

Introduction to Real Estate Economics and Cycle Analysis

Presented to

Asset Management Group

Presented by

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OUTLINE

- **Introduction**
- **Real Estate Portfolio Theory**
- **Supply and Demand Analysis**
- **Real Estate Cycle Theory**
- **Current Economic Indicators**



INTRODUCTION

Real Estate in a Social, Cultural and Economic Context

Interdisciplinary/Cross-Sectional Approach to Real Estate Market Analysis:

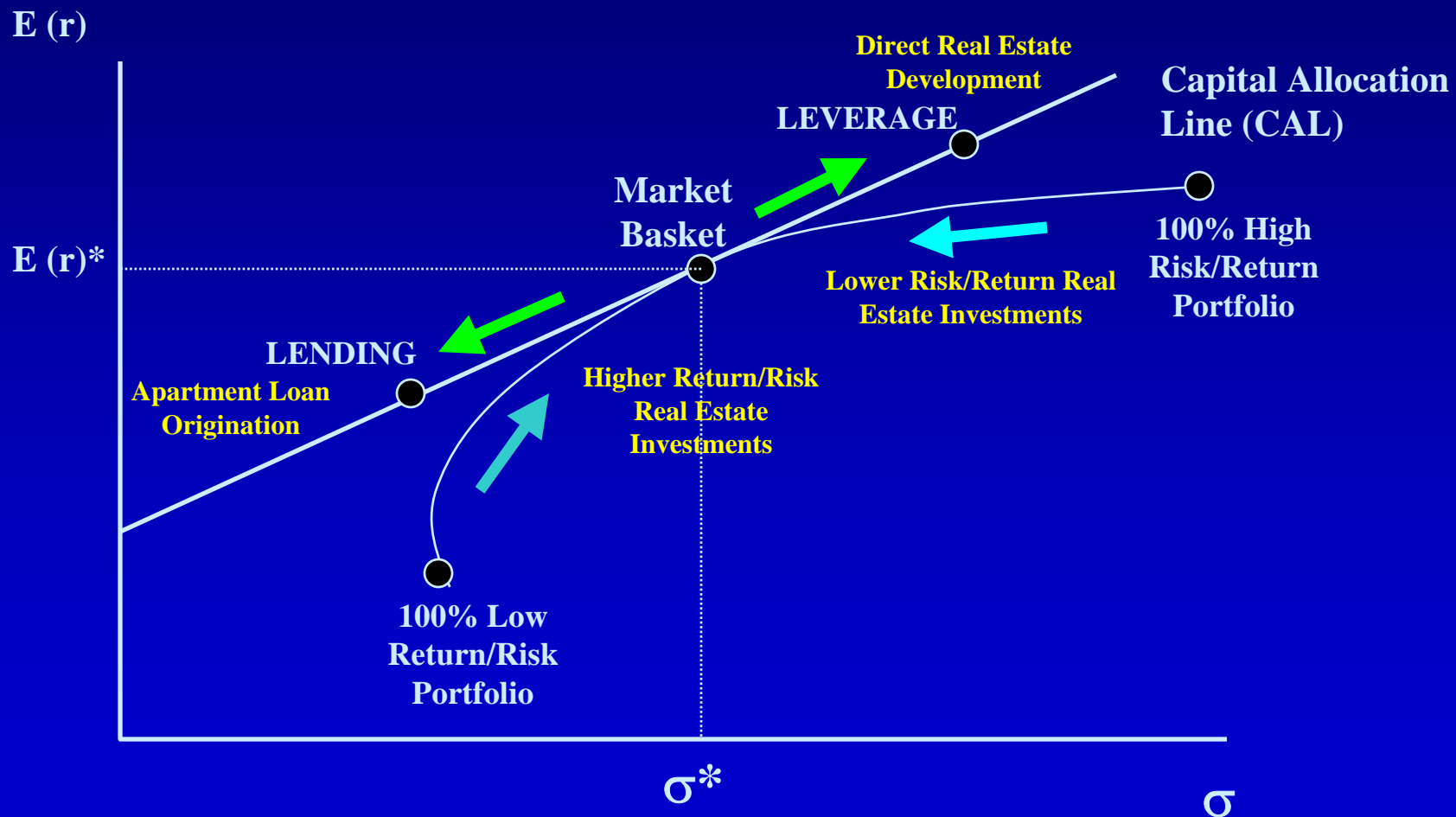
- Biological/Physiological/Psychological
- Philosophical Systems
- Legal Systems
- Political Systems
- Economic Systems
- Financial Systems



PORTFOLIO THEORY

Institutional Real Estate Capital Allocation Line

Movements Along the Efficient Frontier



Applications In Portfolio Theory

Balanced Conditions for Long Periods:

- LA/Orange County/Riverside
- San Diego
- Bay Area
- Seattle

- Low Vacancy Rates
- High Effective Rents
- Prices Above Replacement
- Job Growth
- In-Migration
- Housing Demand
- Positive Net Absorption

Modest Conditions of Over/Under Supply:

- Sacramento
- Salt Lake City
- Portland
- Denver

Risk-Adjusted Rate of Return 1986-2000			
<u>Metro</u>	<u>Average Annual Return</u>	<u>Standard Deviation</u>	<u>Risk-Adjusted Rate of Return</u>
Orange County	13.4%	7.6%	1.7
SF Bay Area	15.5%	8.8%	1.7
Seattle	14.3%	9.3%	1.5
San Diego	13.7%	9.4%	1.4
Los Angeles	14.4%	9.9%	1.4
Sacramento	13.8%	11.0%	1.3
Denver	12.0%	11.2%	1.3
Portland	12.5%	10.0%	1.3
Salt Lake City	13.0%	11.0%	1.2
Phoenix	14.1%	11.4%	1.2
Tucson	14.1%	11.4%	1.2
Riverside	11.6%	11.9%	1.0
Las Vegas	5.1%	6.6%	0.8
Albuquerque	2.4%	4.4%	0.5

Risk-Adjusted Rates of Return are calculated by dividing the Total Average Annual Rate of Return by the Standard Deviation (Risk) for each metro area.

The Risk-Adjusted Rate of Return measures the amount of return for each unit of risk. For example Orange County provides 1.7 units of return for each unit of risk.

Total Returns are calculated by the year-over-year change in sales price per square foot on a quarterly basis (Capital Appreciation) plus the annualized cap rate (Income Return) per quarter.

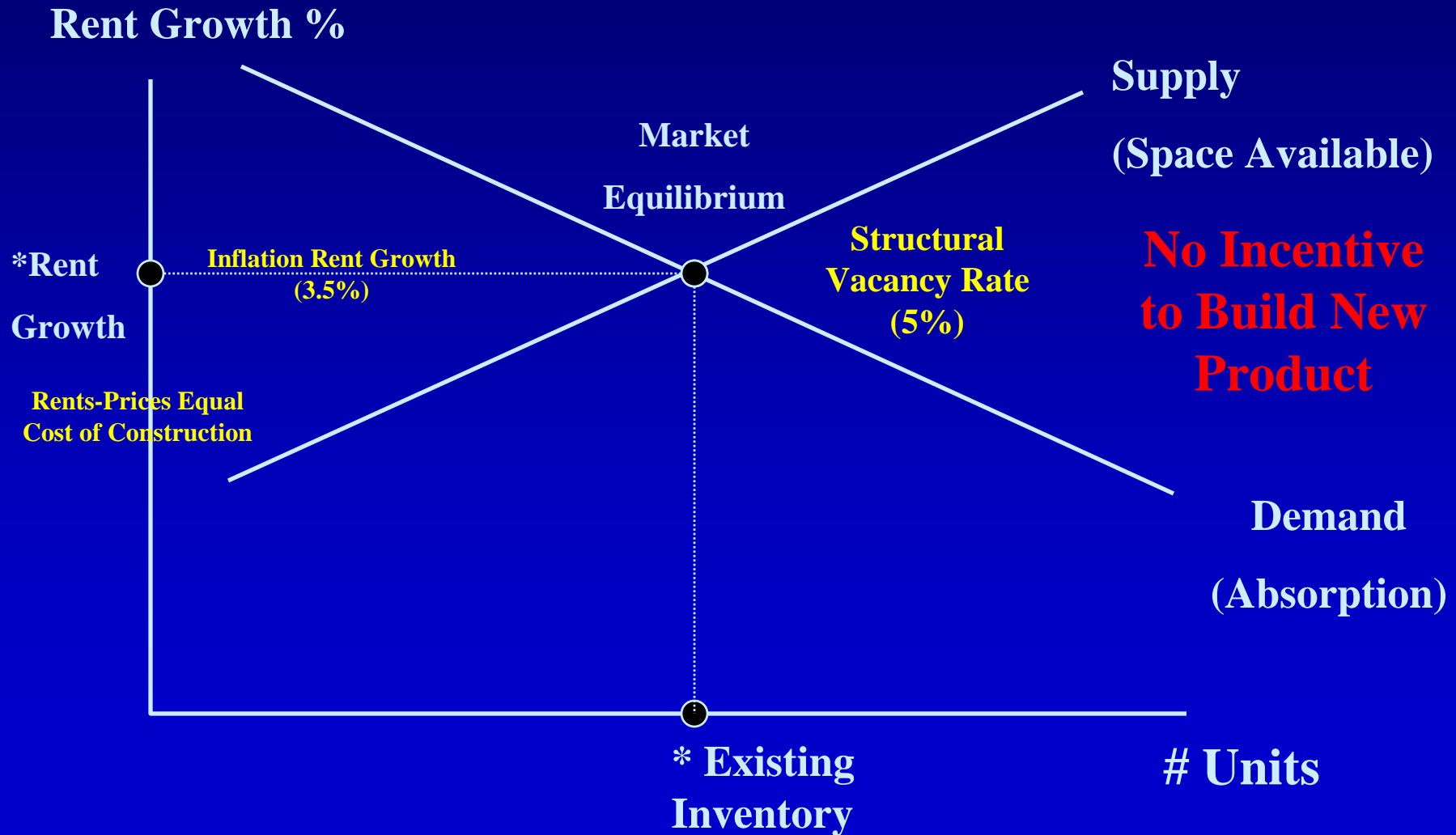
Sources: National Real Estate Index (NREI) and BRE Properties Research Department



SUPPLY AND DEMAND ANALYSIS

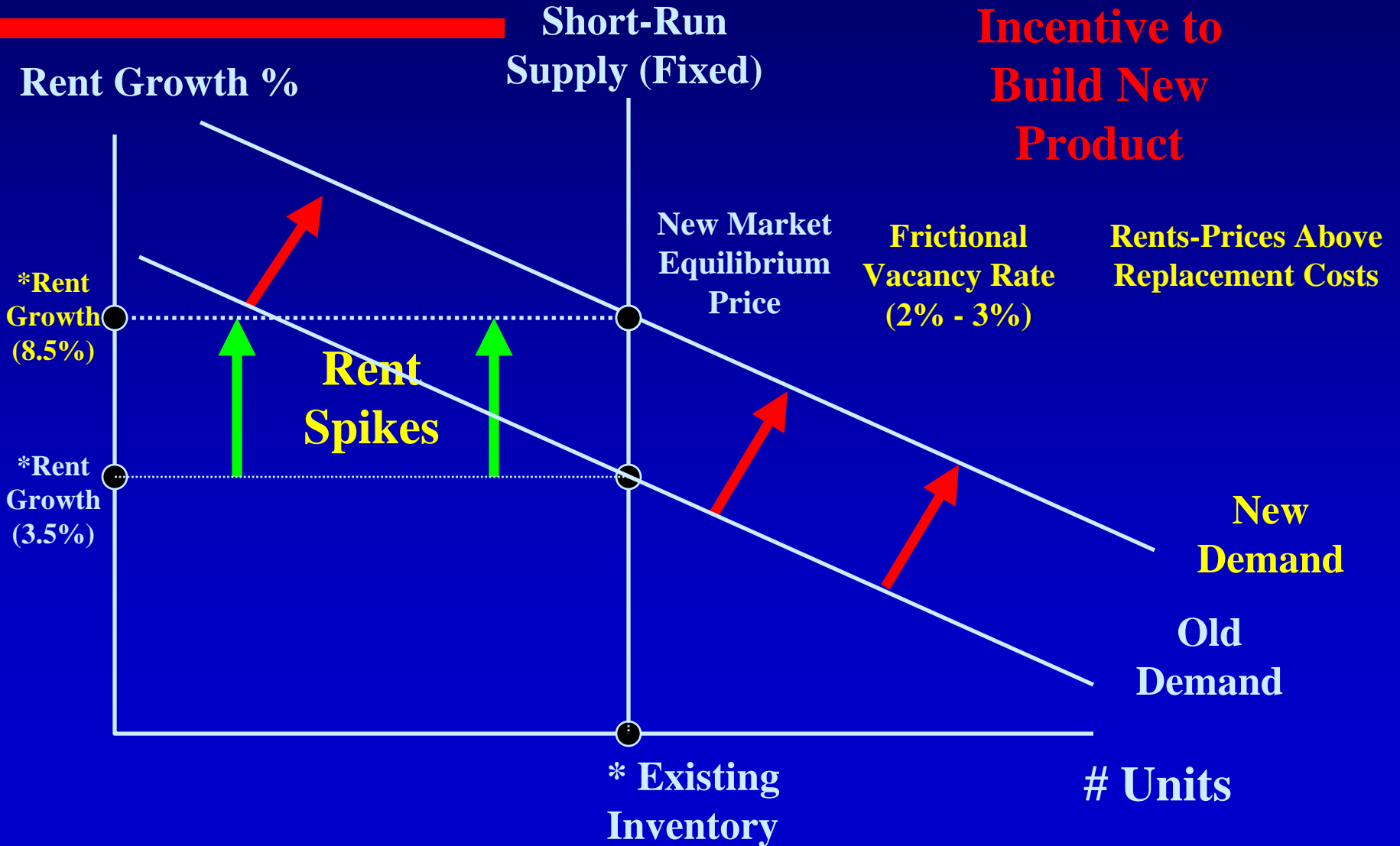
Real Estate Supply and Demand Analysis

Long-Run Market Equilibrium



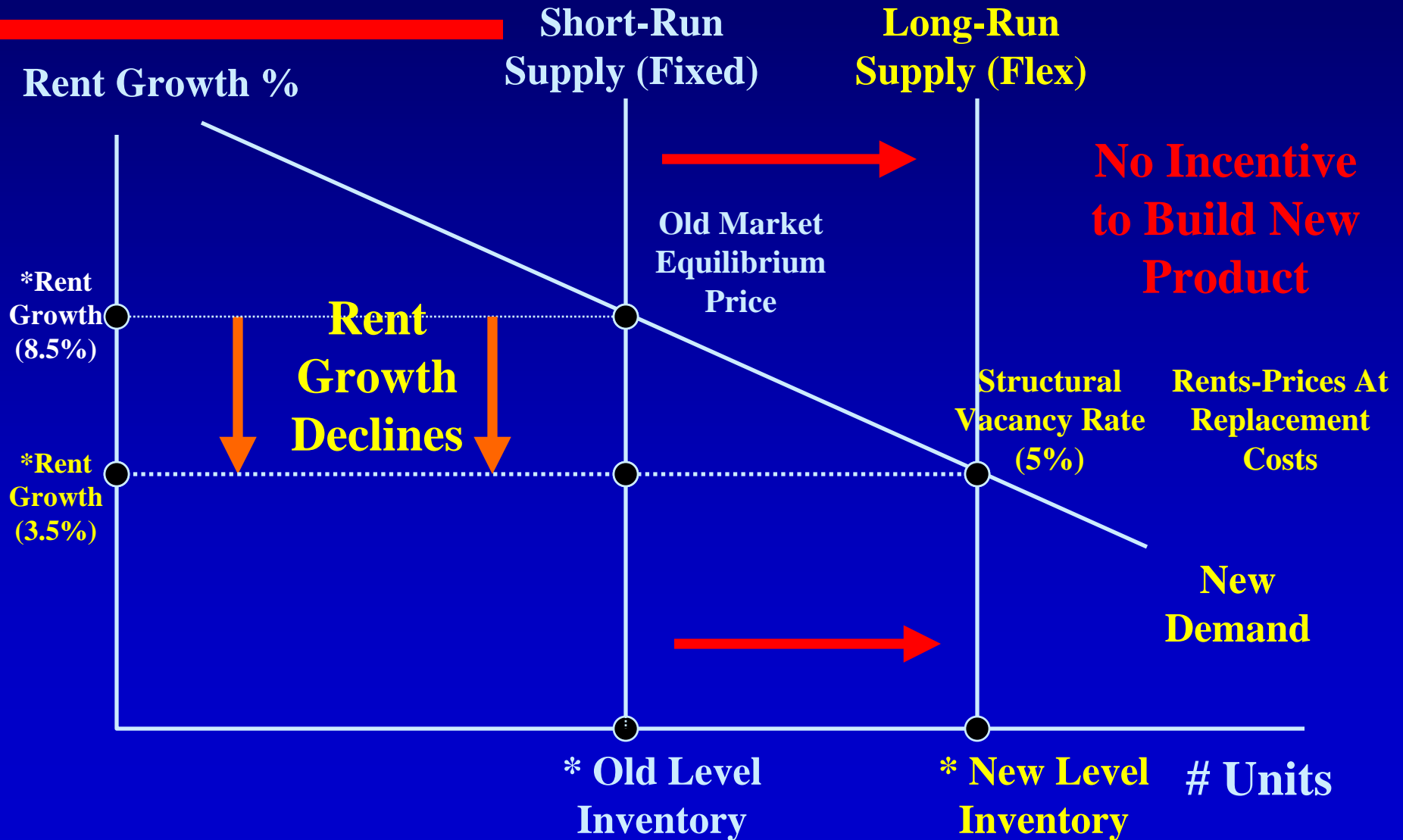
Real Estate Supply and Demand Analysis

Short-Run Supply Conditions with Employment Demand Shock



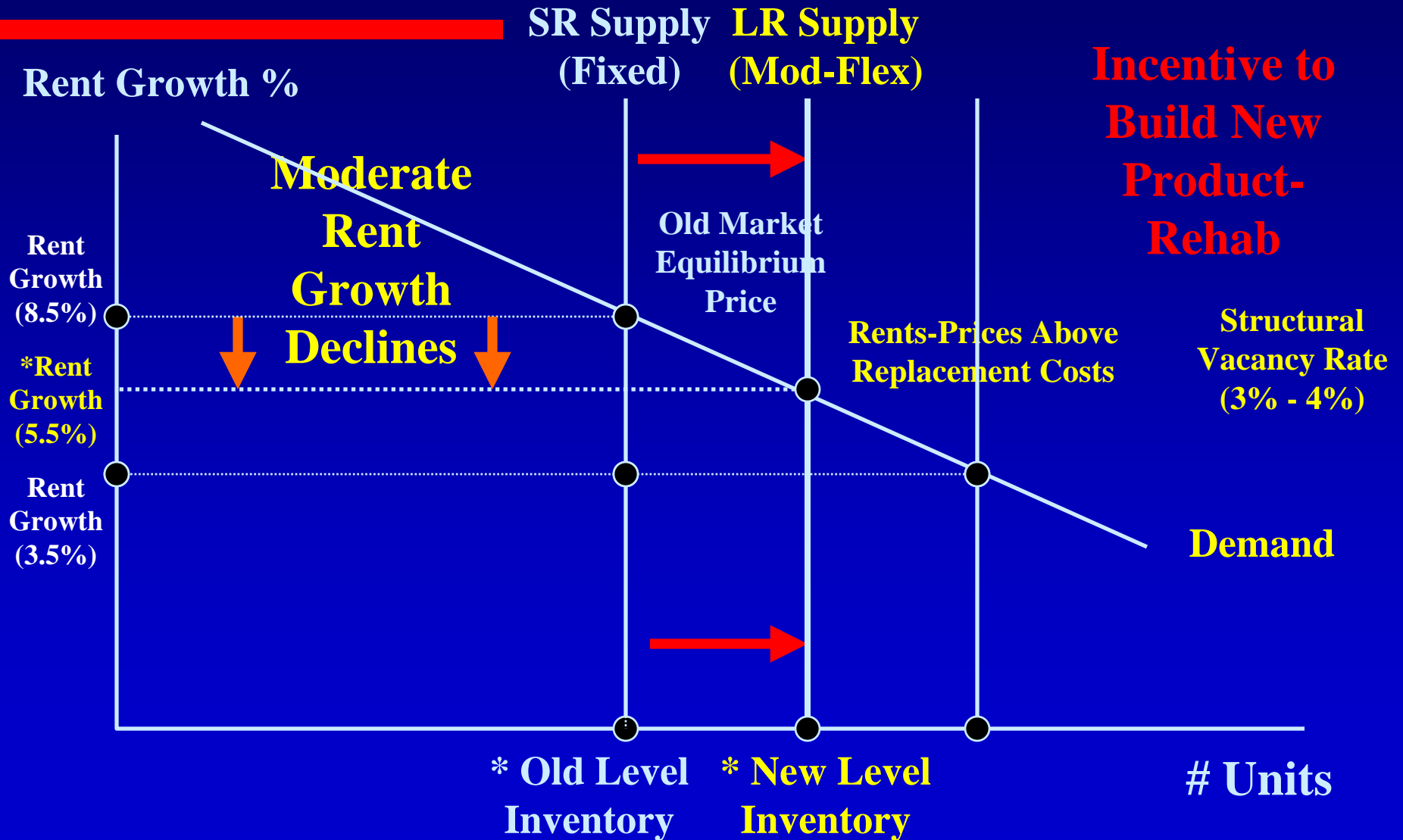
Real Estate Supply and Demand Analysis

Long-Run Supply Response



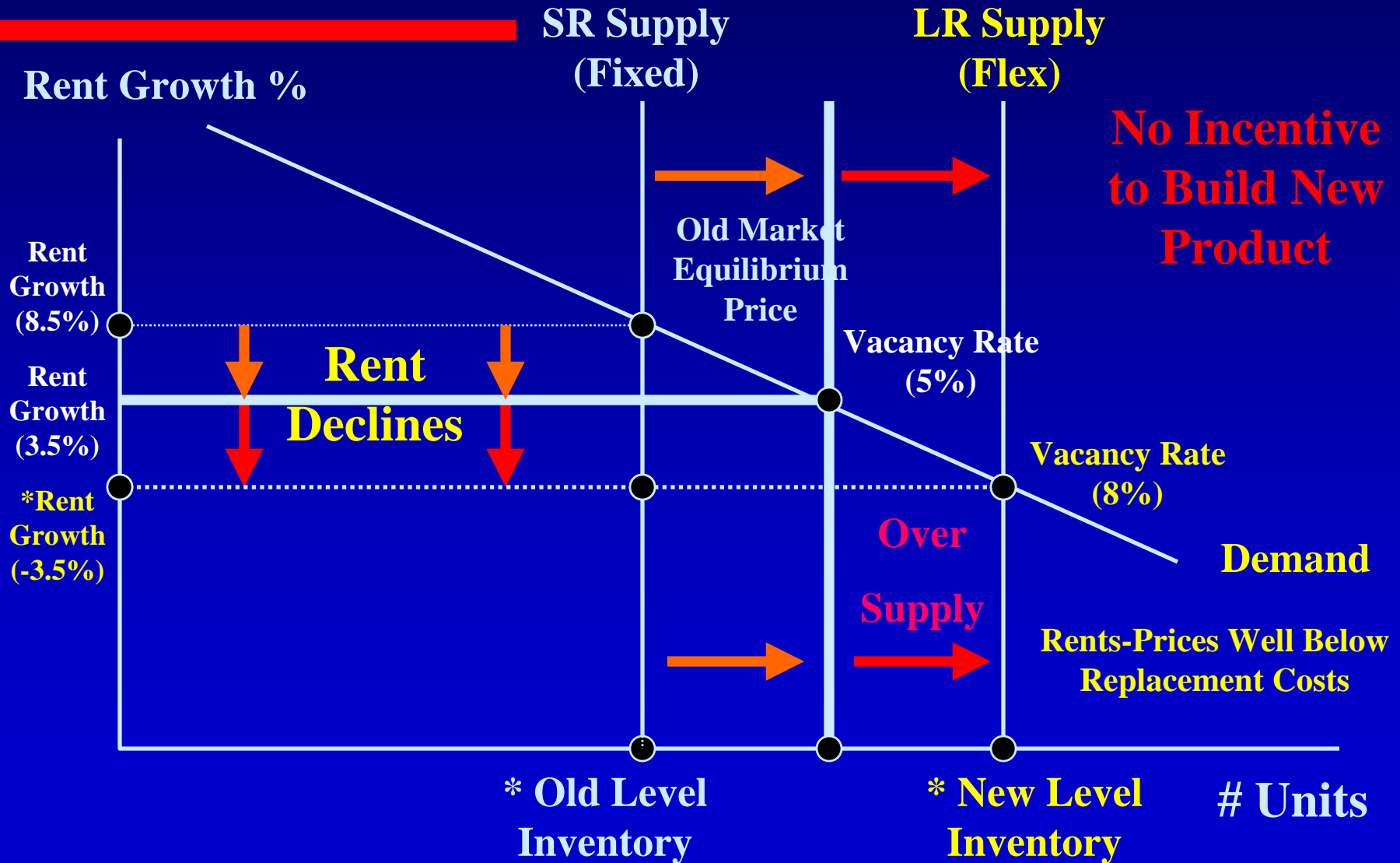
Real Estate Supply and Demand Analysis

Long-Run Supply Response in Supply Constrained Markets



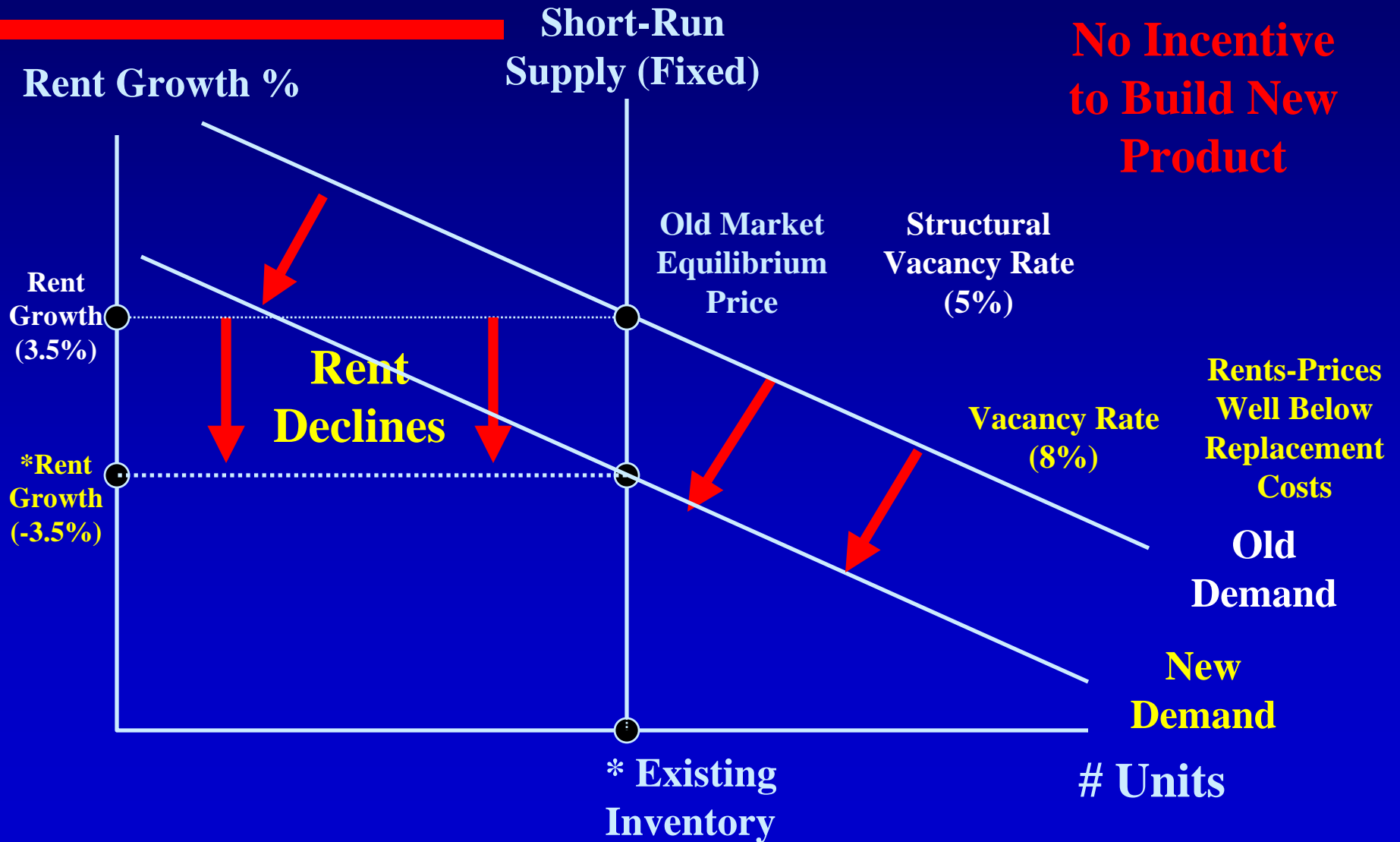
Real Estate Supply and Demand Analysis

Long-Run Supply Response in Supply Unconstrained Markets



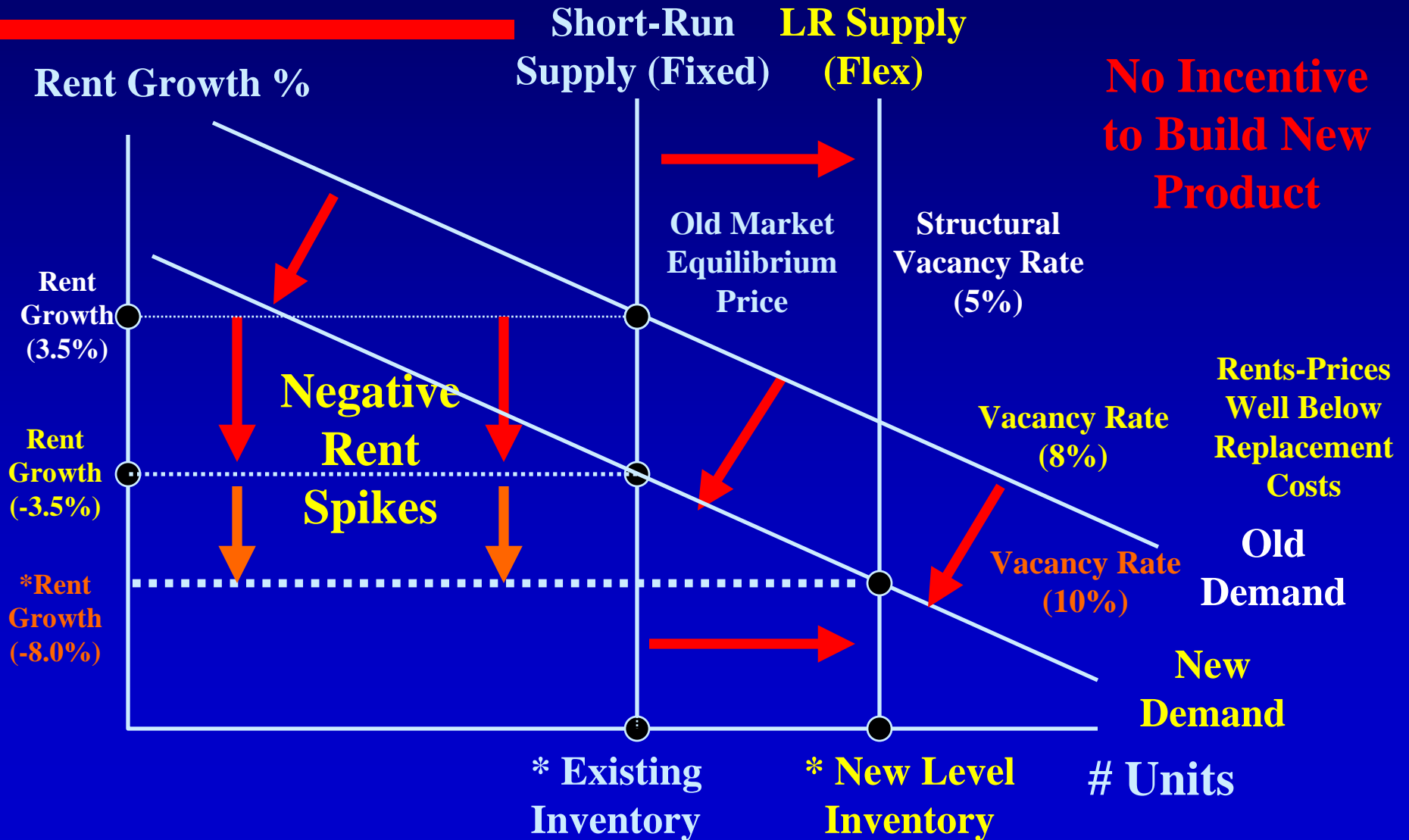
Real Estate Supply and Demand Analysis

Short-Run Supply Conditions with Negative Employment Demand Shock



Real Estate Supply and Demand Analysis

Long-Run Supply Response with Negative Employment Demand Shock

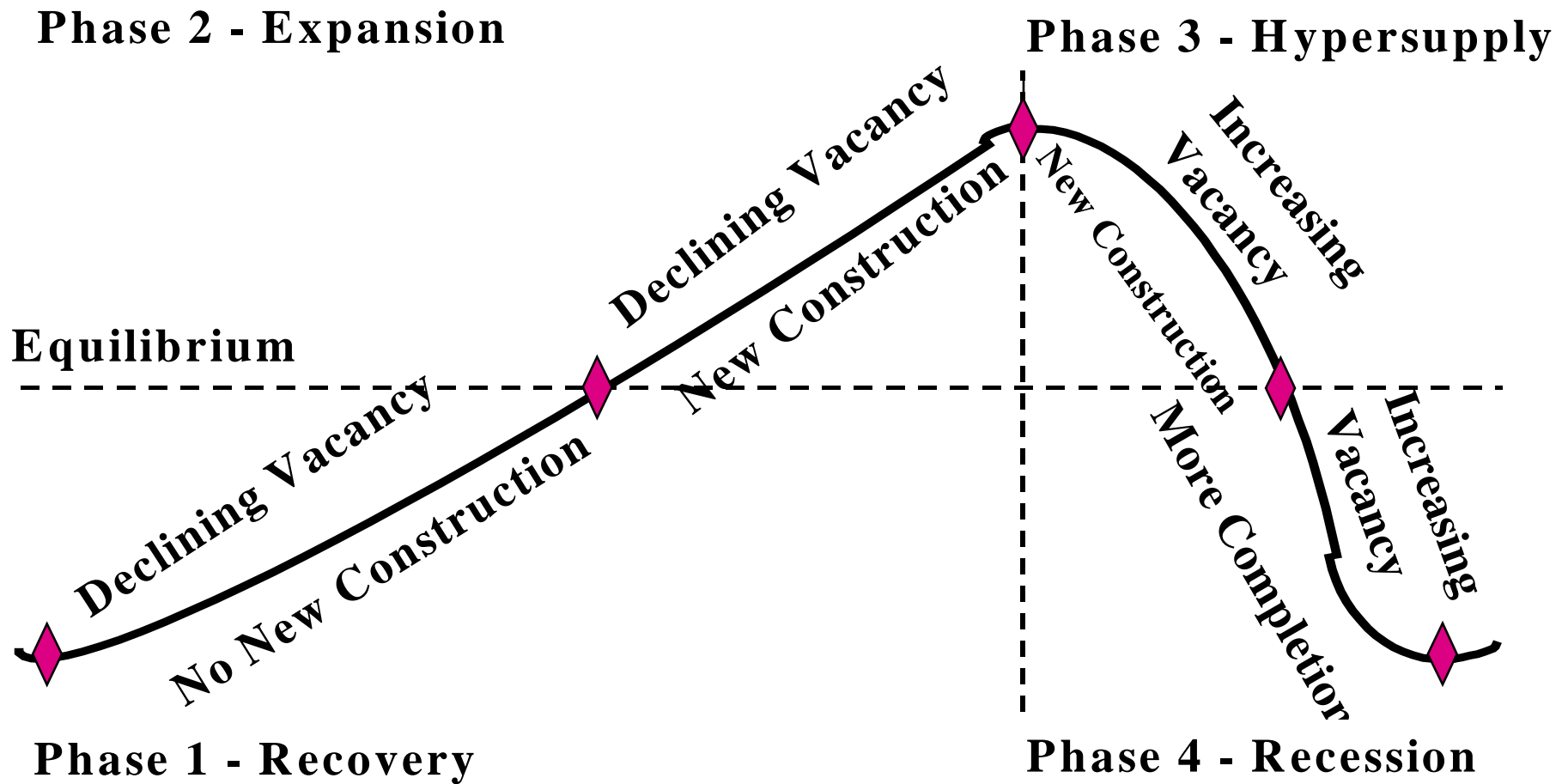




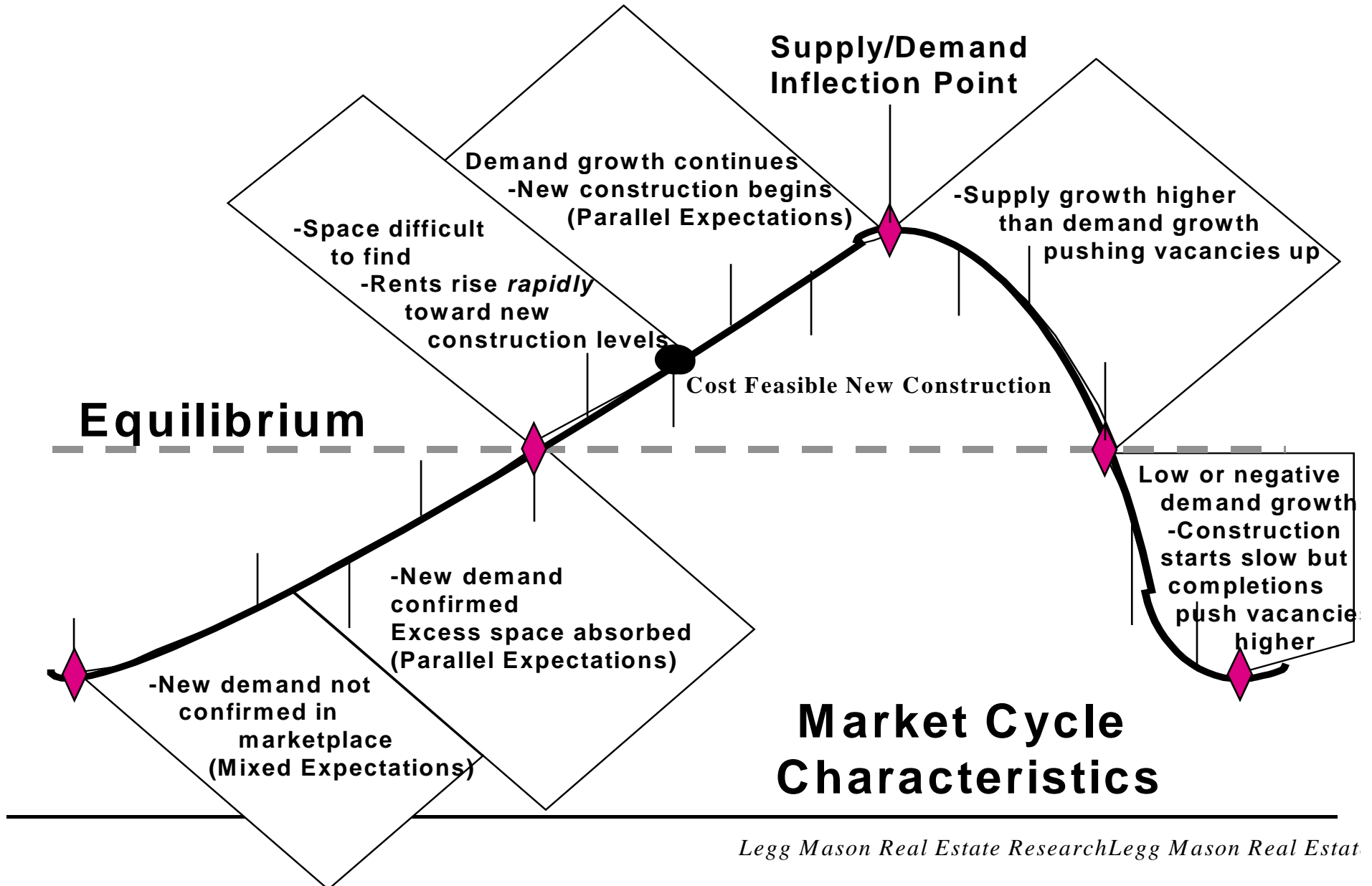
REAL ESTATE CYCLE THEORY

Real Estate Cycle Theory

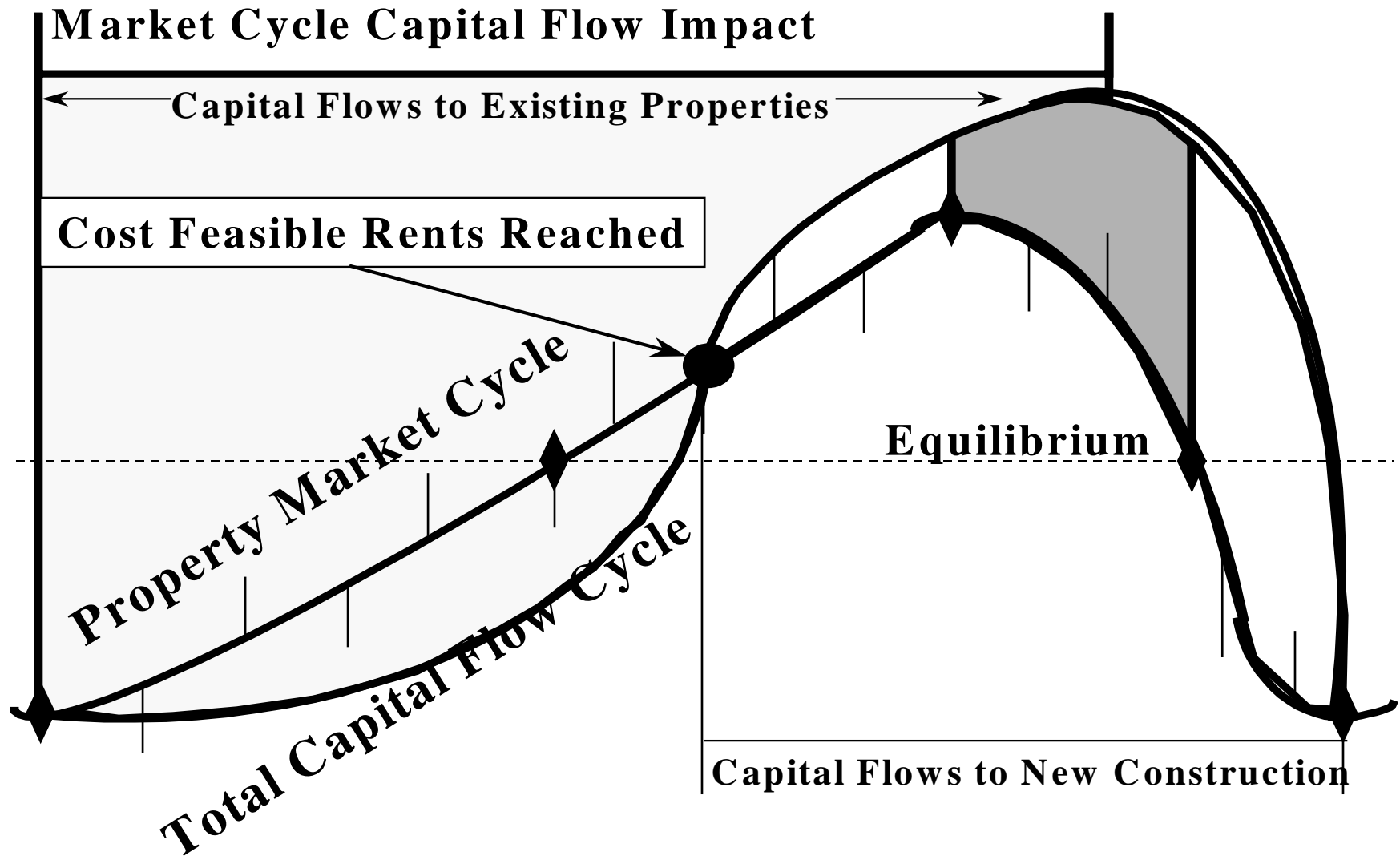
Market Cycle Quadrants



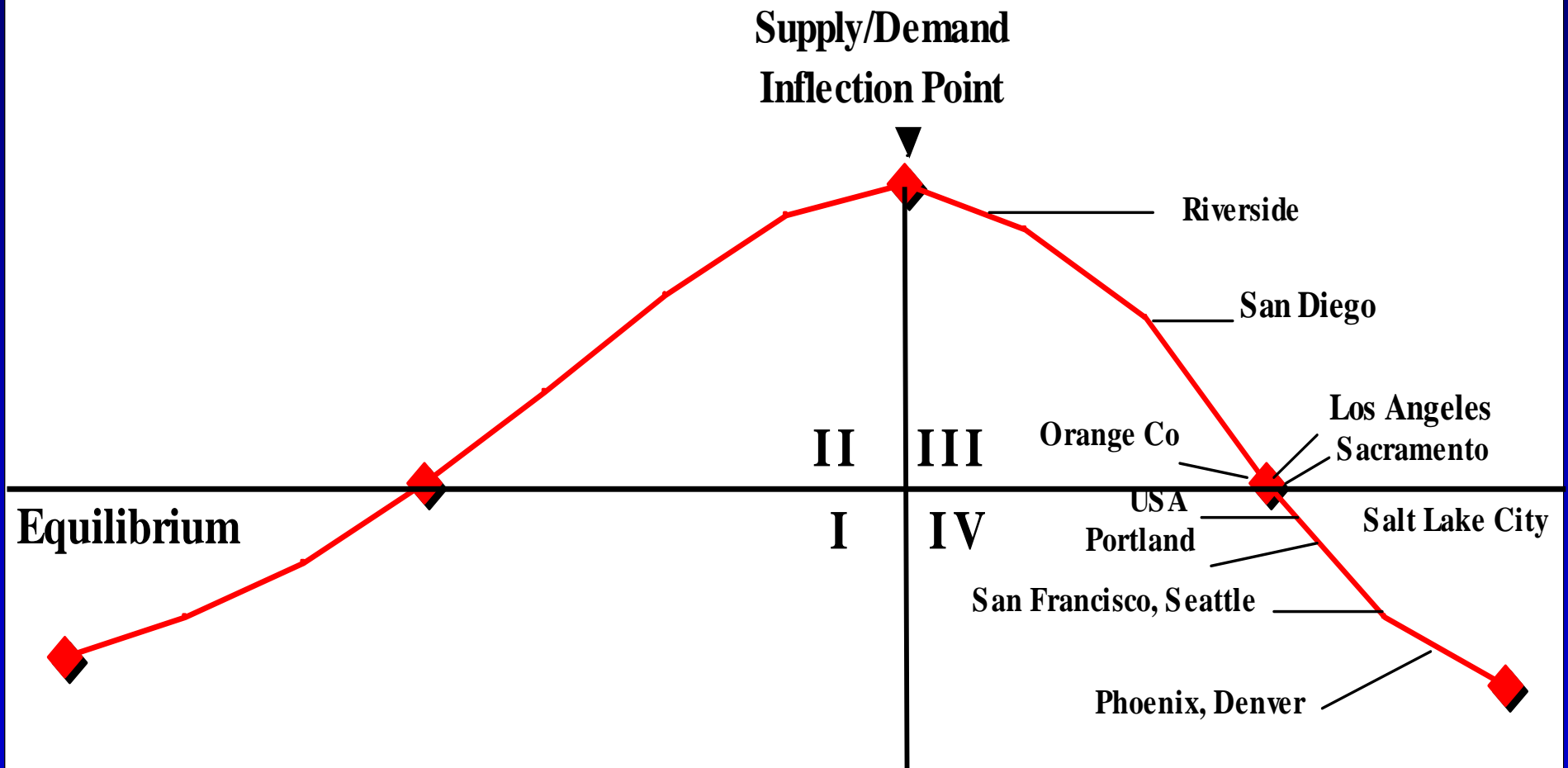
Real Estate Cycle Theory



Real Estate Cycle Theory



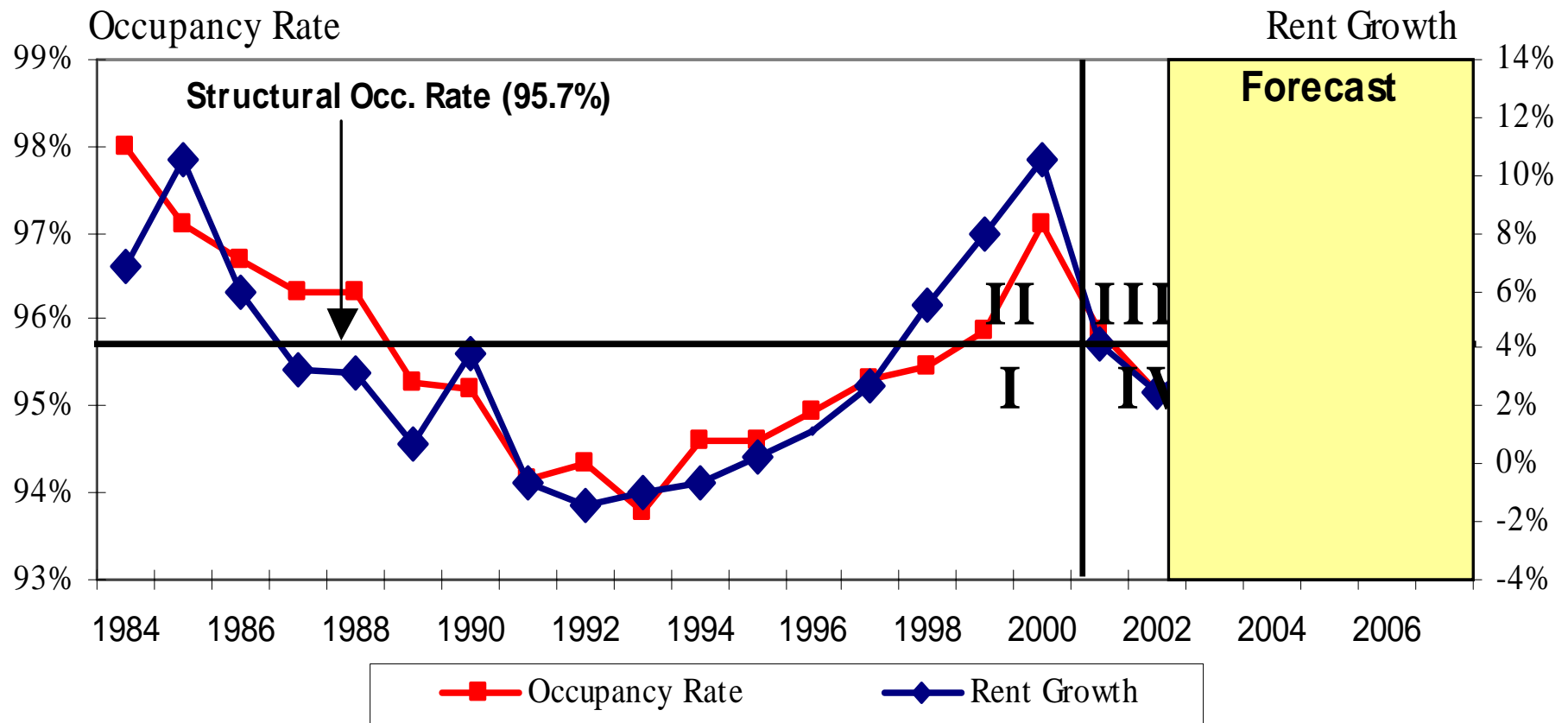
Applications Real Estate Cycle Theory



Source: M/PF Research Inc., Real Facts, Inc, REIS Reports, Inc. and BRE Properties Research Department.

Applications Real Estate Cycle Theory

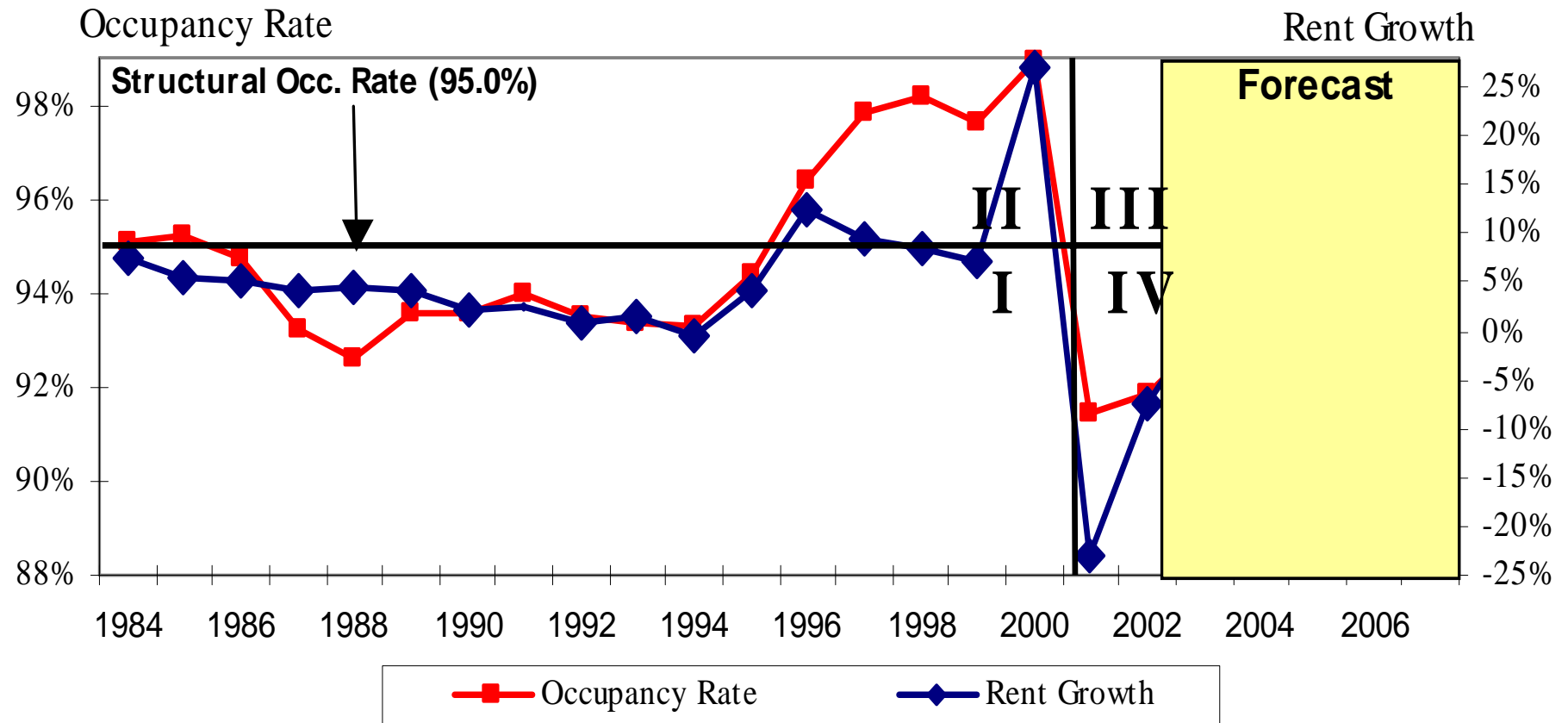
Los Angeles



Source: M/PF Research Inc., Real Facts, Inc, REIS Reports, Inc. and BRE Properties Research Department.

Applications Real Estate Cycle Theory

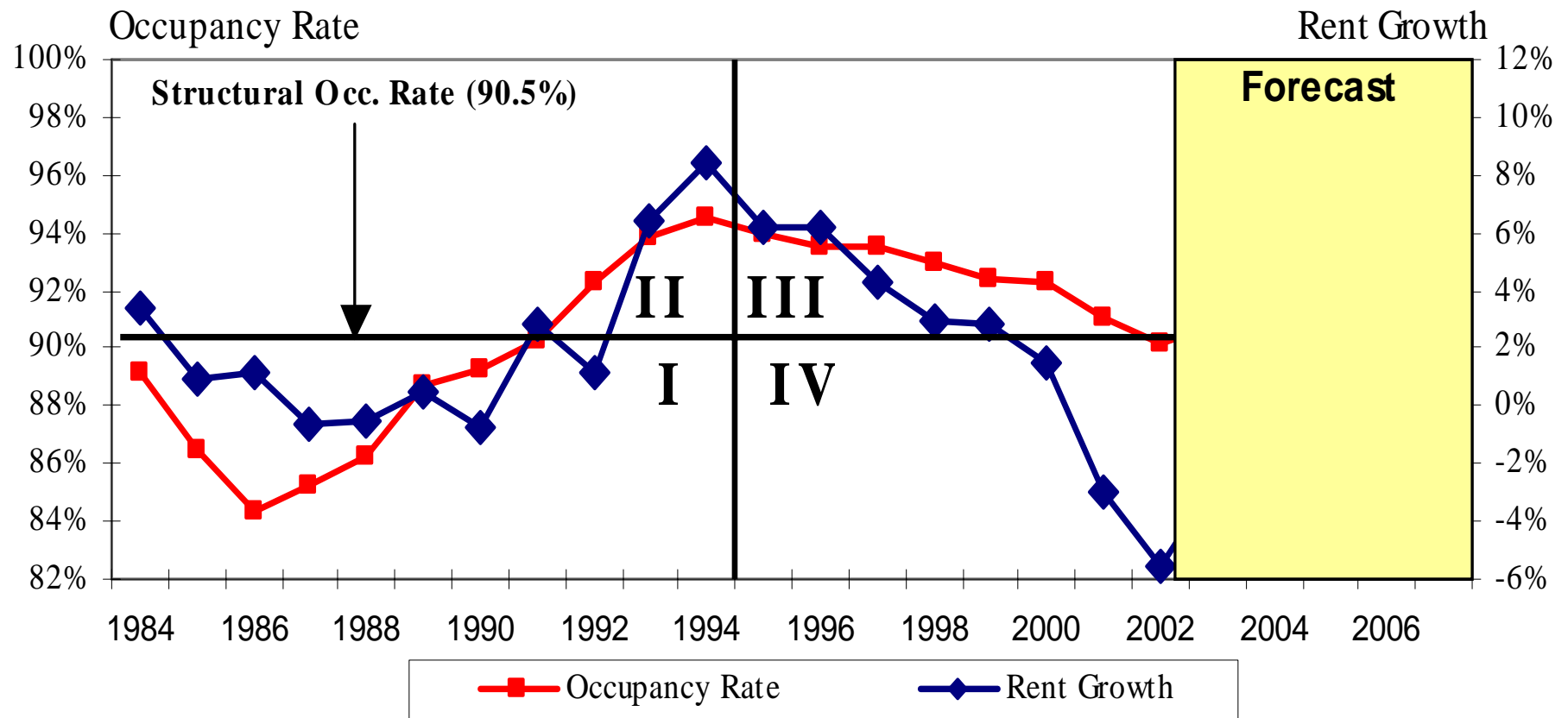
San Francisco



Source: M/PF Research Inc., Real Facts, Inc, REIS Reports, Inc. and BRE Properties Research Department.

Applications Real Estate Cycle Theory

Phoenix



Source: M/PF Research Inc., Real Facts, Inc, REIS Reports, Inc. and BRE Properties Research Department.

Applications Real Estate Cycle Theory

Apartment Occupancy Rate Cycles

Metro Area	Peak-to-Peak	Peak-to-Trough	Trough-to-Trough	Trough-to-Peak
Supply Constrained Markets				
NOTE: Dates are approximate and do not represent the exact beginning or ending of cycles.				
Los Angeles	2000 to 2017 17 years	2000 to 2008 8 years	1993 to 2008 15 years	1993 to 2000 7 years
Orange County	1998 to 2013 15 years	1998 to 2004 6 years	1992 to 2004 12 years	2004 to 2010 6 years
Portland	1995 to 2004 9 years	1995 to 2000 5 years	1991 to 2000 9 years	2000 to 2004 4 years
Salt Lake City	1995 to 2007 12 years	1995 to 2000 5 years	1988 to 2000 12 years	2000 to 2007 7 years
San Diego	1998 to 2013 15 years	1998 to 2002 4 years	1987 to 2002 15 years	2002 to 2013 11 years
S.F. Bay Area	1996 to 2010 14 years	1996 to 2003 7 years	1988 to 2003 15 years	2003 to 2010 7 years
Seattle	1997 to 2005 8 years	1997 to 2001 4 years	1993 to 2001 8 years	2001 to 2005 4 years
Average Duration in Years	1995 to 2008 13 years	1995 to 2002 7 years	1990 to 2002 12 years	2001 to 2008 7 years

Applications Real Estate Cycle Theory

Metro Area	Peak-to-Peak	Peak-to-Trough	Trough-to-Trough	Trough-to-Peak
Supply-Unconstrained Markets				
NOTE: Dates are approximate and do not represent the exact beginning or ending of cycles.				
Denver	1994 to 2008 14 years	1994 to 2000 6 years	1986 to 2000 14 years	2000 to 2008 8 years
Phoenix	1994 to 2008 14 years	1994 to 2000 6 years	1986 to 2000 14 years	2000 to 2008 8 years
Riverside	1993 to 2002 9 years	2002 to 2008 6 years	1997 to 2007 10 years	1997 to 2002 5 years
Sacramento	1995 to 2008 13 years	1995 to 2001 6 years	1989 to 2001 12 years	2001 to 2008 7 years
Average Duration in Years	1994 to 2005 11 years	1994 to 2001 7 years	1990 to 2001 11 years	2001 to 2005 4 years

Notes: A Peak represents top of an occupancy cycle and a Trough represents the bottom of an occupancy cycle.

Source: MP/F Research, RealFacts, RealSource, REIS Reports, Marcus & Millichap, Clayton-fillmore, ULI, and BRE Propertie

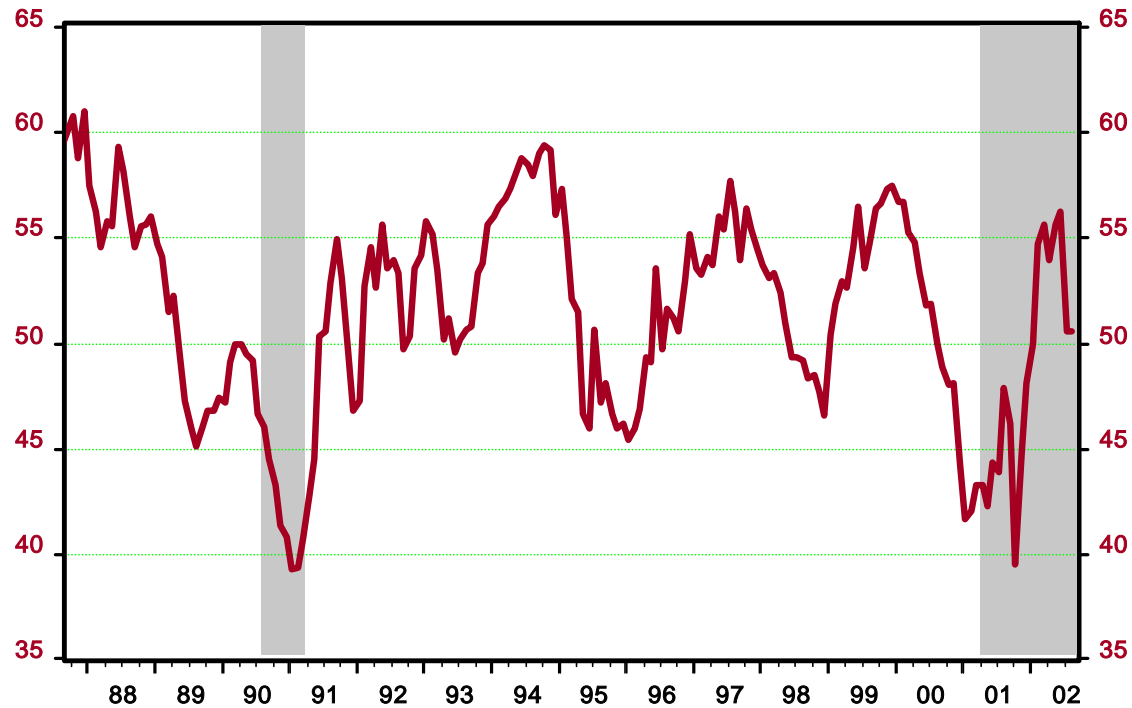


CURRENT ECONOMIC INDICATORS

Manufacturing Continues To Recover

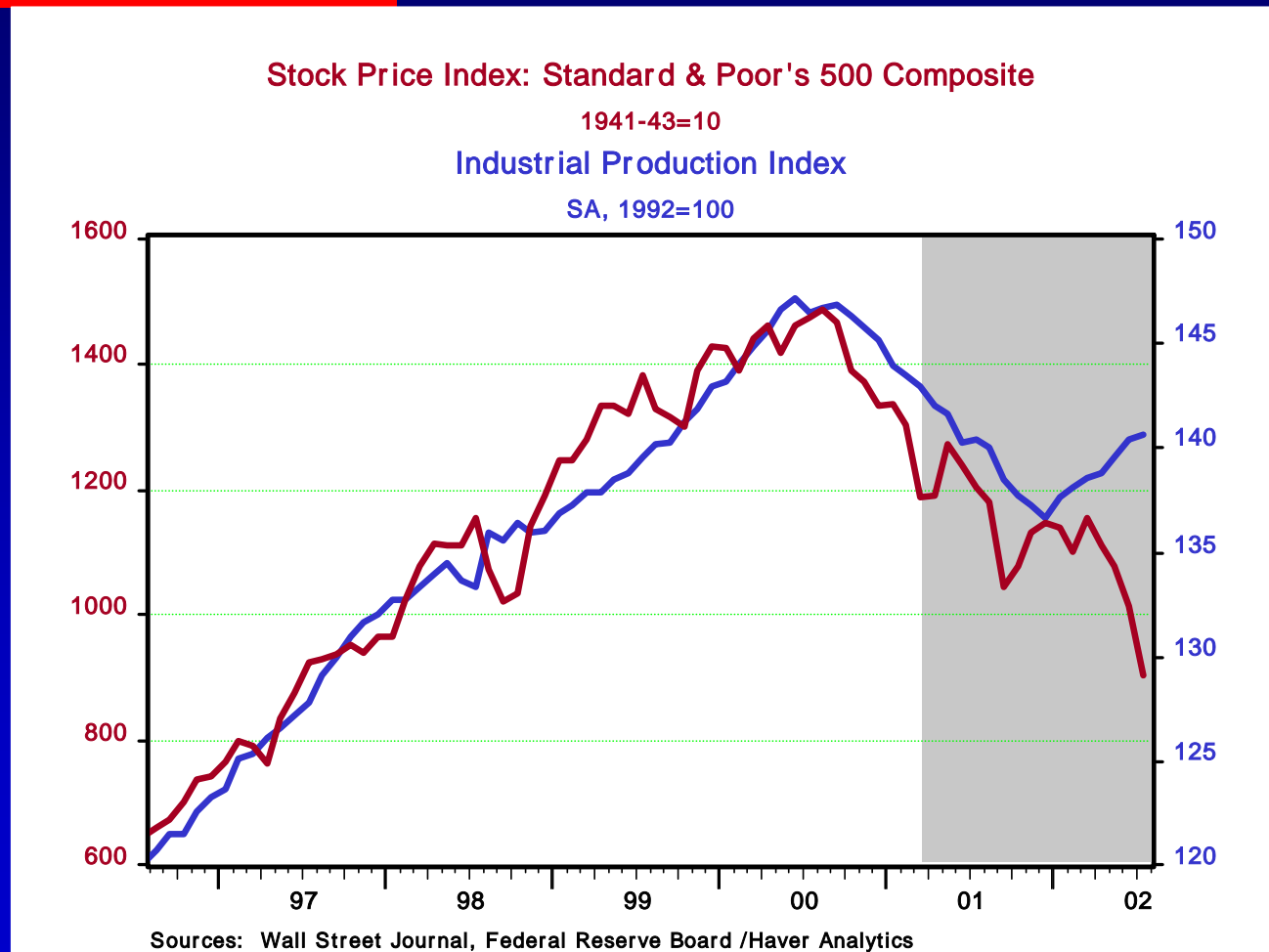
ISM Mfg: PMI Composite Index

SA,50+ = Econ Expand



Source: Institute for Supply Management /Haver Analytics

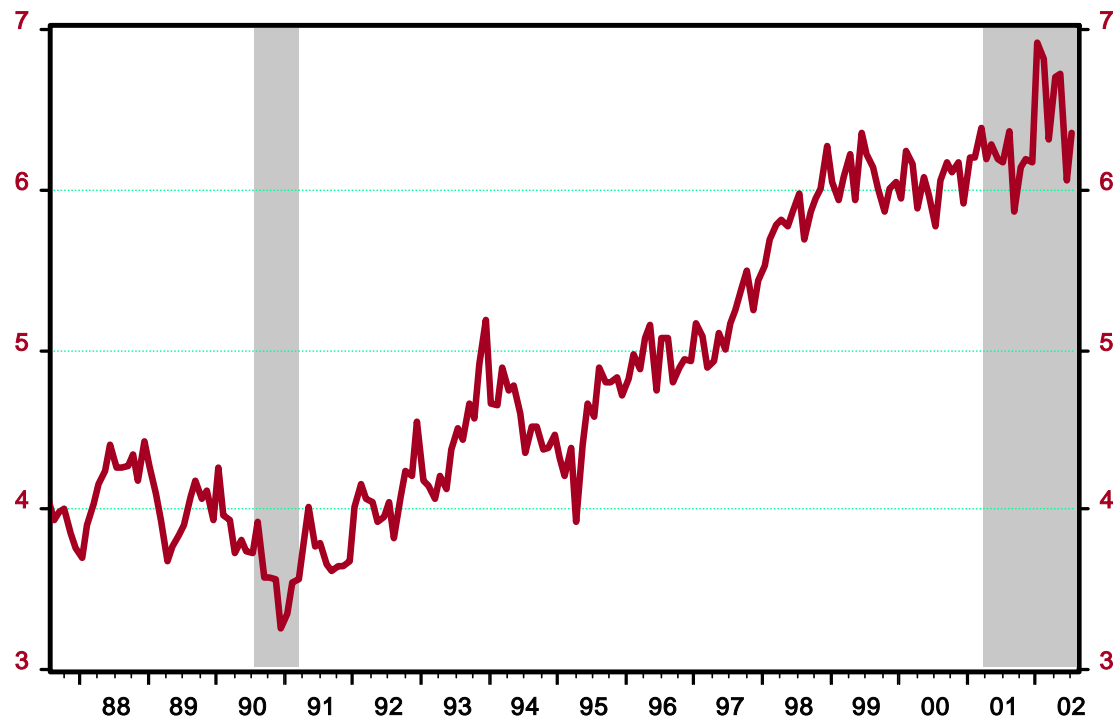
The Markets Appear To Have "Disconnected" From The Economy



Housing Has Remained A Bright Spot

New Plus Existing Home Sales

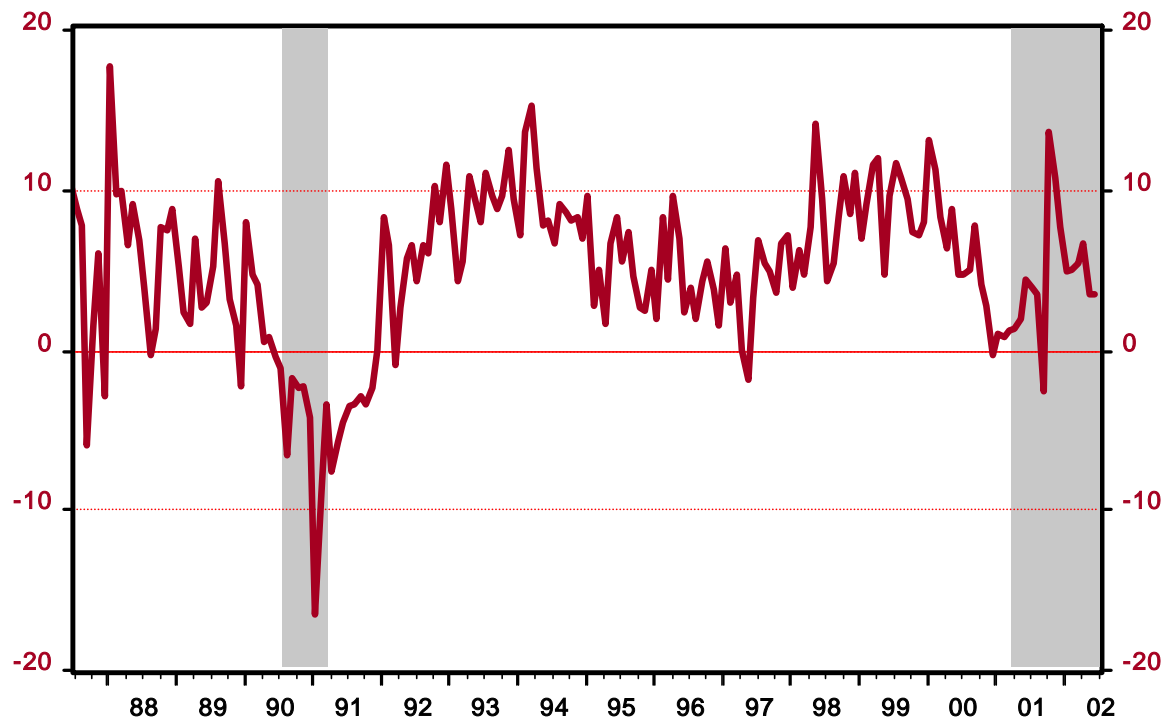
(Millions)



The Consumer Has Remained Relatively Active

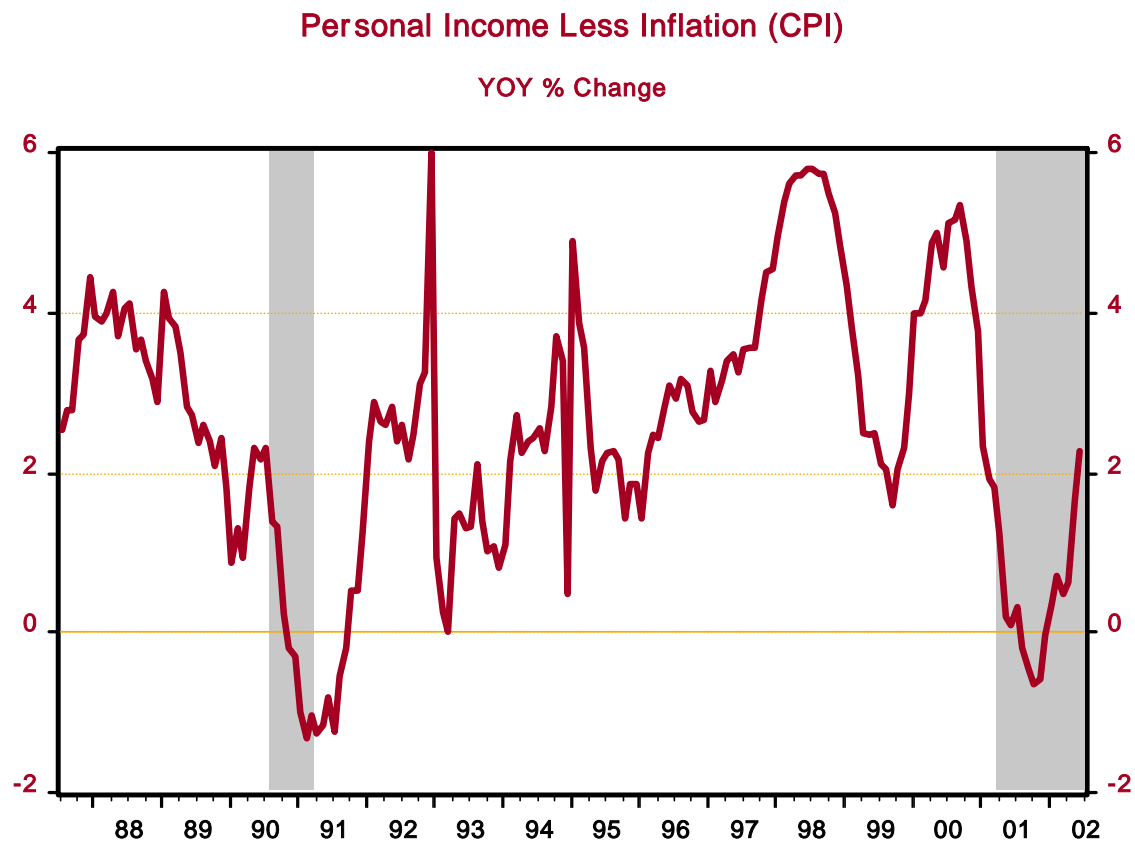
Personal Consumption Expenditures: Durable Goods

% Change - Year to Year SAAR, Bil.\$



Source: Bureau of Economic Analysis /Haver Analytics

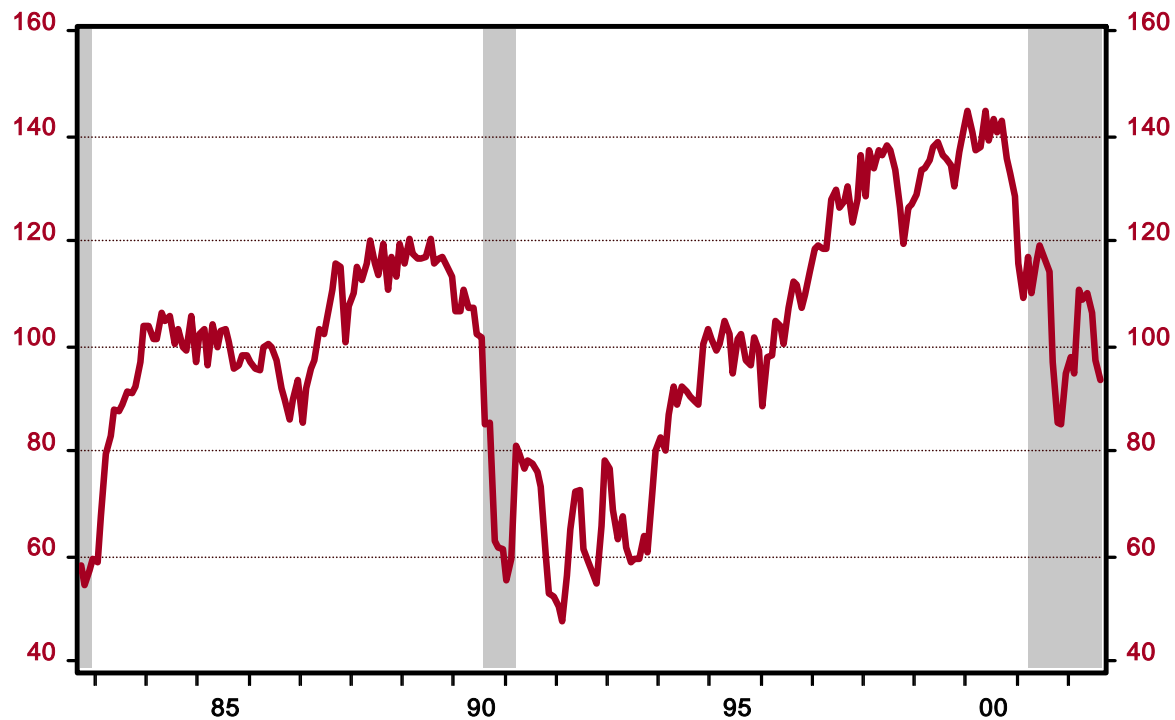
As Income Growth Has Outpaced Inflation



Consumer Confidence Has Slipped Recently

Conference Board: Consumer Confidence

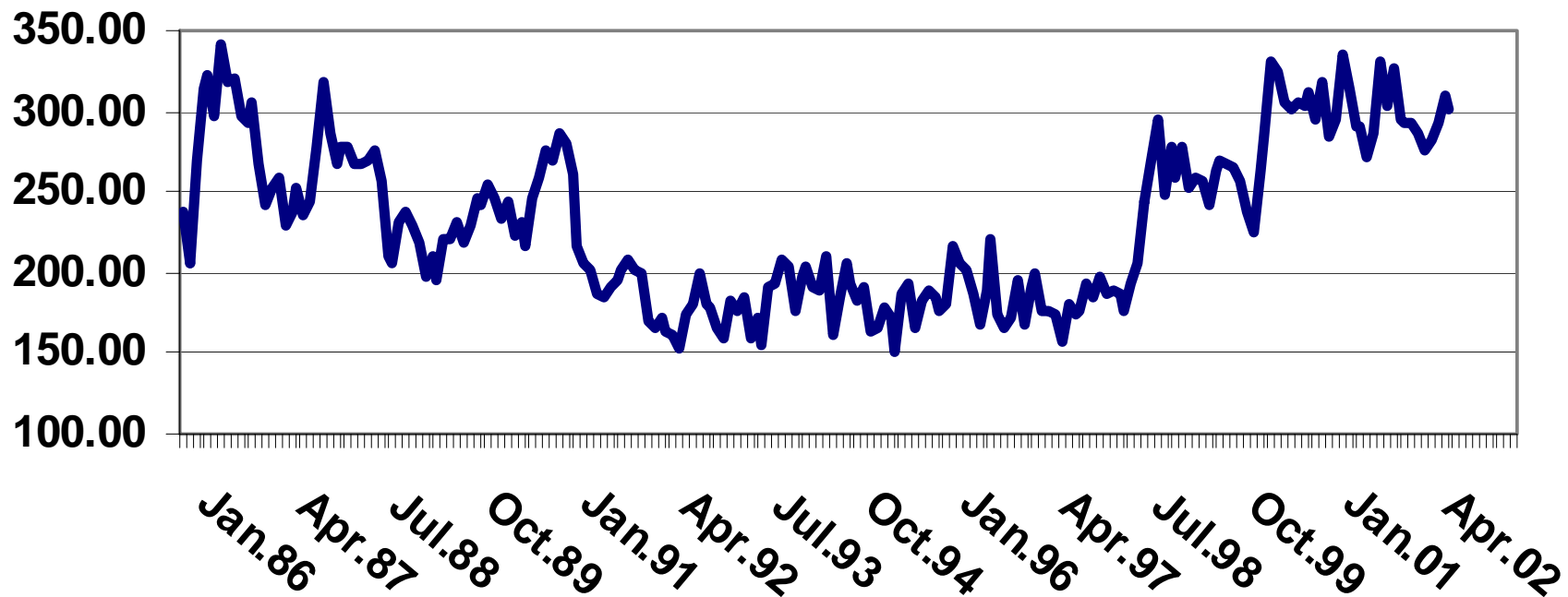
SA, 1985=100



Source: The Conference Board /Haver Analytics

Investor Fear Remains Very High

Investor Anxiety Index



Overall, Conditions Are Not That Dire

The Misery Index
Unemployment Plus Inflation



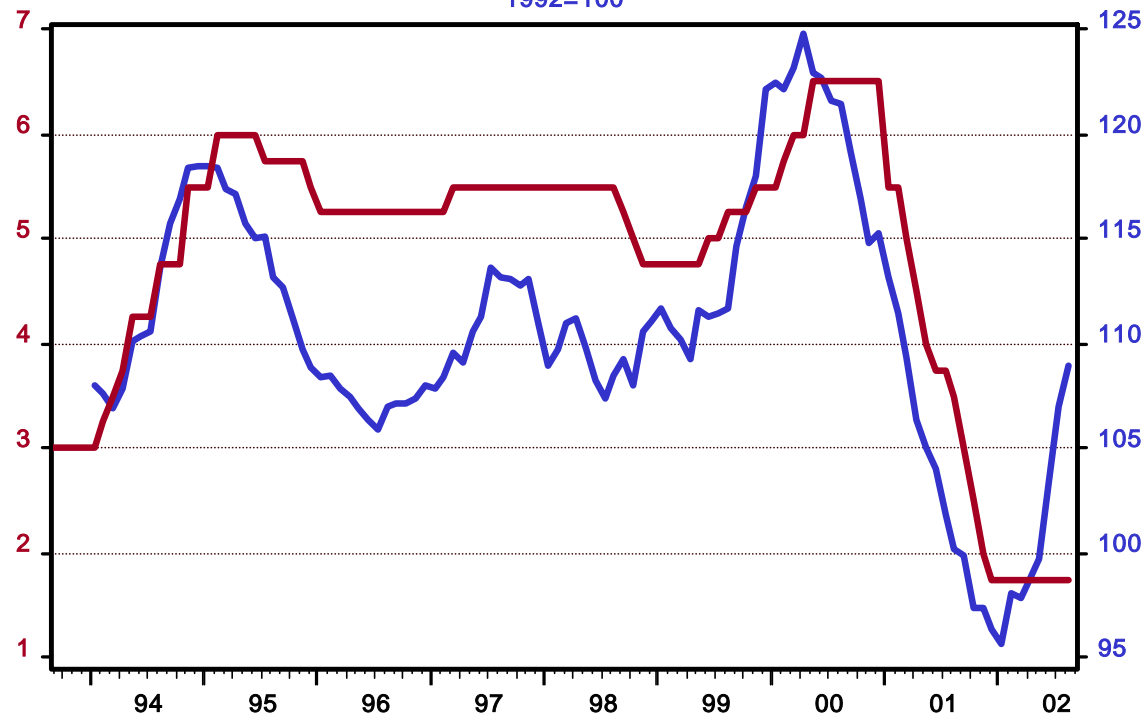
Inflation Expectations Are Increasing

Federal Open Market Committee: Fed Funds Target Rate

EOP, %

ECRI Future Inflation Gauge

1992=100



Sources: Federal Reserve Board, Economic Cycle Research Institute /Haver Analytics

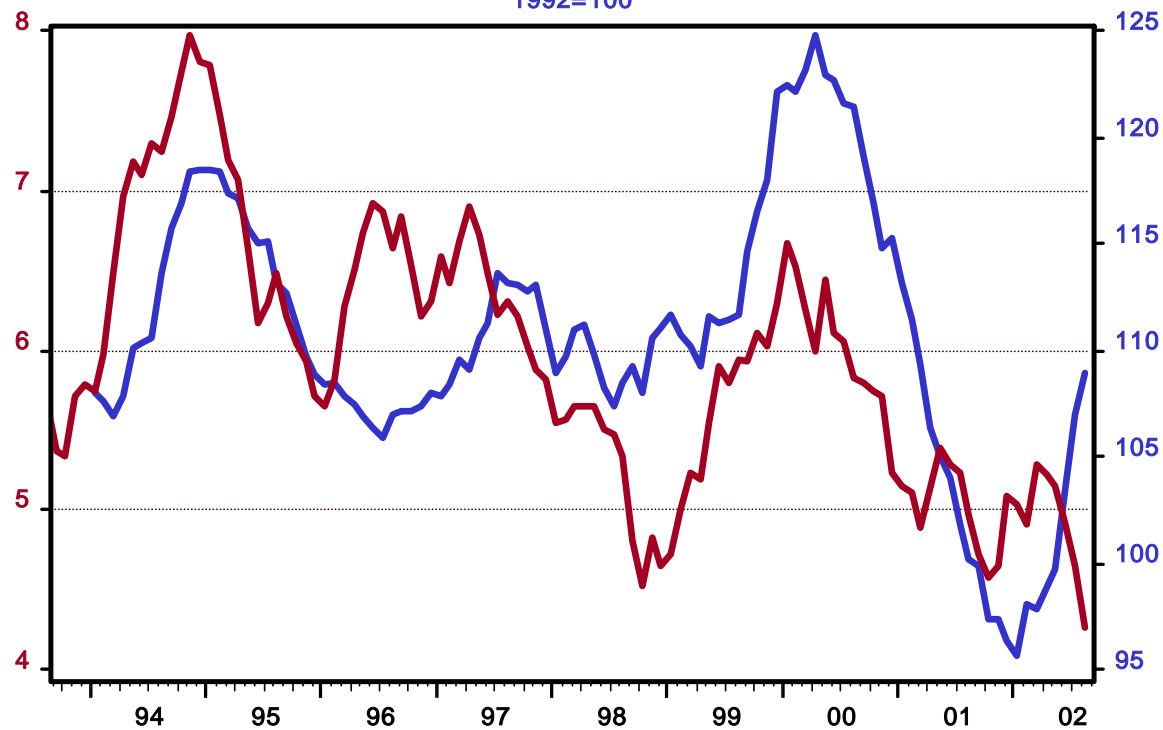
Inflation Expectations Are On The Rise

10-Year Treasury Bond Yield at Constant Maturity

% p.a.

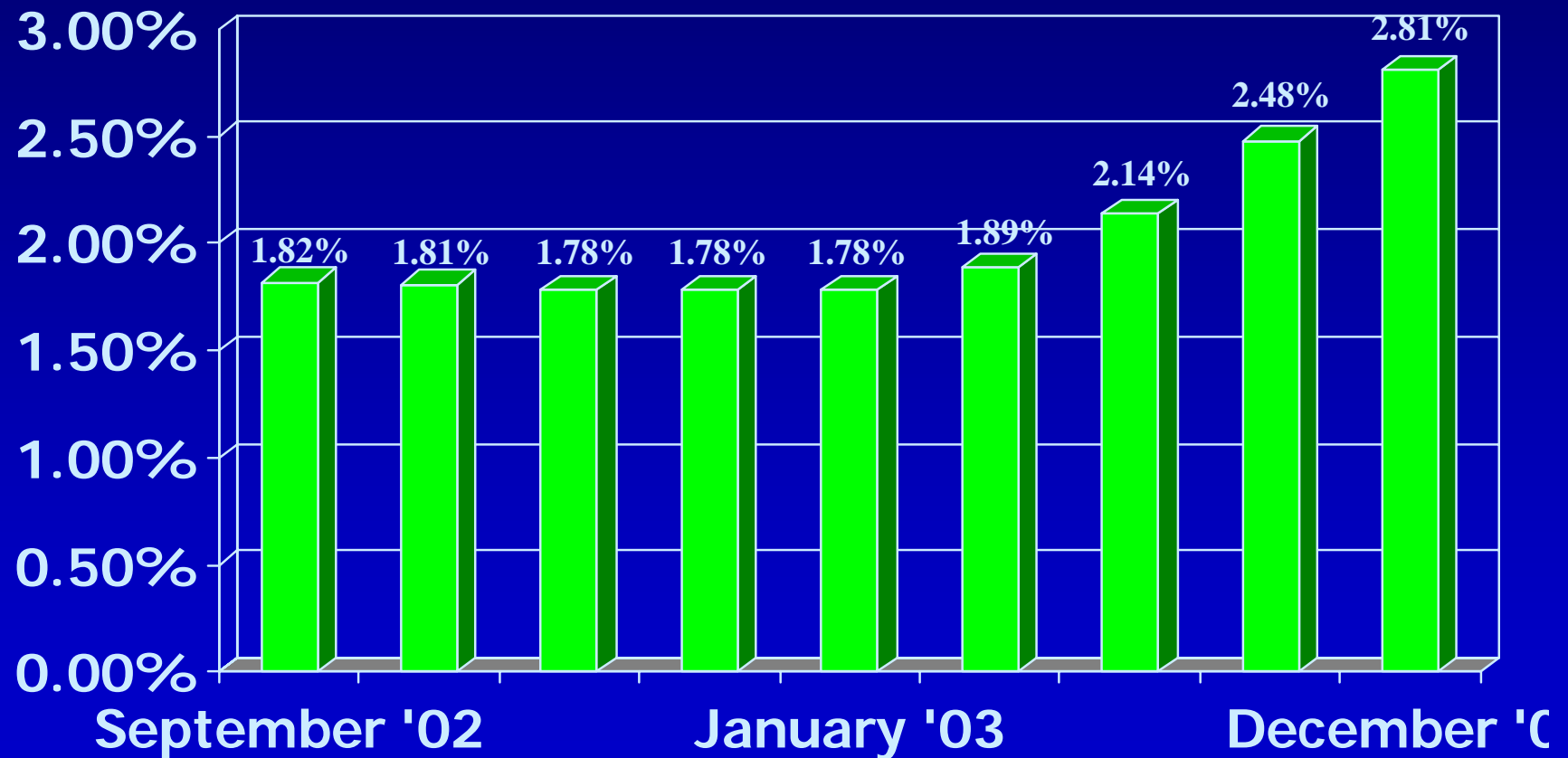
ECRI Future Inflation Gauge

1992=100



Sources: Federal Reserve Board, Economic Cycle Research Institute /Haver Analytics

Eurodollar Futures Indicate The Fed Will Tighten Through 2003



Eurodollar Futures

CONCLUSIONS

- **Real Estate Portfolio Theory**
- **Supply and Demand Analysis**
- **Real Estate Cycle Theory**
- **Current Economic Indicators**