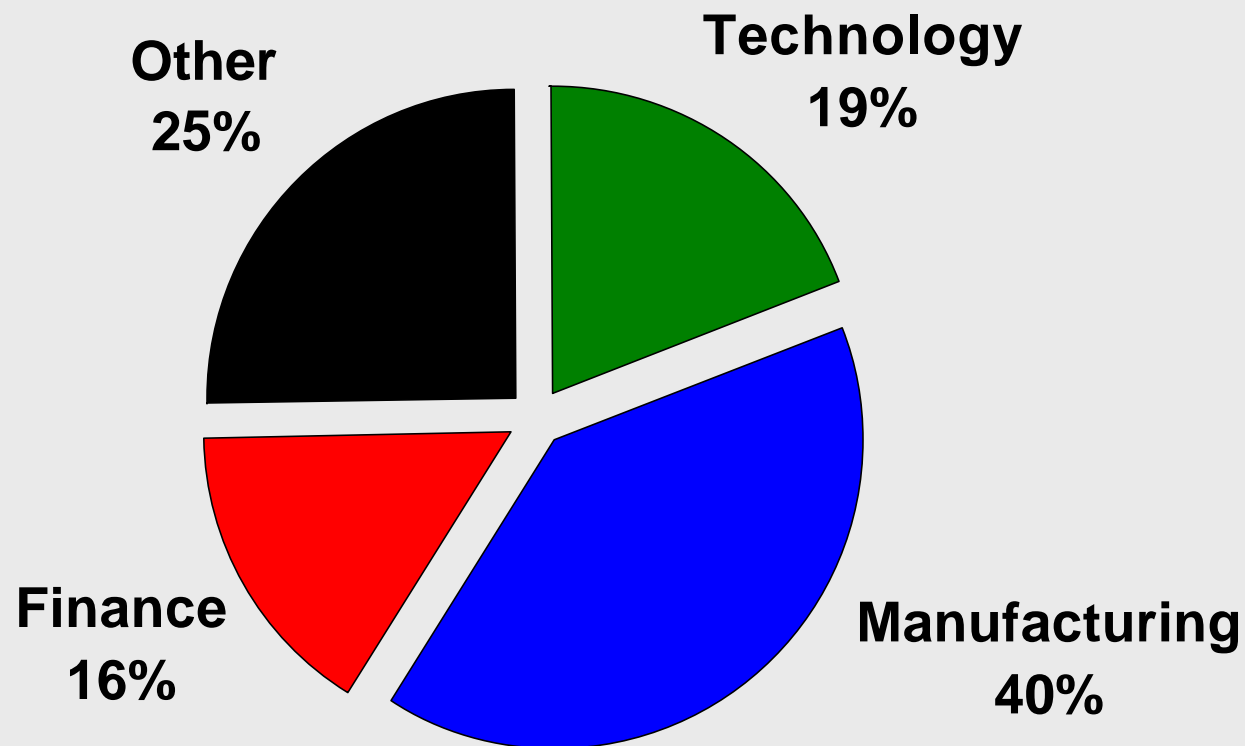
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# The New Economy

1999 S&P500 Market Value, by Business Segment

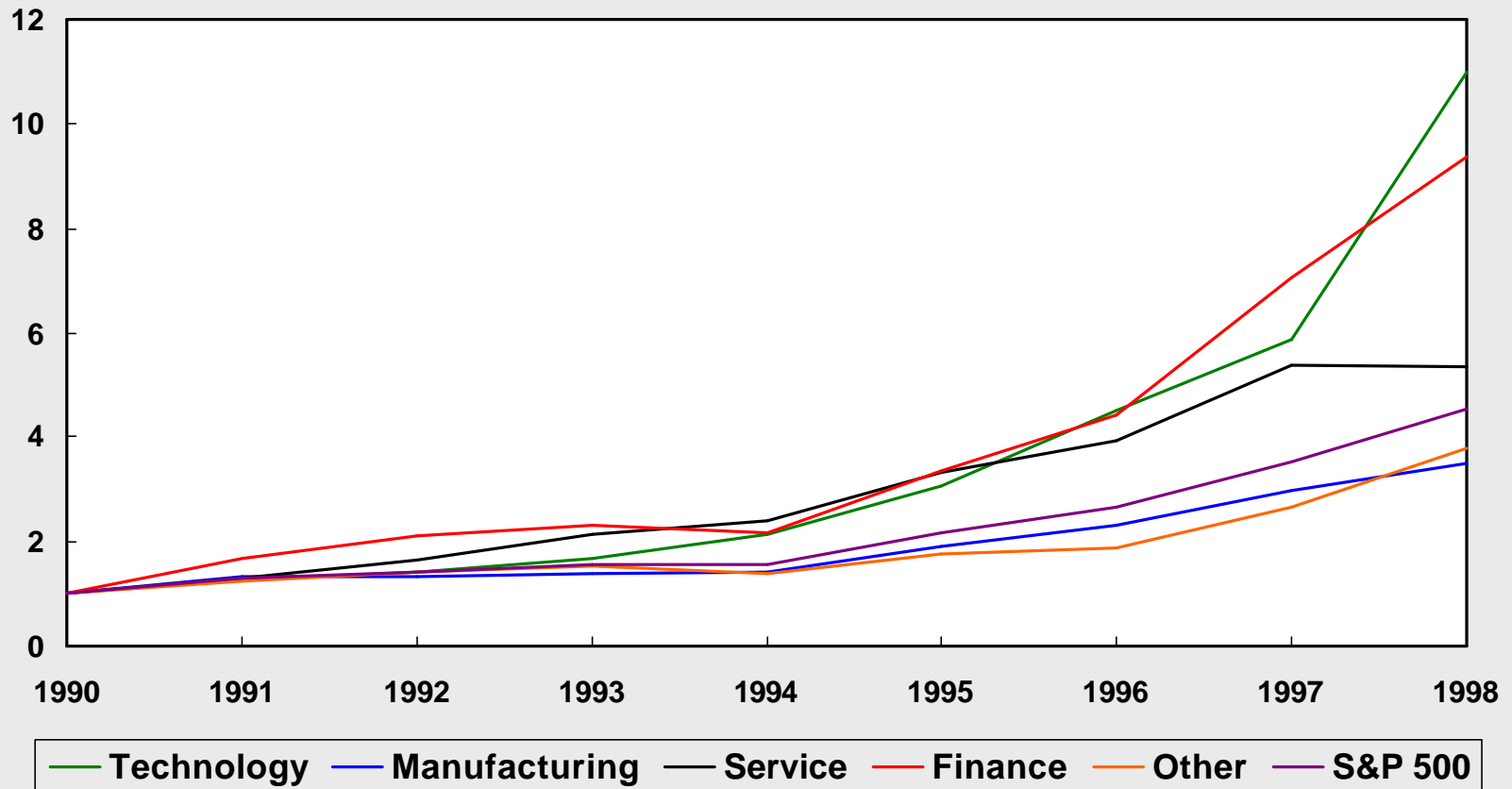
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Total Market Value of 1999 S&P 500 = \$10 trillion

# S&P 500 Sector Indices 1990 - 1998

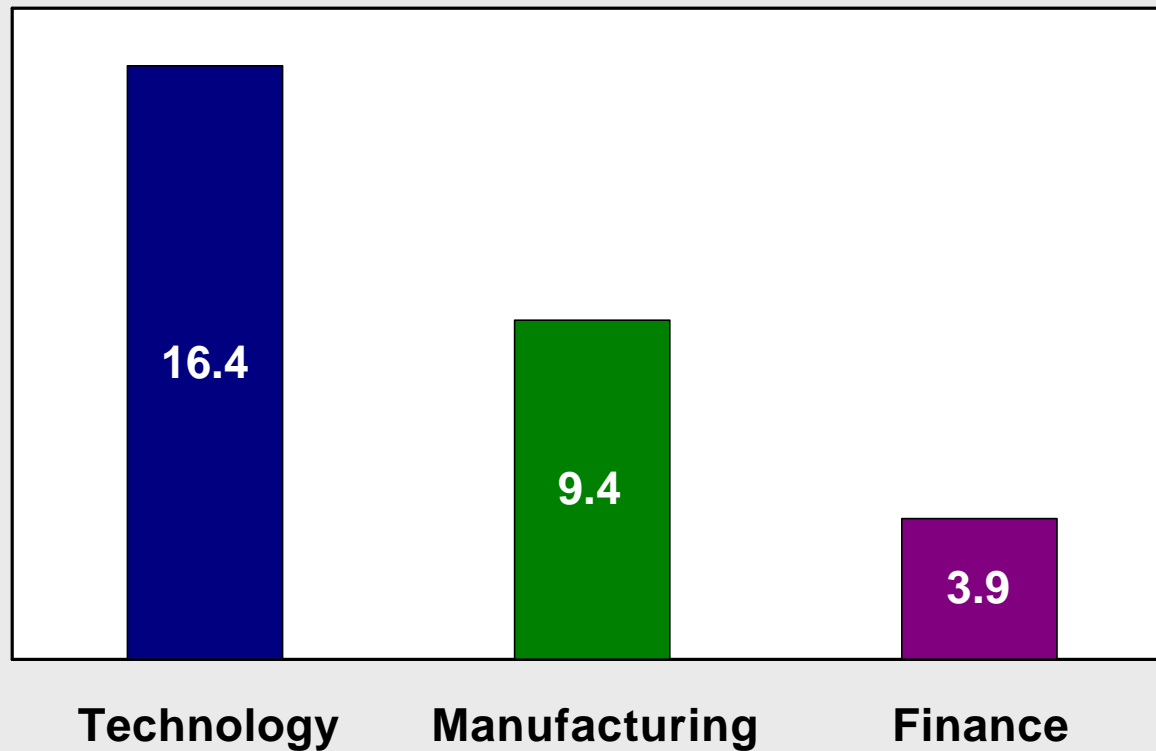
Sector Indices



# Current Market/Book Ratios for S&P 500 Companies

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- Selected Industry Segments

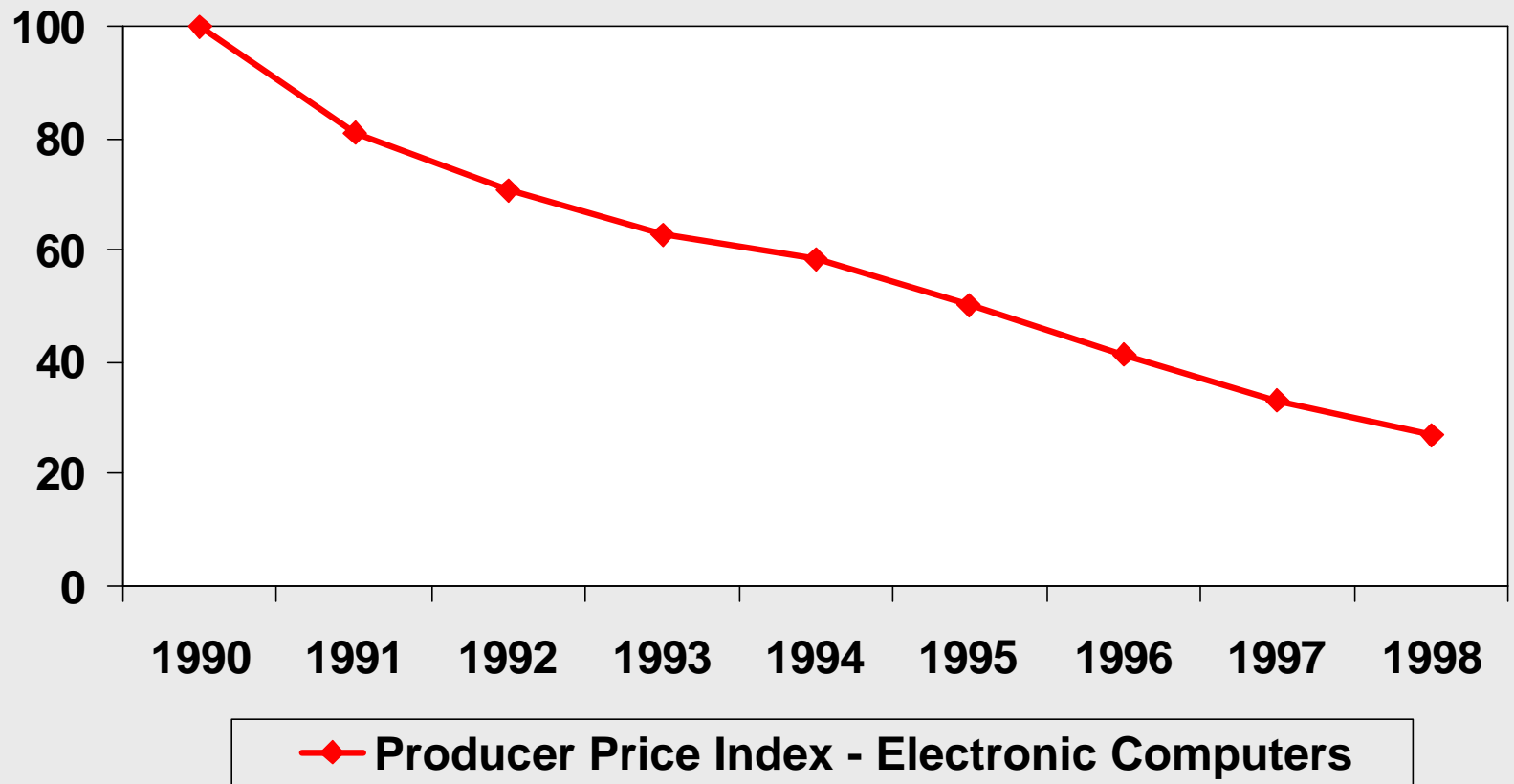




# The New Economy

## Declining Computing Costs

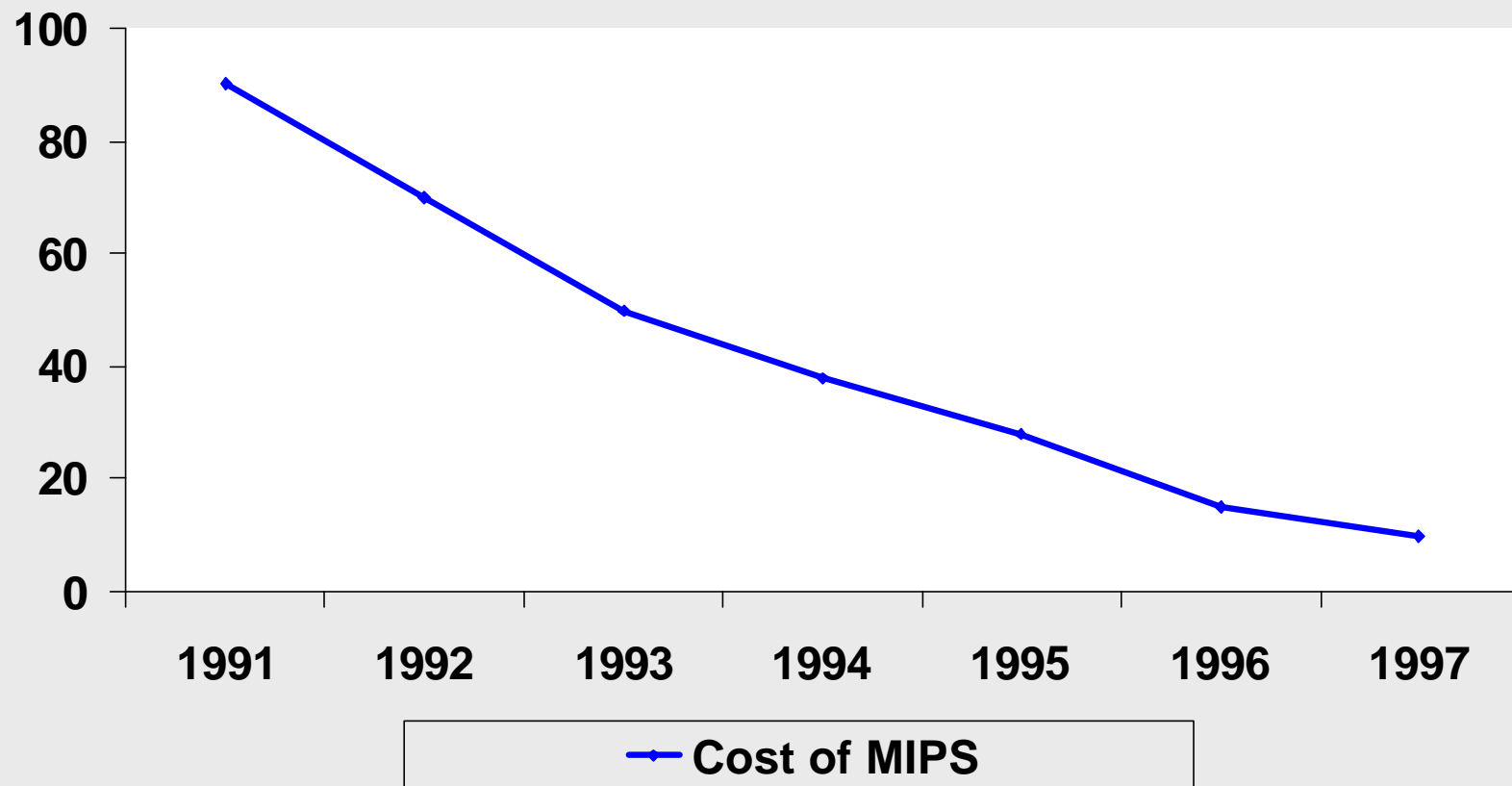
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# The New Economy

## Declining Computing Costs

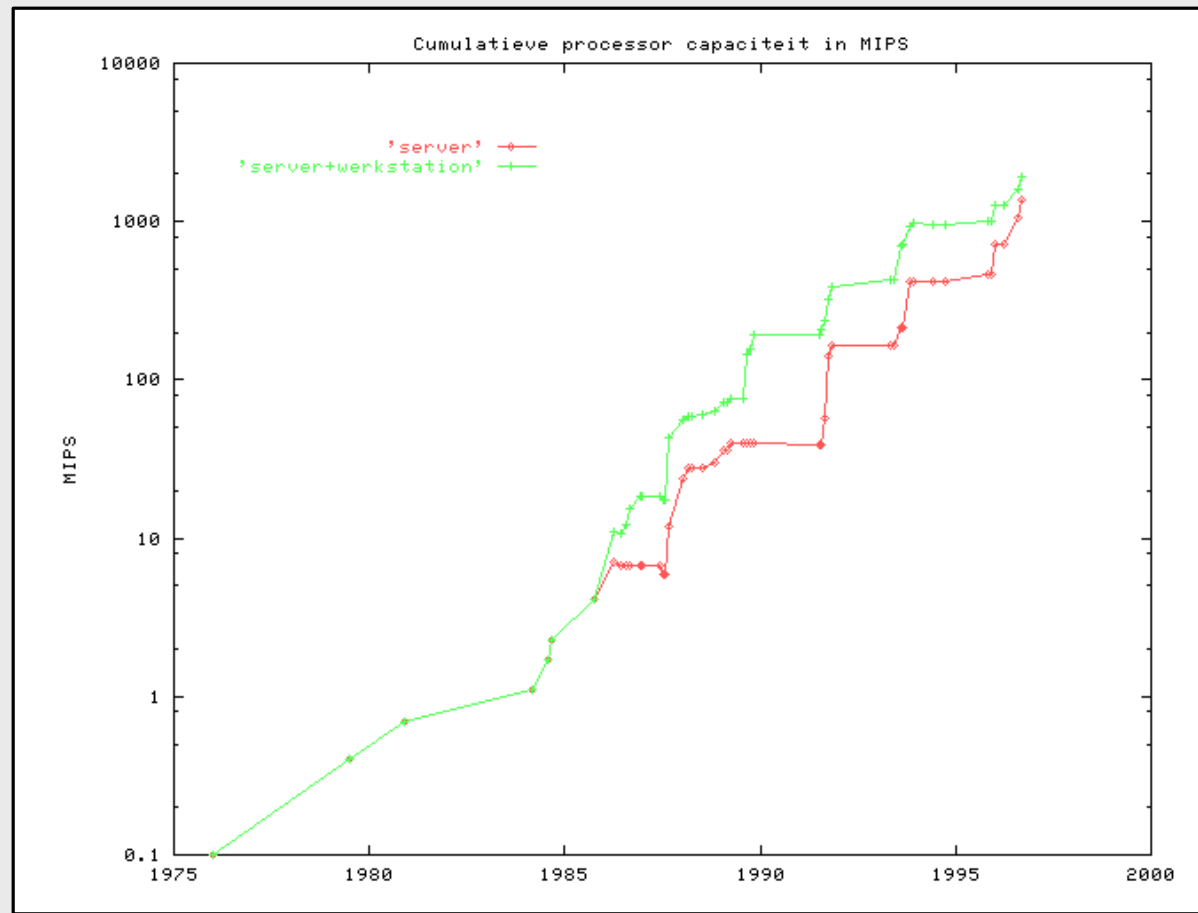
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# The New Economy

## Higher Computer Productivity

Cumulative Processor Capacity, in Mips (Logarithmic scale)



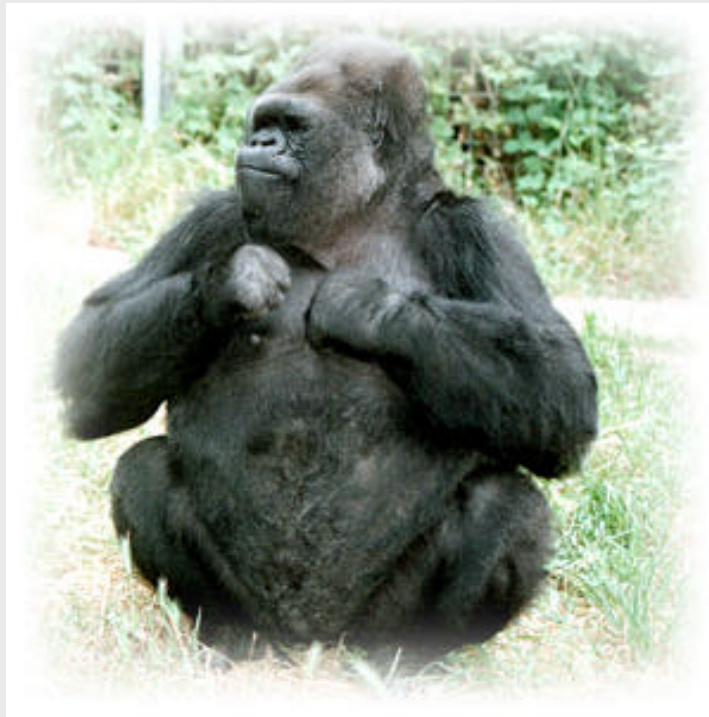
# Implications of the New Economy

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- **Computing is becoming a way of life.**
- **Pervading all aspects of business and consumer markets.**
- **Engine for the Internet will continue to explode.**
  - **New technologies and opportunities.**
  - **Ubiquitous platform.**
- **The Internet will change the way we live and do business.**

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## The Internet “Gorilla”

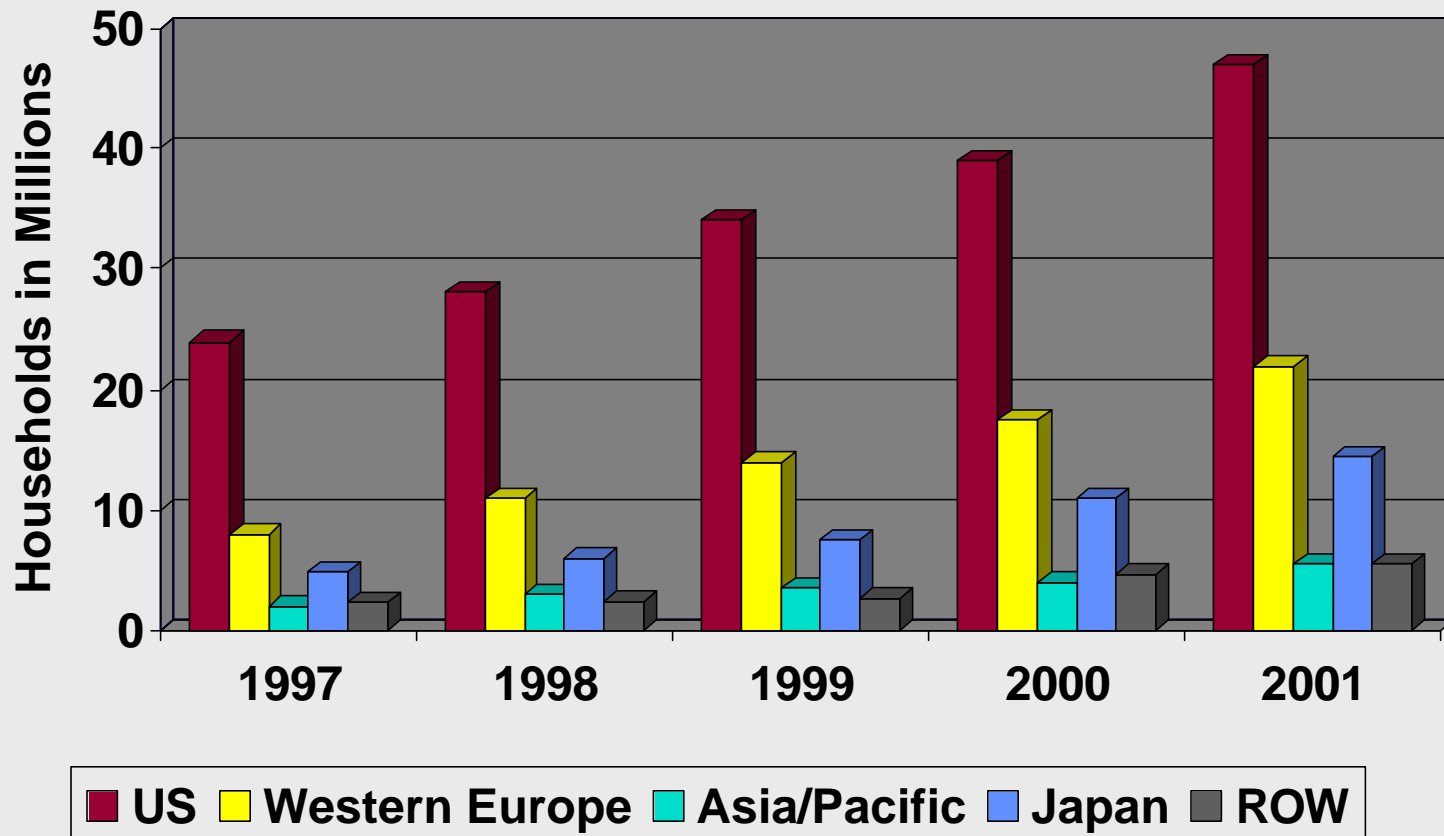


## Internet Soundbites

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- In 1998, business spent \$60 billion on products and services to develop their Internet presence.
- Internet traffic is doubling every 100 days.
- Business to business services estimated to be \$200 billion in 2002.
- Worldwide Internet commerce could top \$3.2 *trillion* in 2003.

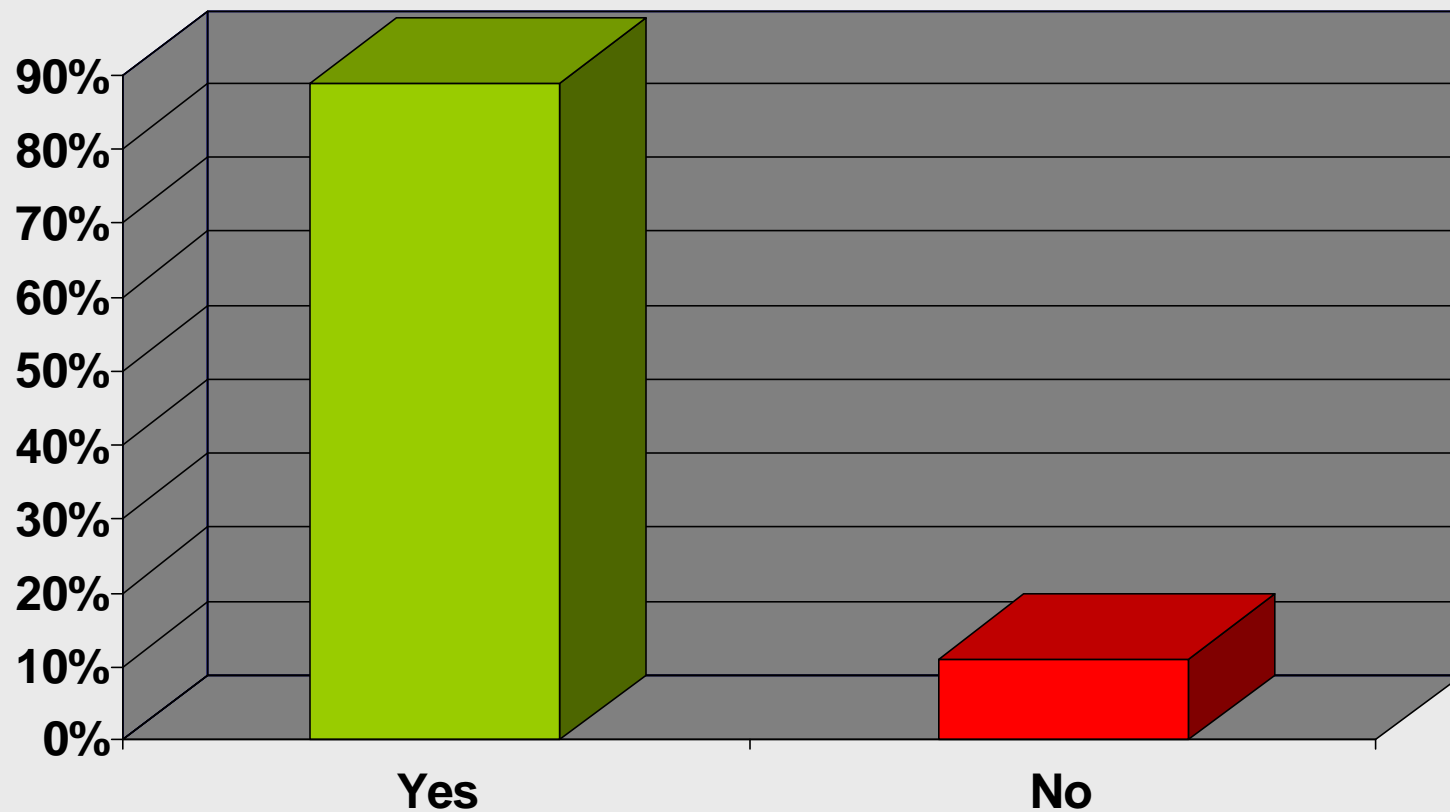
# Worldwide Online Households



# Online Purchase Intentions Accelerate in 1999

**“Do you expect to make an online purchase in 1999?”**

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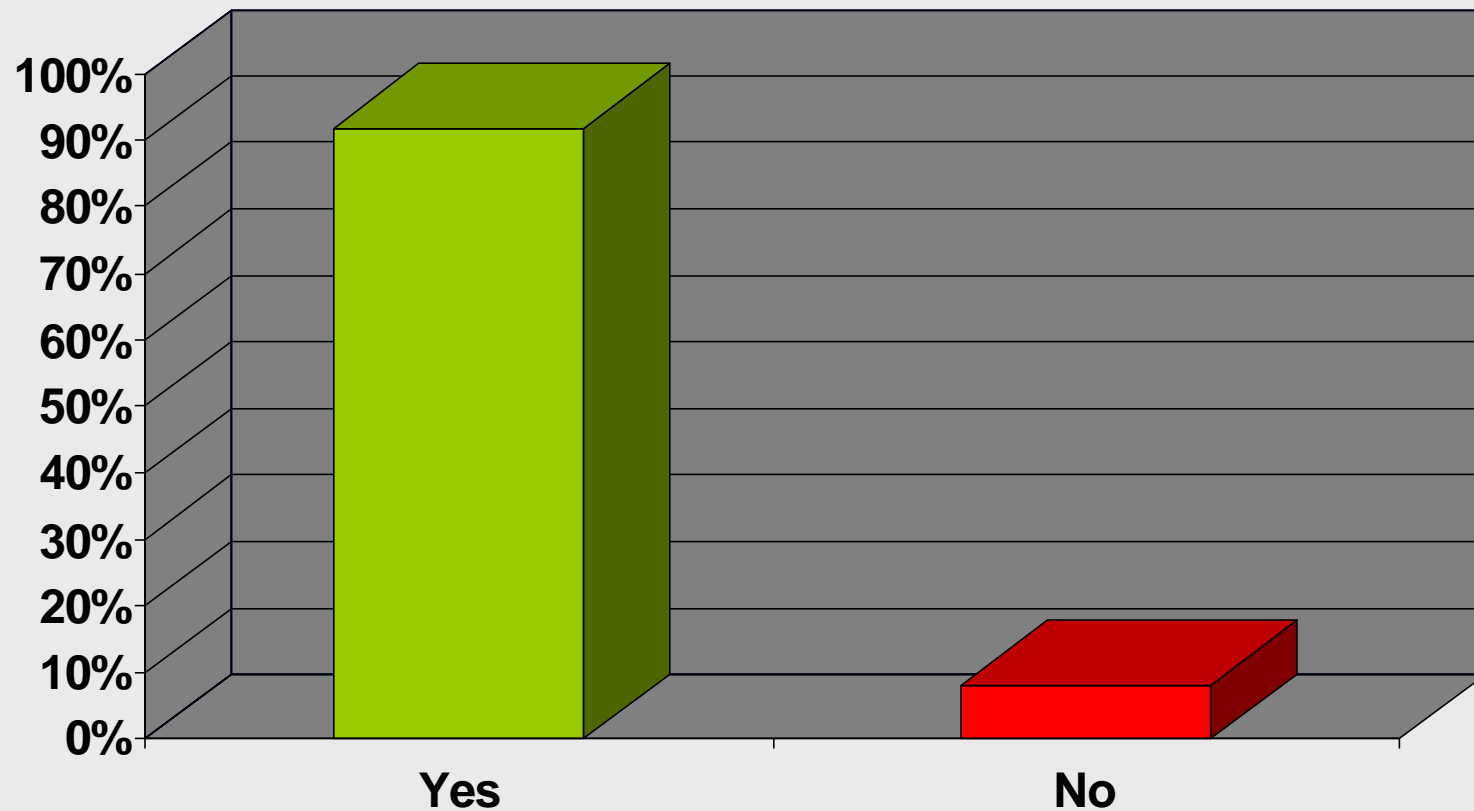




# Online Purchase Intentions Accelerate in 1999

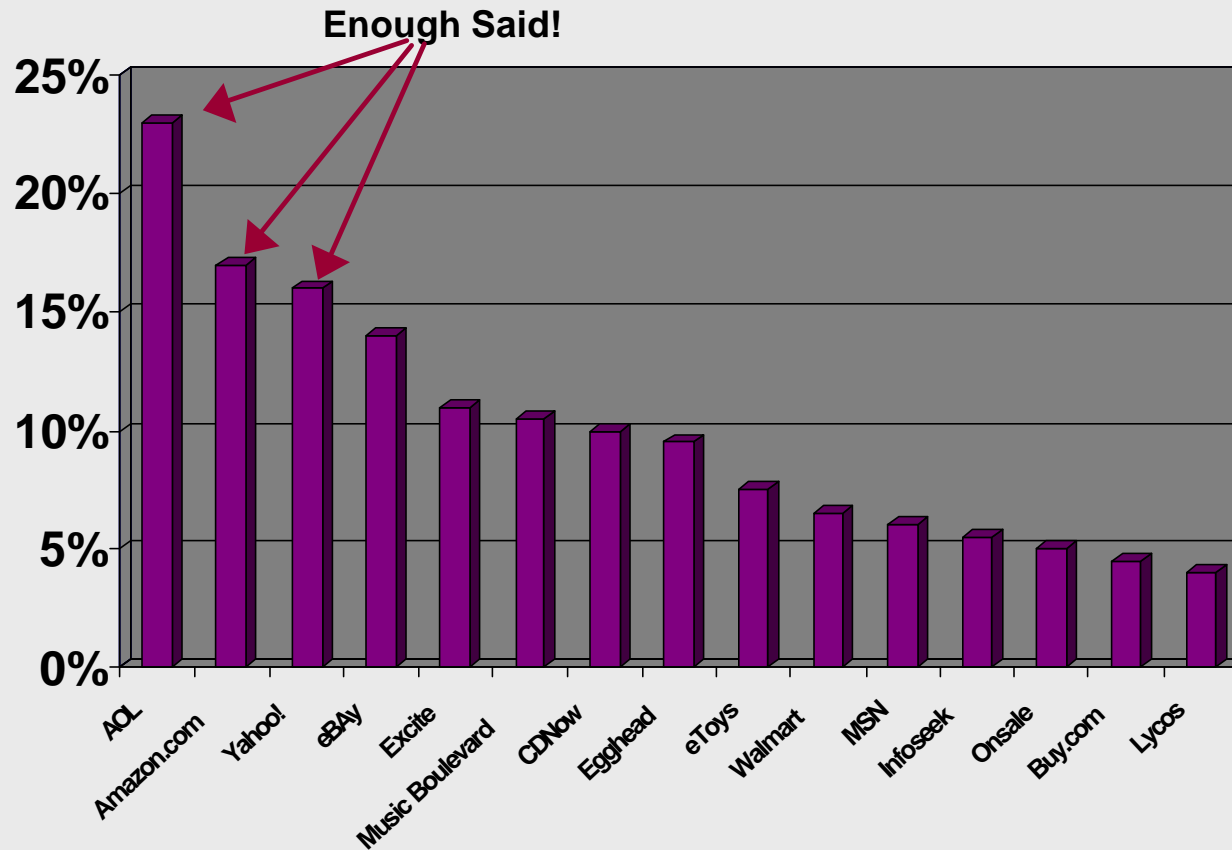
## “Do you research off line purchases online?”

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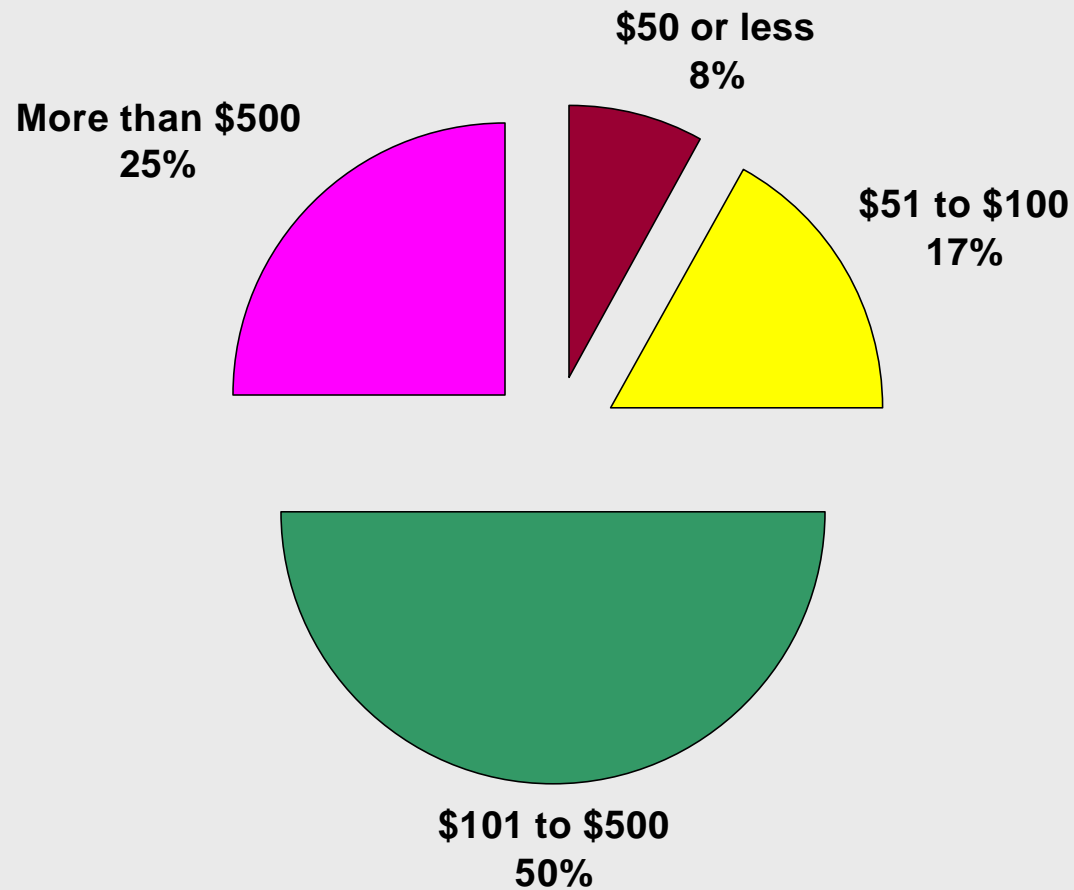
# Amazon, AOL, Yahoo!, And eBay Are The Leading Shopping Destinations

“Where have you made online purchases?”



# Consumer Spending Online

“How much do you expect to spend online in 1999?”



## **Bottom-Line on the Internet**

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- **The opportunity is real.**
- **The opportunity is of a dimension that exceeds the magnitude of the industrial revolution.**
  - **Will change the way goods and services are delivered.**
  - **Pervade every aspect of personal and business life.**
- **Estimates of potential market size might be “too-low!”**
- **Those who dominate the market will be “huge.”**
  - **Wave of hardware and software firms in computer industry created \$1 trillion in market value.**
  - **Internet will do the same.**

## **Add them all up and what do you get?**

---

- **Less Risk**
- **The New Business Model**
- **The New Economy**
- **The Internet “Gorilla.”**



## Valuation: Revisited

Believable!!



	1998	1999	2000	2001	2002	2003	2004
Sales	\$610.0	\$1,220.0	\$2,440.0	\$4,270.0	\$6,832.0	\$10,248.0	\$15,372.0
Net Income	-\$125.5	-\$314.8	-\$180.8	-\$12.4	\$207.1	\$512.4	\$768.6
Net Margin	-21%	-26%	-7%	0%	3%	5%	5%
Assets (NWC + FA)	-\$75.0	-\$101.7	-\$203.3	-\$355.8	-\$569.3	-\$854.0	-\$1,281.0
Change in Assets (NWC + FA)		-\$26.7	-\$101.7	-\$152.5	-\$213.5	-\$284.7	-\$427.0
Free Cash Flow		-\$288.1	-\$79.1	\$140.1	\$420.6	\$797.1	\$1,195.6
Present Value at:	\$30,657.31						
Discount Rate	12%						
Growth rate after 2008	10%						

### Assumption:

Sales Growth Rate	100%	100%	75%	60%	50%	50%
NWC+FA/Sales	-8.3%	-8.3%	-8.3%	-8.3%	-8.3%	-8.3%

Assume no significant depreciation

Aggressive growth assumptions

Same Margins as Base Case

# Lessons

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- **Internet is far from overvalued.**
- **Financial markets are a different beast.**
- **The Internet can, has, and will change the way people do business.**
- **If anything, the recent sell-off of Internet stocks has made them a good buy.**