Forecasting the Space Market: Market: Estimating Cash Flow Growth

This presentation explores the essential techniques for forecasting real estate market fundamentals and cash flows. We'll examine how to develop accurate numerical forecasts, understand market dynamics, and account for depreciation in property valuations.

Forecasting Fundamentals

Market Analysis

Use localized data for space market forecasting to capture specific market conditions.

Statistical Approaches

Apply regression analysis and other statistical tools for more accurate rent forecasts.

Risk Assessment

Employ simulation and sensitivity analysis to understand potential outcomes and risks.

Depreciation Impact

Account for real economic depreciation in DCF proformas to reflect realistic returns.

Simple Structural Analysis

Inventory Existing Supply

Collect data on current space inventory from brokerage firms, planning agencies, and commercial data providers.

Identify Demand Sources

Determine fundamental drivers of space demand, such as office employment for office space.

Relate Demand to Space Usage

Calculate space requirements per demand unit (e.g., square footage per employee).

Forecast Future Supply and Demand

Project demand growth and inventory construction pipeline to predict market balance.

Boston Office Market

Formula	Now	In 5 years	Difference
Net Current Inventory	223,954,598	230,766,696	6,812,099
Employees	844,000	874,000	30,000
Net Absorption	26,574,343	26,186,442	(387,902)
Vacancy rate	11.87%	11.35%	-0.52%

Regression-Based Forecasting

Collect Historical Data

Gather time series data on rents, construction, vacancy, and demand drivers.

Build Statistical Model

Use Vector Autoregressive Model (VAR) to relate variables and capture market dynamics.

Estimate Parameters

Apply Ordinary Least Squares (OLS) to find optimal parameters that minimize errors.

Generate Forecasts

Project future values with confidence intervals to quantify uncertainty.

Forecast Uncertainty

The Reality of Forecasting

Every forecast contains uncertainty. The probability of exact accuracy is nearly zero.

Confidence intervals widen over time as errors compound. A 5-year forecast might range from -1.2% to +8.2% annual growth.

Understanding this uncertainty helps investors quantify risk and make better decisions.

Sensitivity and Simulation Analysis

Sensitivity Analysis

Tests how changes in key variables affect outcomes. Example: How would a 1% lower rent growth impact IRR?

Simulation Analysis

Runs multiple scenarios with probability distributions to generate outcome probabilities.

Value at Risk (VaR)

Quantifies the probability that value falls below a specified threshold, useful for lenders.

The Value of Flexibility

Property Purchase

Initial investment based on expected value

Market Changes

New information reveals positive or negative scenarios

Timing Decision

Option to sell early or hold based on market conditions

Flexibility in real estate investment timing creates option value. The ability to adapt to new information by choosing when to sell can significantly enhance returns.

Understanding Depreciation

Physical Deterioration

Wear and tear on building components. Impacts maintenance costs and operating expenses.

Functional Obsolescence

Outdated features as technology and preferences change. Requires capital expenditures to address.

External Obsolescence

Changes in surrounding area affecting property value. Often impossible to "cure" without redevelopment.

Vintage and Survivor Bias

Vintage Effect

Some architectural styles from specific eras command premium values. Examples include Art Nouveau buildings in in New York and canal houses in Amsterdam.

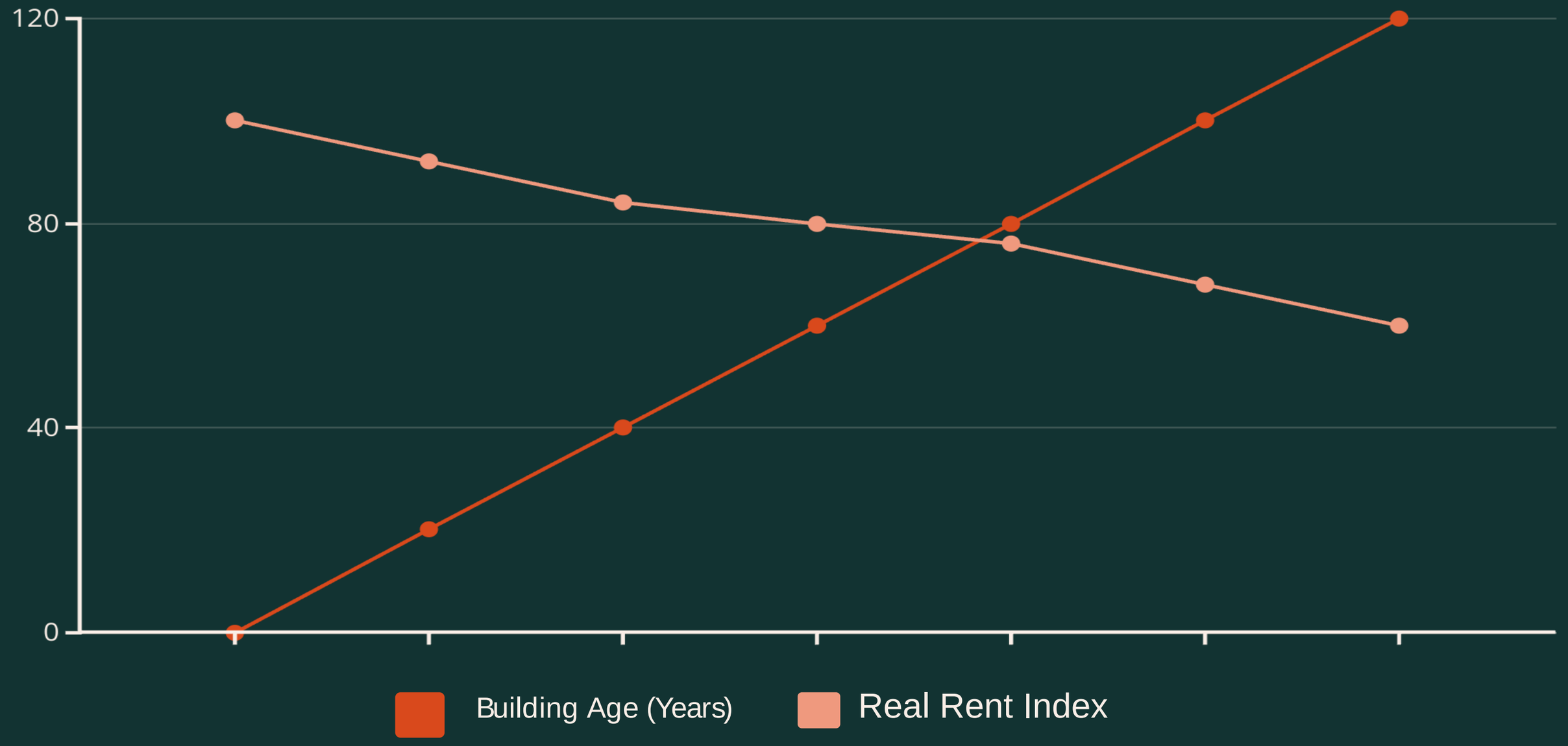
Original, authentic examples have cachet that imparts extra value and can resist some depreciation effects.

Survivor Bias

Only the best-built properties from earlier eras remain standing today. This creates a false impression that older buildings don't depreciate.

Data shows only about 20% of commercial buildings developed 200 years ago still exist in their original form.

Rent Depreciation Over Time



Impact on Operating Expenses

5%

OpEx Increase

Higher operating expenses as percentage of EGI after 60 years

35%

Peak CapEx

Capital expenditures as percentage of NOI around age 60

11%

Vacancy Rate

Average vacancy for 80-year-old buildings vs. 5% for new buildings

Cash Flow Depreciation

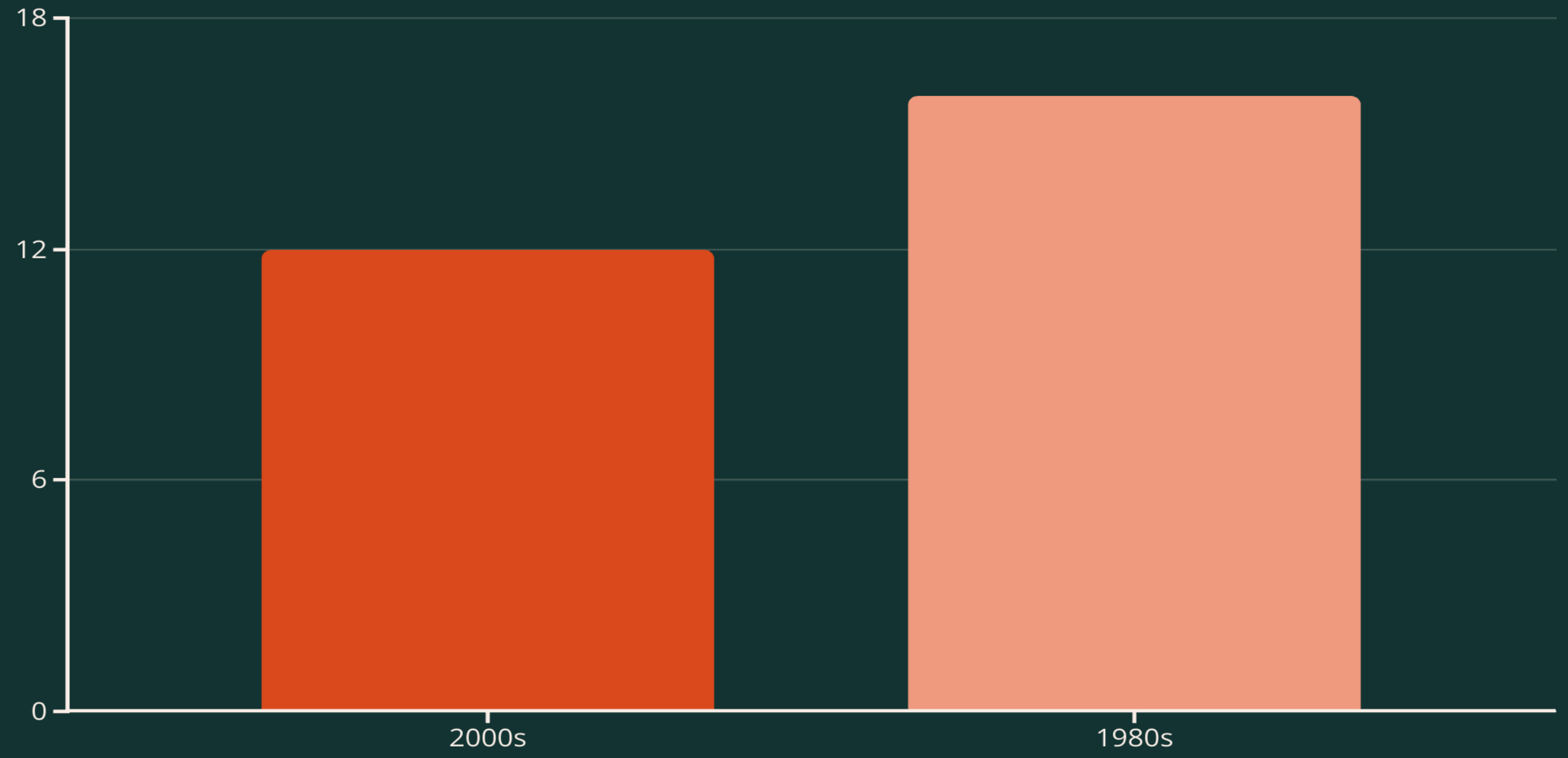
Beyond Rent Depreciation

Cash flow depreciation exceeds rent depreciation due to rising expenses and capital needs.

In first 40 years, rents typically decrease by 16% while PBTCF decreases by 37%.

After 50 years, PBTCF often flattens as capital expenditures expenditures decrease and property value shifts toward land value.

Vacancy Rates by Building Age



Rising Insurance Costs

100%

National Increase

Average insurance cost increase since 2018

400%

Florida Increase

Insurance cost increase in climate-vulnerable regions

Climate-related events are driving unprecedented increases in property insurance costs. Some locations face difficulty obtaining insurance at all, all, affecting mortgage availability and overall property economics.

Adjusting Market Forecasts for Individual Properties

Market Forecast

Average market rent growth projection (e.g., 4% annually)

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Depreciation Rate

Property-specific depreciation (e.g., 0.4% annually)

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Property Forecast

Adjusted growth rate for specific property (e.g., 3.6% annually)

Market-level forecasts must be adjusted for individual property depreciation. A property's rent growth will typically be lower than market averages due to aging effects.

Determining Potential Gross Income

Current Leases

Analyze existing leases, including rates, terms, and expiration dates to project near-term income.

Vacancy Projections

Estimate probability of lease renewal and expected downtime between tenants.

Market Rent Projections

Forecast market rents for when spaces "roll over" to new leases.

Lease Roll Analysis Example

Space	Current Status	Lease Expiration	Current Rent	Market Rent
Space 1	Leased	Year 3	$10.50/SF	$10.00/SF
Space 2	Leased	Year 5	$10.00/SF	$10.00/SF
Space 3	Vacant	N/A	N/A	$10.00/SF

When forecasting property income, analyze each space individually. Account for above/below market rents, lease expirations, and expected vacancy periods.

Tenant Analysis

Credit Quality and Resilience

Assess tenant financial strength and ability to fulfill lease obligations. Government tenants like the Department of Commerce offer high reliability.

Renewal Probability

Consider space customization, tenant improvements, and industry type. Legal and architectural firms tend to be more static than insurance agencies.

Sublease Activity

Monitor sublease space as a leading indicator of future vacancy and potential rent movements in the market.

Key Takeaways

Market-Based Forecasting

Use localized data and statistical methods to develop robust market forecasts.

Property-Specific Adjustments

Adjust market forecasts for individual property characteristics, especially depreciation.

Comprehensive Analysis

Consider all aspects: market trends, property condition, tenant quality, and lease structures.

Uncertainty Management

Use sensitivity analysis and understand the value of flexibility in timing decisions.