

INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

- The discussion in the preceding lectures was about cost; it adequately reflects the reality of concerns that will dominate the work in actual projects.
- However, focusing exclusively on costs in building economic performance is only part of the picture, and may even be counterproductive.
- The point is to relate the costs to the values or benefits received in return for the costs; the concept of economic performance tries to express this more general concern.
- This lecture will look at some of the monetary as well as nonmonetary benefits that are typically obtained from buildings, and at how to estimate and control these benefits.



INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

- There are several basic distinct forms in which economic rewards can be obtained from building projects; these are recognized in real estate theory and law as the different forms of tenancy.
- The first is the economic value of using the building for the owner/investor's own operations or enjoyment, as in a home, or a company's own headquarters. The benefit is entirely intangible in the case of a dwelling, and indirectly economic in the case of space used for the production of goods or services. The legal relationship of the user to the property in this case is that of **freehold**.
- Second, the building can be sold to somebody else; the freehold tenancy is transferred to a new owner in return for a sale price. Here, the economic benefit is entirely monetary and focuses on the profit or excess of money received in the sales price over the cost the seller originally invested in the project.
- The third possibility is that of leasing or renting the whole or parts of the building to others, in return for periodic (daily, as in a hotel, monthly, or annual) payments. Although owner retains the freehold relation to the property in this case, the tenant or actual user is in a **leasehold** tenancy.
- There also are combinations of relationships that can be specified in contracts —for example, the lease with an option to buy, where the relationship on the part of the user begins as a leasehold, but can be changed into sale and freehold at specified points in time, in which, case the lease payments already made are counted toward the sale price.

INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

- The monetary benefits derived from a building thus are as follows:
- Direct money payments in the form of the rent or lease or the sale price;
- Indirect economic benefits derived from the production of other amenities on the premises;
- The economic equivalent of the intangible value of occupying and enjoying a building.
- Here, we are primarily concerned with the question of how the different forms of revenues or benefits can be predicted and estimated, how they relate to initial and long-term costs, and how these estimates relate to architectural design decisions.



INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

- **MONETARY BENEFITS OF BUILDINGS:**
- **Sale Price and Profit:**
- Many investors in building projects, and many developers, are in business in order to sell the buildings they build as soon as possible after completion.
- They make their living from the profit on these buildings, that is, the difference between the cost they had to invest in getting the buildings built and the sale price the buyers are willing to pay.
- How can one anticipate what that price will be? The problem of answering this question is discussed in the literature as the problem of the appraisal of property value, both for the purpose of estimating value for buyers and sellers in the real estate market and for the purpose of establishing property value as the basis of real estate taxes.
- Three basic approaches are recognized:
- **The cost approach**, in essence equating value with the cost of producing a building project;
- **The market approach**, which looks at what buyers of similar projects in the same area have been paying;
- **The income approach** or income capitalization approach, which focuses on the economic value of the stream of income a project is expected to generate over time.

INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

- A simple answer to the value appraisal question would be obtained by starting with the known acquisition or construction cost, adding a profit at some specific rate, say, 12%, 15%, or 20%, to the developer's cost, and letting the total be the sales price.
- But profit added to what? Should the profit be based on the total cost of construction of, for example, \$100,000 for a family dwelling? In this case, the profit at a 12% rate would be \$12,000, and the total price to the buyer \$112,000.
- Or should it rather be based on the developer's actual equity investment in the project? This would be about \$20,000 if the lender used a loan-to-value ratio of 80% for the construction loan. (Although many projects are financed at 100% or close to 100%, the developer's efforts in researching the market-for the project, assembling the financing package, and so on, represent a considerable and risky up-front investment, which is difficult to quantify.)
- In this case, the profit would be 12% of \$20,000 = \$2,400, and the total price \$102,400.
- Or should it be a profit on the equity plus a charge for the time and effort the developer had to devote to the project (which sometimes are actually itemized as "development costs" in the project cost)? One can find all these attitudes, and everything in between, in the real estate market today.

INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

- However, what owners or developers would like to charge is mitigated by competition and available buying power in the market.
- And even if a developer eventually gets the asking price for a building based on one of the above formulae, if he or she has to wait many months for a sale to go through, then the value of that price certainly is reduced.
- In deciding what they are willing to pay, buyers do not really care what the developer's profit is but are concerned with whether they are getting their money's worth.
- So what determines the buyer's perception of what is a fair or good price? The economic assumption at the outset is that the original cost is an adequate but approximate measure of the value of the project; the actual value to the buyer must be higher and at least include the seller's markup over the original cost. So, many assessments of the question of economic benefit of building profits start with this assumption.
- But then, all the factors of the market come into play to complicate the estimate. Inflation and appreciation are examples of such factors, and for simplicity the two often are considered together.



INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

- The value of the building is closely related to the level of maintenance of the building every year. Aside from obsolescence due to different user standards, fashions, and technological advances, it is possible to keep a building in full income-earning capacity indefinitely; the annual maintenance amount needed for this is called the 100% maintenance level.
- Usually, buildings are not maintained at this level, and, as a result, at some point the required level of annual upkeep will exceed the income—especially if rental income does not increase as fast as maintenance costs rise.
- Another factor that will determine the future sale value is supply. How many similar buildings are available in the area? What is the average occupancy rate for buildings of this type in the area at the time of the sale? How desirable is the area going to be? How much would one have to pay to buy or rent a similar building? What are the costs of operating and owning the property in the long run? What are the overall projections regarding the rise or decline of property values in the area?



INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

- One of the most significant aspects in real estate valuation is location. The selling price for the same size and quality house within the same city may vary by as much as 100% or more, depending on the neighborhood in which it is located.
- Many factors are responsible for this, only some of which can be approached by straightforward rational means—for example, the distance from downtown and travel costs. If a family can afford to pay \$800 per month for housing, and a specific location would require spending an extra \$ 150 per month on transportation, the available monthly amount the family can spend on housing in that location would be \$650.
- Other considerations are: the quality (perceived or real) of schools, shopping, and recreational amenities; the proximity and/or visual impact of natural features such as parks, bodies of water, or vistas, or of undesirable areas such as industrial areas and so on; the age of a neighborhood (how new or well established it is; the style, mix, and upkeep of the buildings; the landscaping); age, economic, and ethnic demographics; the crime rate; and outright fashion and social status considerations. All combine to influence the selling price of real estate property.



INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

- Finally, for commercial properties, there is the income capitalization approach: How much money can one expect in rental income from the building?
- The capitalized value of that income stream.—either the present value of the expected income over a specified number of years, at a specified discount rate, or the annual income multiplied by the net income multiplier—must be considered the most a buyer should pay for a project. This brings us to the next question, that of the rental income one can expect from a building.



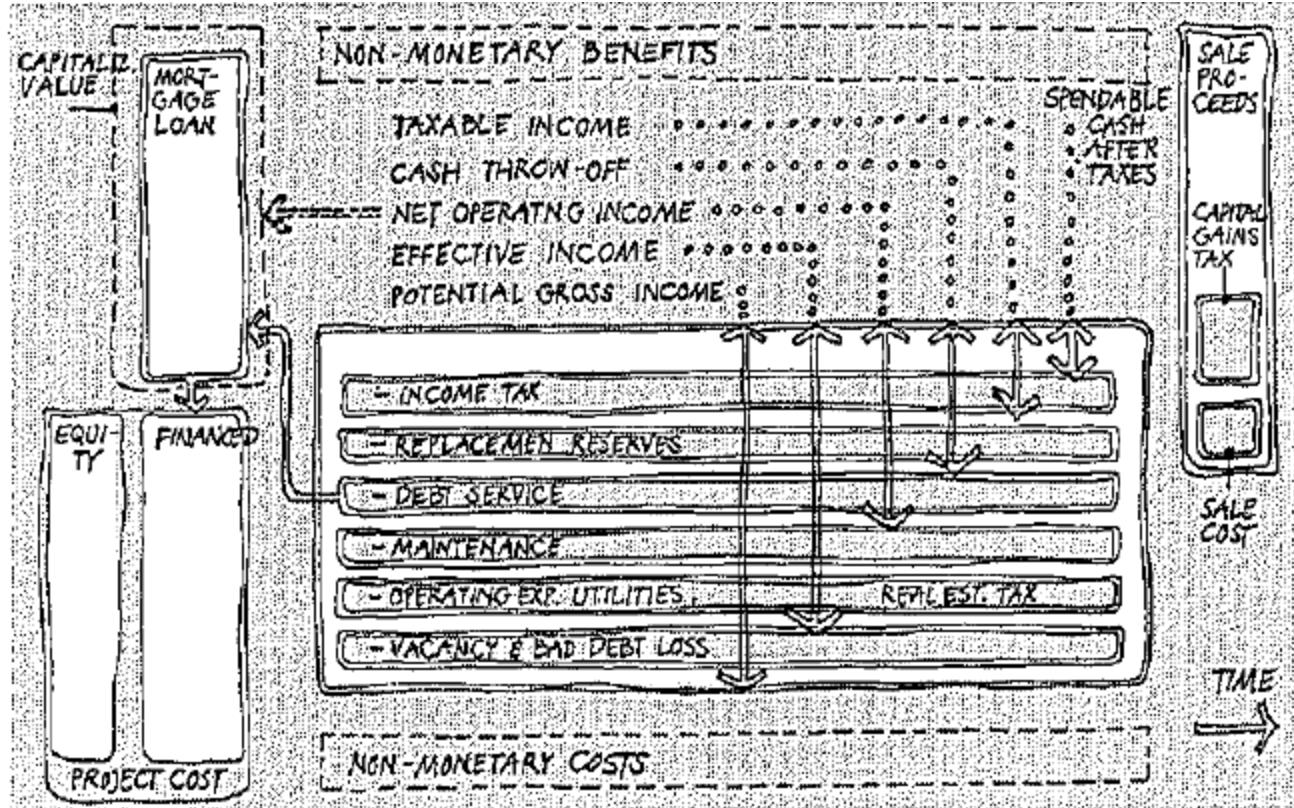
INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

- **Income-Producing Properties: Lease and Rent**
- Most of the market-related questions that make prediction of sale price so difficult, also pertain to the anticipation of income from leasing or renting buildings.
- Again, reliable predictions about "what the market will bear" can be obtained only from thorough analysis and knowledge of the market conditions prevailing in the area where the building is (to be) located. We can calculate the level of rent that must be charged in order to recover the costs of construction, financing, and so on, to "break even."
- Beyond that, things become uncertain. This uncertainty is manifested in phenomena like the vacancy rate (that percentage of the rental space in a building that is not rented and producing income at any given time because of tenant turnover and delays in getting a new tenant, or bad checks, late rent payments, etc.). If an owner sets rental rates too high, he or she may get some tenants eventually but will pay for doing so with a high vacancy rate. Comparison with prevailing rates on the market is vital to arrive at realistic rental projections.



INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

- In estimating income from leases and rentals from a building, the proper interpretation of market information is essential—for example, what is included in the services provided for a lease.
- Technically, assuming that we know the appropriate values of sales prices, equivalent rentals, and the pertinent inflation, appreciation, and depreciation factors, the future values of rentals and sales prices can be easily estimated by using the appropriate time conversion factors.



INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

- In larger multi-tenant projects, especially in new hotels and the like, it sometimes takes a considerable amount of time before the building reaches the expected stable occupancy level.
- The income projections therefore should consider lower occupancy rates during the "lease-up" period; for example, 60% (corresponding to a vacancy rate of 40%) during the first year, 80% during the second year, and approaching the stable state occupancy of 90% or 95% in the third year after completion.
- For hotels and similar building types, there will be significant variations in the rental income for different seasons. The rate structure for vacation hotels, for example, recognizes this by offering different rates during peak season, off-season, and the in-between "shoulder season"—an attempt to trade occupancy (volume) against rental rates to keep demand steady.



INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

- **NONMONETARY BENEFITS; USE VALUE OF BUILDINGS**
- When an owner occupies and uses a building either for residential purposes or to house the operations of a business, there is no cash transaction involved in doing so. The enjoyment of the building, even the image or prestige benefit to corporations from new impressive corporate headquarters, is to a large extent an intangible.
- How then can the value of such occupancy and use be determined? The economist's answer to this is somewhat tautological; its value is precisely what the owner would be willing to pay for the use and enjoyment of a building with the same features on the rental market—which is presumably equivalent to what he or she was willing to pay in terms of present worth equity investment and ongoing mortgage payments (plus operational expenses) when the decision was made to build in the first place.
- The answer seems to suggest, again, that value is equal to cost; but this is no help at all, as we precisely want to find out what cost is acceptable in return for what value. If the definition of value was indeed cost, we could not distinguish between alternative design solutions. It also does not explain the discrepancies we can observe in the real estate market between the cost developers incur to build buildings and the prices they charge to sell them. So value must be deemed—and measured—by something other than cost on one hand, and sale price or rental income on the other.

INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

- Persistent questions about the basis for such judgment will reveal that there are indeed many design features that account for differences in valuation. Real estate listings refer to such items (things) that may be present in a building: fireplace, number of baths, number of bedrooms, built-in closets, garage, swimming pool, to name but a few. For office buildings sometimes one finds mention of corner offices as a desirable feature. Views and of course location always figure prominently.
- Overall though, the discussion of the relationship between value, costs, and income may leave many with a sense of dissatisfaction; it is difficult to see the connections, if any, between these variables and architectural design decisions that presumably create the value.
- One can establish lists of desirable (and undesirable) building features and perhaps correlate them statistically with prices people are willing to pay.
- Research efforts have used game situations with trade-off decisions to find out what people really value in housing, for example. But the precise relationship between these values and the rents or prices people will pay remains elusive.

INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

□ **DESIGN STRATEGIES FOR INFLUENCING ECONOMIC BENEFITS**

- Given the somewhat unsatisfactory outcome of the above attempts to pinpoint definitions and measures of noneconomic benefits from buildings, which in the end also determine the economic ones, a survey of strategies that can be recommended for the control of economic benefits through design measures is not likely to be much more conclusive.
- As long as the most common measurement used for estimating rental returns and sale prices is the floor area (net leasable area); guidelines for design will be largely limited to rules of thumb for maximizing leasable floor area or maximizing the net-to-gross ratio—at least as long as the strategy is looking at the first level of income measures: gross potential income, or even effective income.



INAR 413 BUILDING ECONOMICS
LECTURE 07
BENEFITS AND VALUE OF BUILDINGS

- Common sense tells us that the real impact of design on benefits or building value lies in paying attention to those many details that have to do with how the building meets functional, emotional, and practical but also aesthetic user needs, which make a building enjoyable—with the technical adequacy required to meet environmental challenges such as climate and with structural safety, ease and convenience of maintenance, and so on; in short, all the things that make good architecture.
- The problem is that all those design features are difficult to connect with economic value in a direct quantitative fashion that can be expressed in a mathematical formula such as the above equation describing the impact of inflation of future sales price.
- This leads to an understandable but problematic tendency to give more weight to those factors that can be dealt with in a quantitative manner than to others, with the consequence that the impression sometimes arises that concern for economic issues is equivalent to ignoring or undervaluing other quality aspects—that an economical building equals ugliness.
- Or that the only reason economy-minded corporations would be interested in architectural design would be the advertising value of recognized name designers, stressing the visibility and fashion aspect of such corporate image architecture rather than its inherent quality and value to the user.
- Nothing could be further from the truth; properly understood, architectural value is also economic value. However, it seems to be difficult to communicate this and to get this message across when it must compete with mathematical formulae and spreadsheet calculations. Much work remains to be done on this issue.