



**Construction Cost Escalation Trends
in British Columbia**

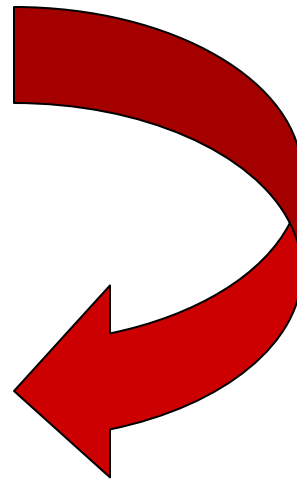
**Presentation to
Public Construction Council of BC**

Stuart MacKay, MMK Consulting

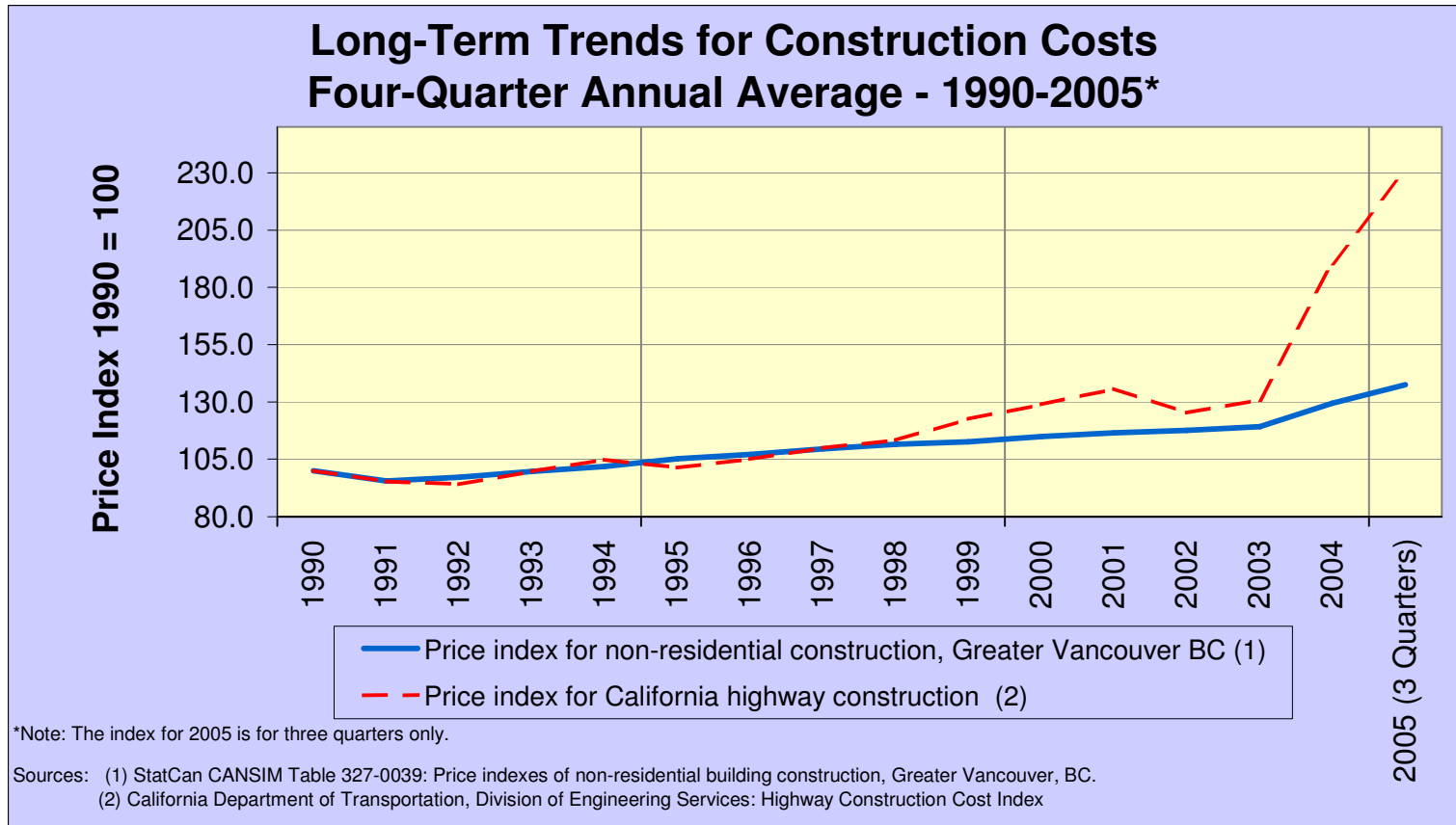
November 29, 2005



1. Looking Back...

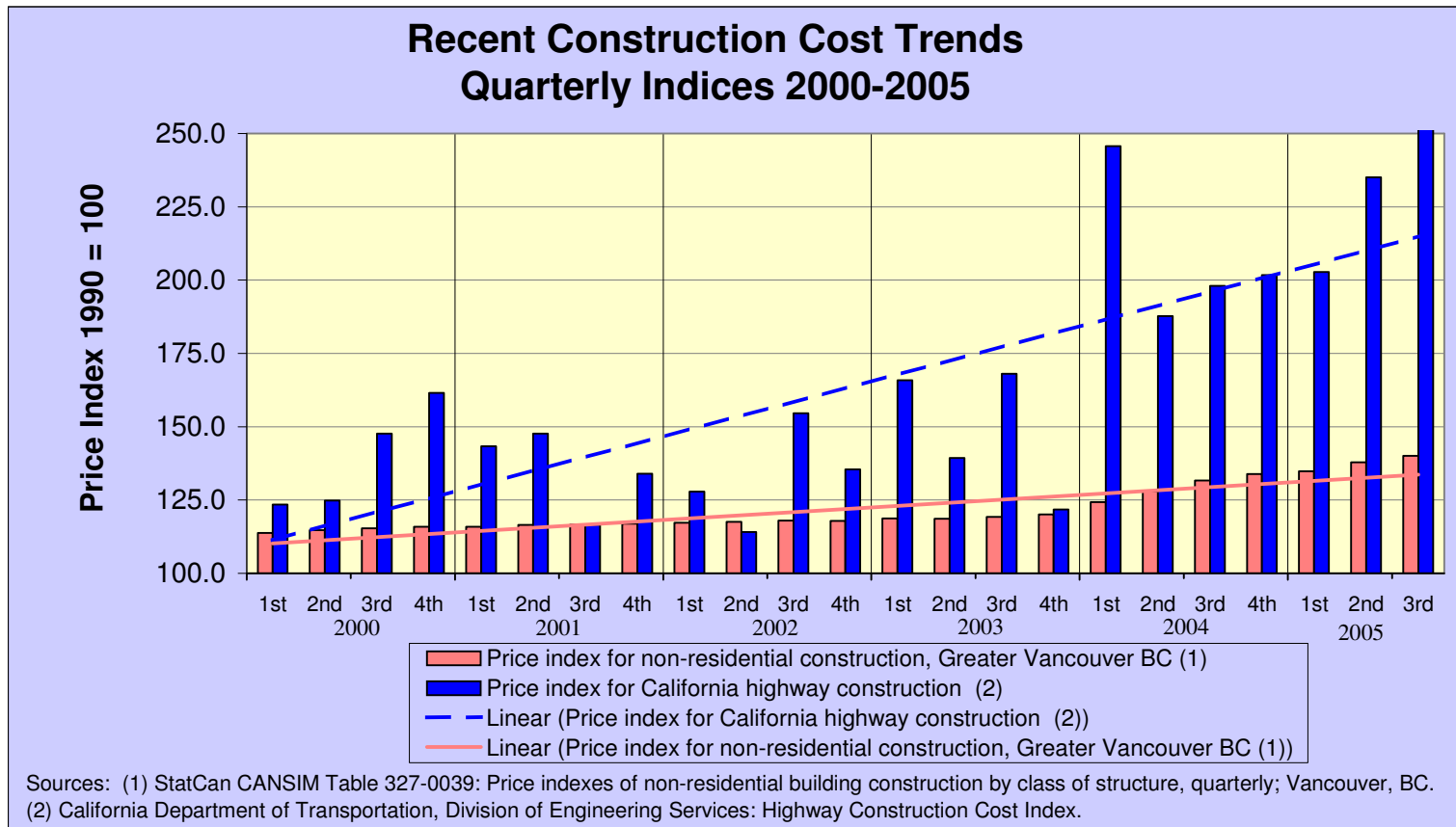


Historical Trends



- Stable 1991-2003
- Current escalation trend now two years old

Quarter-to Quarter Variability



- Unsmoothed data highly variable
- Smaller subsectors → Greater variability and uncertainty.

Cost Trend Factors

“Easier-to measure”

- Labour cost levels
 - Union
 - Non-union
- Materials Costs
 - Concrete
 - Structural steel
 - Reinforcing steel
 - Asphalt
 - Etc.
- Vehicle & Equipment Costs
- Fuel Costs

“Tougher-to-measure”

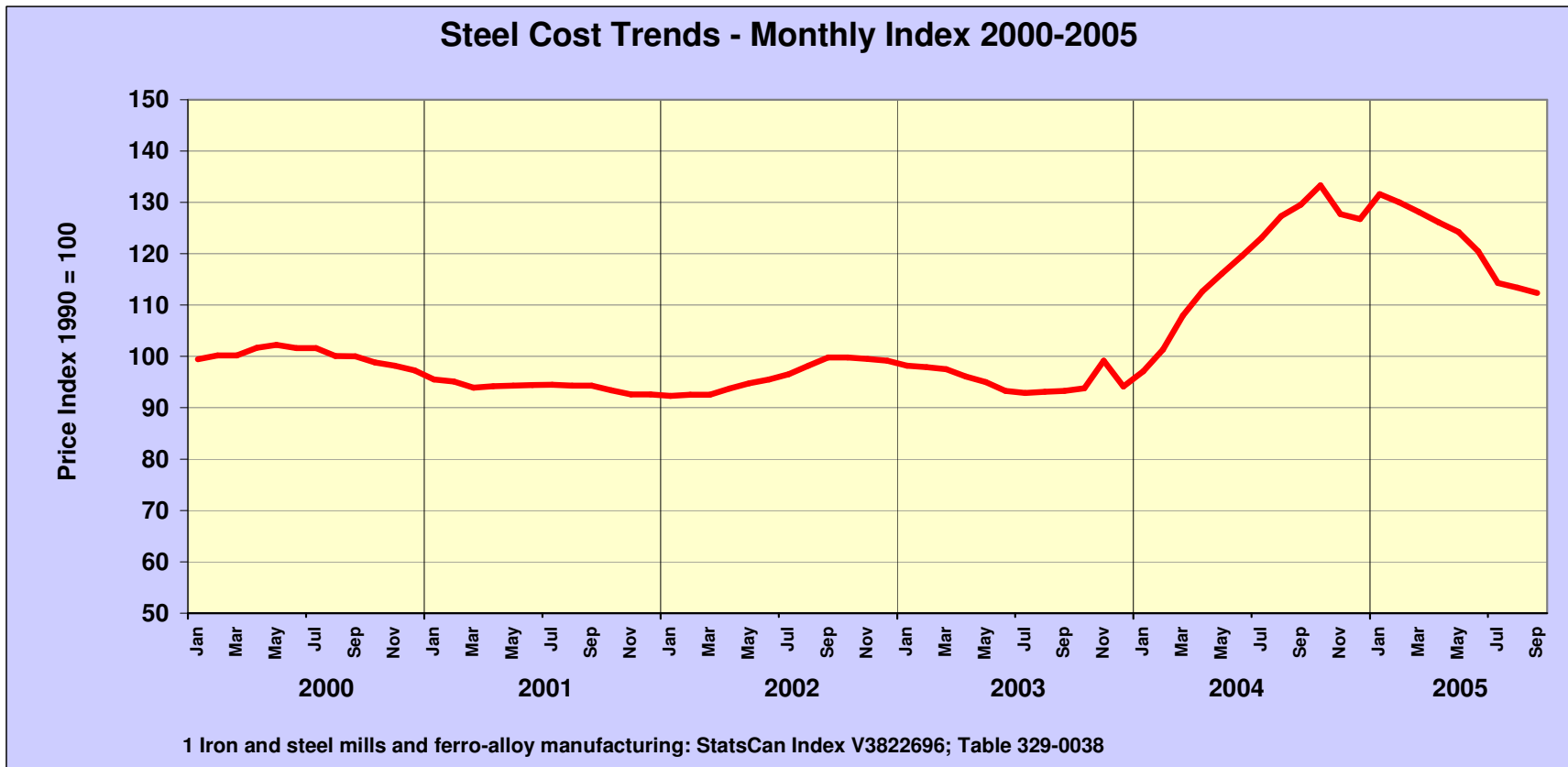
- Labour productivity
 - Experience and skill levels
 - Turnover rates
- Management & Admin Costs
 - Compensation levels
 - Insurance/bonding, legal, IT, etc.
- Target Margins
 - “Normal” margins
 - Premium for technical risks
 - Opportunity costs (future bid opportunities forgone)
- Contingency Allowances
 - Uncertainty about future cost levels

“Easier-to-Measure” Factors

- Two-year trends (Statistics Canada)¹
 - Labour 5.6%
 - Materials
 - Asphalt 20.0%
 - Concrete 4.3%
 - Structural steel 40.4%
 - Concrete reinforcing bars 57.7%
 - Other materials 2.2%
 - Vehicle and equipment
 - Construction machinery & equipment 2.6%
 - Mixing & paving equipment 2.6%
 - Diesel fuel 28.4%
- Results very sensitive to time periods chosen...

¹ Comparing annual averages July 02-June03 versus July04-June 05.

Structural Steel Prices





“Tougher-to-Measure” Factors

- Labour productivity
 - Employee inexperience seen as a major cost driver
 - Plus higher turnover rates (tight markets)
- Management & admin costs
 - Compensation levels
 - Insurance/bonding, legal, IT, etc.
- Contingency allowances
 - Protecting against future cost escalation
- Target margins
 - “Normal”
 - Technical risk premium
 - Opportunity costs (future opportunities foregone)
- Plus measurement issues:
 - Quality/variability of data
 - Reporting time lags

Relative Importance of “Easier-to-Measure” vs “Tougher-to-Measure Factors”

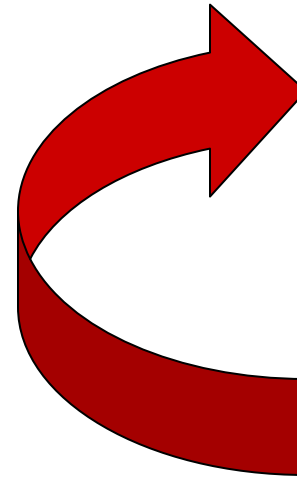
- Actual trends difficult to evaluate from contract information
 - Every project has unique specifications
 - Unavoidable subjectivity in owner cost estimates
 - Unit prices of limited relevance
- General industry consensus that construction costs up 30-50% since 2003
- Approximately half of increase (15%-25%) can be explained by “easier-to-measure” cost factors (Statistics Canada indices)
- Balance attributable to:
 - “Tougher-to-measure” factors
 - Reporting time lags

Differences Within the Construction Sector

- General expectation that cost increases will be greatest in:
 - More active regions (Island, Lower Mainland, Okanagan, Northeast)
 - More active sectors (energy, multi-unit residential, highways)
 - Projects with higher increases in factor costs (fuel-intensive, steel-intensive)
 - Larger projects (limited numbers of bidders)
- Evidence mixed
 - Some anecdotal support
 - Limited reliable statistical data



2. Looking Ahead...





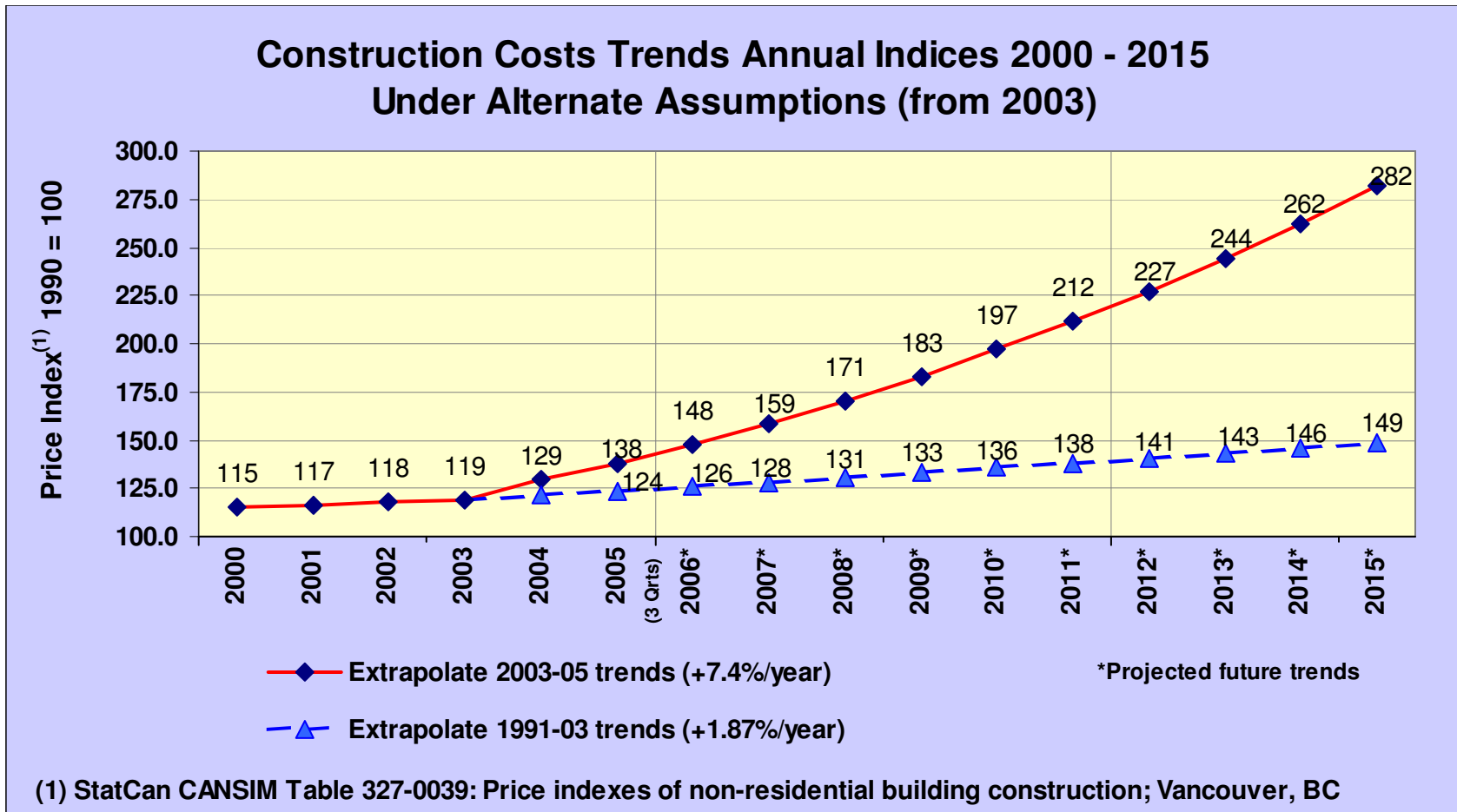
Alternate Forecasting Approaches

- Extrapolate recent industry trends
 - Undampened (two-year trends)
 - Dampened (removing some underlying factors)
- Based on economic trends
 - Macro trends (GDP, labour supply, etc.)
 - Econometric analysis of cost factors (fuel, labour, etc.)
- “Return to normalcy”
 - Standard long-term relationships (constant-dollar terms)
 - Short-term cost fluctuations eventually gravitate towards longer-term trends

Merits of Each Approach

	Strengths	Weaknesses
<ul style="list-style-type: none"> ▪ Extrapolate 2003-05 trends 	<ul style="list-style-type: none"> ▪ Easy to understand ▪ Reduces risk of underestimating 2006 costs 	<ul style="list-style-type: none"> ▪ Doesn't predict market turns ▪ Over-estimates long-term trends, in strong short-term market
<ul style="list-style-type: none"> ▪ Economic trend analysis and economic modelling 	<ul style="list-style-type: none"> ▪ Data and modelling tools available <ul style="list-style-type: none"> • macro analysis • local market supply/demand • factor costs (econometrics) ▪ Predicts market turns 	<ul style="list-style-type: none"> ▪ Linkages to construction prices are indirect ▪ Complex modelling (reliability & ease of understanding) <ul style="list-style-type: none"> • different results possible
<ul style="list-style-type: none"> ▪ "Return to normalcy" 	<ul style="list-style-type: none"> ▪ Conceptually appealing as long-term predictor ▪ Recognizes that short-term markets will turn 	<ul style="list-style-type: none"> ▪ Doesn't predict when/how the turns will occur ▪ Doesn't explain short-term peaks and valleys

Range of Possible Forecasts





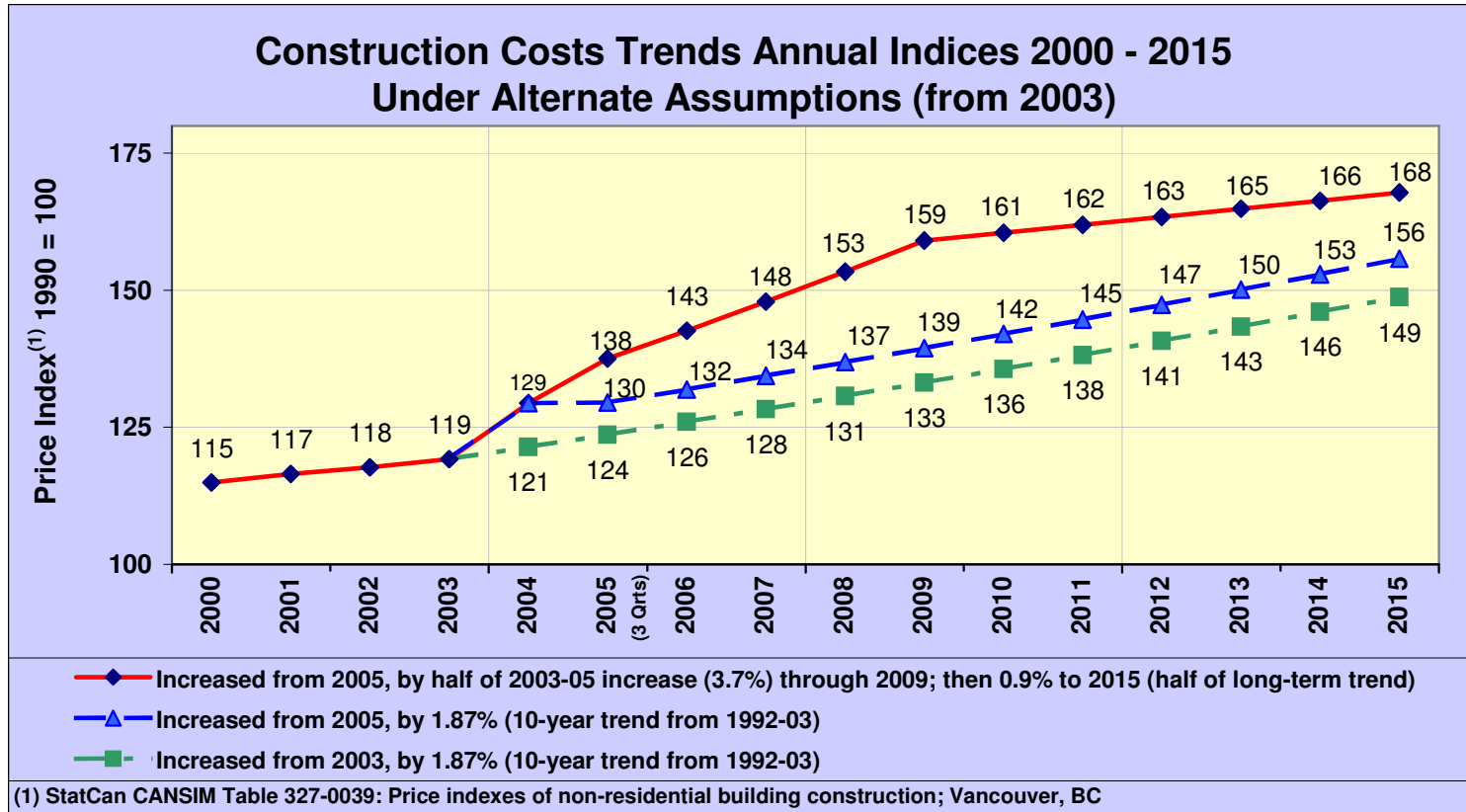
Narrowing the Forecast Range

If:

- Half of 2003-05 increases (i.e. factor cost portion) is a one-time shift in the long-term trend line
 - Other half is gradually eroded by competitive forces, labour skill/productivity, etc.
 - Long-term trend line continues at pre-2003 levels (1.87%), from the shifted (higher) base
- Strong BC construction demand through 2009
 - Increase at 50% of 2003-05 rates (factor cost portion)
- Market begins gravitating back towards the long-term trend line (adjusted) in 2010
 - Increases at half of long-term trend
- General CPI inflation continues at 1.5%-2.5%

Then...

Long-Term Trends, Given Key Assumptions



Disclaimer: Projections are by their nature uncertain, and we cannot represent that these results will be achieved in whole or in part.



Summary – Looking Ahead

- Strong medium-term demand will keep costs rising 2006-2009
 - At a lower rate than 2003-05
- Longer-term gravitation towards trend line
 - Adjusted upwards because of 2003-05 increases

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- Strategic and Business Planning
- Economic and Financial Analysis
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