



Are the Rates Right?

Benchmark Protection Against Escalation SWAG



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Subject Matter Expert

Brian Flynn supports national security efforts at Technomics' Arlington, VA, headquarters. He has a deep understanding of and strong working relationships with many of the cost and OR organizations in the U.S. DoD and the NATO Alliance. His areas of expertise include capability portfolio analysis, weapon system cost estimating, EVM, econometric modeling, economic analysis, AoAs, and corporate financial health. Dr. Flynn has undying pride in his service as a United States Marine. **Semper Fi.**

Today's presentation

- § Requirement and task
- § Healthcare escalation basics
- § Prospective indices
- § Summary of operations
- § Best-fit indices: ECI and ECEC
- § Long-range forecasts
- § Should cost
- § Addenda

... a thorough review of contractor overhead costs is a complex undertaking requiring insight into corporate structures, business assumptions, and subcontractor arrangements ... requiring time and a trained ... team.

Dr. Ashton Carter, *former SECDEF*

Requirement and Task

Understanding the gaps, consequences,
and solutions

Requirement and task

§ Gap

- § Incomplete understanding of company escalation
- § Absence of benchmark indices to support life-cycle estimates, should-cost studies, and affordability initiatives

§ Consequences

- § Over-reliance on projections from defense firms
- § Leading to over-use of “pass-through” cost estimates and failure to comply fully with fiduciary responsibility

§ Solution

- § Conduct “mini-research” projects, such as overhead escalation
- § Develop benchmark rates
- § Health care, pension, and workers’ compensation costs



Measurements

- § Healthcare as a test case or proxy for major elements of indirect cost
- § The benchmark focus is on who pays for healthcare
- § Indices are of interest to defense firms, unions, and government



Projections

- § Take advantage of market data
 - § Prices and yields of financial instruments traded on Wall Street
- § Focus sharpens when prices set by those with “skin in the game”

Healthcare Escalation Basics

Cost element structure, components, and
perspective indices

Healthcare cost element structure

Bureau of Economic Analysis

- § Perspective: Employers, employees and government

- § Medical care commodities
 - § Pharmaceutical products (e.g., prescription drugs)
 - § Medical appliances and equipment

- § Medical care services
 - § Outpatient services
 - § Hospital and nursing home services

Bureau of Labor Statistics

- § Perspective: Consumers

- § Medical care commodities
 - § Drugs (medicinal, prescription, non-prescription)
 - § Medical equipment and supplies

- § Medical care services
 - § Professional services
 - § Hospital relates services
 - § Health insurance

Percent of total medical care cost



Medical Care Commodities



Medical Care Services

Components of healthcare escalation

§ Pure price inflation

§ Change in the prices of identical medical goods and services over time

§ Utilization

§ Change in the per capita demand for medical goods and services

§ Deductible leveraging

§ Increase in price of a claim year-to-year, with deductible constant, yielding an increase in actual payout

§ Technological advances

§ Change in medical costs due to the introduction of new procedures, equipment, and drugs

§ Cost shifting

§ Shift from discount payers, such as Medicare, to “reasonable and customary” players

Prospective medical escalation indices

§ CPI-U Medical (Consumer Price Index for all Urban Consumers)

§ Measures changes in prices **paid by consumers** in their day-to-day living expenses

§ PCE Medical (Personal Consumption Expenditures)

§ FED's favored index for inflation

§ Captures medical spending **by and on the behalf of the consumer**

§ ECI Medical (Employment Cost Index)

§ Measures changes in **end cost** to companies of providing medical coverage to their workers

§ ECEC Healthcare for Union Firms (Employer Cost of Employee Compensation)

§ Measures **employer cost per employee hour** worked for employee healthcare compensation

§ National Compensation Survey – Employer Premium Costs

§ Measures **employer's** medical insurance premium costs for union firms

Analysis and Benchmarks



Healthcare Escalation Benchmarks: Composition and Assessment

Adam James | Brian Torgersen | Anna Irvine | Brian Flynn | Greg Milhalek

Benchmark	Description	Construct	Escalation Rates	Average Annual Growth	Plausible Projections	Assessment
CPI-U Healthcare Consumer Price Index for All Urban Consumers § Healthcare Component § Nominal values	Market basket of out-of-pocket medical expenditures made by consumers for physicians' services, dental services, eyeglasses and eye care, hospital services, nursing home and adult day-care services, medical drugs, and medical equipment and supplies § At the price level § Taxes included	§ Published monthly by Bureau of Labor Statistics § Composition of market basket remains fixed (updated every two years) § Derived using a Laspeyres-type index § Weights from household surveys		Span in Years 10: 3.2% 5: 3.0% 3: 2.9% 1: 3.6%	§ Straight-line extrapolation from polynomial trend (2 nd order) § Moving averages § CAGRs	Captures an <i>employee's</i> perspective, or that of a consumer of healthcare Pros: § Nationally recognized benchmark metric § Useful backdrop information to company, workers, and DoD Cons: § Doesn't capture costs incurred by firms
PCE Healthcare Personal Consumption Expenditures § Healthcare Component § Nominal values	Market basket of medical expenditures made by and on behalf of consumers. Includes: § Out-of-pocket expenditures by consumers § Health care services paid for by employers through employer-provided insurance § Health care paid for by the government through programs such as Medicare Part	§ Published monthly by Bureau of Economic Analysis § Composition of market basket changes quarterly § Derived using a chained Fisher index § Weights are from business surveys § Medical: 22% of the PCE vs 6% for CPI-U		Span in Years 10: 2.0% 5: 1.2% 3: 0.9% 1: 1.0%	§ Moving averages § Projection of the aggregate CPI-U as an analogy § CPI-U and PCE Medical indices closely correlated § Projection of CPI-U from the Cleveland FED using market data	Captures a <i>firm, employee, and federal government</i> perspective Pros: § Broadest measure of healthcare inflation in the economy § Useful backdrop information Cons: § Government costs likely viewed as exogenous to collective bargaining
ECI Healthcare Employment Cost Index § Healthcare Component § Nominal values	Market basket of healthcare commodities and services paid for by companies on behalf of their employees, through employer-provided insurance § Typically includes medical care, vision, and dental § A Principal Federal Economic Indicator § Military pay raises statutorily linked to the ECI aggregate	§ Published quarterly by Bureau of Labor Statistics § Estimated from data collected by the National Compensation Survey (NCS) § Derived using a Laspeyres-type index § Weights are base-period expenditures		Span in Years 10: 3.5% 5: 2.7% 3: 2.8% 1: 2.8%	§ Historical CAGRs § Perhaps flatlined at 3% per annum based on stability over the last five years § Moving averages	Captures the perspective of a firm providing healthcare benefits to its employees Pros: § Directly applicable to medical indirect costs for any defense contractor Cons: § National benchmark which may not exactly match defense industry



Analysis and benchmarks (see handout)

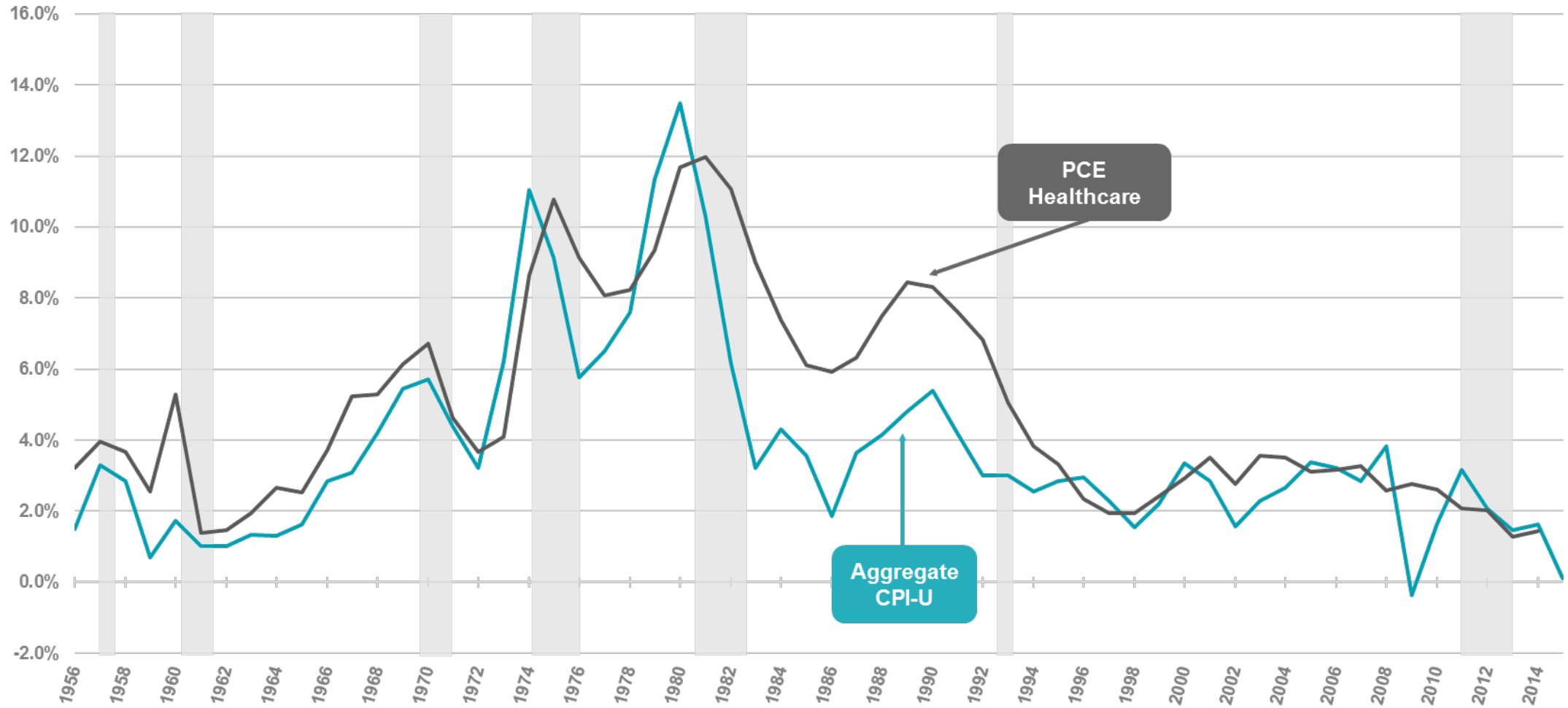


Healthcare Escalation Benchmarks: Composition and Assessment

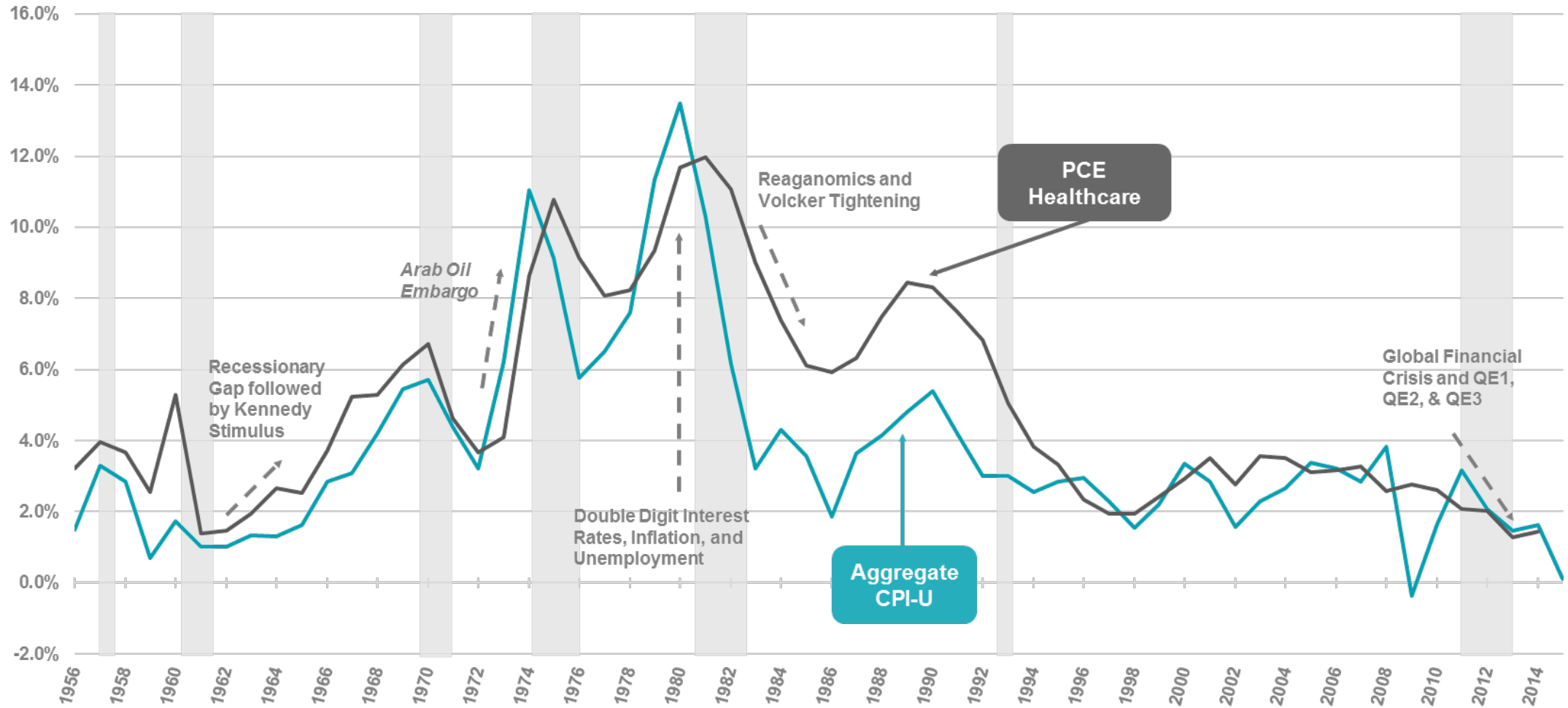
Adam James | Brian Torgersen | Anna Irvine | Brian Flynn | Greg Milhalek

Benchmark	Description	Construct	Escalation Rates	Average Annual Growth	Plausible Projections	Assessment
<p>ECEC Healthcare</p> <p>Employer Cost of Employee Compensation</p> <ul style="list-style-type: none"> § Union firms § Healthcare Component § Nominal values 	<p>Measures employer cost per employee hour worked for employee healthcare compensation</p> <ul style="list-style-type: none"> § Raw data in nominal dollars per hour § Escalation computed from yearly deltas § Same categories of healthcare as the ECI § Healthcare now 12.6% of total worker compensation for union firms vice 10.3 in 2006 	<ul style="list-style-type: none"> § Published quarterly by Bureau of Labor Statistics § Derived using a chained Fisher index § Unlike the ECI, industry and occupational weights vary 			<ul style="list-style-type: none"> § Historical CAGRs, perhaps focusing on the 5-year timeframe given volatility § Moving averages § De-escalation using the aggregate CPI-U followed by projections of the healthcare delta using averages § Projection of CPI-U from the Cleveland FED using market 	<p>Captures the perspective of a firm providing healthcare benefits to its employees</p> <p>Pros:</p> <ul style="list-style-type: none"> § Perhaps the best analogy for defense § Provides a strong basis for should-cost analysis <p>Cons:</p> <ul style="list-style-type: none"> § Uncertain applicability to any one company
<p>National Compensation Survey</p> <p>Employer Premium Cost</p> <ul style="list-style-type: none"> § Computed from raw dollar values for single and family coverage 	<p>Measures employer's medical insurance premium costs for union firms</p> <ul style="list-style-type: none"> § Raw data in nominal dollars § Average flat monthly dollar contribution per covered employee § Firms requiring an employee contribution § Escalation computed from yearly deltas 	<ul style="list-style-type: none"> § NCS published quarterly by Bureau of Labor Statistics § However, detailed data on medical premiums published <i>only yearly</i> § Employee Benefit Survey databases § Presents raw dollar-values rather than indices 			<ul style="list-style-type: none"> § Historical CAGRs, perhaps focusing on the 5-year timeframe given volatility § Weighted average of single and family coverage § De-escalation using the aggregate CPI-U, following the procedure for the ECEC 	<p>Captures the perspective of a firm providing healthcare benefits to its employees</p> <p>Pros:</p> <ul style="list-style-type: none"> § Focuses on union firms and provides details on one component of healthcare costs - premiums <p>Cons:</p> <ul style="list-style-type: none"> § Limited scope compared to the ECEC

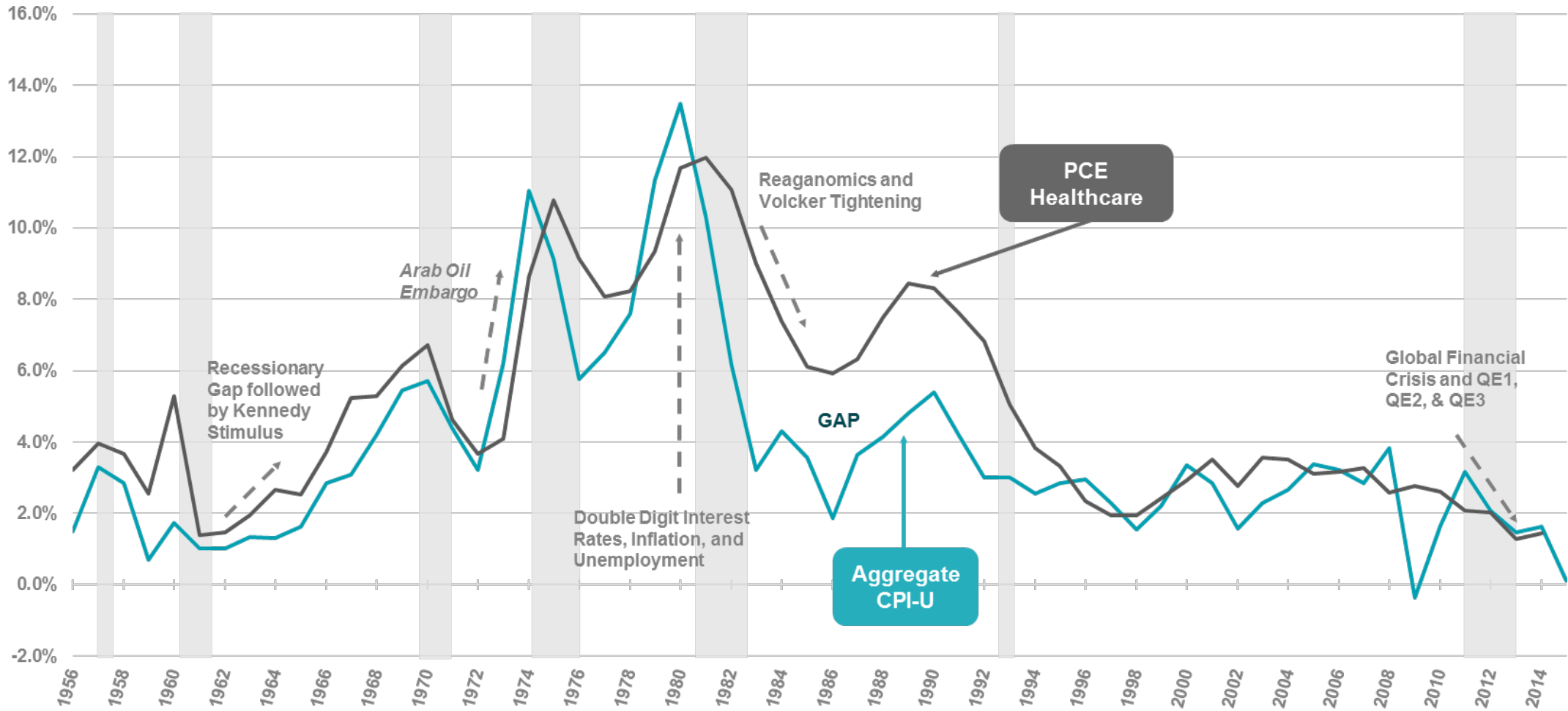
Economy-wide inflation vs. healthcare sector escalation



Economy-wide inflation vs. healthcare sector escalation



Economy-wide inflation vs. healthcare sector escalation



Macro Inflation projections



Treasury Breakevens

- § Yields on nominal treasuries vs. yields on Treasury Inflation-Protected Securities (TIPS)
- § Point predictions up to 30 years out



Zero-Coupon Inflation Swaps

- § Point predictions 30 years ahead



Cap and Floor Derivatives

- § PDFs implied by call price function
- § Based on daily interaction of agents who buy and sell inflation protection in a \$2B+/year market

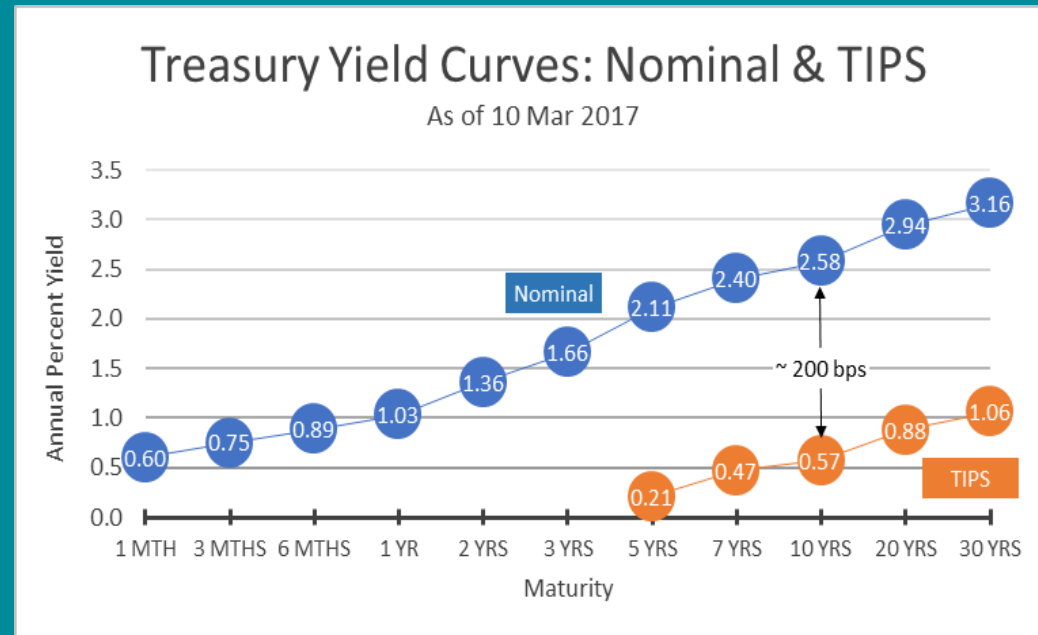
Macro inflation projections



Focus sharpens and credibility rises when prices are set by those with *skin in the game*

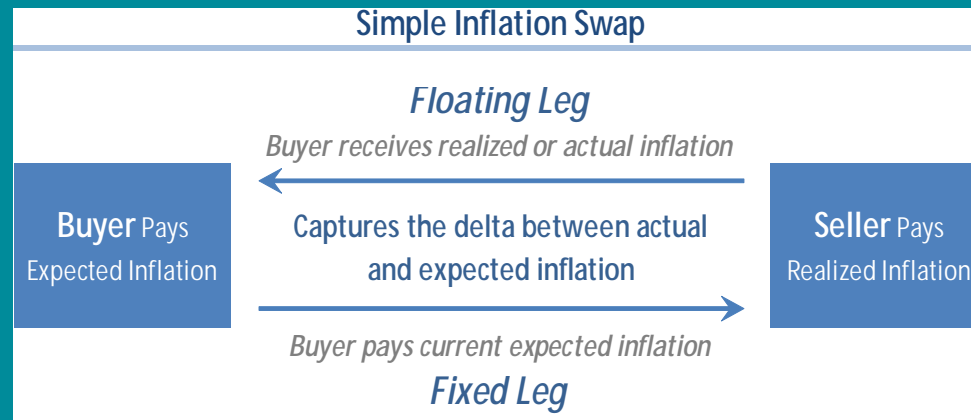
§ Treasury breakevens

- § Yields on nominal Treasuries versus yields on TIPS
- § TIPS added to mix of financial instruments in 1997
- § Sold today in maturities of 5, 7, 10, 20, and 30 years
- § Unlike nominals, principal of a TIPS is **automatically adjusted** to the CPI
- § Provides hedge against inflation so long as security held to maturity
- § “Breakeven inflation” \approx Nominal yield – TIPS yield



§ Inflation derivatives

- § Financial instruments that derive value from the value of an underlying asset
- § Market for inflation protection has grown with the TIPS market
- § Zero-coupon vanilla inflation swap
 - § Bilateral contract between a buyer and seller of inflation protection
 - § Exchange of cash flows
 - § Breakeven **swap rate** quoted daily in the market



Payment of expected inflation = \$notional * [(1 + b)^{tenor} - 1]

Payment of realized inflation = \$notional * [CPI_{t+tenor}/CPI_t - 1]

b = market's inflation expectation

Probability distributions

§ New market in inflation derivatives: “caps and floors”

§ Started in Europe in 2003 and US in 2009

§ Payoff linked to realized changes in an index

§ United States

§ Consumer Price Index for Urban Wage Earners (CPI-U)

§ Europe

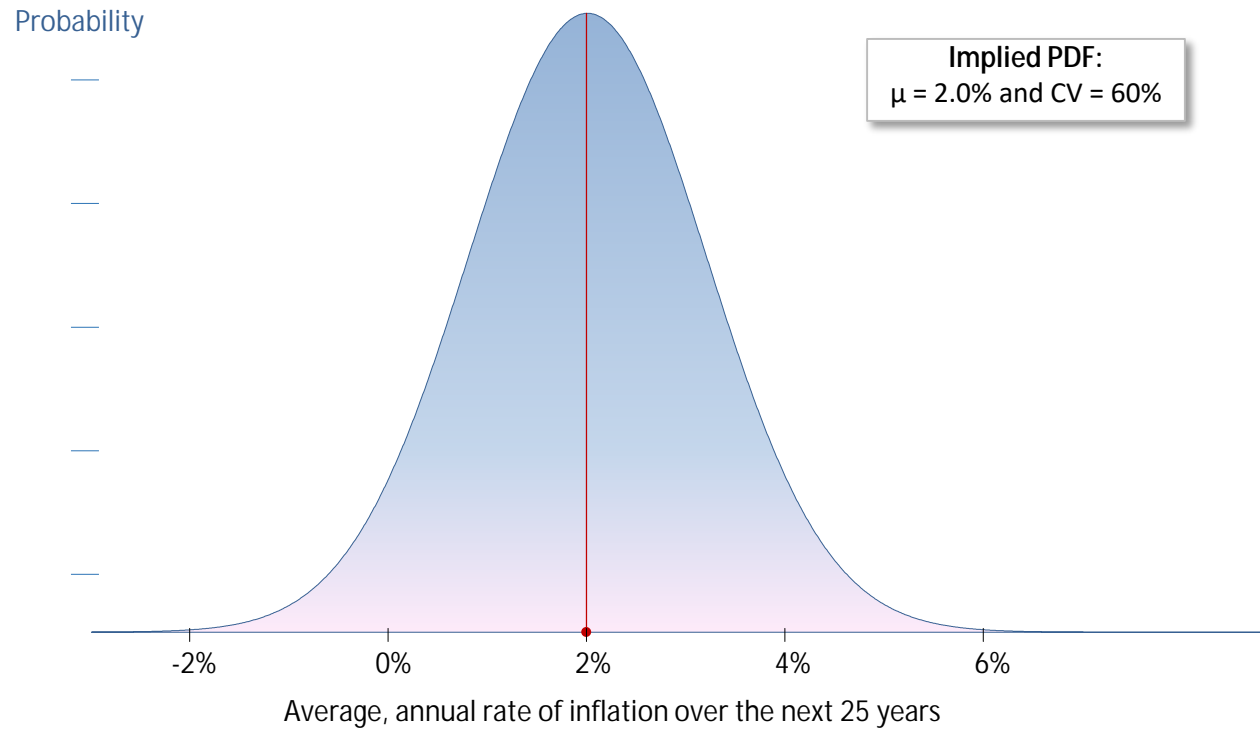
§ Harmonized Index of Consumer Prices (HICP)

§ PDF for inflation extractable from market prices!

$$\$N \cdot \max \left[\left(\left(\frac{CPI_T}{CPI_o} \right)^{\left(\frac{1}{T} \right)} - 1 \right) - k, 0 \right], \text{ where } k = \text{inflation rate}$$

Probability distributions

Market's Expectation of Inflation 25 Years Ahead: Annualized Percent Change in CPI-U



Forecast Uncertainty

Projections: ECEC for union firms

Forecast Methodology

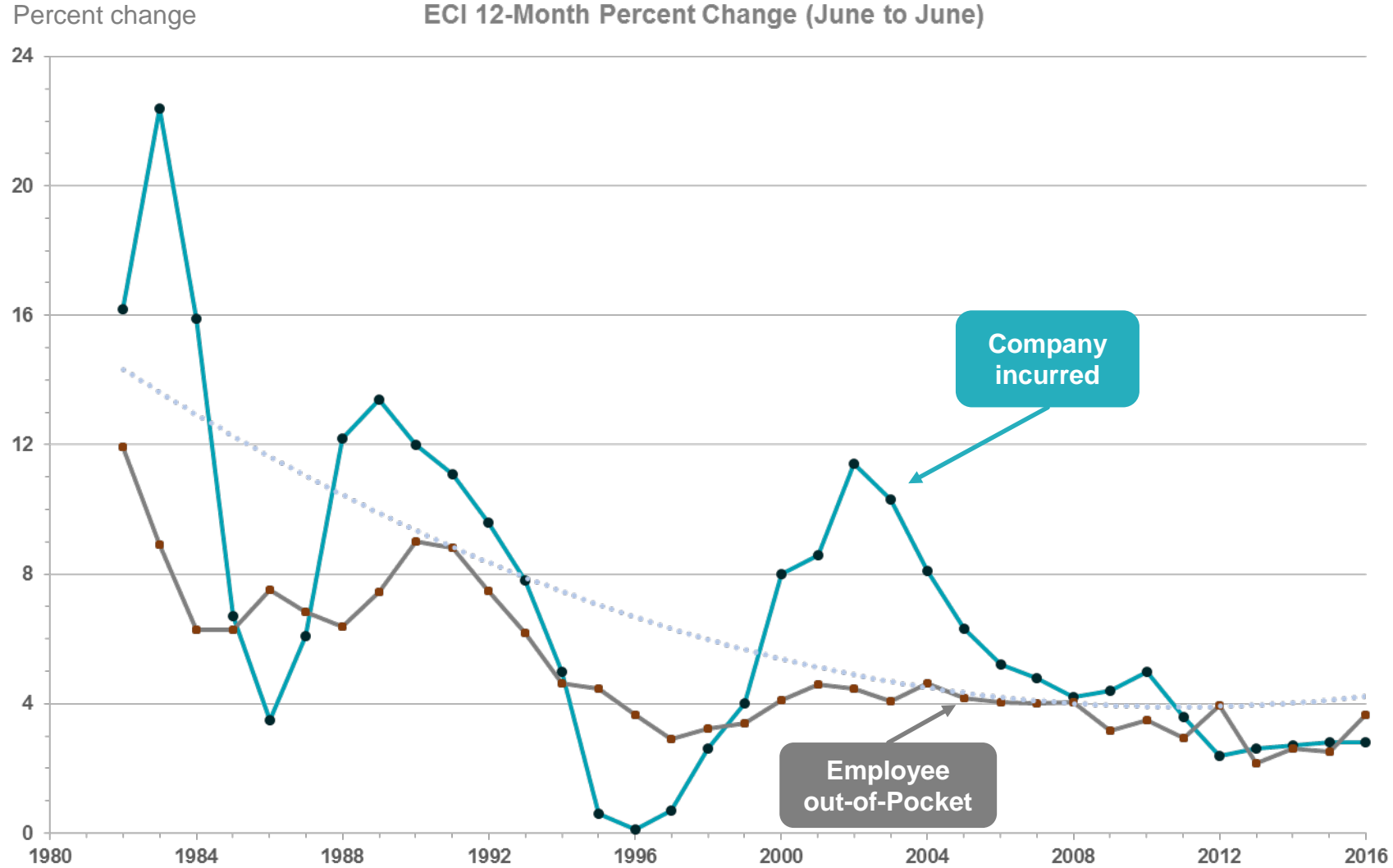
- § Leverage linkage between core inflation and medical escalation
- § Deflate historical medical indices using the CPI-U
- § Compute deltas of medical escalation over macro inflation
- § Use market-based forecasts of macro inflation from the Federal Reserve
- § Tack-on the medical escalation deltas

Advantages

- § Separately accounts for a significant percentage of variation in nominal ECEC rates
- § Takes DoD and defense companies **out of the business** of forecasting **core inflation**
- § Relies instead on transparent, documented, accessible forecasts from the FED
- § Same intel used by the Board of Governors
- § Updated monthly

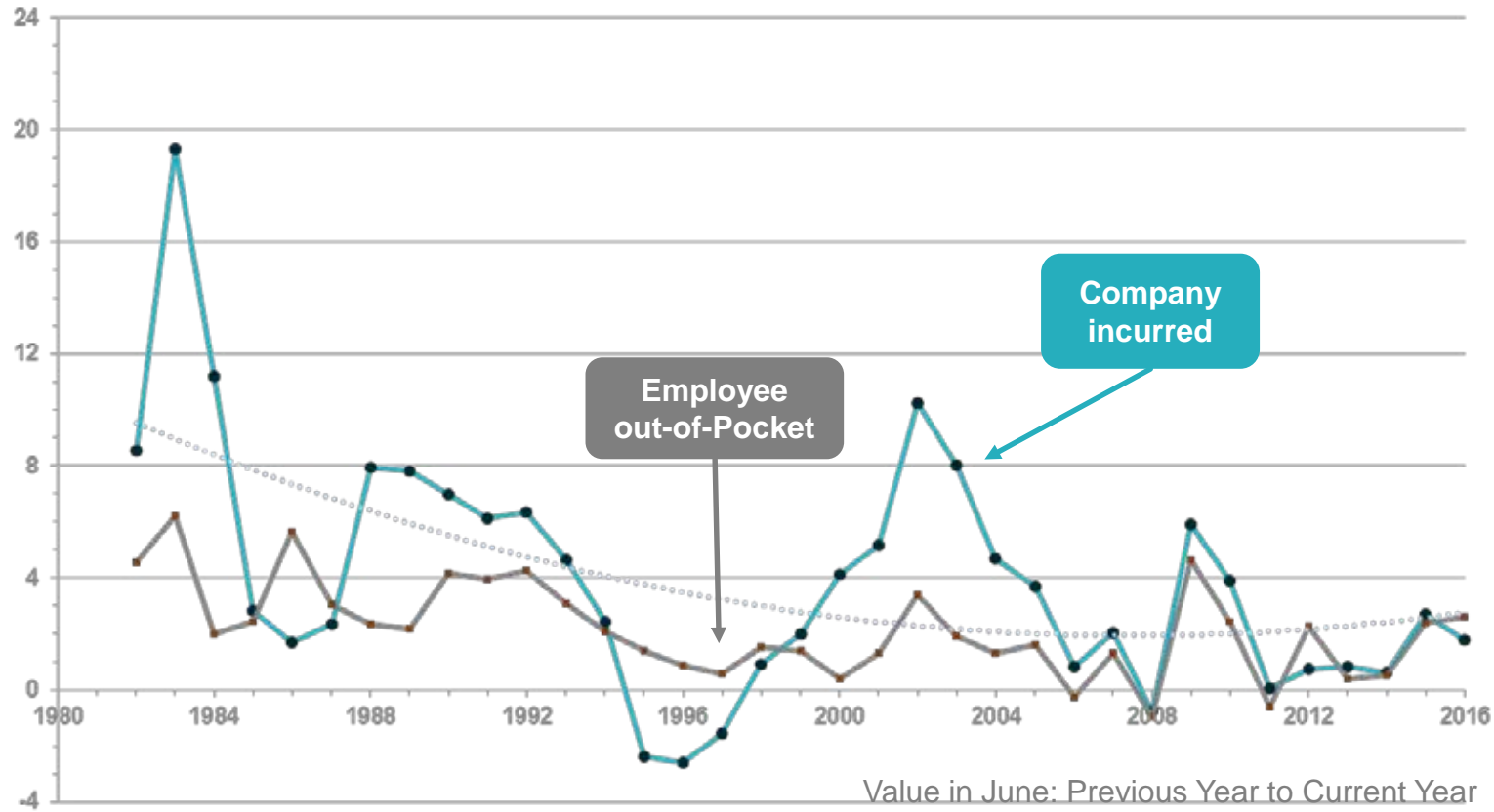
Healthcare Escalation: Private Industry

ECI 12-Month Percent Change (June to June)



Healthcare Escalation in Constant Dollars ECI Adjusted for General Inflation in the Economy

Percent change

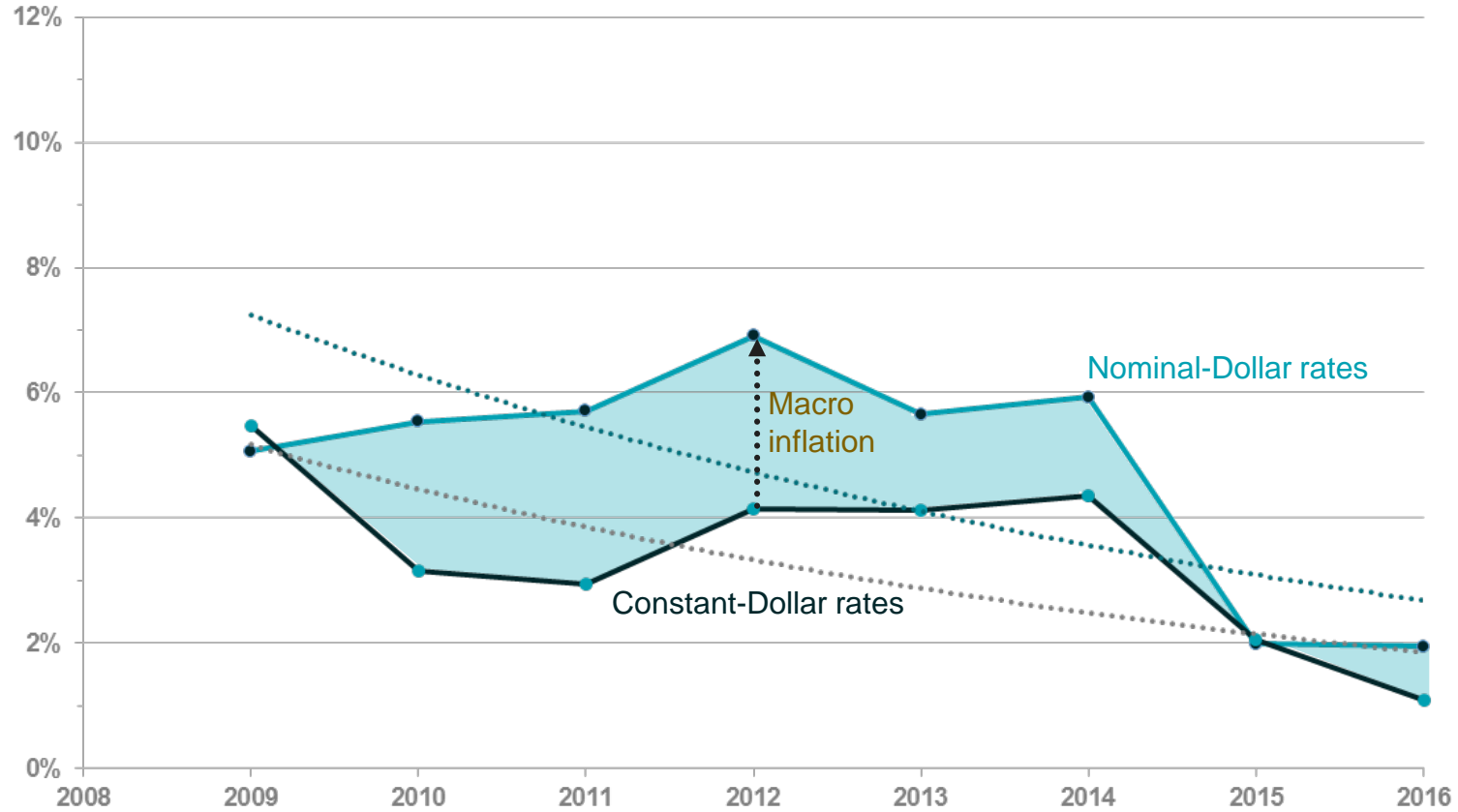


Company-Incurred Nominal Rates: Average Basis Points Above Core Inflation

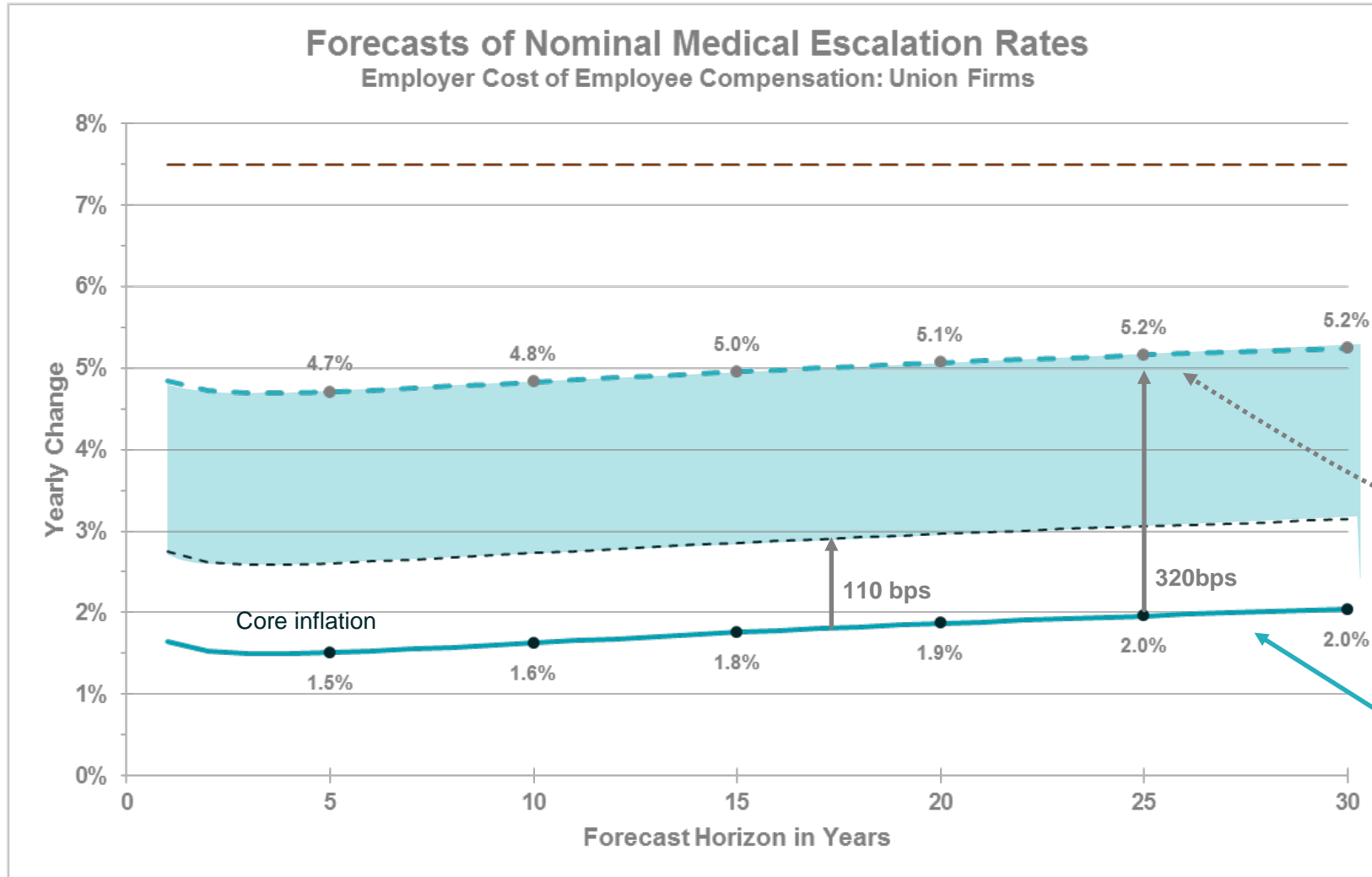
Span	Bps
Last 3 Yrs	169
Last 5 Yrs	132
Last 10 Yrs	178
Last 15 Yrs	301
Sample	398

Healthcare escalation for union firms: post recession

ECEC Healthcare Escalation for Union Firms: Rates in Nominal and Constant Dollars



Additional resources



Historically-based Δ 's: ECEC above core inflation

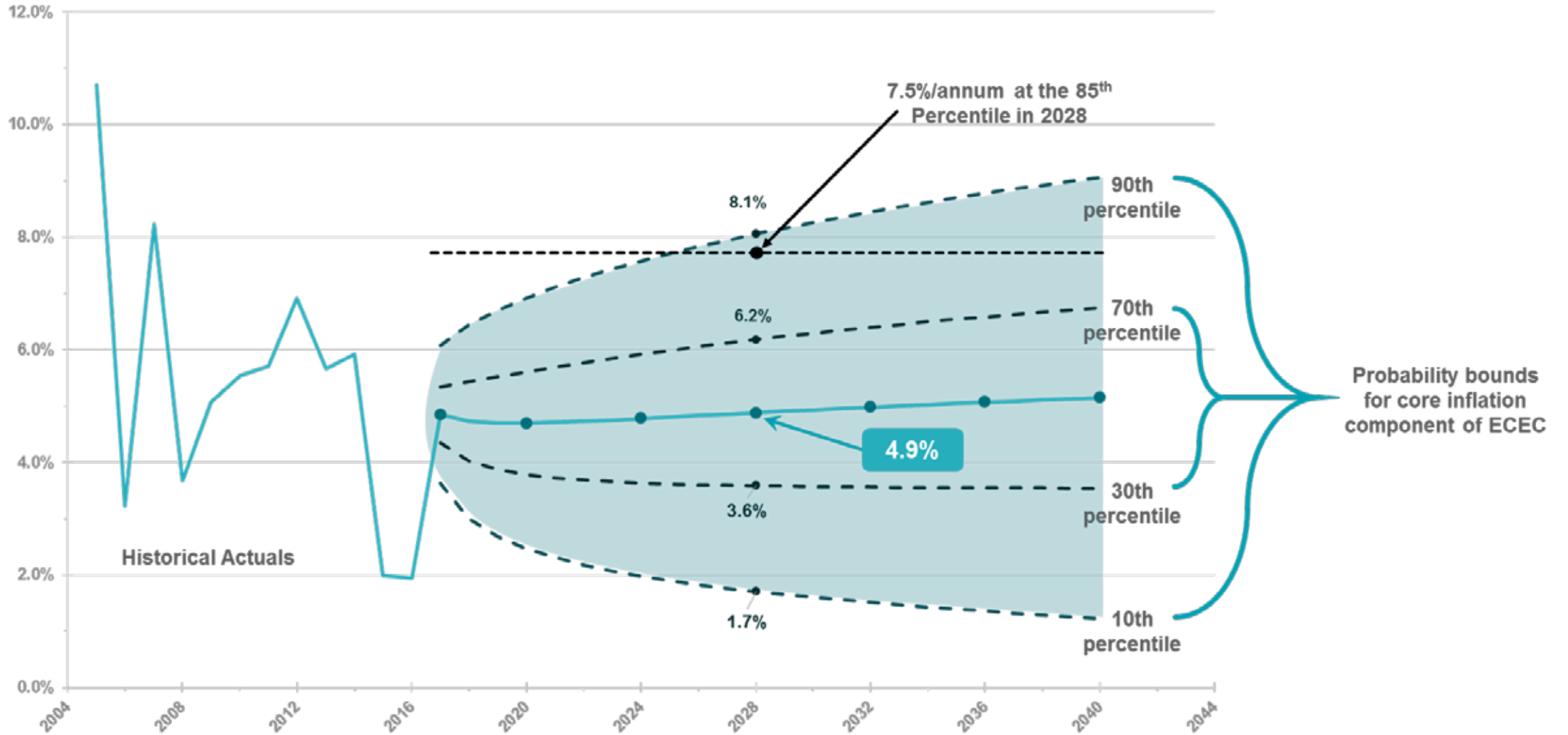
# of Years	Rate
1	1.1%
3	2.5%
5	3.1%
10	3.2%

Upper bound

Lower bound

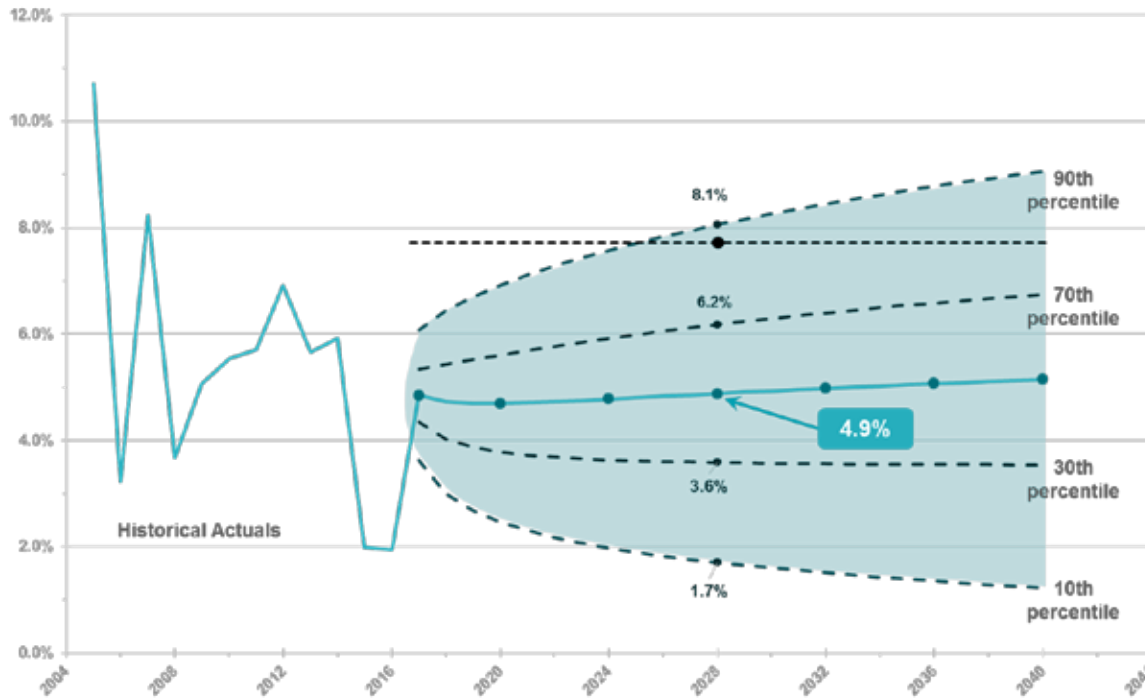
Projection of macro inflation from Federal Reserve, based on market measures

Forecasts of ECEC Escalation Rates: Union Firms

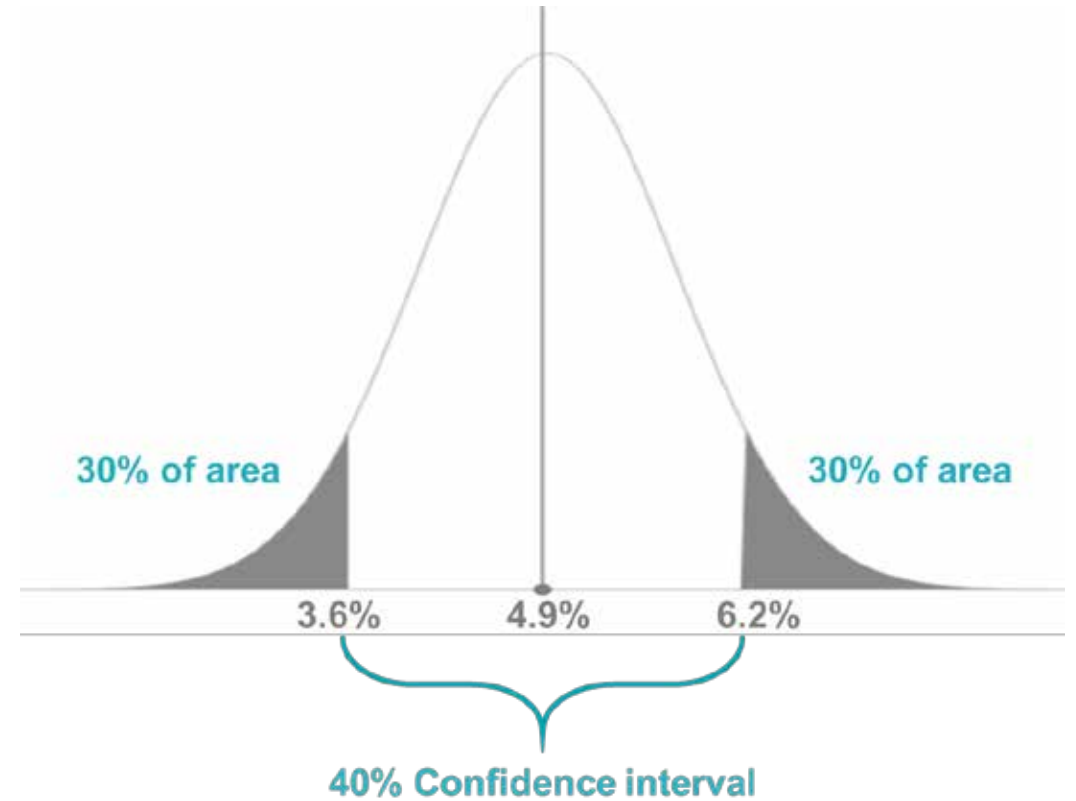


Forecasts of ECEC Escalation Rates: Union Firms

Forecast of ECEC escalation rates



Cross-cut of forecast



An established company can compare the premiums it currently pays for health benefits with nationwide averages. The comparison helps the established company assess its health benefits or negotiate contracts with health benefit companies.

–Bureau of Labor Statistics, *National Compensation Measures*



Thank you!

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Addendum

For more information, visit us at Technomics.net