



Construction Cost Escalation

Uncertainty in Financial Forecasting in Construction

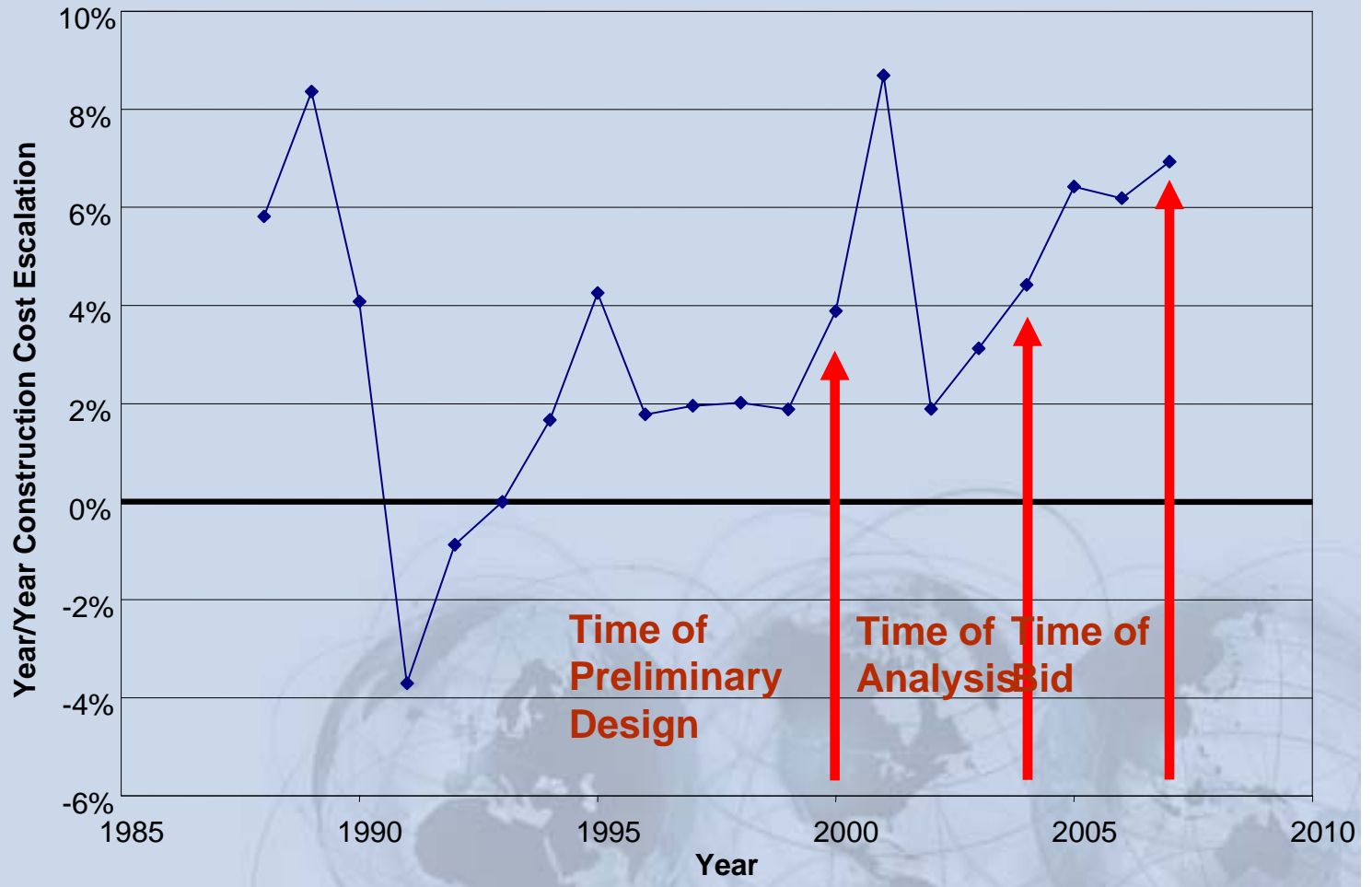
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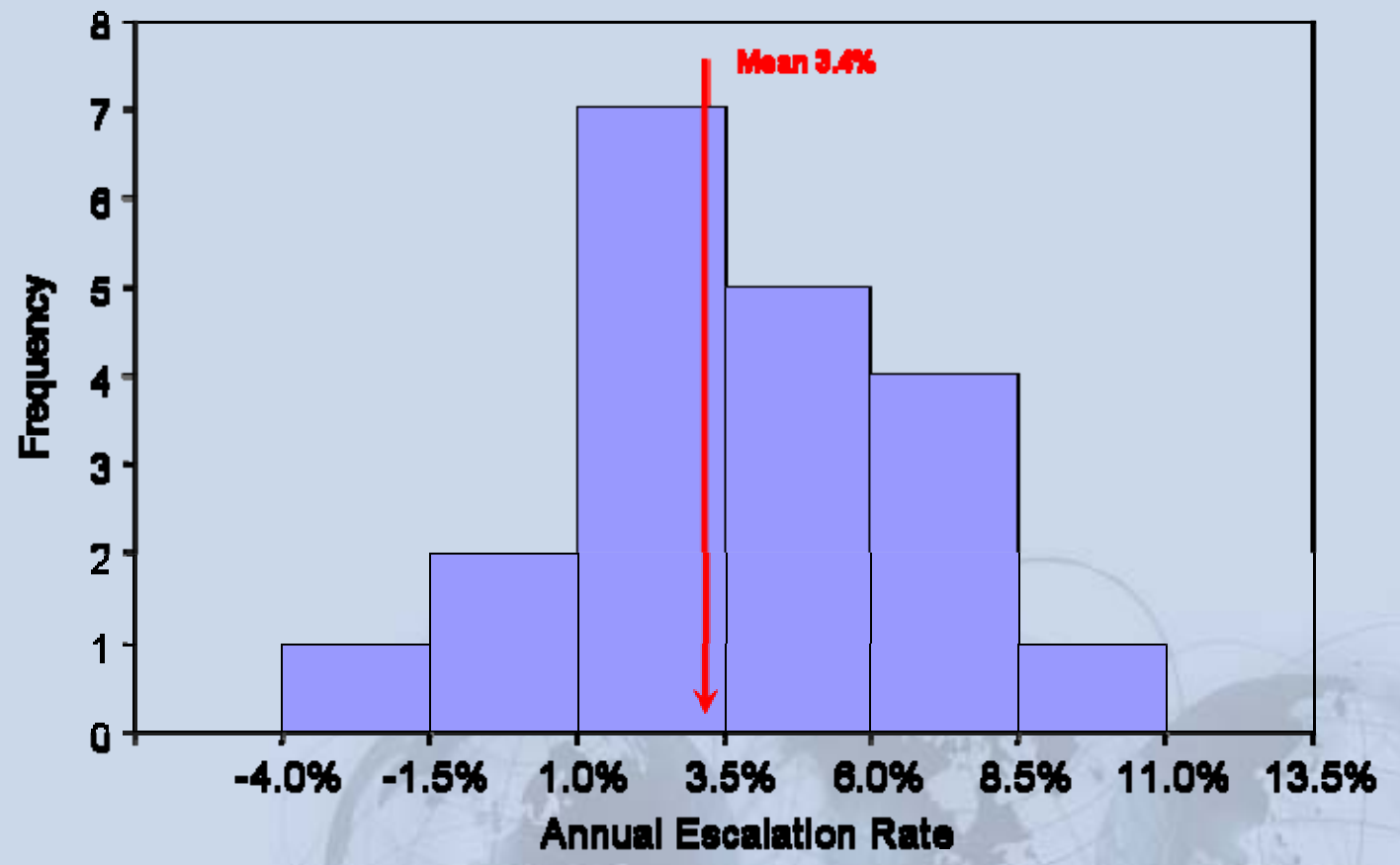
Construction Cost Escalation Uncertainty

- Construction Cost Escalation
 - Often, in civil engineering, a discrete value is used to estimate year/year construction cost changes
 - Based on average “hind-sight” of past years
 - How can this be rationally addressed for forecasting/estimating?

Construction Cost Escalation Uncertainty



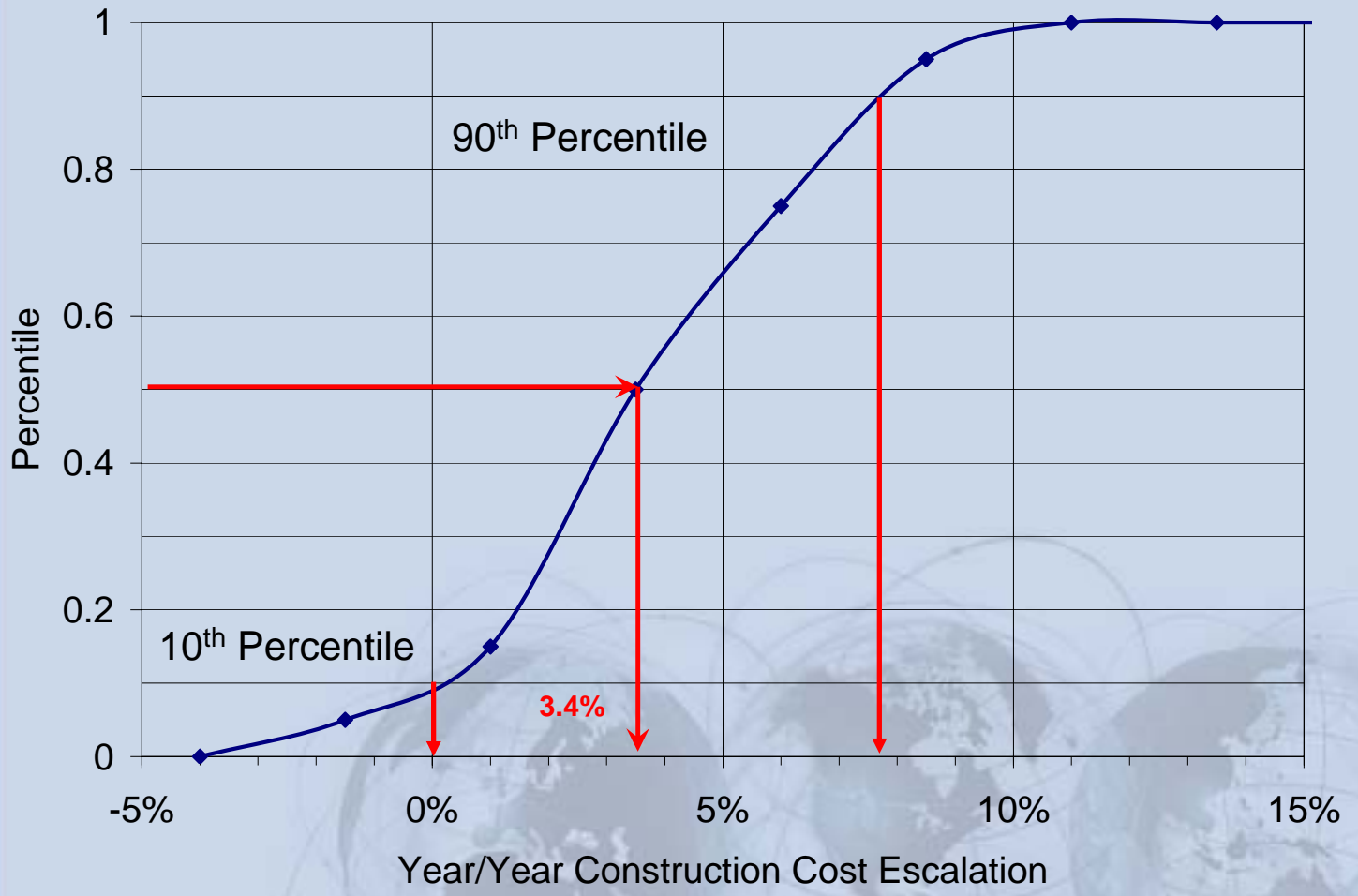
Construction Cost Escalation Uncertainty



Construction Cost Escalation Uncertainty

- Uncertainties
- Which phase of “cycle” are we in?
 - Steadily increasing?
 - Steadily decreasing?
 - Sharp peak?
 - Sharp trough?
 - Relatively consistent period
 - Close to average, or large departure from average?

Construction Cost Escalation Uncertainty



Issues for Modeling Escalation

- Project-by-project versus program-wide rates
- “Lumped” rate for overall project costs *versus* separate rates by cost component (e.g., design, right-of-way, and construction)

Issues for Modeling Escalation

- Definition of “escalation” rates
 - Inflation trend + other sources of escalation included in annual rates, *versus*
 - Model inflation trend with rates and treat other sources of escalation as separate risks

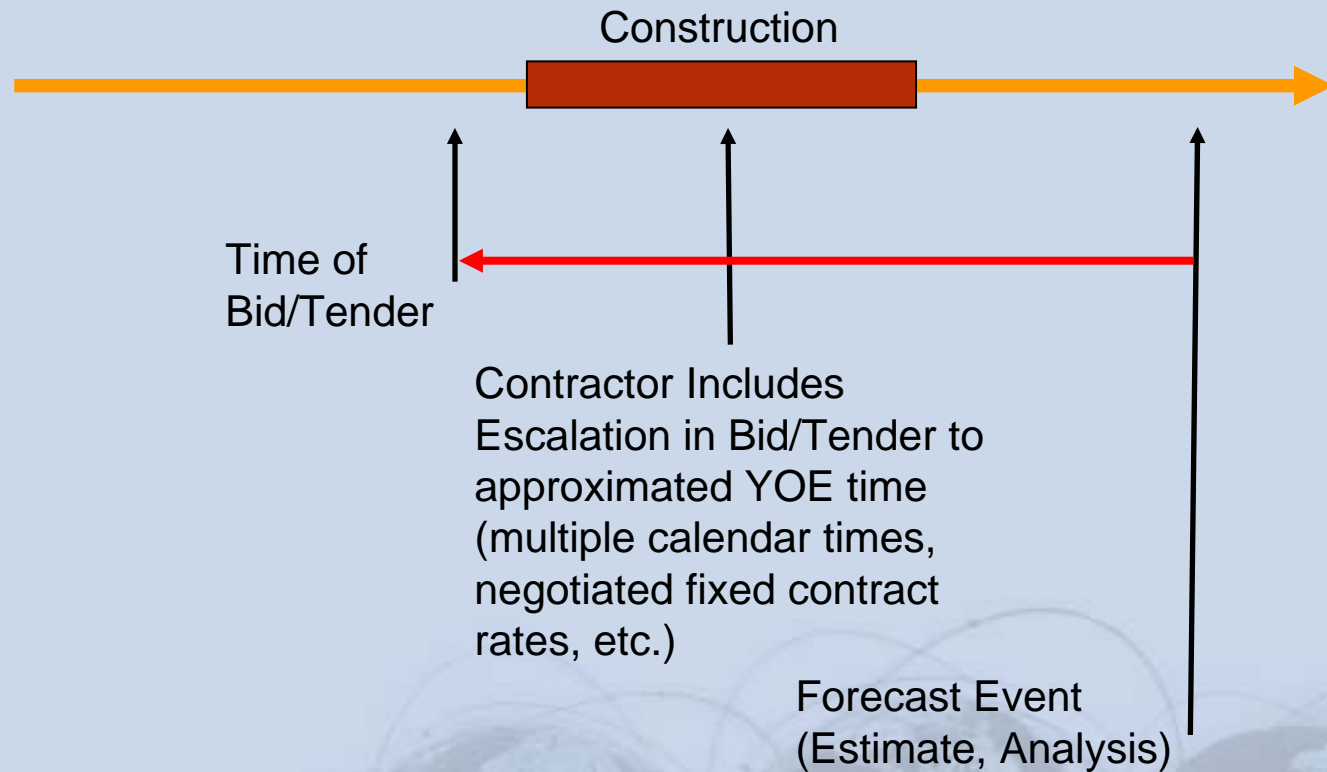
Issues for Modeling Escalation

- Variability in rates
 - Apply same rate each year, *versus*
 - Vary rate from year to year
- Uncertainty in rates
 - Deterministic (e.g., apply an average annual rate to all years), *versus*
 - Uncertainty (and risk) in the rate for any given year

Issues for Modeling Escalation

- Correlation among years, if any
- Escalation as function of time
 - Link escalation to cost and schedule / schedule delay (integrated model)
 - Ad-hoc escalation 'layered' onto separately-generated schedule results

Issues for Modeling Escalation



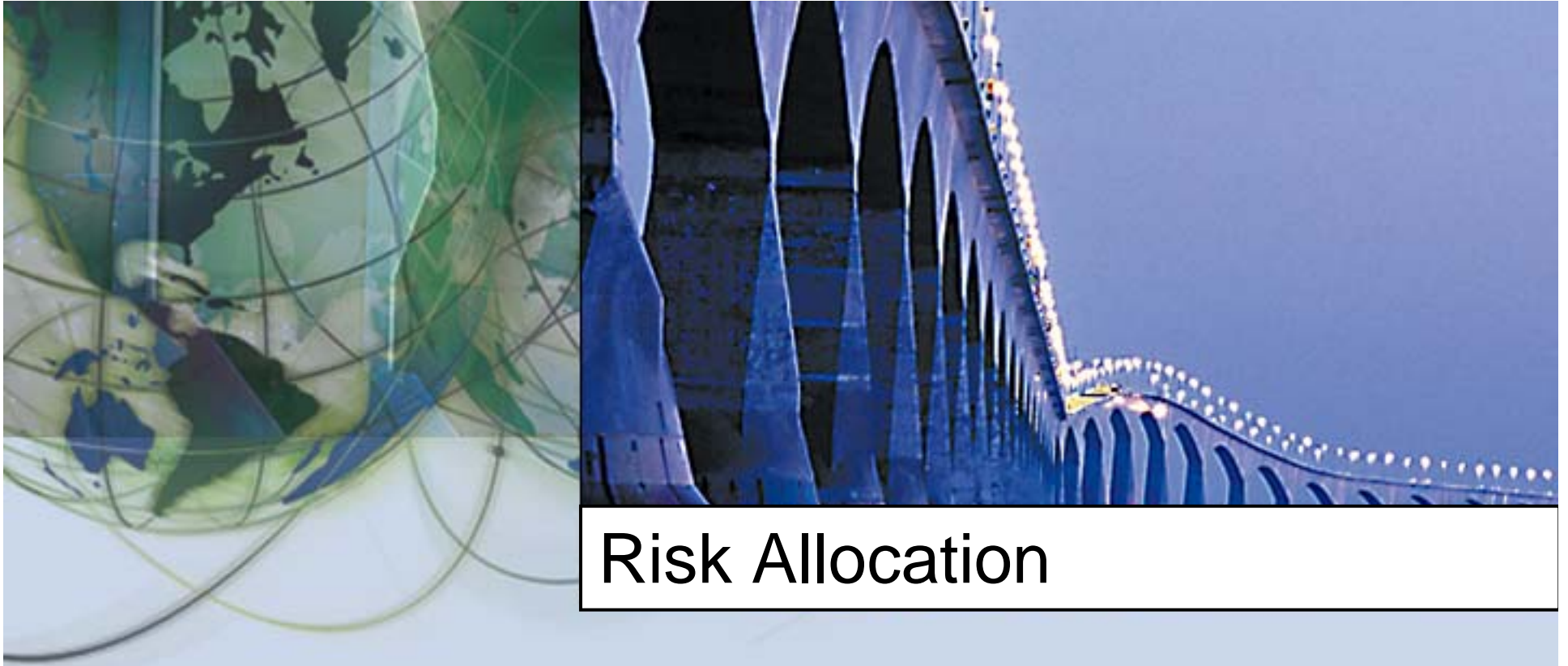
Is forecasting using hind-sight bid information reliable or reasonable, and can it be calibrated based on construction timing (back-analysis)?

Issues for Modeling Escalation

- Use of historical bid information to judge year/year escalation
 - Is it a reliable indicator?
 - What lies beneath bid item?
 - Contractual conditions
 - “Roll-up” of materials, labour, incidental items
 - Bid item “weighting”
 - Strategic decisions on part of contractor
 - Financing
 - Real or perceived risks or opportunities
 - Insurance (transferred risk, costs of transfer)

Construction Cost Escalation Uncertainty

- In forecasting and analysis, what factors can be/should be considered separately
 - Local economic conditions (e.g., market competition/contractor pricing strategy)
 - Macro-economic conditions (inflation)
 - Commodity pricing (oil, steel, copper, etc.) (in addition to normal inflation = escalation component)



Risk Allocation

Who Takes on Risk/Opportunity?

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Risk Allocation

➤ Risk Allocation

➤ Contract method

- Design-Bid-Build
- Design-Build
- Design-Build-Operate Transfer
- Do any of these offer greater advantage to one party or the other?
- “Pay me now or pay me later”, must beware of risk cost in contractual transfer/avoidance

Risk Allocation

➤ Risk Allocation

- Assigning risk to the party most able to control/manage risk
 - Builder: methods, materials, site safety, etc.
 - Owner: location specifics, ground conditions, etc.
- Court/Legal liabilities & precedent
 - Contractual transfer of risks may not be supportable/defensible

➤ Risk Allocation

➤ Residual Risk

- Risk “mitigation” may not “eliminate” risks
- Characterization of risk following “mitigation” may be biased
- Mitigation can induce new risks

➤ Retained Risk

- Retaining risk may be optimal strategy in some cases (risk vs reward)

➤ Insurable Risks (by owner, builder, etc.)