



# PROFESSIONAL PRACTICE 544

THE ECONOMICS OF CONSTRUCTION

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The background is a dark blue gradient with a subtle grid pattern. The grid lines are curved, creating a sense of depth and movement. The lines are more pronounced in the center and fade towards the edges. The overall effect is a modern, technical, and professional aesthetic.

# CONSTRUCTION ECONOMICS

# Construction Economics - Components

## **The Study of Construction Economics Includes:**

- ▶ Economic decisions related to construction
- ▶ Economic decisions related to the type of project
- ▶ Economic decisions related to the project outcome
- ▶ Economic review over the life of the project/building

# Construction Economics - Components

## Critical Elements:

- ▶ Cost Estimation
- ▶ Financial Analysis
- ▶ Risk Management
- ▶ Contract Management

# Construction Economics - Value Analysis

## A Key Element of Construction Economics is Value Analysis

- ▶ Determining how much money a project will cost
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# Construction Economics - Value Analysis

**Value analysis also involves analyzing the tradeoffs between different options**

- ▶ If two options have the same cost but one takes longer to complete, choosing the option that takes less time would be more valuable
- ▶ What is the ultimate use of the building and where might tradeoffs apply between a public and private project

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# BUILDING TYPES

# Building Types – Intent and Function

Buildings may be categorized based on their economic equation. Compare the relation of profit to the building's function. Begin with the original intent of the building's function.

1. Intent: **Purely to function, not to earn:**

- single family home
- courthouse
- library

2. Intent: **Primarily to function, but also needs to make economic sense:**

- hospital
- museum
- nursing home

3. Intent: **It must function and earn through its functionality:**

- factory
- stadium

4. Intent: **Earns by way of an investment, but needs to function to be marketable:**

- housing (multi-unit v single family)
- office building
- commercial building - retail

# Building Types – Key Concepts and Terms

- Motives:** Profit (free market) versus Social Good (controlled economy)
- The economic equation – regardless of the motive – must still work to make economic sense.
  - If losing money, i.e., the economics do not work:
    - the “owner” will not continue to maintain building
    - the building will not operate as intended (or fail)

## Key

- Players:**
- Developer – Often initially considered the “owner” for purposes of contracts and construction. But, then will turn over the building to a new “owner.”
- Market Analyst – Will assess the when, what, & where regarding the development of a building or project by looking at the market related factors.
- Mortgage Lender – Necessary for funding – handles prime mortgage, construction loans, bridge loans, etc. Lifeblood of development.

# Building Types – Overall Costs/Value

**PRO FORMA** A Latin term meaning “for the same of form.” For financial considerations, it describes a method of calculating financial results in order to emphasize either current or projected figures.

The three main factors in a developer’s pro forma are:

- **Costs**
- **Expenses**
- **Income**

The following is a typical list of items that will be found in a developer’s pro forma for a given project.

# Building Types – Proforma Components

## COSTS – Development of Apartment Building

Land Acquisition

Local Costs (utility extension, fee, etc.)

Construction Cost

Fixtures, Furnishings & Equipment (FF&E)

Architect/Engineer Fee

Owner's Representative Fee

Legal Expenses/Accounting Expenses

Misc. Costs (survey, borings, printing, etc.)

Marketing (personal, advertising, etc.)

Project Cost

+ Interest on construction loan

Total Cost (Total Cost - Mortgage Value = Equity)

# Building Types – Proforma Components

## EXPENSES – After Construction

Utilities (gas oil, water, electric, etc.)

Operations (engineer, doorman, etc.)

Repair and maintenance

Management office

Continued marketing

Insurance

Real estate taxes

Miscellaneous

Operating expense

+ mortgage retirement

Total Expense

# Building Types – Proforma Components

## INCOME – After Construction

Rental income - apartment

Leases - office or commercial leases

Garage rental income

Gross income

- Vacancies (. . . %)

Net Income (or cash flow)

NET INCOME – TOTAL EXPENSE = PROFIT (= % OF EQUITY)

(growth is the hidden quantity here)

Calculate your RETURN ON INVESTMENT (“ROI”)

- If you have a \$50K investment and growth is \$1M = 20X ROI
- If you have \$100K invested in a project and the growth is \$1M = 10X ROI

# THE "ECONOMIC EQUATION"

# The "Economic Equation"

Assume a 12-14 story apartment building containing 100 two-bedroom apartments of 1200 square feet, 100 parking spaces and 5,000 square feet commercial.

## HARD COSTS

### Land:

\$25,000/Units at 100                      \$ 2,500,000

### Building:

Net Units: 100 at 1200 s.f.                      120,000 s.f.  
Circulation – add 20%                      24,000 s.f.  
144,000 s.f.

Common areas – add 7%                      10,000 s.f.  
(Corridors, elevators, etc. garbage shaft, stairs,  
exterior walls, lobby, garbage, janitorial lockers)

Commercial                      5,000 s.f.

Total                      159,000 s.f.

Garage: 100 @ 350 s.f.                      35,000 s.f.

159,000 s.f. @ \$135.00                      \$21,465,000

35,000 s.f. @ \$70.00                      \$2,450,000

TOTAL HARD COSTS                      \$23,915,000

## SOFT COSTS

### Construction Loan (\$23,915,000):

7.0% Interest, and then "halved" b/c  
it is drawn down progressively                      \$837,025

Lender's Fee:  
1.5% of full loan                      \$358,725

Architect's Fee:  
4.0% of Construction Costs                      \$956,600

Legal                      \$50,000

Marketing                      \$50,000

Miscellaneous                      \$120,000  
\$2,372,350

TOTAL SOFT COSTS                      \$2,372,350

TOTAL HARD COSTS                      \$23,915,000

TOTAL PROJECT COST                      \$26,287,350

# The "Economic Equation"

## INCOME

|   |                            |
|---|----------------------------|
| Apt Rent: \$1,600/month @100 units @12months: | \$ 1,920,000               |
| Garage: \$200/month @100 spaces @12 months:   | \$ 240,000                 |
| Commercial Rent:                              | + \$ <u>100,000</u>        |
| Subtotal:                                     | \$ 2,260,000               |
| Less 5% vacancy:                              | \$ - <u>113,000</u>        |
| <b><u>TOTAL INCOME:</u></b>                   | <b><u>\$ 2,147,000</u></b> |

## EXPENSES

|  |                            |
|--|----------------------------|
| Management: salaries, utilities, maintenance, taxes, etc. 40% of income: 40% of \$2,147,000: | \$ 858,800                 |
| Mortgage Retirement: 85% of \$26,287,350 = \$22,344,248 x 6%:                                | + \$ <u>1,340,655</u>      |
| <b><u>TOTAL EXPENSES:</u></b>  | <b><u>\$ 2,199,455</u></b> |

# The “Economic Equation”

## BALANCE

Income: \$ 2,147,000

Expenses: - \$ 2,199,455

Loss: (\$ 52,455)

Equity: 15% of \$ 26,287,350 = \$3,943,103  
 $\$52,455 / \$3,943,103 = 0.013$

This is almost a **1.3% loss/year** of investment

## CONCLUSION

Compared to risk-free savings accounts or bonds, this is a **poor investment**. Can it be improved and have it still marketable?

# The "Economic Equation"

## INCOME

|  |                     |
|--|---------------------|
| Apt Rent: \$2,000/month @100 units @12months | \$ 2,400,000        |
| Garage: \$200/month @100 spaces @12 months:  | \$ 240,000          |
| Commercial Rent:                             | + \$ <u>100,000</u> |
| Subtotal:                                    | \$ 2,740,000        |
| Less 5% vacancy:                             | \$ - <u>137,000</u> |

**TOTAL INCOME:** \$ 2,603,000

[Try a higher rent this time.](#)

## EXPENSES

|   |                       |
|---|-----------------------|
| Management: salaries, utilities, maintenance,<br>taxes, etc. 40% of income: 40% of \$2,603,000: | \$ 1,041,200          |
| Mortgage Retirement: 85% of \$26,287,350 =<br>\$22,344,248 x 6%:                                | + \$ <u>1,340,655</u> |

**TOTAL EXPENSES:** \$ 2,381,855

# The “Economic Equation”

## BALANCE

Income: \$ 2,603,000

Expenses: + \$ 2,381,855

**Gain:** \$ 221,145

Equity: 15% of \$ 26,287,350 = \$3,943,103  
 $\$221,145 / \$3,943,103 = 0.056$

This is almost a 5.6% gain/year of investment

## CONCLUSION

This is not a great investment.

You will increase your wealth. But, average stock market rise is 10% over the last 25 years.

On the other hand, consider that the value of the real estate increases more rapidly than money in the bank, compounded with the revenue generation, it might make sense for a long-range investment.

Another rental raise will increase the annual profit margin.

# The “Economic Equation”

## CONDOMINIUM

|                                 |                            |
|---------------------------------|----------------------------|
| Hard Cost (Same):               | \$23,915,000               |
| Soft Cost (Same with increases) | \$ 2,372,350               |
| Increases:                      |                            |
| Broker: 6% of \$23,915,000      | \$ 1,434,900               |
| Legal:                          | \$ 40,000                  |
| Surveyor (vertical survey):     | \$ <u>75,000</u>           |
| Sub-total:                      | \$27,836,450               |
| <b>Add 15% Profit:</b>          | <b>\$ <u>4,175,468</u></b> |
| <b>Total:</b>                   | <b>\$32,011,918</b>        |

\$32,011,918 / 100 units = approximately \$320,100 per condominium.

Depending on where this building is developed, it may be a good investment for a 15% profit on the project.

# Other Factors in Residential Development

## **Ownership → Care for building**

- Apartment building landlords don't maintain
- Slumlords
- But even condo boards hesitate to spend

## **Condominium litigation scenario**

- Developers cut corners and oversell
- Attorneys scare boards into lawsuits



QUESTIONS