

Principles of Commercial Real Estate Finance

Module 2: Time Value of Money and Discounted Cash Flow; Real Estate Cycles

Associated Readings

Linneman Text:

Prerequisite I: The Basics of Discounted Cash Flow &
Net Present Value Analyses
Ch. 20: Real Estate Cycles

GetREFM.com:

Resources page, Recommended Viewing section:
“Crisis of Credit” videos



Aqua at Lakeshore East, Condominiums, Chicago

The Importance of Timing

- Owners generally do not want to spend money before they absolutely have to.
- Vendors and service providers generally want to get paid as soon as possible.
- Investors want to make investment and get returns based on the transaction documents, whose profit-sharing terms have been architected based on their investment objectives.
- Internal Rate of Return (IRR) metric depends partly on the timing of cash flows.

Time Value of Money / Discounted Cash Flow (DCF) Model

- The passage of time introduces the potential for both positive and negative change in the value of a dollar.
- It theoretically allows us to invest \$1.00 today (Present Value) and get a positive return on it, so that it would be worth more than \$1.00 in the future (Future Value).
- It also introduces operating, market and credit risks, all of which could destroy part or all of the value of the \$1.00 we invest.

Time Value Of Money Basics



Time Value Of Money Crash Course

- We agree in theory that \$100.00 in hand today is equivalent to a value **greater than** \$100.00 at some point in the future (say \$104.00 at the end of 1 year), under the **assumption** that the amount by which the \$100.00 base amount is grown (4% over 1 year in this case) is the **appropriate growth estimate**.



Time Value Of Money Crash Course

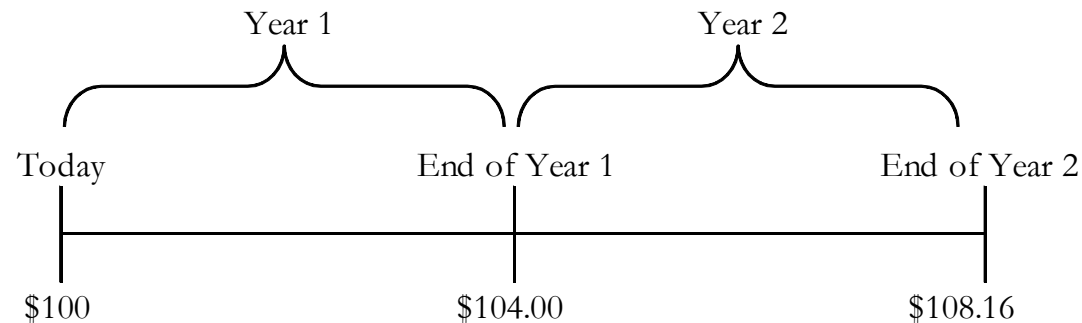
- If we were to theoretically transport ourselves to the end of Year 1 and look **backwards**, to get back to the \$100.00 amount at Time 0, we would apply the 4.00% growth rate in reverse. This is known as **discounting** the future expected cash flow.



Time Value of Money / Discounted Cash Flow (DCF) Model

Time Value of Money

4% constant growth rate is assumed

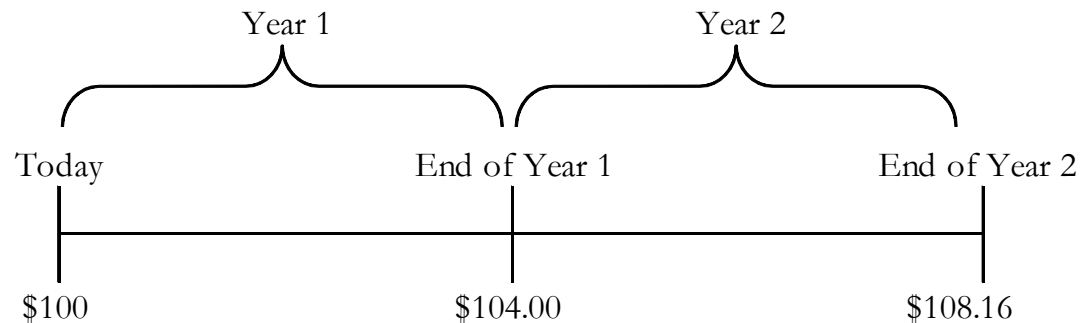


	Today	End of Year 1	End of Year 2
Future Value of \$100	--	\$104.00	\$108.16
Future Value Derivation	--	$\$100 \times (1 + .04)$	$\$100 \times (1 + .04) \times (1 + .04)$

Time Value of Money / Discounted Cash Flow (DCF) Model

Time Value of Money

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- How *certain* are we that we will indeed get these exact cash flows?
- What is the likelihood that the 4% constant growth assumption is wrong?

>> Go To Excel: TVM Timeline and Calculator tab

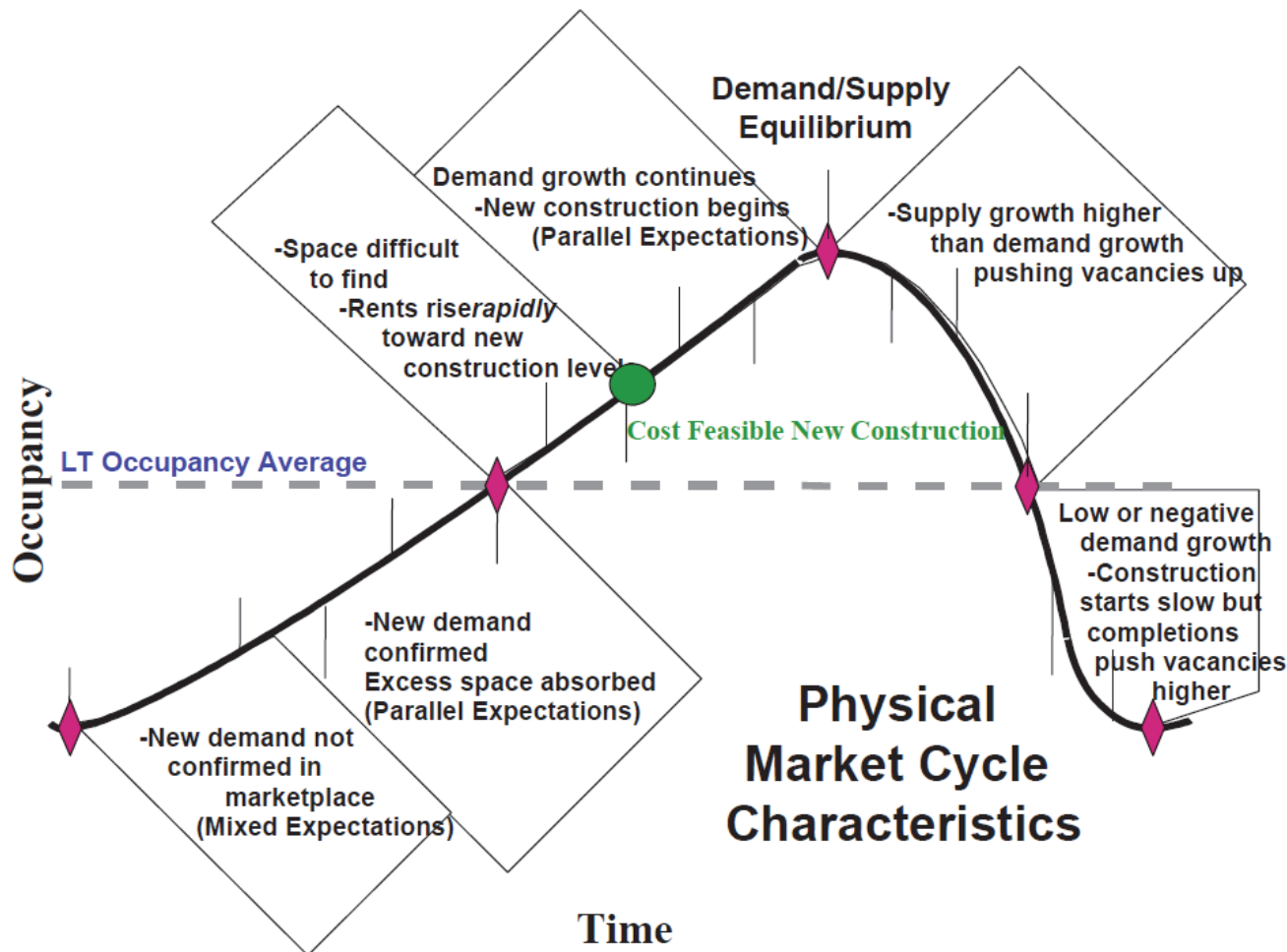
Time Value of Money / Discounted Cash Flow (DCF) Model

- Just like a company listed on the stock market, an income-producing property can be valued based on the *expected value* of its future cash flows
- To properly value these expected future cash flows today, we discount them to a present value based on all of the aforementioned risks as they apply specifically to the contemplated transaction
- These future values are first inflated based on escalation assumptions (Note that income and expense assumptions are not necessarily identical)

Real Estate Cycles

- Cycles are prolonged periods of property supply and demand imbalance
- Real estate markets are rarely near equilibrium because:
 - it takes so long to plan, permit, finance, build and lease new supply
 - inventory is relatively imperishable (bulldozing as a remedy)
 - tenancies are governed by leases, often long-term
 - demand grows slowly
 - population (around 1%, or 3MM people per year in U.S.)
 - employment
 - On **average**, 1.8MM jobs created per year
 - ~200 GSF required per office employee

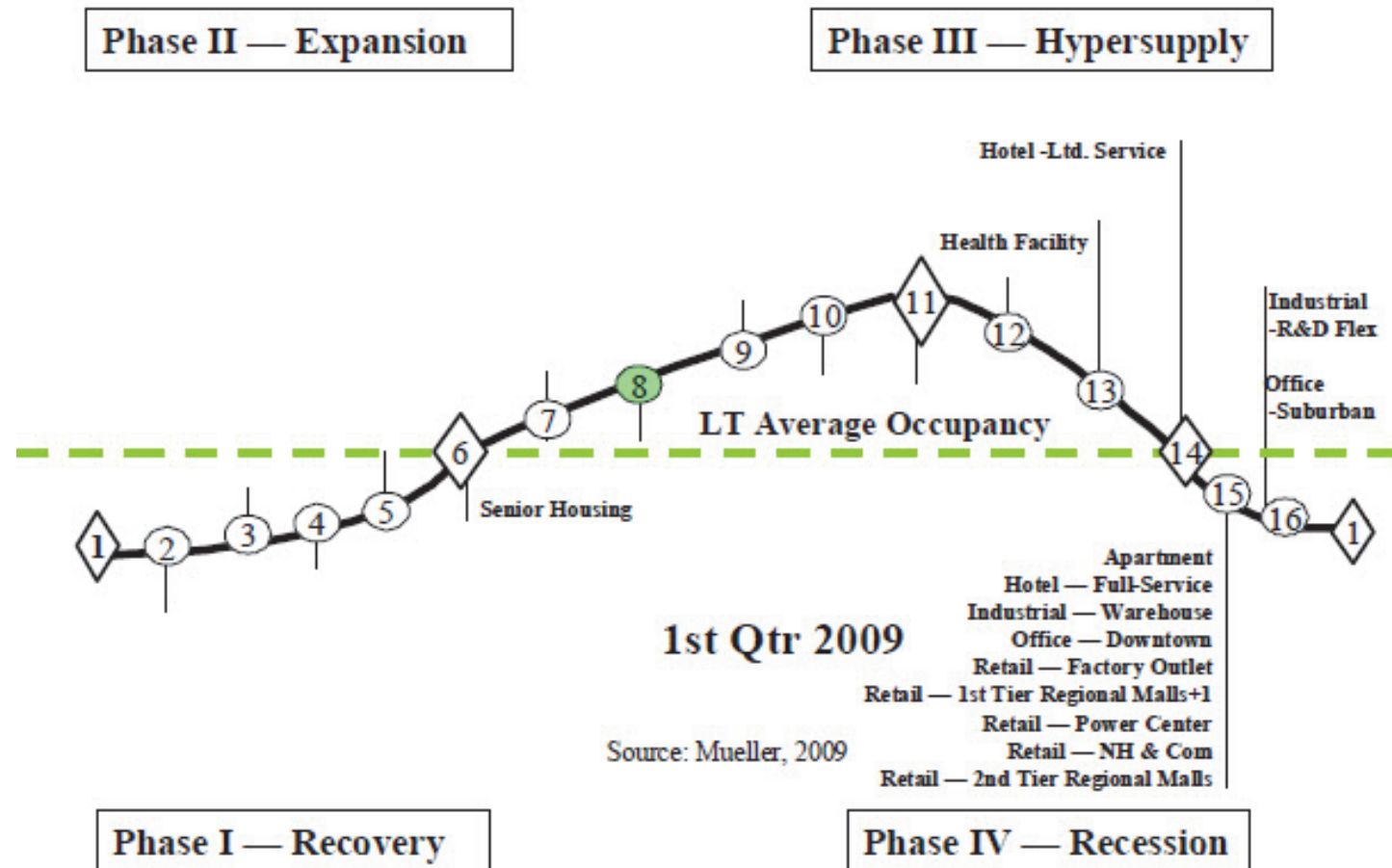
The Real Estate Cycle – Generic



Source: Mueller, Real Estate Finance, 1995

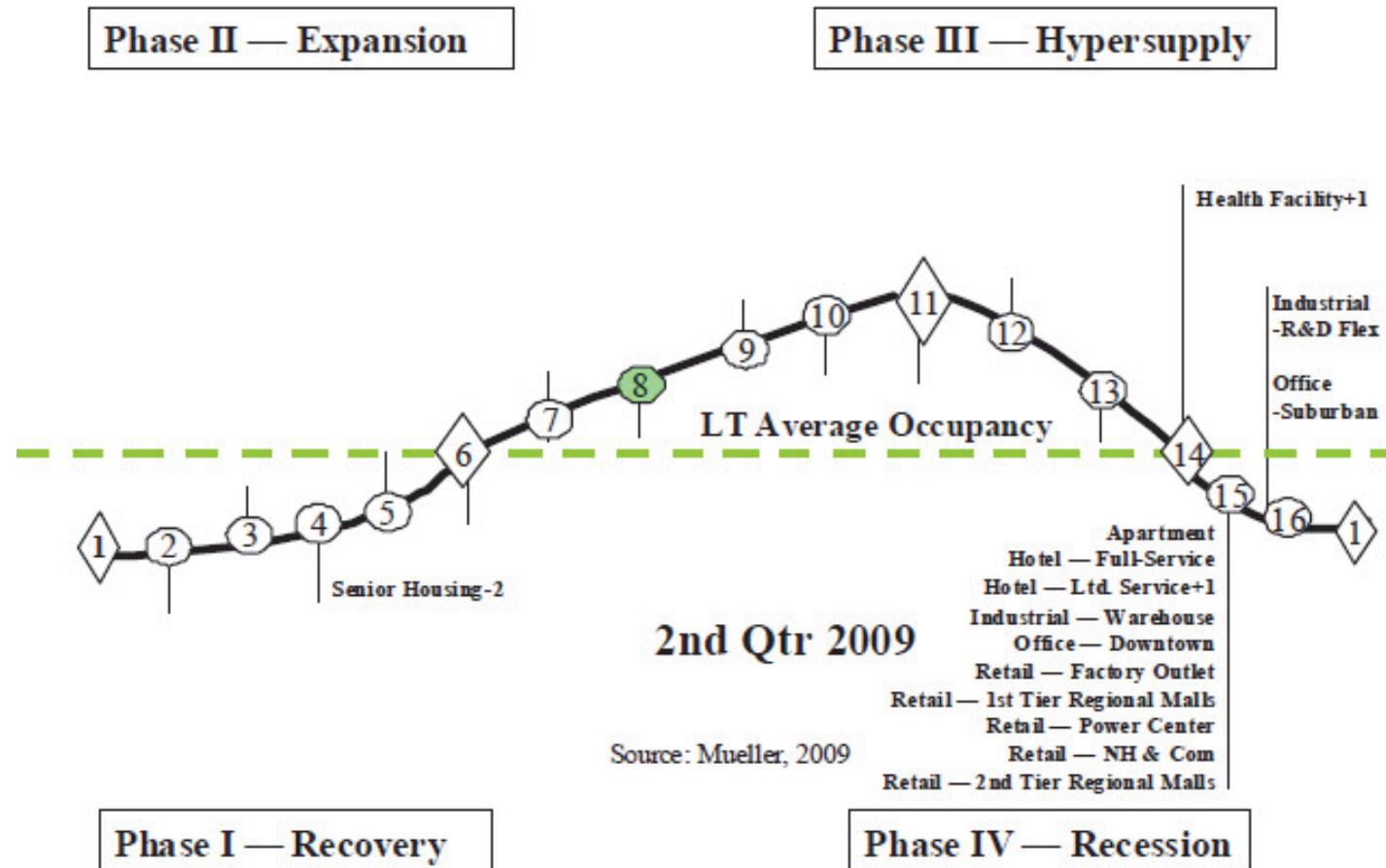
The Real Estate Cycle – U.S. Commercial, 1Q2009

National Property Type Cycle Locations



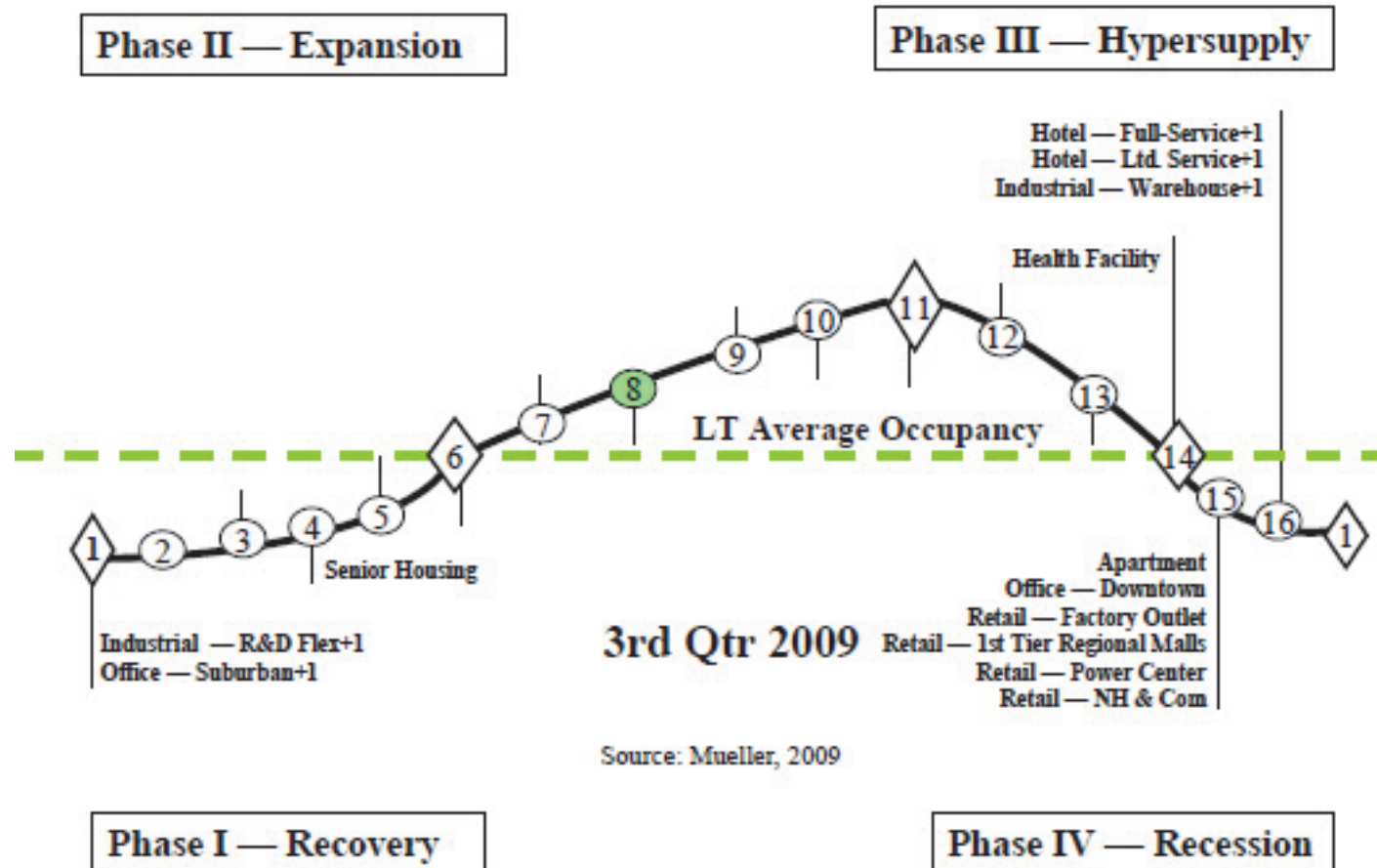
The Real Estate Cycle – U.S. Commercial, 2Q2009

National Property Type Cycle Locations



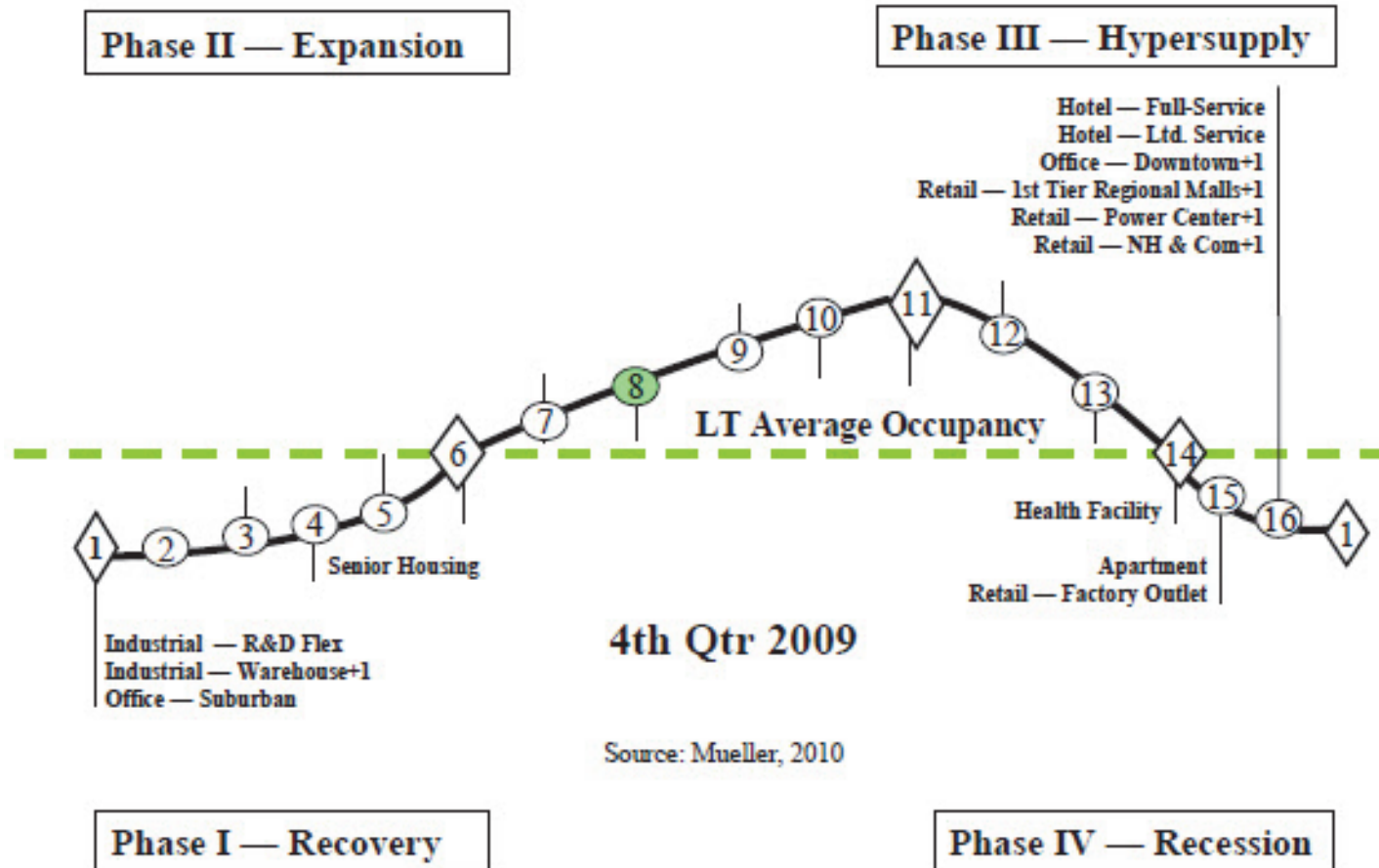
The Real Estate Cycle – U.S. Commercial, 3Q2009

National Property Type Cycle Locations



The Real Estate Cycle – U.S. Commercial, 4Q2009

National Property Type Cycle Locations

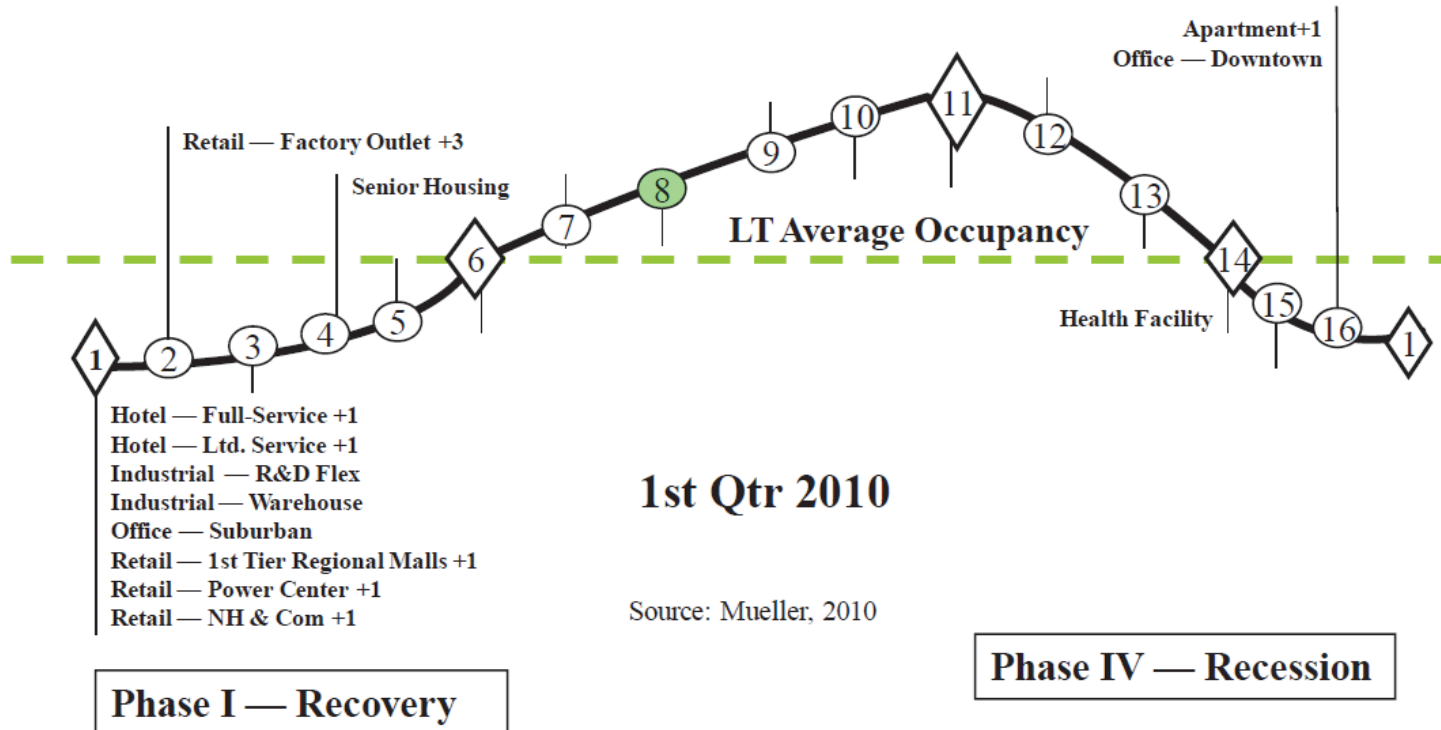


The Real Estate Cycle – U.S. Commercial, 1Q2010

National Property Type Cycle Locations

Phase II — Expansion

Phase III — Hypersupply

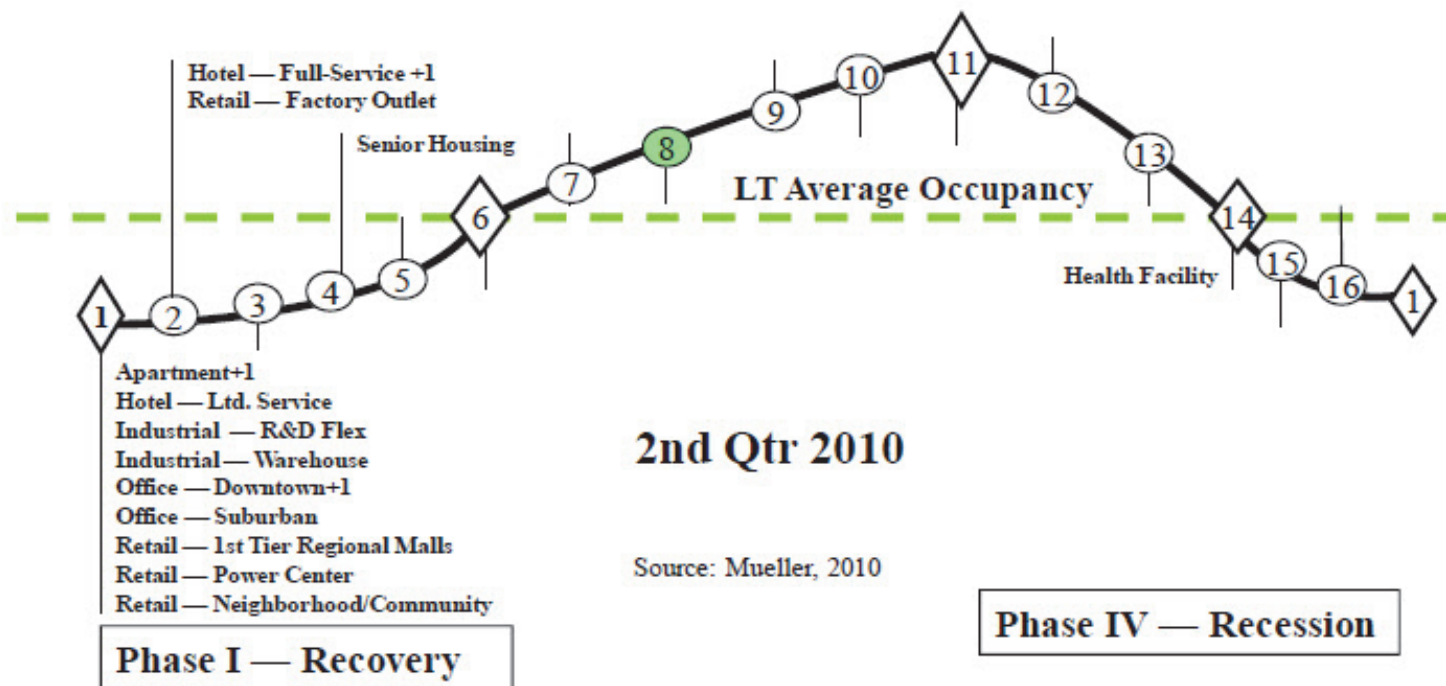


The Real Estate Cycle – U.S. Commercial, 2Q2010

National Property Type Cycle Locations

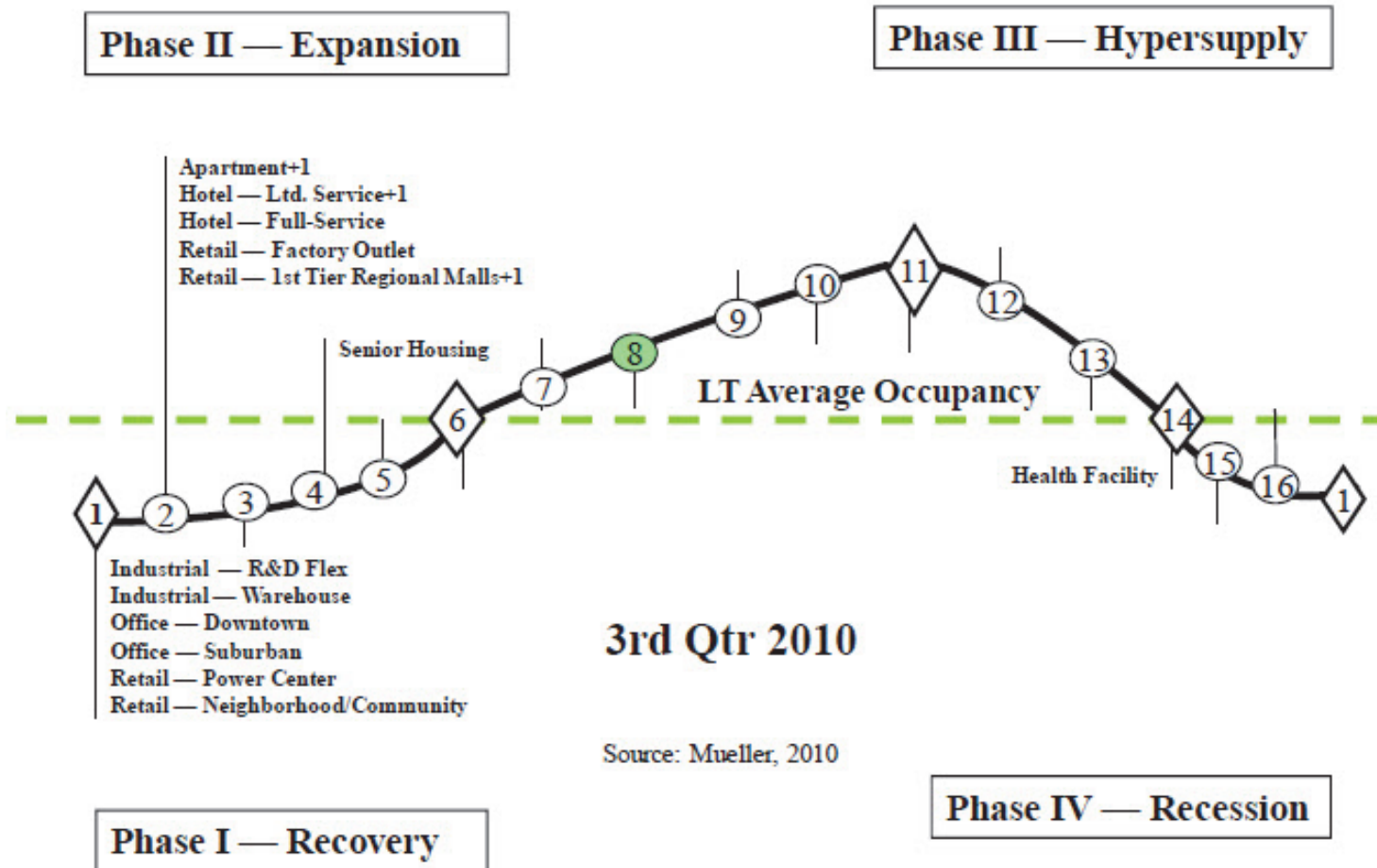
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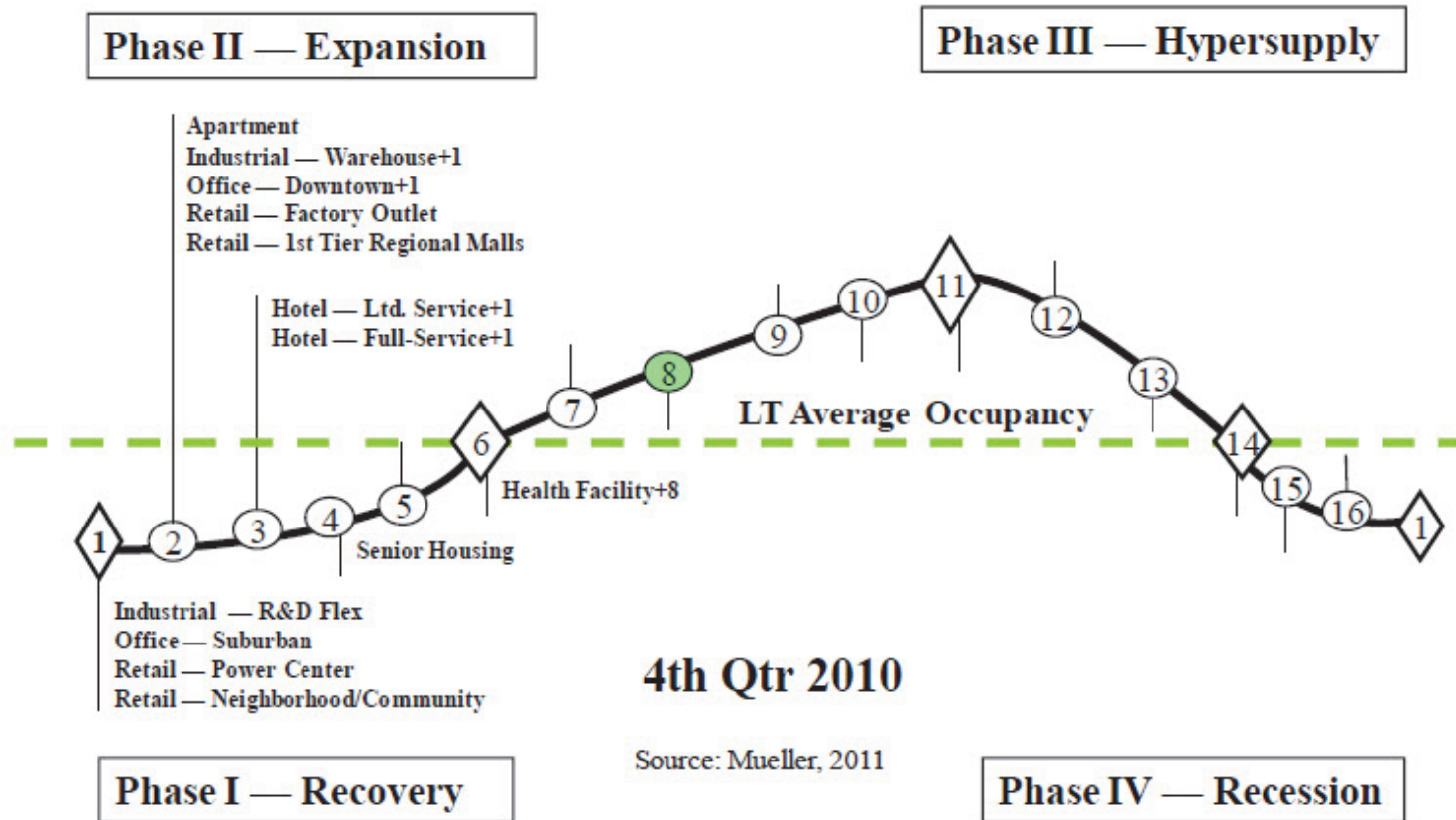
The Real Estate Cycle – U.S. Commercial, 3Q2010

National Property Type Cycle Locations



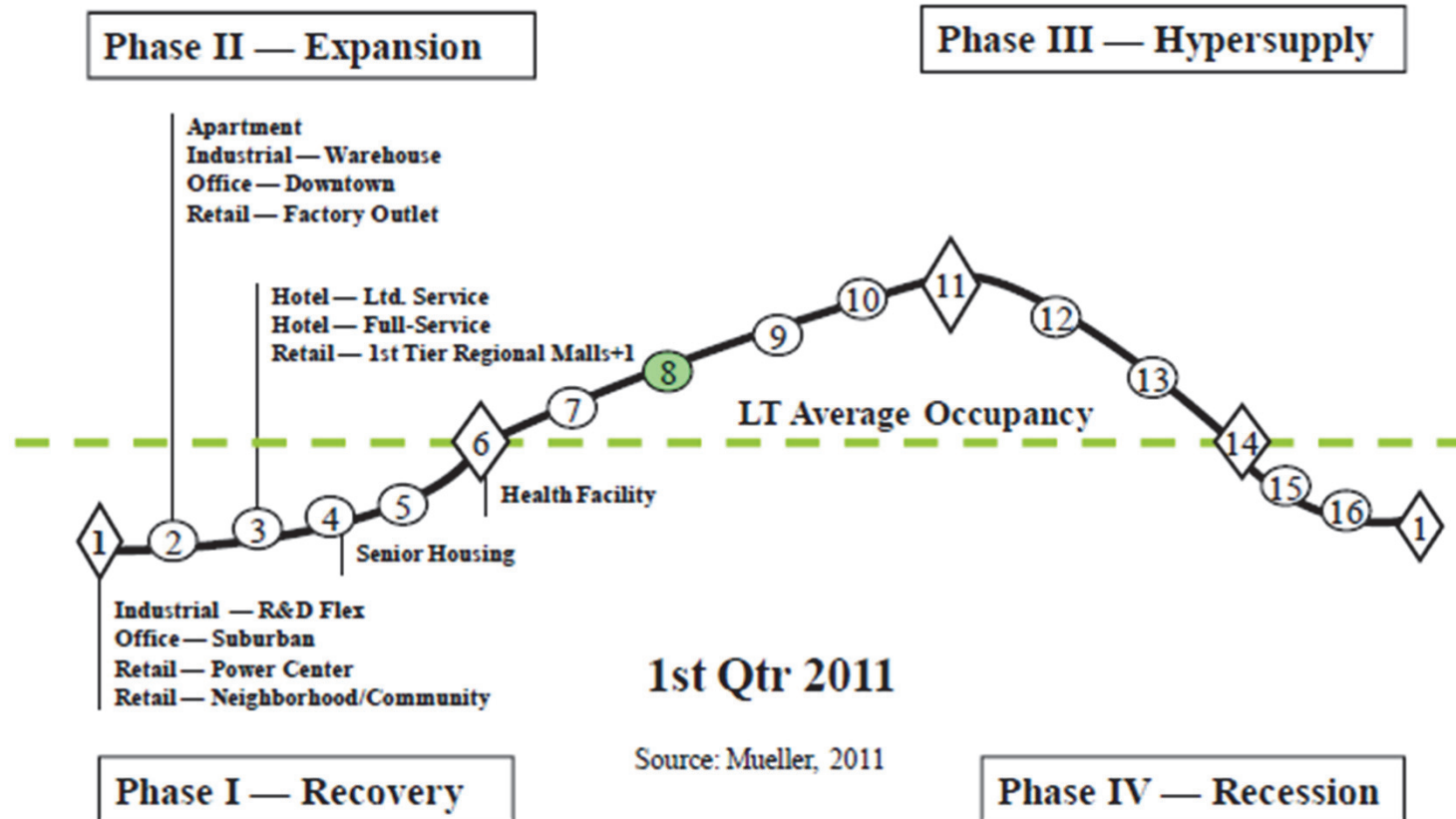
The Real Estate Cycle – U.S. Commercial, 4Q2010

National Property Type Cycle Locations



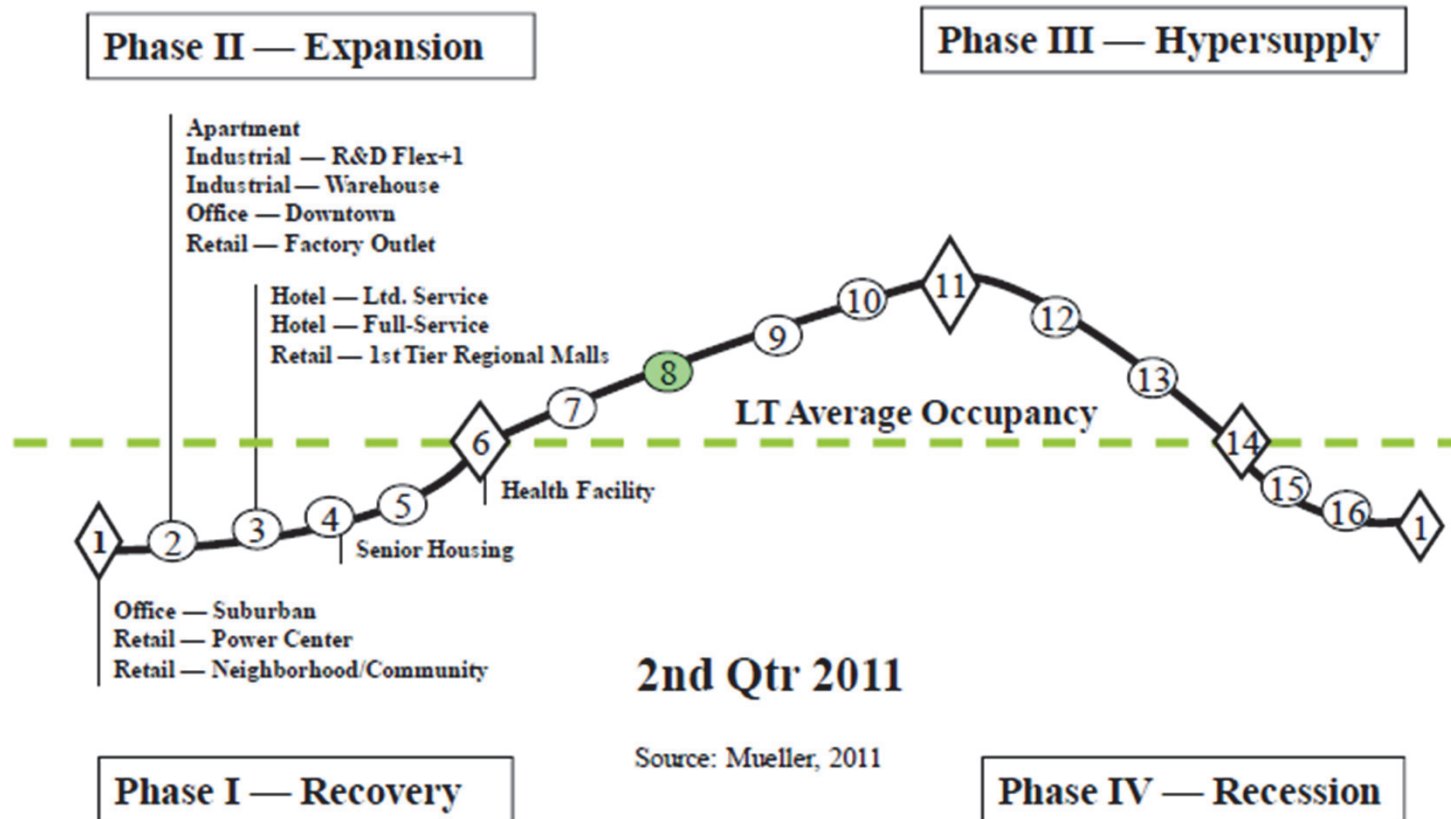
The Real Estate Cycle – U.S. Commercial, 1Q2011

National Property Type Cycle Locations



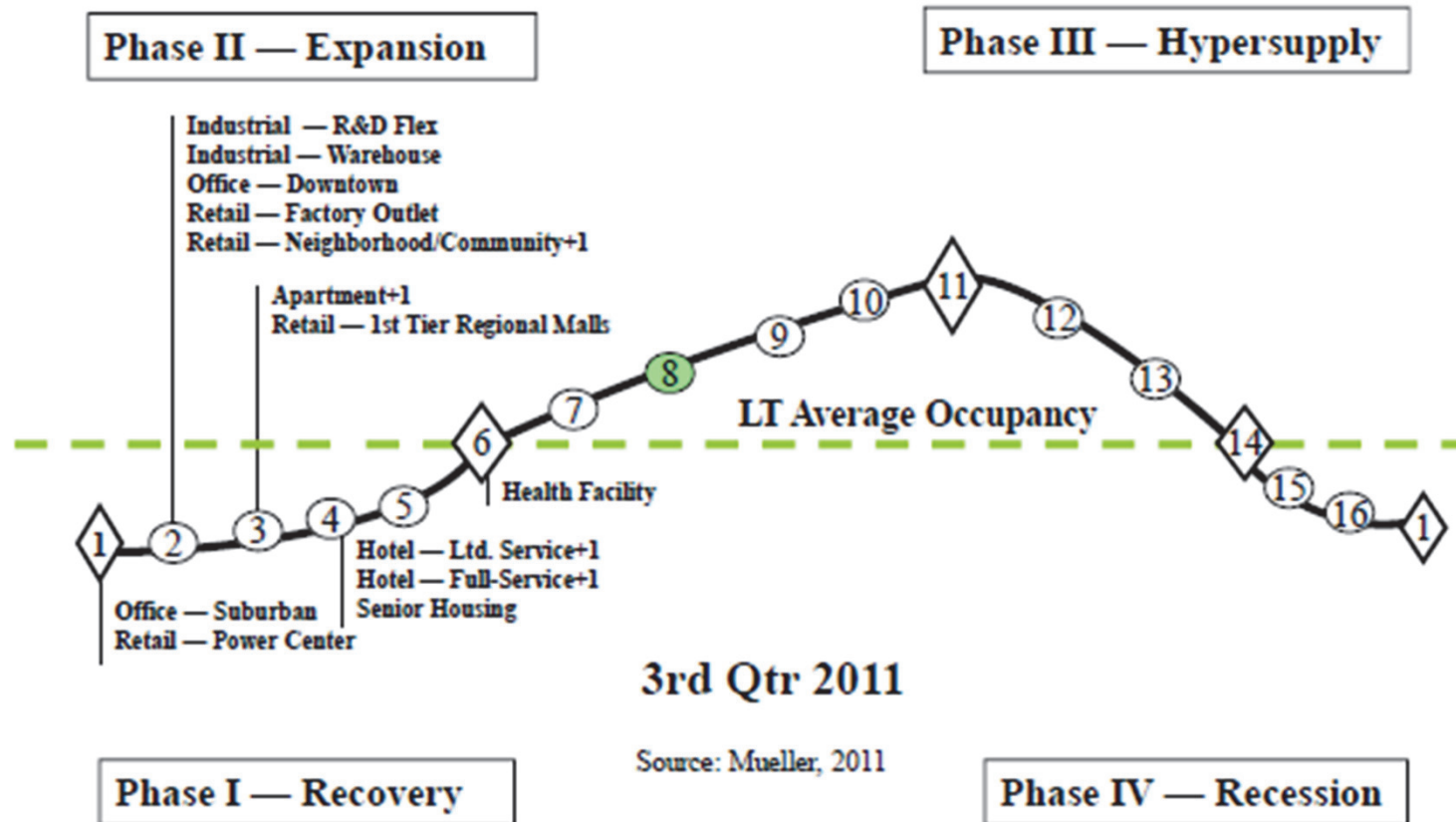
The Real Estate Cycle – U.S. Commercial, 2Q2011

National Property Type Cycle Locations



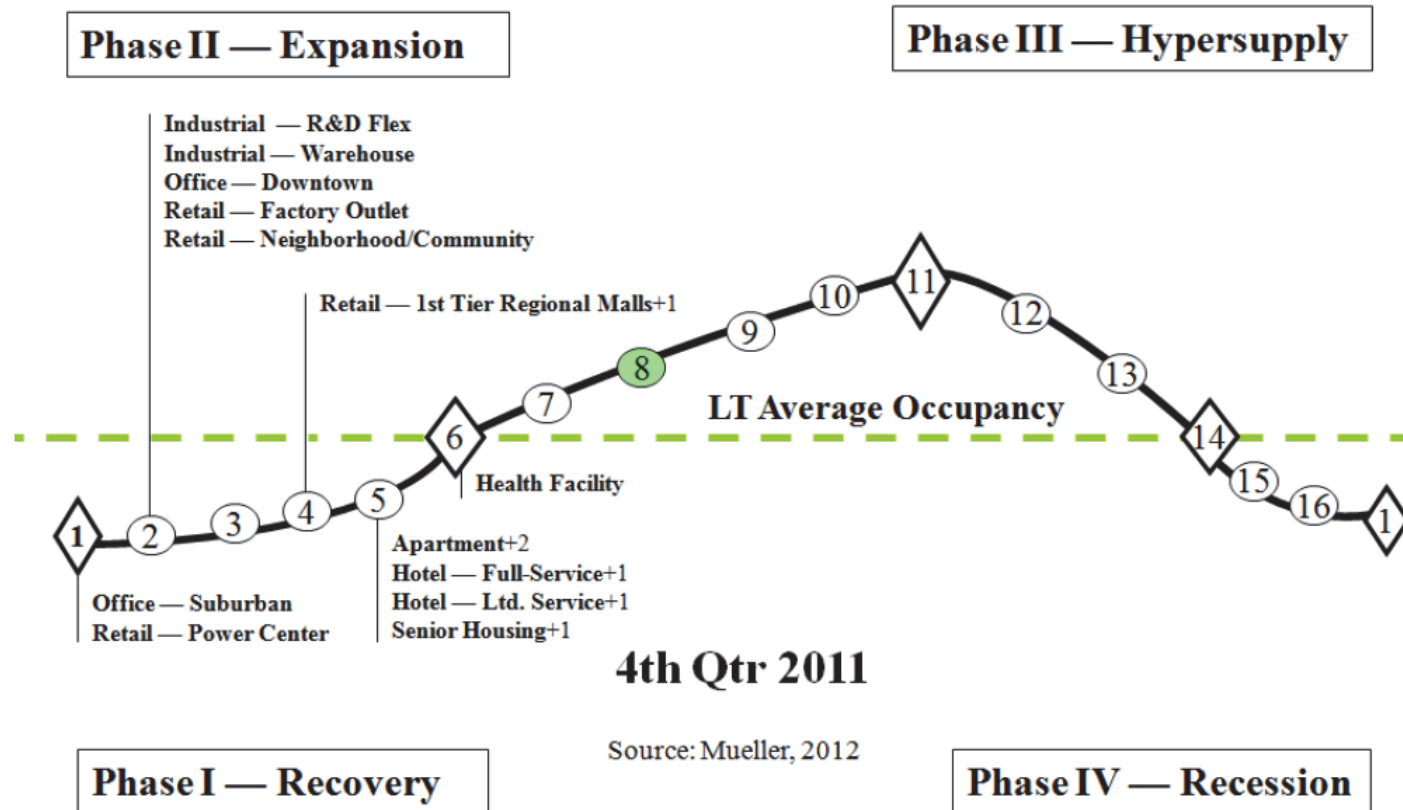
The Real Estate Cycle – U.S. Commercial, 3Q2011

National Property Type Cycle Locations

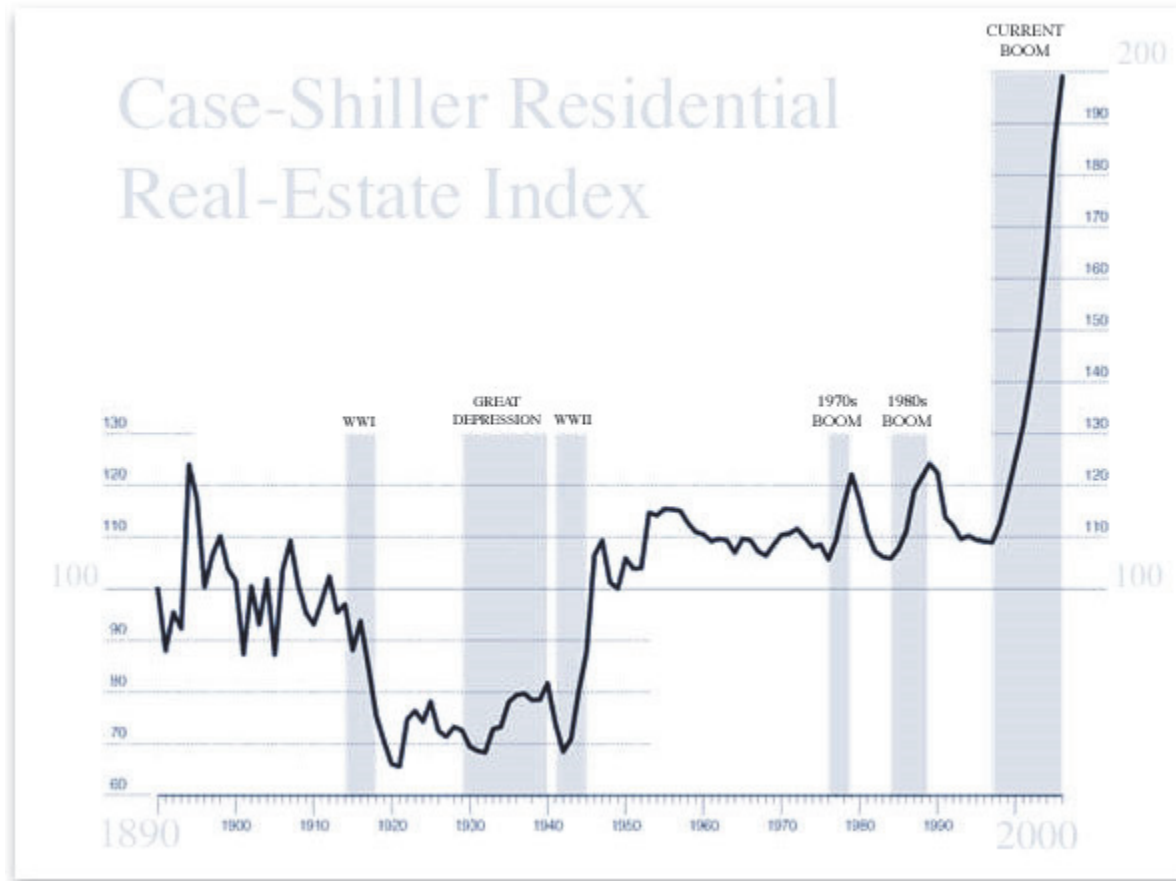


The Real Estate Cycle – U.S. Commercial, 4Q2011

National Property Type Cycle Locations

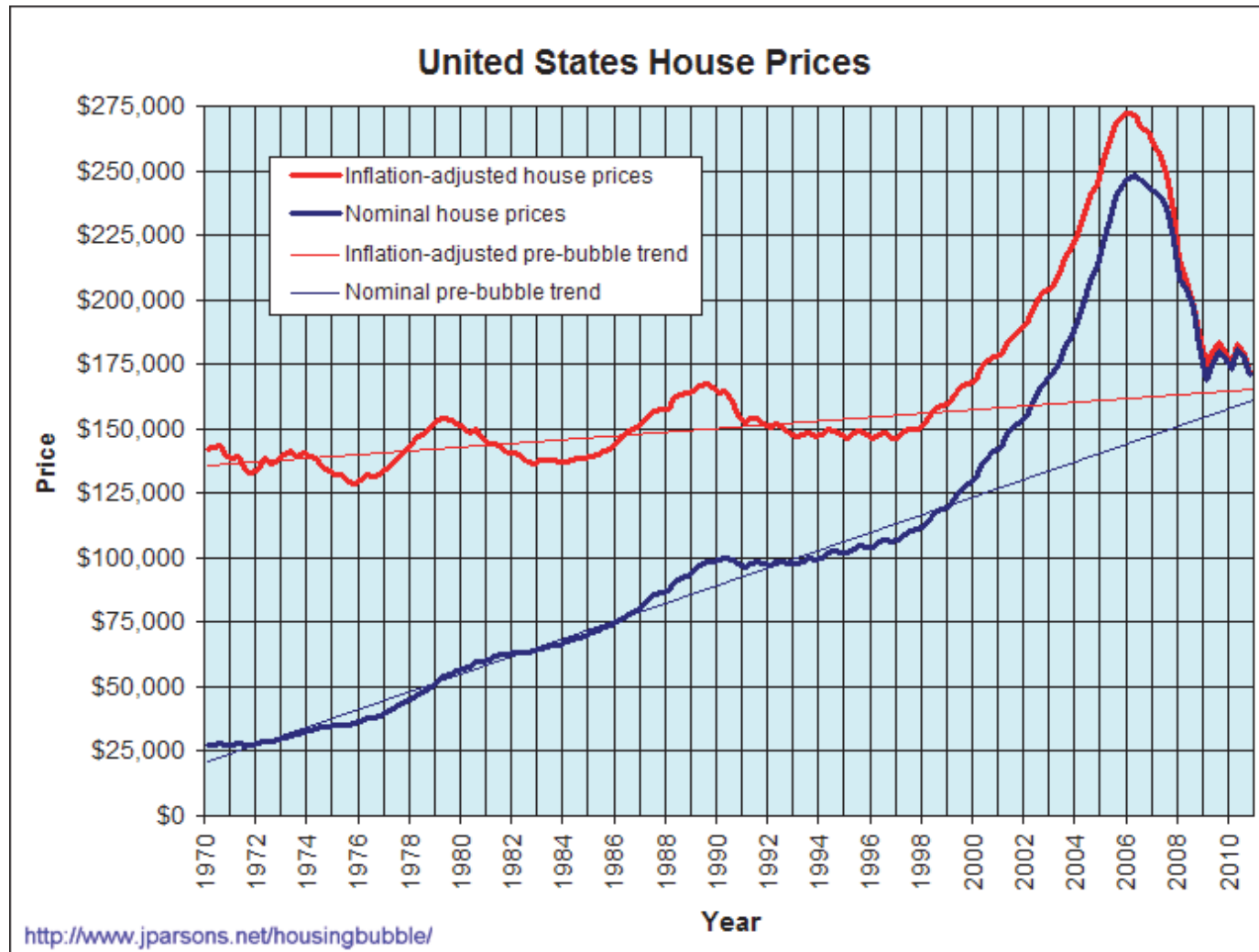


U.S. Housing Market Pricing, 1890 - 2006



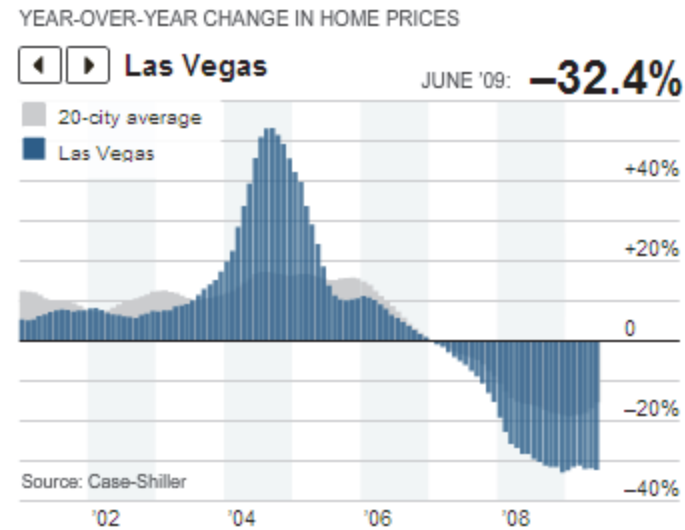
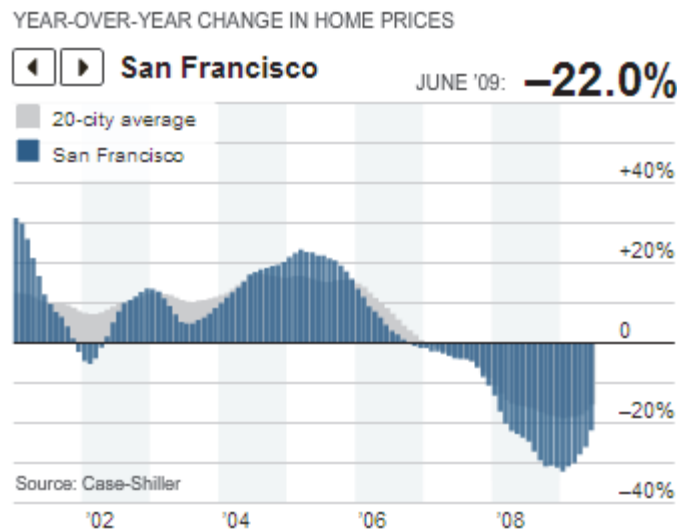
Source: Huffington Post

U.S. Housing Market Pricing, 1970 - 2010



Local Housing Market Pricing, 2001 – 2009

- But remember, every market is unique



Source: New York Times

Submarkets Are Unique, Too

- Georgetown vs. Anacostia
- Capitol Hill vs. U Street
- Kalorama vs. Rosslyn
- Ballston vs. Mount Vernon Triangle
- Southwest vs. Glover Park
- Silver Spring vs. Tysons Corner