

Group Project

- We'll form small teams (chosen by the instructors).
- Each team will choose a country.
- Each team will prepare a "country buy report" for some kind of real estate.
 - Written report (circa 30 pages).
 - Presentation to the class, with supporting materials.
- We'll start discussing this in detail next week.

High-level outline

- Introduction
- Overview of the country and economy
 - Basic indicators (GDP, employment, etc.)
 - Key institutions, the setting
 - How does your country compare to other potential markets?
- Where in the country are you investing?
- What's your property type?
- How will you invest?
- Risk analysis and mitigation

Innovations

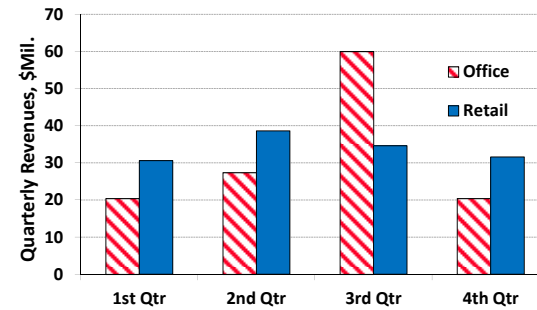
- Classes and basic material will be "front loaded." We'll complete lectures by March 12.
 - We will hold several Friday meetings as needed, 1:30 to 3:30.
 - We'll also post selected lectures online for self-study.
- PRELIMINARY schedule:
 - First exam: February 17
 - Final exam: March 19
 - Draft "buy report" due: March 26
 - Presentations: April 9
 - Final buy report due: April 16

Some initial hints on data

- Focus on the World Development Indicators.
- Think about spreadsheet/database design.
 - "Database for Life", a bottom-up concept.
 - Go to <http://data.worldbank.org/>
- Some principles of effective data presentation.

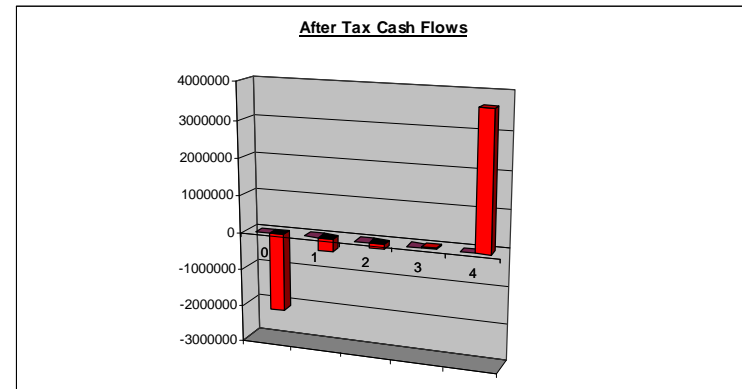
Charting data

Revenues by Property Type, Firefly Realty Co. LLP

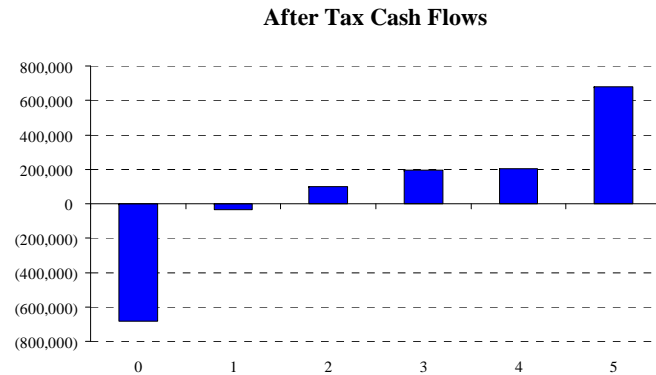


Charting Style

- Keep it simple: avoid 3-D like the plague.
- Keep backgrounds uncluttered, and white.
 - How will this look when it's xeroxed?
- Use simple, widely available fonts (Arial or Times Roman).
 - Microsoft has some new fonts packaged with Office 2007. I'm using Calibri.
- Limit use of "boxes."
- Simple orientation is usually best.



More Ideas about Charts



- Avoid “chartjunk.”
- Keep information-to-ink ratio high.
- Use clip art, etc., sparingly, if at all.
- For comparisons across charts, use identical scales on axes.
- Avoid abbreviations.
- Don’t use vertical labels on y-axes.

More thoughts on fonts

- Never use more than one font.
- Serif fonts (like Times Roman) are more formal, and easier to read in large blocks of text. (The serifs aid recognition).
- Sans serif fonts (like Arial or Calibri) are easier to read from a distance (e.g. overhead presentations in a large room).
- Use color, italics, etc. sparingly.
 - If for some reason you violate these rules, **never** use more than two fonts.

Fonts in this presentation

- I’m switching over from a serif font (Times Roman) to Calibri (a new Microsoft sans serif font) as my “workhorse” presentation font.
- It will be quite some time until all my old slides from Excel etc. are swapped over. So there’s more mixing in here than ideal.
- Also, a few of my old slides from older software have not converted perfectly to Office 2007 (Windows XP) and Office 2008) (Mac). Main problem seems to be with fonts.

Charting Tips

- Be sure you understand the difference between line charts and x-y charts.
- Make fonts big enough to read.
– **Overheads need larger fonts than printed reports!**

Recommendation

- Excel/PowerPoint chart engine is simply not sufficient for serious business users.
- If you are charting data, consider one or more of the following separate products, Excel add-ins, or their equivalents
 - S-Plus (statistics package that has good graphics add-in for Excel)
 - SPSS
 - SigmaPlot (good analytical charts)

More Charting Tips

- Excel/PowerPoint's charting engine contains many chart types that should never be used
 - Radar charts, cone charts, etc.
- Excel/PowerPoint's charting engine is missing many useful chart types
 - Boxplots, side-by-side graphs, etc.
- Example: use a side-by-side graph if comparisons between individual pairs of values are most important.

Still More Charting Tips

- Excel/PowerPoint's charting engine is particularly poor on “analytic” graphing capabilities
 - Example: there are no true data labels available for x-y plots in Excel
 - What MS calls a data label is not a true data label. Excel allows you to show the value of the y axis variable on the chart; occasionally useful, but a true data label permits use of a third variable.
 - Example: you want to plot house price by MSA population; label points with three letter code for name of MSA. Can't do this in Excel, although you can easily do it in every other spreadsheet on the market.
 - Solution: use Quattro Pro, or Lotus; or use a macro (VBA) or an add-in.

Two actual charts from industry; and revisions

- Originals: lots of text, tiny fonts, busy, low contrast backgrounds.
- Modification: clean up the design, increase font size, split to pages when needed.
 - And fix a few misspellings!

Tips for Working Offshore

- Learn Your Perspective Market
- Identify a Local Partner to Understand Business Customs and Culture
- Learn the Local Culture / Language
- Find a Reputable Accounting /Legal Firm
- Practice Honesty and Humility in all you do



Turner

Tips for Working Offshore

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Credit Turmoil Overview

The "Known_Knowns"

- The wall of liquidity
- Yields compressing
- Values rising
- LTVs increasing

The "Known_Unknowns"

- Credit standards were loosening with fewer covenants
- Underlying interest rates were increasing and yield gap was turning negative
- Everyone knew at some point this couldn't continue... but when? – the known unknown

The "Unknown_Unknowns"

- Erosion of confidence
- Cracks in the system emerge
- Trust breaks down
- Panic sets in
- Corporates and Banks will fail including names that would be unimaginable
- What happens next and how do we recover ?

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Credit Turmoil

- The **“Known Knowns”**
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Credit Turmoil (cont’d.)

- The **“Unknown Unknowns”**
 - Erosion of confidence
 - Cracks in the system emerge
 - Trust breaks down
 - Panic sets in
 - Corporations and banks will fail, including names that would be unimaginable
 - What happens next and how do we recover ?

Something more local... And a 15 second revision

- Lose the distressing background.
- Keep the box? If so, try red.
- Simplify the font.
- Could do better with more time...

4th REC Meeting

- » Thursday, November 18th
- » 7:00pm @ The Pyle Center
- » Senior Health Care Symposium
- » Club Dues:
 - » \$50/semester
 - » \$95/year
- » 25 free admission passes available in Graaskamp Center

4th REC Meeting

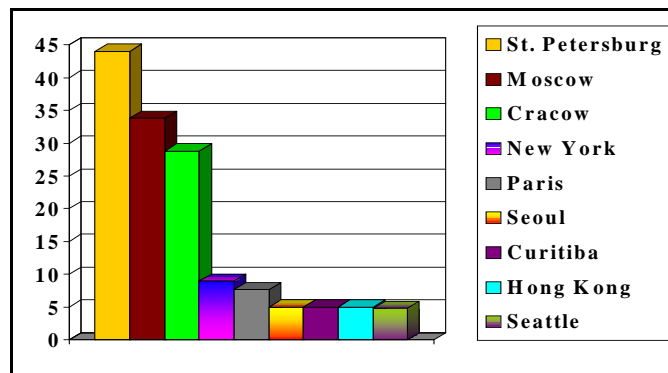


- Thursday, November 18th
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An actual chart from an industry report; and a revision

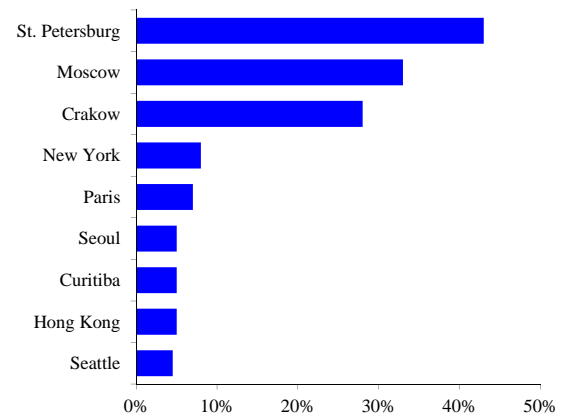
- Original: 3-D Bar, using mostly Microsoft defaults.
- Modification: 2-D, horizontal bar, larger fonts, match city labels with bars (no legend needed!)

Figure 2: Industrial Land Use as a Percent of Urban Land in Selected Cities.



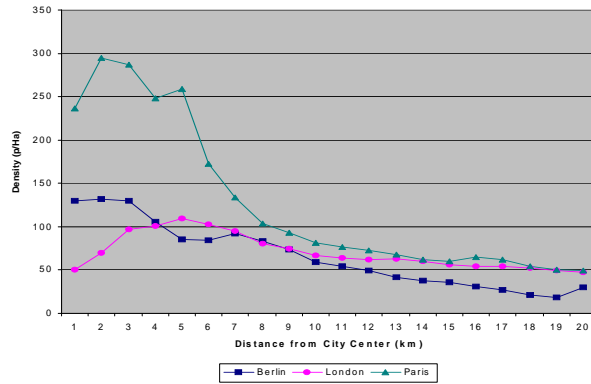
World Bank (various studies, 1991-1999).

Industrial Land Use as a Percent of Urban Land, Selected Cities

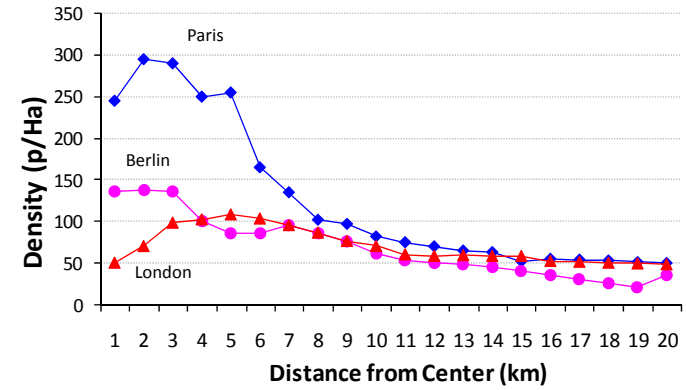


Source: Bertaud, and other World Bank studies

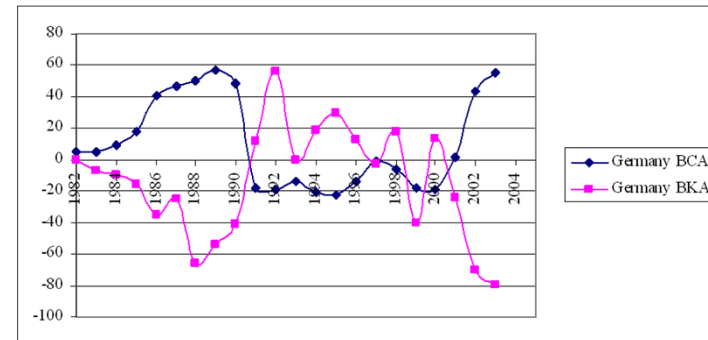
Figure 3a. Residential Density in Selected Western European Cities



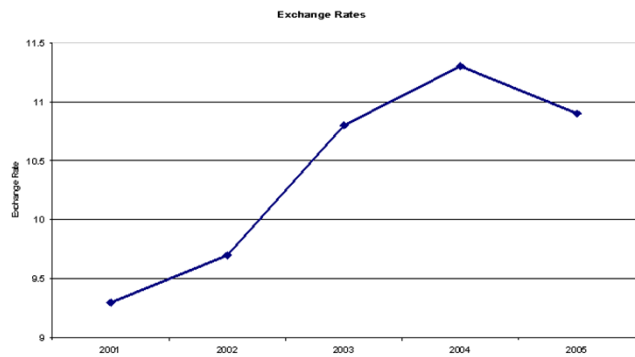
Residential Density in Selected Western European Cities



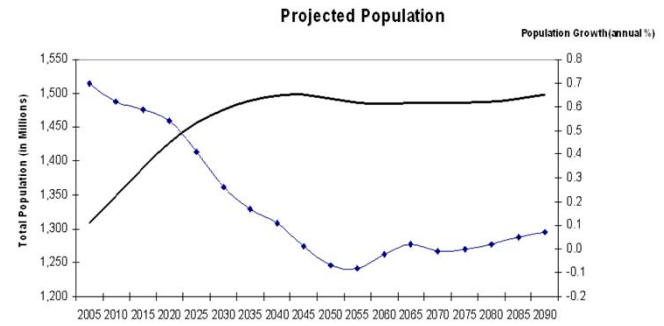
More examples



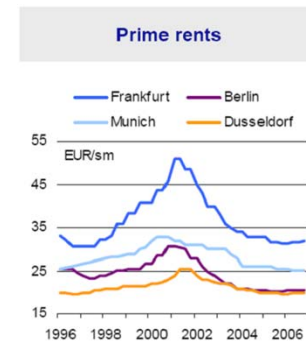
Lose "chart junk" (here, extra boxes)
Move horizontal legend to bottom



Font size?



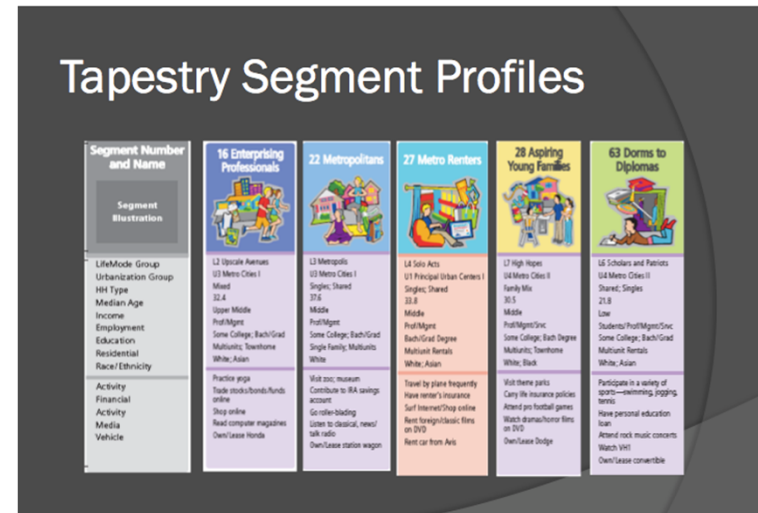
Source?



Pros and cons of "cut and paste"

Pros and cons of “cut and paste”

- Save time, when pressed.
- Often real estate data are private, scarce; you may find an industry report with a picture more easily than the underlying numbers.
- Gives a “slap-dash” cut-and-paste impression.
- A surprising number of industry charts are very badly executed.
- Copyright issues.
- Temptation to paste in a chart that’s too “busy” to read, see next example.



Cut and paste tips

- Use sparingly – no, very sparingly – if at all.
- If background is dark, you can often improve by selecting (right click) the image, then play with its properties, e.g. fill color, other color schemes.
- Don't forget to cite the source below the chart!

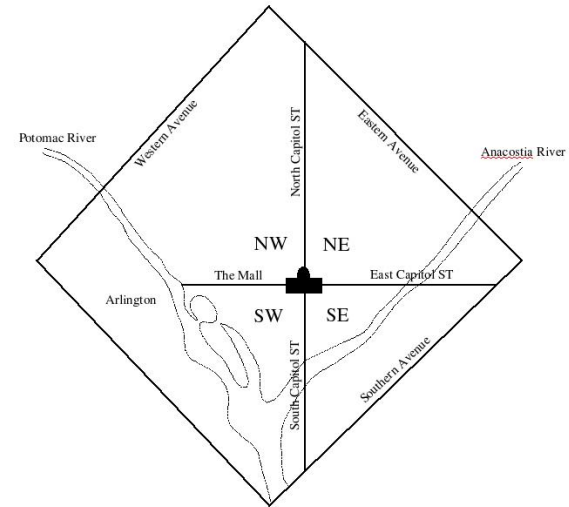
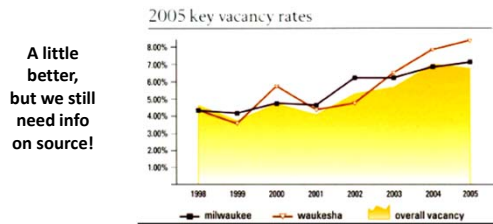
Milwaukee Industrial Market

- One-third of the US' manufacturing output is located within 600 miles of Milwaukee
- Wisconsin has an export growth rate of twice the national average
- Overall Sector Vacancy of 6.92%, up from 6.64% in 2004

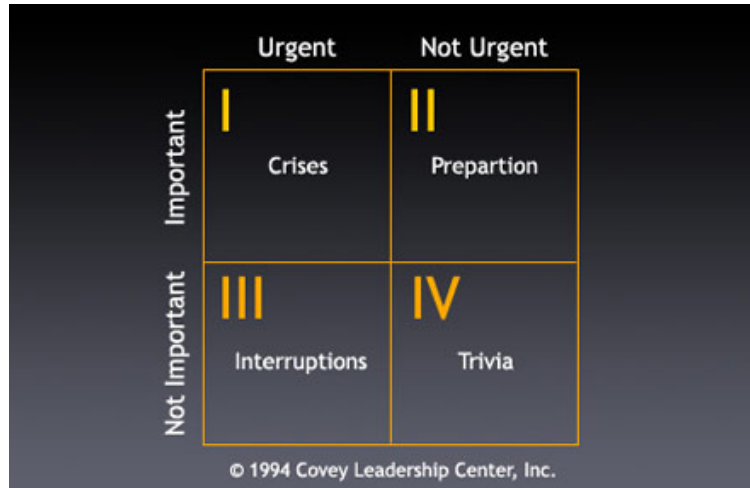


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- Wisconsin has an export growth rate of twice the national average
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Current readings

- Denise DiPasquale and William C. Wheaton, *Real Estate Economics*, Chapter 1, The Property and Capital Markets.
- Bertrand Renaud, The Real Estate Economy and the Design of Russian Reforms. (In two parts). *Urban Studies*, 1995. Required, Part II. Part I is recommended.
- Note: the 4QM is also discussed in Geltner and Miller, *Commercial Real Estate Analysis and Investments*, Chapter 2. Recommended.

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You may have seen “a” four quadrant model of real estate before, in real estate finance:

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The “Four Quadrants” of RE Investment

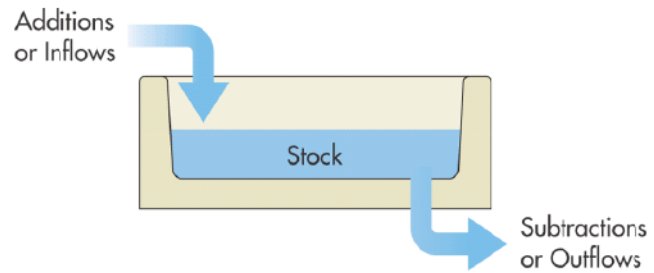
	Public	Private
Debt	Mortgage REITs; MBS and other structured debt	Whole mortgages
Equity	Equity REITs; Listed property companies	Direct property investments; Private equity funds; Private REITs

This is a very useful taxonomy, but it is NOT the 4QM we’ll be using in Urban Economics!

An Analytic Framework

- Now we will focus on the four quadrant model of DiPasquale and Wheaton.
 - Don’t confuse with the broadly similar model by Jeff Fisher, e.g. in Brueggeman and Fisher.
 - Conceptually similar, but different.
 - Don’t confuse with the four quadrants of real estate investment (public/private, by debt/equity).
 - See previous slide.
 - Nothing in common but the jargon.

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A Fundamental Concept: Stocks and Flows

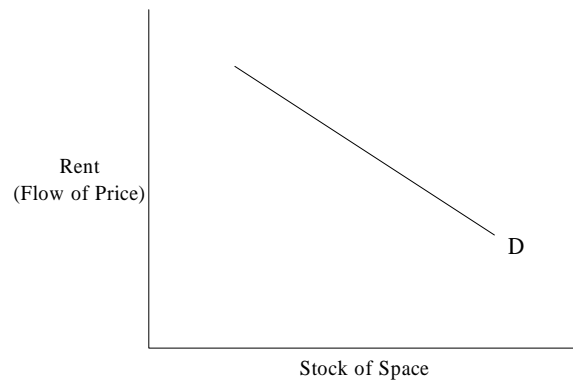
- Flows: Amounts per period yielded by an asset.
- Stocks: Corresponding total value of an asset at a particular time.

Income, GDP	⇒	Wealth
Dividends	⇒	Stock Price
Rent	⇒	Property Value

The 4QM is a stock-flow model. Considers both.

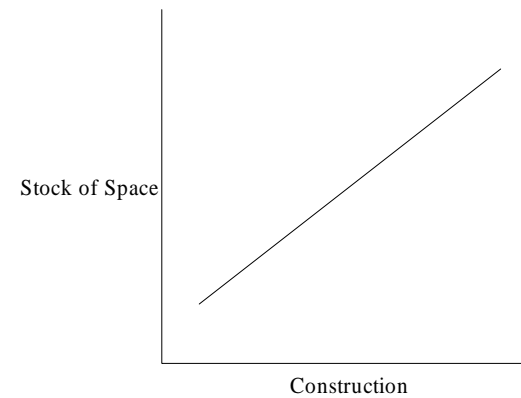
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Figure 1 Demand for Stock of RE



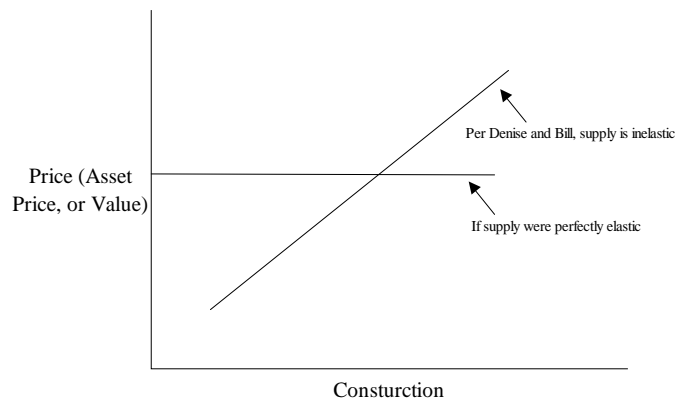
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Figure 2 Annual Construction in the Steady State



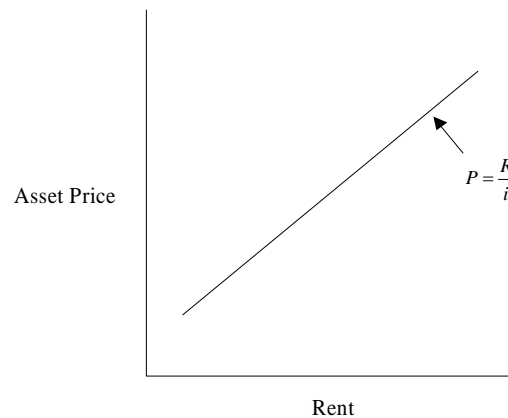
61

Figure 3 Supply of New Construction



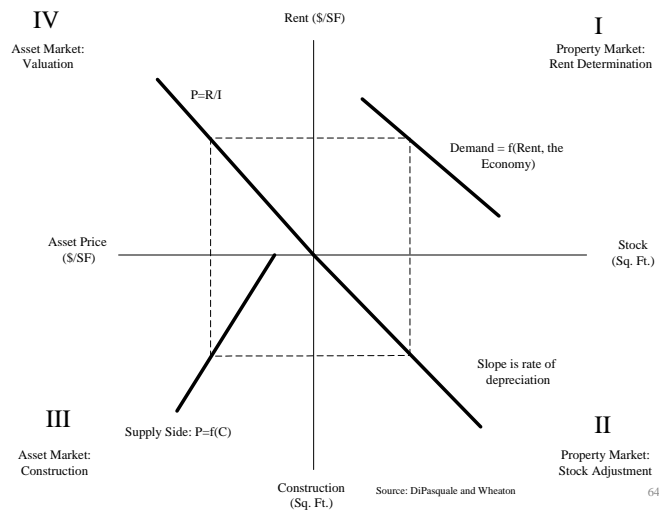
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Figure 4 Asset Price is Present Values of Rents



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Markets for the Use of Property, and Asset Markets



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Some Insights of the 4 Quadrant Model

- Integrates stocks and flows in a simple framework
- Comparative static model; not a true dynamic model
- Easy to “solve” graphically for *qualitative* changes
- It’s a little tricky to solve for actual numbers because the four equations are *simultaneous*.
 - Well, not too tricky. Four equations, four unknowns.
 - Spreadsheet model can do some of the work for us, using Excel’s *Solver* add-in.

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Analysis with the 4QM

- Demand for real estate by foreign investors increases.
 - 4QM → cap rates fall (QIV). Asset prices rise.
 - But supply response (QIII) increases stock of space, rents fall (QI), moderating original asset price increase.
- Demand for real estate increases from the office sector.
 - 4QM → Demand shifts out (QI), values rise. Note difference between shifts in space demand and asset demand!

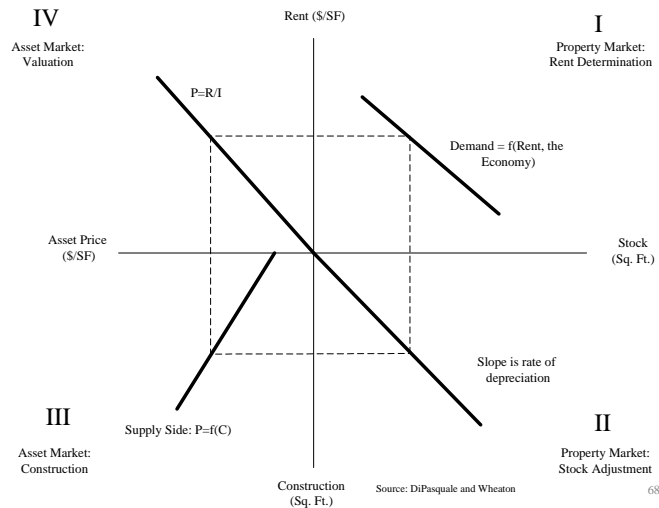
66

Further Analysis with the 4QM

- Mortgage rates fall.
 - 4QM → When long term rates fall, then existing yield from real estate becomes higher in relative terms. Investment demand increases. Cap rates fall (QIV), supply up (QIII), rents fall (QI).
- Short term interest rates fall.
 - 4QM → Higher short term rates (holding long term rates constant) shift the costs of development (QIII), lowers the stock of space (QII), rents rise (QI), asset prices rise with costs (QIV).
- Many other scenarios possible, e.g. an increase in public housing, growth management, tax changes.

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Markets for the Use of Property, and Asset Markets



Calibrating the 4QM

- Following a textbook version of DiPasquale and Wheaton (1996, p. 8), we specify the relationships in our 4QM as follows:
 - (1) $S = E(400-10R)$
 - (2) $C = \delta * S$
 - (3) $P = 200 + 5C$
 - (4) $R = iP$
- Where do these numbers come from? How can we calibrate the model? We'll discuss briefly now, more on this later.

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	A	B	C	D	E	F	G	H
1	Summary of Denise and Bill's Model (see Ch. 1)							
2								
3	Inputs in Red ("Guess" will change after model's run)				Model Equations			
4	Exogenous Variables				Demand for Stock of Space, S			
5								
6	Employment (Million)	E	20.00		$Sd = E(400-10R)$		4000.00	
7	Cap Rate	i	0.05					
8	Depreciation Rate	delta	0.01		Flow of Construction (Steady State, C)			
9					$C = \text{delta} * S$		40.00	
10								
11	Endogenous Variables				Guess	Solution	Difference	Construction Cost (Asset Price), P
12	Space (Mil Sq Ft)	S	4000.00	4000.00	0.00	$P = 200 + 5C$	400.00	
13	Construction (Mil Sq Ft)	C	40.00	40.00	0.00	In equilibrium, construction cost = asset price, so		
14	Asset Price (Value)	P	400.00	400.00	0.00	eqbm. level of construction is: $C = (P-200)/5$		
15	Flow Price (Rent) (\$)	R	20.00	20.00	0.00			
16						Rent per sq ft, R		
17						$R = iP \text{ (or } P/iR)$	20.00	
18								
19	Notes							
20	I would prefer to use V for value instead of P for price, but we'll stick with D&B's notation.							
21	Notice if we standardize for quality and location, R is flow price and P is stock price.							
22	Model is in spreadsheet "Four Quadrant RE Market Model.XLS". To run, change exogenous variables							
23	(and equations if necessary), and make initial guess for endogenous variables.							
24	Then run SOLVER in Excel (let sum of differences= 0, subject to each individual							
25	difference also equals zero).							
26	Notice this is the steady state solution. If (e.g.) employment increases, solve the							
27	model twice (at old and new values of E). The difference between S on the first run							
28	and S on the second will be the one-time shock to construction, and C in the							
29	second run will be the new steady state (replacement) construction. We call							
30	such an exercise comparative statics.							

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9					$C = \text{delta} * S$	
10						
11	Endogenous Variables			Guess	Solution	Difference
12	Space (Mil Sq Ft)	S	3999.999994119	= + G6	= + C12-D12	$P = 200 + 5C$
13	Construction (Mil Sq Ft)	C	39.9999992169	= + G9	= + C13-D13	In equilibrium, construction cost = asset price, so
14	Asset Price (Value)	P	399.999996084	= + G12	= + C14-D14	eqbm. level of construction is: $C = (P-200)/5$
15	Flow Price (Rent) (\$ per SF)	R	20.0000005291	= + G17	= + C15-D15	
16						Rent per sq ft, R
17						$R = iP \text{ (or } P/iR)$
18						
19	Notes					
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30	such an exercise comparative statics.					

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The screenshot shows the Excel spreadsheet with the Solver Parameters dialog box open. The dialog box is configured as follows:

- Set Target Cell:** \$E\$17
- To:** Max Min Value Of: 0
- By Changing Variable Cells:** \$B\$3:\$B\$5
- Subject to the Constraints:**
 - \$E\$12 = 0
 - \$E\$13 = 0
 - \$E\$14 = 0
 - \$E\$15 = 0





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Application of the 4QM to Country Economic Analysis: Russia, 1990s (Transition period)

- From World Bank Sector Report 14929-RU, Chapter 3 (summarized in Renaud, Urban Studies, Part II)
- Stabilization strategy in light of the 4QM:
 - QI: Demand is now “behind a veil.” Privatize the housing stock, reform rents, subsidies.
 - QII: Lower depreciation with better incented maintenance, rehabilitation (where feasible).
 - QIII: Improved regulatory framework and “industrial organization” of the real estate market will enhance supply.
 - QIV: Costs of funds must rise to opportunity cost, cap rates will rise, asset prices will fall to a sustainable equilibrium.

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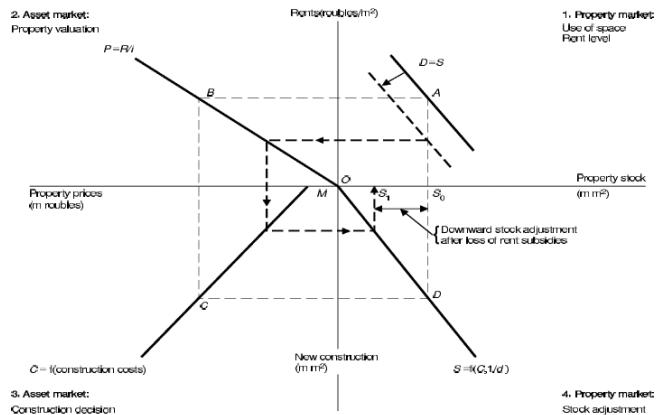


Figure 1. Recent shocks to the traditional housing system.

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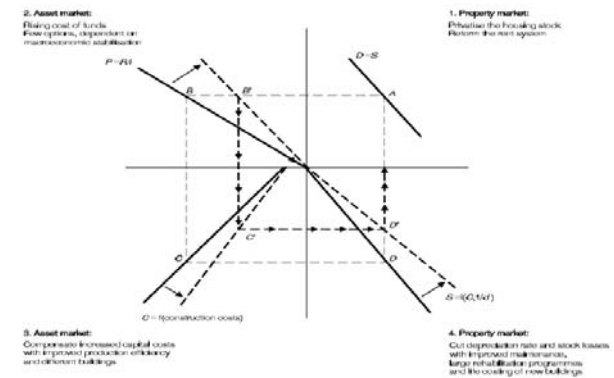


Figure 2. Stabilization strategy for housing.

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