# Cost Shielding in Executive Bonus Plans

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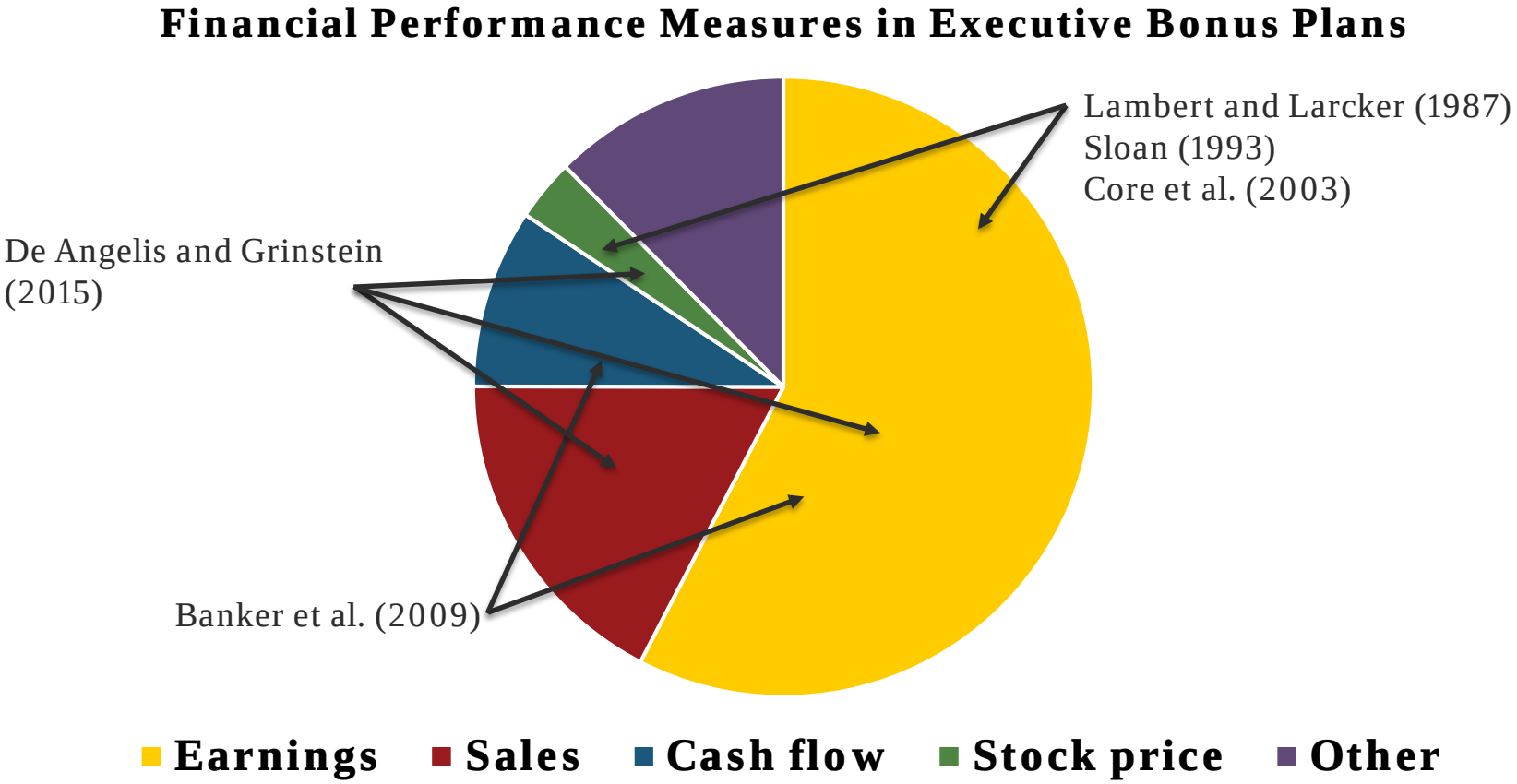
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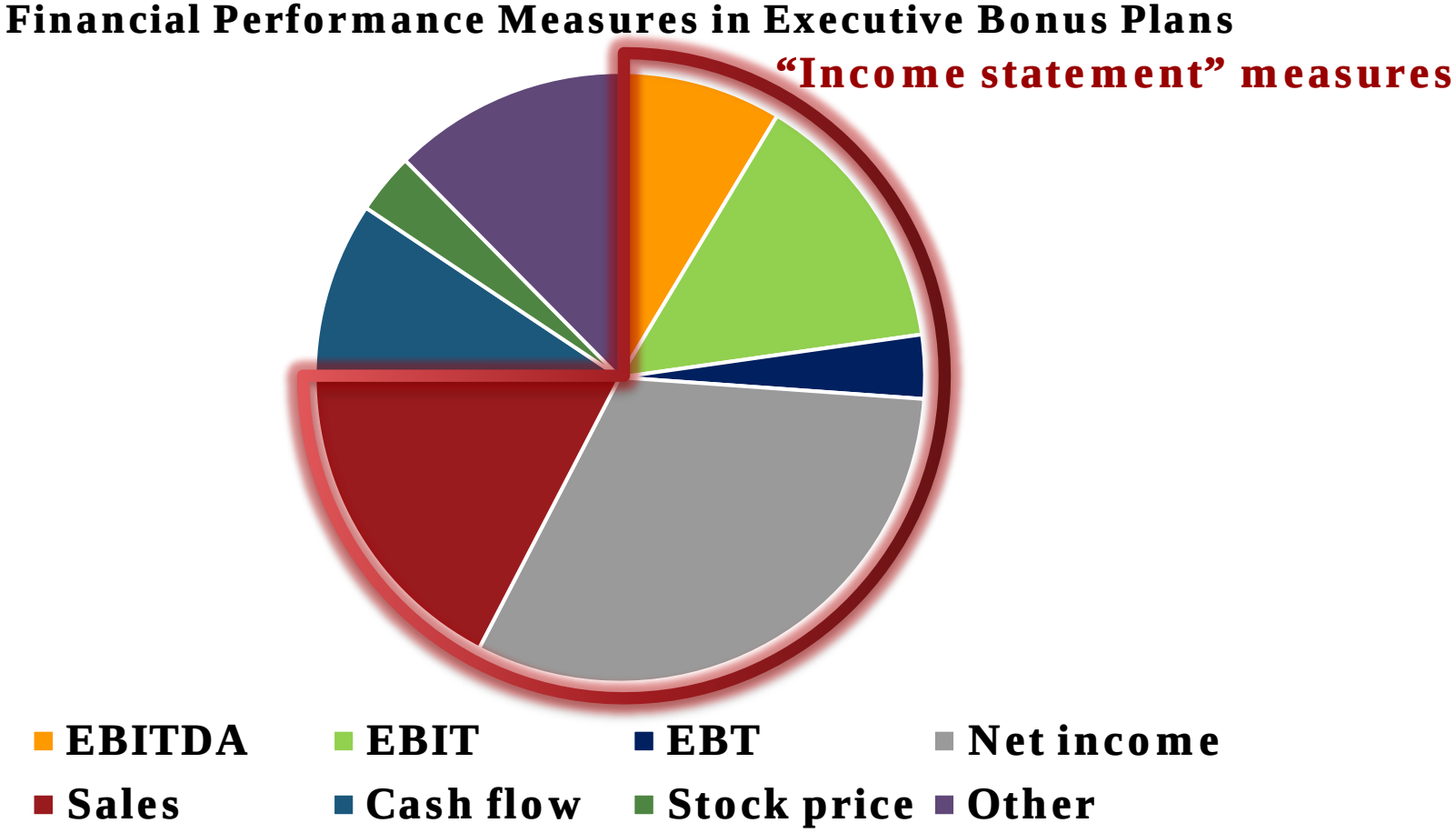
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December 16, 2019

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# Motivation


Financial Performance Measures in Executive Bonus Plans
Lambert and Larcker (1987)
Sloan (1993)
Core et al. (2003)
De Angelis and Grinstein (2015)
Banker et al. (2009)
Earnings
Sales
Cash flow
Stock price
Other

# Motivation


Financial Performance Measures in Executive Bonus Plans
"Income statement" measures
EBITDA
EBIT
EBT
Net income
Sales
Cash flow
Stock price
Other

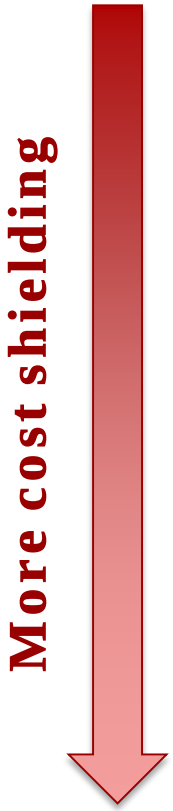
# Motivation

- Most variation in performance measure choice is *within* the income statement

- What explains these *ex ante* performance measure choices?

- We examine agency-theoretic predictions on the role of "cost shielding"
  - The primary distinction between different income statement measures is the extent to which they exclude various expenses

# Cost Shielding




**Net income =** Sales minus Expenses

**EBT** = Net income *excluding tax expense*

**EBIT** = EBT *excluding interest expense*

**EBITDA** = EBIT *excluding depreciation*

**Sales** *excludes all expenses*

# Cost Shielding

Macy's 2017 proxy:

> "The [compensation committee] selected EBIT as the performance metric to ensure that the maximum potential payout is determined as a percentage of controllable profit.
>
> Excluding interest and taxes ensures that profit is defined based on operating results that the Named Executives can directly influence."



# Primary Questions

- Do boards use cost shielding to improve contracting efficiency and resolve issues with:
  1. Noisy costs?
     - Incentive contracts should place relatively smaller weights on noisier performance measures (Banker and Datar, 1989; Lambert, 2001)
     - Helps validate our empirical cost shielding measures
  2. Temporal mismatches between costs and benefits of investments?
     - Performance measures that include investment-related expenses can encourage myopic behavior (e.g., Stein, 1989)
  3. Costs resulting from previous management's actions?
     - Executives should be evaluated on measures that are informative about their actions (e.g., Holmström, 1979; Antle and Demski, 1988)

# Main Findings

- Noisy costs:
  - We find more cost shielding when expenses are more volatile
- Temporal mismatches between costs and benefits:
  - We find more cost shielding for firms with more growth opportunities/focus on new product launches
- Costs resulting from previous management's actions:
  - We find cost shielding decreases with executive tenure

# Measuring Cost Shielding

- We create a categorical variable for each performance measure within a given firm-year:
  - Net income = 0
  - EBIT = 1
  - EBITDA = 2
  - Sales = 3

- Our summary cost shielding measure (*Cost Shield*) is the firm-year mean of these categorical variables.
  - Firm using only net income: *Cost Shield* = 0
  - Firm using only sales: *Cost Shield* = 3
  - Firm using sales and net income: *Cost Shield* = 1.5

# Research Design

$$Cost\ Shield_{i,t} = \alpha + \beta_1 Contracting\ Value_{i,t-1} + \beta_2 Ln(MVE)_{i,t-1} + \beta_3 Idio\ Vol_{i,t-1} + \beta_4 BTM_{i,t-1} + \beta_5 Free\ Cash\ Flow_{i,t-1} + \beta_6 Ln(Delta)_{i,t-1} + \beta_7 Ln(Tenure)_{i,t} + \delta_t + \varepsilon_{i,t}, \quad (1)$$

$$Measure_{i,t} = \alpha + \beta_1 Contracting\ Value_{i,t-1} + \beta_2 Ln(MVE)_{i,t-1} + \beta_3 Idio\ Vol_{i,t-1} + \beta_4 BTM_{i,t-1} + \beta_5 Free\ Cash\ Flow_{i,t-1} + \beta_6 Ln(Delta)_{i,t-1} + \beta_7 Ln(Tenure)_{i,t} + \Gamma\ Other\ Measures_{i,t} + \delta_t + \varepsilon_{i,t}, \quad (2)$$

- Contracting value measures:
  - Noisy costs: Volatility of depreciation, R&D, interest, and effective tax rate (ETR)
  - Temporal mismatches between costs and benefits: Sales growth, book-to-market, % of new products, firm age
  - Costs from previous management: Executive tenure, turnover

# Noisy Costs

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Dependent Variable: | *Cost Shield$_t$* | *Sales Metric$_t$* | *EBITDA Metric$_t$* | *EBIT Metric$_t$* | *Earnings Metric$_t$* |
| *Depreciation Volatility$_{t-1}$* | 8.977*** | 4.219*** | 1.998* | –3.228** | –4.282*** |
| | (3.62) | (2.83) | (1.82) | (–2.55) | (–3.27) |
| *R&D Volatility$_{t-1}$* | 5.178*** | 5.295*** | –3.041*** | –0.677 | –1.639** |
| | (3.88) | (6.56) | (–6.04) | (–0.91) | (–2.11) |
| *Interest Volatility$_{t-1}$* | 7.252* | –4.663* | 11.663*** | –0.032 | –3.391* |
| | (1.87) | (–1.91) | (6.12) | (–0.02) | (–1.65) |
| *ETR Volatility$_{t-1}$* | 0.024 | –0.008 | 0.025*** | 0.019* | 0.012 |
| | (1.23) | (–0.67) | (2.85) | (1.83) | (1.06) |
| Firm Controls | Yes | Yes | Yes | Yes | Yes |
| Other Metric Controls | No | Yes | Yes | Yes | Yes |
| Fixed Effects | Year | Year | Year | Year | Year |
| N | 7,318 | 7,318 | 7,318 | 7,318 | 7,318 |
| $R^2$ | 0.107 | 0.095 | 0.276 | 0.215 | 0.257 |

# Timing of Costs and Benefits

| Dependent Variable: | (1) *Cost Shield$_t$* | (2) *Sales Metric$_t$* | (3) *EBITDA Metric$_t$* | (4) *EBIT Metric$_t$* | (5) *Earnings Metric$_t$* |
|---|---|---|---|---|---|
| *Sales Growth$_{t-1}$* | 0.164*** | 0.055 | 0.008 | –0.118*** | –0.117*** |
| | (2.67) | (1.43) | (0.26) | (–3.42) | (–2.97) |
| *Book–to–Market$_{t-1}$* | –0.309*** | –0.187*** | –0.032 | 0.001 | 0.089*** |
| | (–6.77) | (–6.04) | (–1.32) | (0.03) | (2.96) |
| Firm Controls | Yes | Yes | Yes | Yes | Yes |
| Other Metric Controls | No | Yes | Yes | Yes | Yes |
| Fixed Effects | Year | Year | Year | Year | Year |
| N | 8,005 | 8,005 | 8,005 | 8,005 | 8,005 |
| $R^2$ | 0.088 | 0.059 | 0.209 | 0.204 | 0.240 |

# Timing of Costs and Benefits

| Dependent Variable: | (1) *Cost Shield$_t$* | (2) *Sales Metric$_t$* | (3) *EBITDA Metric$_t$* | (4) *EBIT Metric$_t$* | (5) *Earnings Metric$_t$* |
|---|---|---|---|---|---|
| *% New Products$_t$* | 0.173*** | 0.132*** | 0.041** | 0.008 | 0.047 |
| | (3.84) | (4.43) | (1.97) | (0.28) | (1.55) |
| Ln(*Firm Age$_t$*) | –0.238*** | –0.108*** | –0.029* | –0.033 | 0.079*** |
| | (–6.29) | (–4.13) | (–1.71) | (–1.34) | (3.31) |
| Firm Controls | Yes | Yes | Yes | Yes | Yes |
| Other Metric Controls | No | Yes | Yes | Yes | Yes |
| Fixed Effects | Year | Year | Year | Year | Year |
| N | 6,498 | 6,498 | 6,498 | 6,498 | 6,498 |
| $R^2$ | 0.121 | 0.076 | 0.191 | 0.198 | 0.243 |

# Controllability

| Dependent Variable: | (1) *Cost Shield$_t$* | (2) *Sales Metric$_t$* | (3) *EBITDA Metric$_t$* | (4) *EBIT Metric$_t$* | (5) *Earnings Metric$_t$* |
|---|---|---|---|---|---|
| *CEO Tenure Years 0-2$_t$* | 0.132*** | 0.054** | 0.052*** | 0.026 | 0.045* |
| | (3.34) | (2.02) | (2.93) | (1.10) | (1.80) |
| *CEO Tenure Years 3-5$_t$* | 0.102*** | 0.044* | 0.045*** | 0.012 | 0.040 |
| | (2.63) | (1.66) | (2.61) | (0.55) | (1.64) |
| *CEO Tenure Years 6-8$_t$* | 0.062* | 0.032 | 0.021 | –0.015 | 0.016 |
| | (1.86) | (1.36) | (1.39) | (–0.70) | (0.72) |
| Firm Controls | Yes | Yes | Yes | Yes | Yes |
| Other Metric Controls | No | Yes | Yes | Yes | Yes |
| Fixed Effects | year | year | year | year | year |
| N | 8,009 | 8,009 | 8,009 | 8,009 | 8,009 |
| $R^2$ | 0.087 | 0.059 | 0.208 | 0.202 | 0.239 |

# Controllability

| | (1) | (2) |
|---|---|---|
| Sample Restriction: | *External Hire*$_t$ = 0 | *External Hire*$_t$ = 1 |
| Dependent Variable: | *Cost Shield*$_t$ | *Cost Shield*$_t$ |
| *CEO Tenure Years 0-2*$_t$ | 0.089** | 0.319*** |
| | (2.14) | (2.79) |
| *CEO Tenure Years 3-5*$_t$ | 0.075* | 0.230** |
| | (1.83) | (2.29) |
| *CEO Tenure Years 6-8*$_t$ | 0.052 | 0.124 |
| | (1.44) | (1.40) |
| Firm Controls | Yes | Yes |
| Other Metric Controls | No | No |
| Fixed Effects | year | year |
| N | 6,949 | 1,060 |
| $R^2$ | 0.082 | 0.126 |

# Additional Analyses

- CEO turnover as a “shock” to contracting value
- Role of the board’s financial expertise
- Robustness tests and alternative variable construction

# CEO Turnover

- We examine two complementary CEO turnover settings:
  1. We hand-collect data on CEO turnover due to death or health-related reasons
     - Likely unrelated to firm/manager characteristics that influence bonus plan design (plausibly "exogenous")
  2. We examine forced CEO turnover (Peters and Wagner, 2014)
     - Suggests board has rejected the previous CEO's actions and the incoming CEO may require greater cost shielding

- We find significant increases in cost shielding following both types of turnover

# Financial Expertise

- We examine whether our results differ between boards with relatively high and low financial expertise

- Findings for *noisy costs* and *controllability* are more pronounced among boards with greater financial expertise
  - Results primarily from substitution between different earnings-based measures

- Findings for temporal mismatches of costs and benefits *do not differ* based on financial expertise
  - Results primarily from inclusion of sales measures

# Robustness Tests

- Our inferences are unchanged if we:
  - Define *Cost Shield* based on other firm-year summary measures than the mean (e.g., median, max)
  - Define *Cost Shield* using actual weights on individual performance measures
    - For example, for a bonus based 75% on sales (3) and 25% on net income (0), *Cost Shield* = 75% x 3 + 25% x 0 = 2.25
  - Exclude loss firms
  - Include fixed effects for number of performance measures
  - Examine the firm's lowest-paid NEO, rather than the CEO

- Collectively, these results suggest our findings are not an artifact of specific research design choices

# Summary

- We show substantial heterogeneity in performance metrics within “earnings-based” pay
- We provide evidence that boards use bonus plans to focus executives’ attention on specific, more controllable objectives
- Boards appear to recognize the limitations/deficiencies of specific income statement measures and design bonus plans accordingly
- Our findings highlight an unexplored benefit of directors’ financial expertise

# Thank you!

# Sample

- Incentive Lab
  - Annual cash incentive plans
  - Sample period: 2006-2017
  - 8009 firm-years, 1442 distinct firms

- Other firm-level data:
  - Financial (Compustat)
  - Stock returns (CRSP)
  - Compensation/tenure (Execucomp)
  - New/existing products (Factset)

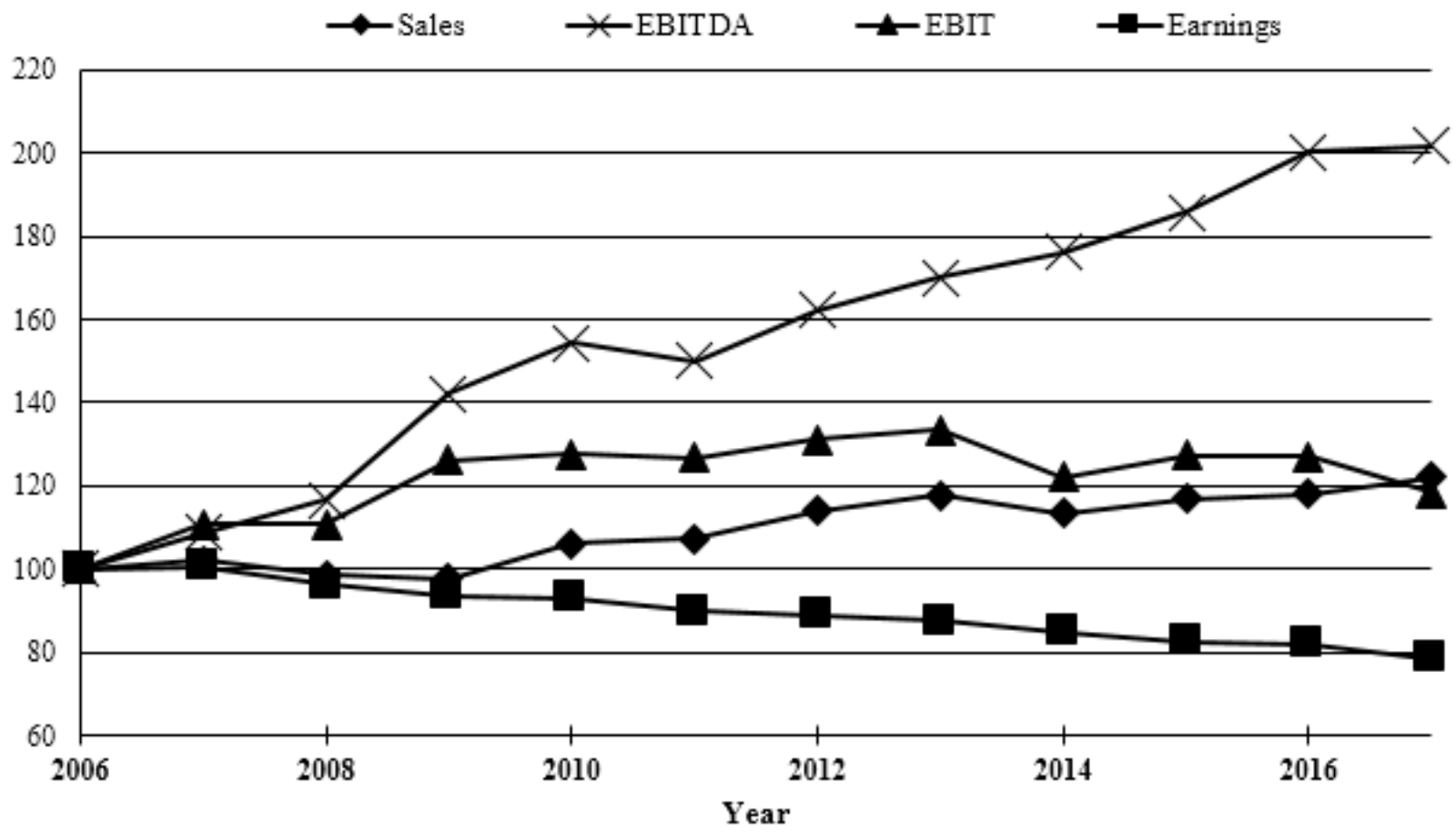
# Descriptive Statistics

| Variable | N | Mean | Std. Dev. | 25th | 50th | 75th |
|---|---|---|---|---|---|---|
| CEO Bonus Plan Measures: | | | | | | |
| *Cost Shield* | 8,009 | 0.73 | 0.73 | 0.00 | 0.67 | 1.25 |
| *# Sales Metrics* | 8,009 | 0.50 | 0.80 | 0.00 | 0.00 | 1.00 |
| *# EBITDA Metrics* | 8,009 | 0.18 | 0.50 | 0.00 | 0.00 | 0.00 |
| *# EBIT Metrics* | 8,009 | 0.44 | 0.80 | 0.00 | 0.00 | 1.00 |
| *# EBT Metrics* | 8,009 | 0.09 | 0.35 | 0.00 | 0.00 | 0.00 |
| *# Earnings Metrics* | 8,009 | 1.01 | 1.18 | 0.00 | 1.00 | 1.00 |
| *Total Income Statement Metrics* | 8,009 | 2.27 | 1.68 | 1.00 | 2.00 | 3.00 |

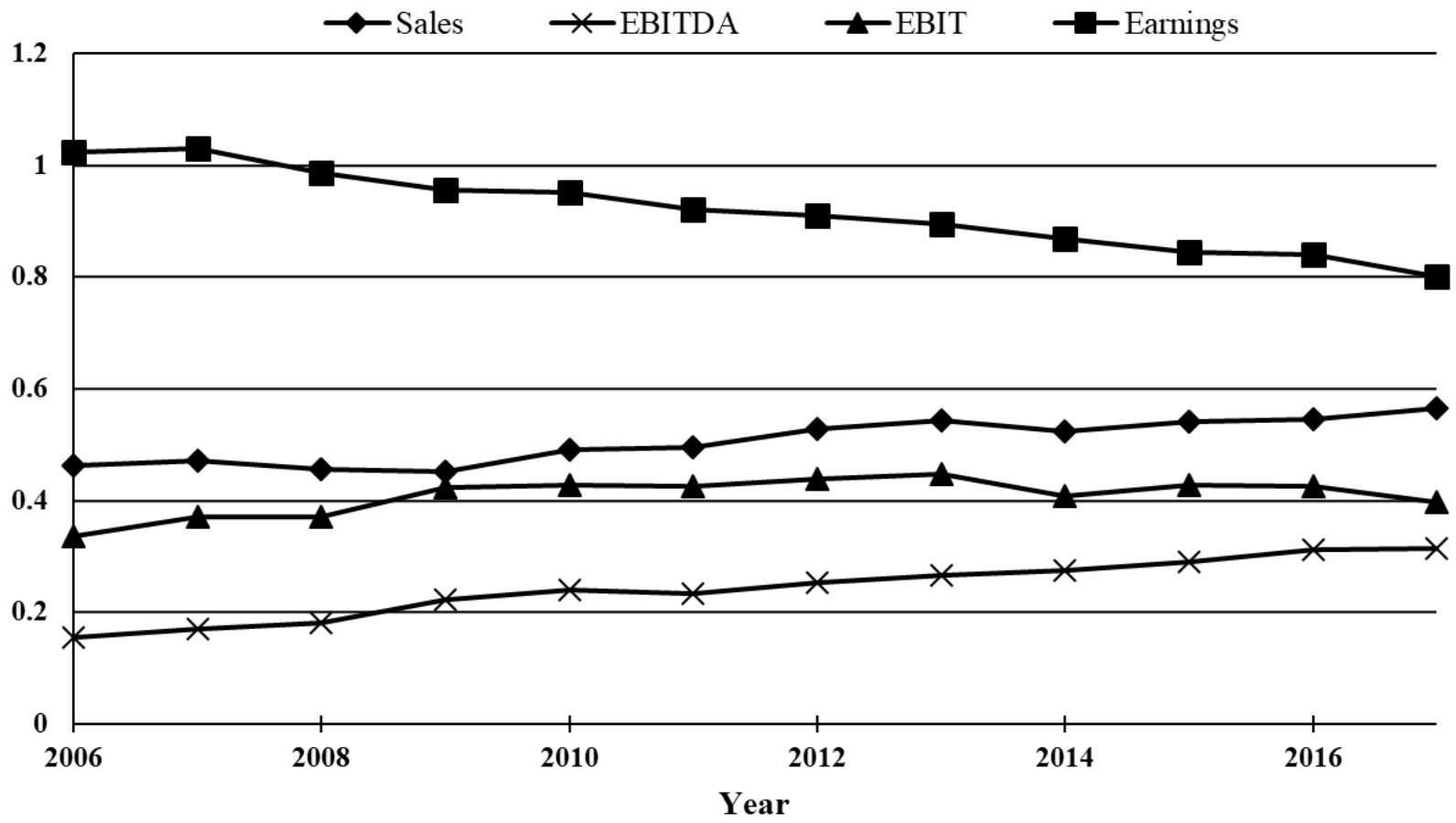
| Variable | *Δ # Sales Metrics* | *Δ # EBITDA Metrics* | *Δ # EBIT Metrics* | *Δ # EBT Metrics* | *Δ # Earnings Metrics* | *Δ # Total Metrics* |
|---|---|---|---|---|---|---|
| *Δ # Sales Metrics* | 1.00 | . | . | . | . | . |
| *Δ # EBITDA Metrics* | 0.0700* | 1.00 | . | . | . | . |
| *Δ # EBIT Metrics* | 0.1093* | –0.0952* | 1.00 | . | . | . |
| *Δ # EBT Metrics* | 0.0505* | –0.0356* | –0.0982* | 1.00 | . | . |
| *Δ # Earnings Metrics* | 0.1458* | –0.0387* | –0.1155* | –0.0336* | 1.00 | . |
| *Δ Total Metrics* | 0.6119* | 0.2665* | 0.3735* | 0.1457* | 0.6194* | 1.00 |

# Performance Measure Usage

(2006 = 100)



# Performance Measure Usage



# Cost Shielding

