ECONOMIC AND MARKET ANALYSIS

(Sources of material in this section include the MIT Center for Real Estate and Urban Economics and Real Estate Markets, Denise Pasquale and William C. Wheaton, Prentice Hall, 1996.)

Real estate - the stock of buildings, the land on which they are built and vacant land
Market - A mechanism for the voluntary exchange of goods and services among owners.

The real estate market consists of two markets

- The market for real estate use or space, e.g. the needs of tenants and the type and quality of buildings available determine the rent for space
- The market for real estate assets, e.g., building may be bought, sold or exchanged between investors; these transactions determine the asset price

A market is “segmented” if it breaks up into sub-markets, or market segments.
Within each sub-market or segment, the same good may have a different equilibrium price.
The real estate space market is highly segmented.

- Users require specific types of space... A lawyer can’t use a warehouse.
- Users require specific locations (or types of locations)

As a result, market conditions vary by local regions (MSA and submarkets) and property type (residential (apartment), Office, Industrial (warehouse), Retail, Other (hotels, health-care, etc...))
The real estate space market deals with physical capital.

The real estate asset market deals with financial capital.

“Physical Capital” = Real physical assets that produce real goods or services over an extended period of time.

“Financial Capital” = Money.

In the real estate asset market, financial capital is used to purchase physical capital assets.
Physical capital is specific and relatively immobile.
Financial capital is fungible (homogeneous) and very mobile.
For investors, Real Estate Assets = Future Cash Flows

“Cash is fungible.” Cash is cash is cash, whether it comes from real estate, stocks, or bonds.

Real estate assets compete against stocks & bonds. The real estate asset market is part of the broader capital market.

Asset prices are such that expected returns are the same for properties with the same risk, across different property market segments.
Therefore, Asset Markets are integrated, not (very) segmented

The demand curve expresses the ability and willingness of buyers to purchase a product at various prices; Rent/Price will range from $0 to some finite number of dollars;
At each possible rent/price, a different number of consumers will express interest in the property; at a very high price, consumers are not interested in the space; at a price of $0, consumers are interested in a large quantity of space.

Shifts in the demand curve can result from several factors including changes in customer preference, prices of related, complement and/or substitute goods, income, number of potential buyers or expectations of a price change.

The supply curve expresses the ability and willingness of suppliers (builders, sellers) to sell/produce a product;

The real estate supply curve is “kinked” due to the longevity of buildings, i.e., you can add them easier than you can subtract them.

Shifts in the supply curve can result from several factors including changes in prices of other goods, number of sellers, prices of relevant inputs, technology, and expectations of prices.

Supply function = Long-Run Marginal Cost function (LRMC)

$ LRMC = $ Virtually zero (at and below existing supply).

$ LRMC = $ Development cost (beyond existing supply)

$ Development cost = Construction + Land + developer profit

In a market with expanding demand, equilibrium rent is the “Replacement cost rent”—the rent the market tends to return to that is just sufficient to make new development profitable.

The Real Estate System

Development is a creative, entrepreneurial process characterized by

Vision

Profit motivation (greed)

Cooperation

• Between public & private sectors;

• Between developers & financiers.

Risk

• Even an economy in recession needs an existing stock of built space.

• New space (need for development) results only from economic growth &/or change.

Real estate development is therefore dealing with the dynamic “cutting edge” of the physical built environment.

This makes development the most cyclical branch of the real estate industry.
Negative feedback loops - Mechanisms within a system that tend to dampen the changes in the system, helping to keep it in control, preventing it from spiraling out of control.

Example:
A thermostat puts a negative feedback loop into a heating and cooling (HVAC) system in a building.
- When the temperature in the building gets too low, the thermostat triggers the heater.
- When the temperature in the building gets too high, the thermostat triggers the air conditioning.

The result is that the building temperature remains "under control", within a comfortable temperature range.

Housing Bubble
Housing demand is rising because prices are rising because housing demand is rising! No reason to buy other than the fact that others are buying.

Real estate can be measured both as a flow and as a stock.
- Flow is the value of new buildings put in place each year less losses from the stock through depreciation or demolition
- Stock is the value of all land and all existing buildings

Real estate markets are affected by *exogenous* and *endogenous* factors; exogenous forces are factors that influence real estate market outcomes but are not influenced by the real estate market, e.g. interest rates, climate, world trade; endogenous factors are measures of real estate market outcomes such as prices and rents.

**Real Estate Asset Market**
Real estate asset production and price are determined in an asset or capital market, in which demand to own real estate assets must equal their supply

The price of houses largely depends on how many households wish to own units and how many units are available for ownership; The value or price of shopping centers depends on how many investors wish to own them and how many centers there are available to invest in.

All else being equal, an increase in the demand to own will raise prices while a greater supply of space will depress prices.

Supply of new real estate assets comes from the construction sector and depends on the price of the assets relative to the cost of constructing them (replacement cost).

In the long run, the market should equate market prices with replacement costs that include the cost of land; however, in the short run, prices and replacement costs diverge due to lags and delays inherent in the development and construction process.
Real Estate Space Market

Supply in the space market is given by the asset market.

Demand in the space market comes from the occupiers of space—tenants, owners, firms or households. The cost of occupying space, rent, is the annually outlay necessary to obtain the use of real estate. For tenants rent is specified by contract; for owners, rent is the annualized cost associated with ownership of property.

Demand for space depends on rent and other exogenous factors such as firm production levels, income levels, or the number of households.

Rent is determined in the space market, not in the asset market.

The amount of rent a firm can pay will depend on firm output levels and the relative cost of space; space is one of the firm’s factors of production.

The amount of rent a household can pay will depend on income and the relative cost of other commodities such as food, clothing, entertainment, etc.

The space market determines a rent level at which the demand for space use equals the supply of space.

All else equal, when the number of households increases or firms expand production, the demand for space rises, and with fixed supply, rents rise as well.

Link between Asset and Space Market

Rent levels are determined in the space market but rent levels determine the demand in the asset market, i.e., investors purchase assets based on the income stream (rent) the asset generates.

If supply in the asset market increases through development and construction, asset prices are driven down with a corresponding decline in rents in the space market.

The 4Quadrant Model

The links between the asset and space market are illustrated with the DiPasquale-Wheaton Four Quadrant model shown above. The two right hand quadrants represent the space market; the two left hand quadrants represent the asset market.
Quadrant I (Space Market)
QI has two axes: rent (per unit of space) and stock (units of space).
The curve represents how the demand for space depends on rents given the state of the economy.
Movement along the curve depicts how much space would be demanded given a particular rent level on the vertical axis—movement along the curve results from endogenous factors.
If households or firms tend to demand the same amount of space regardless of rent levels (inelastic demand) then the curve is nearly vertical. If space usage is very sensitive to rents (elastic demand), then the curve is more horizontal.
Shifts in the curve result from exogenous factors such as changes in the economy, interest rates, consumer preferences, etc. Economic growth (increase in consumers, firms or households) causes an upward shift in the curve meaning that more space is demanded for the same rent.
Equilibrium occurs where the demand for space is equal to the stock of space. The stock of space is given by the asset market.
Demand is a function of rent and conditions in the economy.

Quadrant II (Asset Market)
The purpose of QII is to take the rent level from QI and determine a price for the asset using a cap rate (ratio of rent to price). QII has two axes: rent (per unit of space) and price (per unit of space).
The ray emanates from the origin and represents the cap rate; The cap rate is the current yield investors demand to hold real estate assets
4 general factors (exogenous) affecting the cap rate:
- Interest rates and rates of return on other assets in the economy
- Expected growth in income
- Risk associated with income stream
- Tax treatment
A higher cap rate is represented by a clockwise rotation in the ray; a decline in the cap rate is represented by a counter clockwise rotation

Quadrant III (Asset Market)
QIII is the portion of the asset market where the creation of new assets is given.
The curve represents the replacement cost of real estate assets
Replacement cost is assumed to increase with greater building activity
The ray intersects the price axis at the minimum dollar value per unit of space required to get some level of new development under way. If this construction can be supplied at any level with almost the same costs, the ray will be close to vertical (elastic supply). If there are impediments to new development and construction (e.g. construction bottlenecks, land scarcity, etc.) the ray is more horizontal (inelastic supply)
Given the price of real estate assets from QI, the vertical axis determines the level of new construction where replacement costs equals asset prices. Lower levels of construction would lead to excess profits whereas higher levels would be unprofitable.

**Quadrant IV (Space Market)**

QIV converts the flow of new construction of QIII into a long-run stock of real estate space. Change in the stock in a given period is equal to new construction minus losses from the stock (demolition). The ray emanates from the origin and represents the level of stock (on the horizontal axis) that requires an annual level of construction for replacement just equal to that value on the vertical axis. At that level of stock and corresponding level of construction, the stock of space will be constant over time (demolition = new construction).

**Rotation through Model**

Starting with a level of stock in the space market, the space market determines rents, which are translated into asset prices. Asset prices generate new construction which eventually yields a new level of stock in the space market.

The space and asset markets are in equilibrium when the starting and ending levels of stock are the same. Equilibrium is represented by a rectangle intersecting the four axes and connecting the curves in the four quadrants.

If the starting stock value exceeds the ending stock value, then rents, prices and construction must all rise to be in equilibrium.

If the starting stock value is less than the ending stock amount, then rents prices and construction must be decreased to be in equilibrium.

The 4Q model is a static model of the long-run equilibrium between space and asset markets; it does not address short-run dynamics in the market.

**Space Demand – Economic Growth – QI**

Economic growth or contraction causes shifts in the demand curve in QI (changes in population, employment, income). Economic expansion causes an outward shift in the demand curve indicating that for a given level of space, rents must rise if the demand to use space is to equal available space. Higher rents lead to higher asset prices in QII. Higher asset prices in QII lead to a higher level of construction in QIII. More construction leads to a greater stock of space in QIV. The new equilibrium rectangle lies outside the original rectangle at all points; the shape of the new box will depend on the slopes (elasticities) of the various curves, e.g., if construction were very elastic with respect to asset prices (vertical in QIII), new levels of prices and rents would be only slightly greater than before whereas construction and stock would expand considerably.

**Asset Demand - Investment Yields – QII**

Changes in demand to own real estate assets result from differences in the attractiveness of real estate as in investment relative to other investments. If interest rates (or rates of return on other investments such as stocks or bonds) in the rest of the economy rise, then the existing yield from real estate becomes low relative to other investments and investors will seek to shift their funds from the real estate sector. If risk characteristics of real estate are perceived to have worsened, then the existing yield from real estate may also become insufficient (more than necessary) to get investors to purchase real estate assets relative to other assets. Changes in income tax treatment of real estate investments will also affect yields relative to other investments.

Changes in asset demand are reflected in the slope of the QII curve.

A reduction in the yield investors require from real estate assets (cap rate) will rotate the curve counterclockwise. An increase in the cap rate will rotate the curve clockwise.

Given a level of rent from the space market in QI, a reduction in the cap rate will raise asset prices in QII which leads to an increase in construction in QIII. This leads to an increase in the stock of space in QIV which lowers rents in QI. The new equilibrium rectangle is lower and more rectangular than the original.
Supply Variables – QIII
Shifts in the supply schedule for new construction can result from increase construction costs. Construction costs are dependent on short-term interest rates (construction financing), the regulatory environment, and labor and materials costs. Negative supply changes result in an outward shift in the construction cost curve—for the same level of asset prices, construction will be less. Positive changes in the supply environment, such as easy availability of construction financing move the curve inward and increase construction for the same asset price.

For a given level of asset prices, a negative shift in asset construction in QIII will eventually lower the stock of space in QIV. With less space, rents will have to rise in Q1 which will generate higher asset prices in QI. The equilibrium rectangle will lie to the upper left of the original equilibrium. The magnitude of changes will depend on the slopes (elasticities) of the various curves.

Owner Occupied Real Estate Example
Asset prices and rents are determined by the same participants, i.e. homeowners are both occupiers of space and investors.

The demand for single family homes depends on the number of households, their incomes and the annual costs of owning a home - the equivalent of rent.

In Q1, a rise in the number of households shifts the demand curve out. With greater demand and a fixed stock of housing units, rent (annual housing payments) must rise. In Q2, annual payment is translated into a house price that households are willing to pay for a home, e.g. Lower interest rates imply that with the same annual payment, households can afford to pay a higher asset price. New housing development and a new equilibrium stock of space follow.

Forecasting Supply and Demand

<table>
<thead>
<tr>
<th>Supply and Demand Equilibrium—Example</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Projected population, 2012</td>
<td>100,000</td>
</tr>
<tr>
<td>Est required housing (2.5 hh size)</td>
<td>40,000</td>
</tr>
<tr>
<td>Plus vacancy factor (5%)</td>
<td>2,000</td>
</tr>
<tr>
<td>Total estimated housing required</td>
<td>42,000</td>
</tr>
<tr>
<td>Minus units existing and under const</td>
<td>32,000</td>
</tr>
<tr>
<td>Minus units permitted, not built</td>
<td>3,000</td>
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<tr>
<td>Total housing supply</td>
<td>(35,000)</td>
</tr>
<tr>
<td>Additional housing required by 2012</td>
<td>7,000</td>
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<tr>
<td>Required per year to 2012 (7 years)</td>
<td>1,000</td>
</tr>
<tr>
<td>Est present population</td>
<td>80,000</td>
</tr>
<tr>
<td>Est present housing requirement (2.5 hh size)</td>
<td>32,000</td>
</tr>
<tr>
<td>Plus vacancy factor (5%)</td>
<td>1,600</td>
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<tr>
<td>Est present housing requirement</td>
<td>33,600</td>
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<tr>
<td>Minus total housing supply</td>
<td>(32,500)</td>
</tr>
<tr>
<td>Existing demand (oversupply)</td>
<td>1,100</td>
</tr>
<tr>
<td>Est. time to deplete oversupply</td>
<td></td>
</tr>
</tbody>
</table>

The real estate cycle

Real estate markets tend to rise and fall around the theoretical equilibrium over time—the real estate cycle. The real estate cycle is not modeled by the 4Q model per se—the rotation through the quadrants or the changes in equilibrium can be thought of as movement along the real estate cycle. The 4Q model is a static picture of the long-run equilibrium and does not model short term changes in the market.
The endogenous and exogenous factors upon which the model is based are constantly changing (dynamic) leading to constantly shifting curves. Some changes are more dramatic than others. The development and construction process consists of long lead times from start to delivery and occupancy of space.

Supply can be provided without necessarily being linked to demand; the real estate cycle is a periodic “overbuilding” of the market -excess supply - that originates from capital or development activity and is not necessarily linked to demand movements.

Demand can be generated by speculation; The real estate cycle is also a reaction to a “shock” in the underlying economic demand for the property: national or regional recessions and economic boom periods.

**Phase II - Expansion**
- Hi rent growth
- Tight market
- New Construction

**Phase III - Hypersupply**
- Rent growth slows
- Supply growth higher than demand growth

**Phase I - Recovery**
- New demand
- Excess space absorbed
- Low rental growth

**Phase IV - Recession**
- Negative rent growth

**Recovery—supply exceeds demand—the bottom of the cycle**
Oversupply from previous new construction or negative demand growth; Vacancy rates are at their highest, rents/prices are flat.
Vacancy rates begin to decrease, rents/prices stabilize and begin to increase
Replacement costs exceeds values/prices

**Expansion—demand growth exceeds supply growth—peak**
Supply declines, rents increase, vacancy decreases
Replacement costs equal values/prices justifying new construction

**Hypersupply—supply growth exceeds demand growth**
Rents begin to flatten and decline; Vacancy begins to increase
Values exceed replacement cost

**Recession—negative demand growth**
Supply increases as a result of overbuilding and increased vacancy; Rents decline
The economy and real estate

Circular flow of income Model
Economy is assumed to be a closed economy with no exchange of goods or dollar payments with the rest of the world;
Three sectors—household, business and government
Government sector acts to redistribute income earned by other sectors and is therefore not considered

Household sector—all individuals and households that own the factors of production;
The Household Sector are the local residents who:
■ Provide labor services to local industries
■ Own land in the local economy
■ Own all the capital goods and capital funds used locally
■ Provide entrepreneurial talent to local firms
The Household sector sells factors of production to the business sector
The Household sector purchases goods and services from the business sector
The Household sector can be described by identifying key variables (segmentation):
■ Population size, number of families or households
■ Age composition
■ Income composition
■ Household/family size
■ Sex composition
■ Marital status
■ Educational level
■ Other variables

The Business sector uses productive resources
The Business sector produces consumer and capital goods and services that are purchased by the businesses and individuals in the household sector
The Business sector can be described by identifying industrial classifications that exist in the local economy
<table>
<thead>
<tr>
<th>Code</th>
<th>NAICS Sectors</th>
<th>SIC Divisions</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Agriculture, Forestry, Hunting, and Hunting</td>
<td>Agriculture, Forestry, and Fishing</td>
</tr>
<tr>
<td>21</td>
<td>Mining</td>
<td>Mining</td>
</tr>
<tr>
<td>23</td>
<td>Construction</td>
<td>Construction</td>
</tr>
<tr>
<td>31-33</td>
<td>Manufacturing</td>
<td>Manufacturing</td>
</tr>
<tr>
<td>22</td>
<td>Utilities</td>
<td>Transportation, Communications and Public Utilities</td>
</tr>
<tr>
<td>48-49</td>
<td>Transportation and Warehousing</td>
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</tr>
<tr>
<td>42</td>
<td>Wholesale Trade</td>
<td>Wholesale Trade</td>
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<tr>
<td>44-45</td>
<td>Retail Trade</td>
<td>Retail Trade</td>
</tr>
<tr>
<td>72</td>
<td>Accommodation and Food Services</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>Finance and Insurance</td>
<td>Finance, Insurance, and Real Estate</td>
</tr>
<tr>
<td>53</td>
<td>Real Estate and Rental and Leasing</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>Information</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>Professional, Scientific, and Technical Services</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>Administrative Support; Waste Management and Remediation Services</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>Educational Services</td>
<td>Services</td>
</tr>
<tr>
<td>62</td>
<td>Health Care and Social Assistance</td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>Arts, Entertainment, and Recreation</td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>Other Services (except Public Administration)</td>
<td></td>
</tr>
<tr>
<td>92</td>
<td>Public Administration</td>
<td>Public Administration</td>
</tr>
<tr>
<td>55</td>
<td>Management of Companies and Enterprises</td>
<td>(parts of all divisions)</td>
</tr>
</tbody>
</table>

**Economic base—the complex of activities that comprise the household and business sectors and the flows in the flow-of-income model**

**Export base theory—the link to the non-local area**

Firms sell to both local and nonlocal consumers but nonlocal sales generate the economic growth

Basic activities are those industrial and commercial firms that sell a large portion of their products to nonlocal consumers—the export industries, the basic sector of the local economy—town builder jobs

Non-basic activities are those firms that sell goods and services primarily to local consumer—non-basic or service sector—town filler jobs

As exports grow, local economy grows

Basic industries need more employees to meet increased external demand

Non-basic industries need more employees to meet increased internal demand of new basic employees

The increase in number of employed persons and resultant increase in local purchasing power leads to increase in demand for housing, retail and office space

**Location quotient**

Ratio of local employment in an industry to total employment in the local economy - e

Ratio of national employment in an industry to total employment in the national economy - E

If e / E > 1.0, the industry is considered basic

Structural changes in basic industries should be monitored and analyzed

**Internal multiplier effect—a one unit change in basic employment causes a more than a one unit change in total employment**

**Demand Factors**

Demand—people, firms, and other entities are willing to pay various prices for the use of space for consumption or production purposes
Determinants of demand—population, employment and income (effective demand)
Household is the basic unit of demand; A household is a single individual or a group of individuals living in the same dwelling unit.
Effective demand—a household must have an ability and willingness to pay for housing for there to be demand.
Changes in household formation drive the housing market; Factors in household formation include:
- Age - households are typically formed at different stages of the life cycle. Age is important, but not the only factor
- Changes in lifestyles - delays in marriage or childbearing, increase in the divorce rate, lower birthrates, fewer remarriages, etc.

**Price of Housing**
In economic terms:
Price is the market price for a defined quantity of a good such as price per gallon of gas.
Consumption is the quantity or quality of the good purchased such as 10 gallons of unleaded gas.
Expenditures are the unit price times the consumption.
The real estate price/rent data often observed or reported is that of expenditures, disaggregated without regard to quality, etc, e.g. the median house price, the average metropolitan apartment rent, etc.
Home prices and rents are influenced by the same economic conditions and depend on the same underlying housing production costs yet they often diverge in a given metropolitan area. While land and construction costs will limit price declines over the long run, there can still be short-term fluctuations in prices and rents because of changes in regional economies or imbalances between the supply of and demand for units.
Households ultimately compare rent levels to the annual cost of ownership.

**Tenure choice**
At the time households are formed, they must also make the decision of whether to own or rent.
Some households cannot afford to own their homes: The initial cash required to purchase a home (down payment and closing costs) and the amount of income required to qualify for a home loan are prohibitive.
While some households can afford to own their homes, they choose to rent.
Households that move frequently for work or recreational opportunities may find renting less costly—transaction costs associated with renting are substantially lower than with homeownership—actual dollars, time and hassle factor.
Mobility rates are higher among renters than homeowners.
Mobility tends to decline with age as workers settle into their careers or begin having children.
Older workers have had time in the labor market to accumulate the initial cash required to purchase a home.
Wages tend to rise with work experience.

**Segmentation**
The process of subdividing consumers into smaller groups with similar characteristics
- Demographic characteristics—Age, sex, household size, familial status, etc
- Economic characteristics—income level, assets, income source, employment type
- Psychographic characteristics—attitudes, preference patterns, tastes, behavior, etc
Segmentation can occur on any or several of the above characteristics
Demand factors include
Net household formation
- Age composition of the household
- Household income
- Credit conditions
- Prices of substitute units
- Ownership costs
- Expectations about the future
- Seasonality

There is a positive relationship between income and housing consumption but it is not quite proportional, e.g. a doubling income will not lead to a doubling of the housing consumed (inelastic demand)

In analyzing housing expenditures, permanent income is a better predictor of housing consumption than current income.

Household size generally has little impact on total housing expenditures or the consumption of housing services. Larger households need more shelter, however larger households also need more food, clothing, etc. However, the presence of children creates an important change in housing consumption.

As households age, housing consumption tends to increase.

While moves occur for many reasons such as job relocation, marriage, divorce, etc, the single most important reason for moving is to adjust one’s housing consumption.

Mobility of households is highest in the under-25 age bracket and declines steadily as households age.

Renters are much more mobile than owners.

Supply Factors
- Disaggregation

An analysis of supply in the market, the process of dividing a market into smaller more homogeneous sub-markets.

Geographic sub-market—the area of generally comparable population characteristics, generally defined by
- Travel time from major employment centers
- Mass transportation facilities and highway links
- Existing and anticipated patterns of development
- Socioeconomic composition
- Physical barriers

Tenure
- Renter occupied
- Owner occupied

Number of units per lot—single family vs multifamily—density (lot sizes)—number of dwelling units per acre

Product types
- Attributes
  - Age (new vs. existing)
  - Price
  - Style
  - Size
A distinction may be made between the market for housing units and for housing services—this may be considered a form of disaggregation.

- The market for housing units is the demand for and supply of dwelling units—single family, apartments, townhouses, etc.
- Housing services include the size of the structure and lot, unit characteristics, location amenities, etc.

**Vacancy, Inventory, Sales Time**

The demand for housing services (or product types/amenities) changes significantly over the life cycle of any individual household, e.g., marriage, arrival of children, increasing economic success, retirement, each generating shifts in demand for housing services.

Such shifts in demand and corresponding movement of households leads to a large volume of transactions.

The housing vacancy rate facilitates transactions—vacant units provide the inventory from which households choose. When inventory is large, buyer/renter households have a wide choice, can easily find the units they want, at more attractive prices/rents sellers/lessors have difficulty in finding buyers/tenants and must be flexible in accepting purchase/lease terms.

Housing prices and rents are strongly influenced by the combination of the vacancy rate and the number of households seeking to move. If household mobility is high and inventory low, prices will rise rapidly, eventually dissuading households to move. Conversely, a large inventory and low mobility will lower prices, encouraging households to move.

As households move, there is the risk of not being able to sell or lease the unit the household is moving from. This risk is normally borne by the asset owner. A softening market increases this risk as owners become more desperate. The market factor that primarily determines this risk is the vacancy rate.

There is a simple relationship between the average length of time houses take to sell or lease and vacancy:

\[
\text{Vacant inventory (units)} \div \text{Sales (units per year)} = \text{Average sales time (years)}
\]

The average sales or lease time within a market is an important barometer. A long sales time results when the inventory of vacant units is unusually high and the sales rate is below average. Excessive vacancy presents problems for sellers; too little vacancy creates problems for buyers. A normal or structural vacancy rate provides choice for buyers and sufficient incentive for sellers. Equilibrium assumes a normal vacancy rate.

Sales time affects construction independent of the impact of house price levels. Holding costs and implicit and explicit financial constraints related to sales time lead builders to curtail construction. Sales time is a predictor of future price movements.
Residential vacancy rates move remarkably little (in comparison to commercial. Supply seems quite disciplined relative to demand. Yet there are significant swings in rents and house prices!

U.S. Single-Family Market:
Completions move with the economy, and home prices adjust quickly.
U.S. Multi Family Market: Supply not as closely aligned to Demand.

MIT Center for Real Estate

U.S. Single-Family Market
Completions Rate vs. Home Price Appreciation
MIT Center for Real Estate

National Multi-Housing Forecast
Permits vs. Real Rent

MIT Center for Real Estate

National Industrial Forecast
Completions Rate vs. Real Rent
MIT Center for Real Estate

National Office Forecast
Completions Rate vs. Real Rent Per Sqft

MIT Center for Real Estate

National Hotel Forecast
Supply Growth Rate vs. Real ADR
NON-RESIDENTIAL MARKETS

The cyclic pattern of non-residential markets generally follows the macro economy. However, the long lead times for planning and construction may affect the correlation

Office

Supply
Office space can be categorized according to several factors:

Class - measured by evaluating age, location, quality of finishes, building systems, amenities, lease rates, and tenant profiles

- Class A—excellent location and access, good to excellent physical condition, rents are competitive with new construction
- Class B—good location, generally good physical condition, some functional obsolescence and deterioration, below new construction rents
- Class C—older building, physical deterioration and functional obsolescence, remains as part of active supply with reasonable vacancy rates and lower rent that Class B

Location - downtown (CBD) - accounting, law, consulting, government; Secondary note - hospital, university, etc; suburban - more diverse industries

Size and flexibility - high rise, mid rise, low rise; floor plate

Use and Ownership - single tenant (may be owner-user or build to suit) or multi tenant, spec

Features and amenities

Demand
Driven by employment growth
Increases in demand come primarily from growth in office-using jobs

Space per employee

Two major segments:
Local market servers—doctors, dentists, accountants, insurance agents, real estate brokers, bankers, etc.; location vis-à-vis customers is important

Non-local market servers—regional offices of corporations, financial service companies, etc; location vis-à-vis customers less important; quality of life, proximity to vendors/complementary business, prestige, transportation systems are more important

Office using firms tend to decentralize to be closer to workforce and to pay lower wages

**Industrial**

**Supply**
Industrial development includes a continuum of real estate product types that range from R&D which closely resembles office space, through unfinished warehouse space. Hybrid space mixes both.

Warehousing and distribution functions are characterized by relatively low ratios of employment to building square footage

Three broad categories of industrial space

Manufacturing

R&D

Warehouse/distribution

**Demand**
Driven by employment growth in appropriate sectors (R&D); less of a link to manufacturing and warehousing which are more closely associated with products than persons

Industrial firms have largely moved to suburban locations because modern production and storage technologies make them extensive users of land. In part due to spatially diffuse character of rail and truck transport, industries decentralize because they are less willing to compete with denser, higher rent paying land uses.

**Retail**
Retail space markets—demand for retail real estate by a retailer is derived from the demand for the retailer’s product

Trade area—the geographic territory from which customers are drawn to the retail site; Affected by

- Transportation system—street system and accessibility, access onto the site, the route environment and travel anxiety
- Physical barriers to the flow of traffic
- Psychological barriers
- Existing patterns of residential development
- Clustering of similar households with similar incomes
- Available data sources

Trade area levels

- Primary—immediate surrounding area; size (in minutes) will vary based on the type of facility—supermarkets may be 5 minute drive while a mall may be 20-30 minutes; accounts for 60-70 percent of sales
- Secondary—adjacent to primary and defined by a predetermined driving time; accounts for 20 percent of sales
- Tertiary—adjacent to secondary, accounts for 5-10 percent of sales

A shopping center cannot generate new business or create new buying power; it can only
Attract customers from existing businesses within or beyond the trade area that are not meeting market expectations because they are obsolete or poor quality; Fulfill a demand that has not been met within the market area; Capture the increase in purchasing power that results from population, household, employment or income growth.

New retail space can cause a redistribution of business outlets and consumer patronage but it cannot create new customers.

A new center can alter consumers’ shopping habits

Retail real estate market—demand factors include

- Number of consumers
- Consumer income
- Tastes and preferences
- Price of substitutes
- Credit conditions—not as important as in residential

Supply analysis

Location, characteristics, and sales figures of competitive retail centers, by type of center, in the trade area

Retail space availability, absorption, and sales trends by retail categories in the trade areas

Characteristics and status of proposed and planned retail developments in the trade areas, as well as availability of other vacant, zoned sites that could likely become competitive retail development

Estimated market share (capture rate) and sales per square foot, and recommended characteristics, anchors, and sizing of the center or centers depending on the scenarios being considered

<table>
<thead>
<tr>
<th>Classification of goods and services</th>
<th>Category</th>
<th>Type</th>
<th>Price level</th>
<th>Frequency</th>
<th>Trip type</th>
<th>Proximity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shopping High Order</strong></td>
<td>Personal goods</td>
<td>Clothing, jewelry, dry goods</td>
<td>Moderate to high</td>
<td>Frequently; several times per year</td>
<td>Single or multi purpose comparison</td>
<td>15-30 min</td>
</tr>
<tr>
<td></td>
<td>Household goods</td>
<td>Furniture, appliances, carpet</td>
<td>High</td>
<td>Infrequently, less than per year</td>
<td>Single-purpose comparison</td>
<td>Within driving range—30 min</td>
</tr>
<tr>
<td></td>
<td>Automotive products</td>
<td>Automobiles, trailers, boats</td>
<td>High</td>
<td>Infrequently</td>
<td>Single-purpose comparison</td>
<td>Within driving range</td>
</tr>
<tr>
<td><strong>Convenience Low Order</strong></td>
<td>Convenience goods</td>
<td>Groceries, drugs, liquor</td>
<td>Low to moderate</td>
<td>Frequently; daily to monthly</td>
<td>Multiple purpose repetitious</td>
<td>Close by 5-15 min</td>
</tr>
<tr>
<td></td>
<td>Personal services</td>
<td>Beauty, barber, cleaners</td>
<td>Low</td>
<td>Frequently</td>
<td>Multiple purpose repetitious</td>
<td>Close by</td>
</tr>
<tr>
<td></td>
<td>Repair services</td>
<td>Shoe repair, appliance</td>
<td>Low</td>
<td>Frequently to often</td>
<td>Multiple purpose repetitious</td>
<td>Close by</td>
</tr>
<tr>
<td></td>
<td>Personal business</td>
<td>Bank, real estate, insurance</td>
<td>Varies</td>
<td>Frequently to infrequently</td>
<td>Single or multi purpose comparison</td>
<td>Close by to moderate</td>
</tr>
<tr>
<td><strong>Miscellaneous Mixed</strong></td>
<td>Eating and drinking</td>
<td>Restaurants, bars, clubs</td>
<td>Low</td>
<td>Frequently</td>
<td>Single or multi purpose comparison</td>
<td>Close by</td>
</tr>
<tr>
<td></td>
<td>Entertainment/recreation</td>
<td>Theaters, bowling alley</td>
<td>Low</td>
<td>Frequently</td>
<td>Single purpose repetitious</td>
<td>Close by</td>
</tr>
</tbody>
</table>
Types of markets
- Generative business—retail operation has strong market appeal and is a primary destination
- Shared business—market appeal is based on cumulative attraction of generative and complementary retail operations; may not have enough appeal on its own
- Suscipient business—market appeal from an independent source, such as a major public transportation facility or employment center—parasitic—dependent on external source

Types of Shopping Centers

<table>
<thead>
<tr>
<th>Shopping Center Type</th>
<th>Product/Service</th>
<th>Center Size</th>
<th>Trade Area Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighborhood</td>
<td>Goods and services that meet day to day needs: Food, drugs, cards, sundries, dry cleaning, hair and nail care, travel agent, video rental, take-out food</td>
<td>Tend to be smaller than 100,000 sf; may range from 30,000 to 150,000; 10-15 acres of land</td>
<td>2-3 miles</td>
</tr>
<tr>
<td>Community</td>
<td>Daily necessities plus apparel and specialties; key tenants: are usually a supermarket and discount department store and may include home improvement stores, hardware, lawn and garden, gift items, banks and restaurants</td>
<td>Typically 150,000; may range from 100,000 to 300,000 sf; 10 to 20 acres</td>
<td>3-6 miles</td>
</tr>
<tr>
<td>Power</td>
<td>In-depth merchandise selection; Mostly “big box” or “category-killer” stores and few small stores</td>
<td>250,000 to 1M sf open air; each store has at least 25,000 sf; 30-90 acres</td>
<td>5+ miles</td>
</tr>
<tr>
<td>Regional</td>
<td>General merchandise, apparel, furniture, home furnishings, entertainment, restaurants</td>
<td>400,000 to 800,000 sf; usually enclosed with 2 or 3 department stores; 30 to 90 acres</td>
<td>10 miles</td>
</tr>
<tr>
<td>Super-Regional</td>
<td>Same as regional with large department stores</td>
<td>800,000 to 2M sf; 100+ acres</td>
<td>10 miles</td>
</tr>
<tr>
<td>Outlet</td>
<td>Collections of discount stores directly operated by manufacturers, selling out of season items and production overruns</td>
<td>Usually less than 400,000 sf</td>
<td>Up to 60 miles</td>
</tr>
<tr>
<td>Value-Oriented Hybrid</td>
<td>Large discount and off price anchors with smaller factory outlet stores and themed entertainment as a special case</td>
<td></td>
<td>Up to 60 miles</td>
</tr>
</tbody>
</table>

Hotels and Resorts
Historical hotel development has followed the path of other types of development
Early 20th century - most development occurred in downtown areas near office and retail development
Mid 20th century - highways changed demand to correspond with outward movement of offices, stores and residences
Late 20th century - renewed demand in central areas
In 1970s, product began to become more segmented and specialized
Two main categories: Location (downtown, airport, resort) and market niche
<table>
<thead>
<tr>
<th>Hotel Type</th>
<th>No of Rooms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Convention</td>
<td>400-500</td>
<td>Usually in downtown location, feature banquet, meeting space and retail space, close to convention center, design features such as large lobbies, concierge, etc. based on clientele served</td>
</tr>
<tr>
<td>Luxury</td>
<td>&lt;300</td>
<td>Located in large metro areas, places frequented by visitors willing to pay a premium price for accommodations; tend to cater to corporate and overseas travelers; distinguished by high quality furnishings, amenities and services; may house a fine restaurant</td>
</tr>
<tr>
<td>Commercial</td>
<td>100-500</td>
<td>Similar to convention hotels but groups served are smaller; provide less public space and less extensive food and beverage outlets than convention hotels</td>
</tr>
<tr>
<td>Budget/Economy</td>
<td>50-150</td>
<td>Upper tier - more upscale furnishings and décor; charge rates closer to market averages</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Middle tier - rates 25-40% below full service hotel rate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lower tier - rates 50% below market rate</td>
</tr>
<tr>
<td>All-Suite or Residence</td>
<td>200-300</td>
<td>Designed to meet the needs of long-stay travelers, feature larger rooms with living and/or kitchen space; can be categorized as urban, suburban or residential</td>
</tr>
<tr>
<td>Executive Conference Centers</td>
<td>200-400</td>
<td>Designed to accommodate groups in a self-contained environment</td>
</tr>
<tr>
<td>Resort</td>
<td>varies</td>
<td>Cater to both vacation and meetings and conferences</td>
</tr>
<tr>
<td>Bed and Breakfast</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boutique</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condominium</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hotel demand is typically not generated by the hotel itself, but by local businesses, convention facilities, tourist attractions, and other draws.

Hotels cater to patrons from outside the local area.

Trade area boundary is affected by:

- Location of competitive hotels
- Segmentation and orientation of the facility’s major source of business
- Trends in travel patterns for vacation, commercial and convention visitors to the site
- Proximity and scope of major demand generators
- Expenditure patterns of area visitors
- Existing socioeconomic boundaries

Demand segments include

- Commercial market - corporate/commercial individuals, corporate groups, convention and association groups
- Tourists and Leisure travelers - Free independent thinker (FIT), group, wholesale
- Other kinds of stays - Long term guests, contract demand, government and military, gateway guests