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Pitfalls of Price-to-Book ratios, ROE, EV/EBITDA

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Important Disclosure Information is contained on the last page of this report. The recipient of this report is directed to read these disclosures.

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1. Price-to-Book Ratios: Obvious Flaws
2. Problems With ROE
3. Pitfalls of EV/EBITDA
4. How do you protect yourself?
5. Get better research – for free

Part I

Flaws of Price-to-Book

P/B ratio = price/accounting book value per share:

- Calculation:
 - If price of stock is \$20 per share and assets minus liabilities are \$10 per share, then the P/B ratio is 2.
- Basis for the vast majority of value index funds



*source: [@EricBalchunas](#)

THE P/B RATIO - PITFALLS

Structural Issues

P/B strategies outperformed in the past, but have underperformed dramatically over the past 15 years.

- Many important assets today (technological expertise, customer relationships, brand value, etc.) are not on the balance sheet
- End of pooling acquisitions and goodwill amortization in 2002 led to high goodwill inflating balance sheets

THE P/B RATIO - PITFALLS

A Factor, Not a Strategy

Using a P/B Ratio is **Not** Value Investing

1. Ratios are a shorthand for valuation, not an actual valuation process
2. Index funds – and the "quasi-indexer" active managers that copy them – are giving investors exposure to companies with low P/B
3. They are not attempting to identify undervalued companies

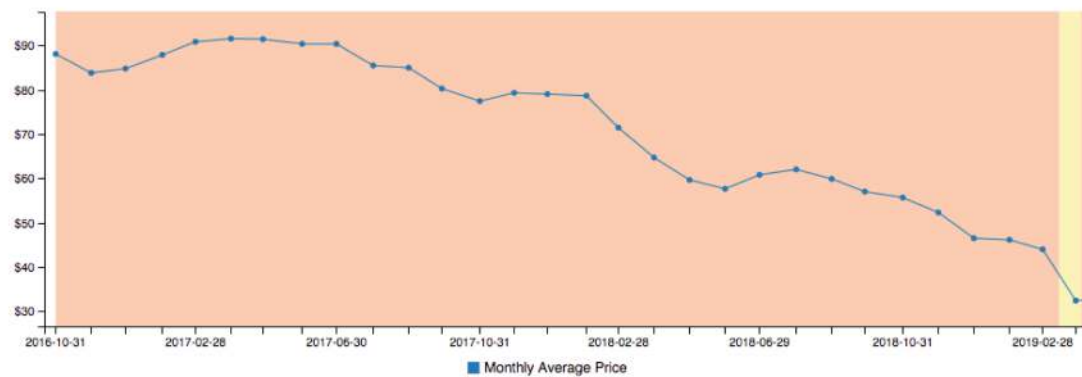
THE P/B RATIO - PITFALLS

Pitfalls of P/B in Action

Kraft Heinz (KHC)

1. KHC looked cheap in February with a P/B of 0.9
2. Over 85% of total assets were Goodwill and other intangibles
3. Low ROIC showed that assets on the balance sheet were overvalued.
4. Company wrote-down over \$15 billion in Goodwill - ~25% of book value erased with the stroke of a pen.
5. Stock down 63% vs. S&P 500 up 35% since we initiated coverage with an Unattractive rating in 2016.

▼ Normalized Rating History - Monthly Average*



*This graph was created based on information collected and analyzed by New Constructs, LLC. New Constructs regularly gathers information from over 3,000 companies' 10Ks, including the Notes to the Financial Statements and MD&A.

Part II

Problems With ROE

ROE = Net Income/Total Shareholders' Equity

- Calculation:
 - If GAAP net income is \$2 per share and assets minus liabilities are \$10 per share, then the ROE ratio is 20%.
- How to use:
 - Measure of profitability
 - Common performance metric for executive compensation

Blind Spot for ROE: **Reliance on reported EPS**

1. [CFO's admit to earnings manipulation](#)
 - Featured on [MarketWatch.com](https://www.marketwatch.com)
2. The earnings numerator of the ROE ratio is subject to accounting rules that are constantly being reshaped.
3. Like P/B, balance sheets don't always accurately reflect assets and liabilities.

ROE- PITFALLS

A Better Metric

Instead of ROE, investors should look at return on invested capital (ROIC). Advantages of ROIC include:

1. Adjusts for earnings manipulation and changing accounting rules in the numerator
2. Accounts for all forms of capital – both on and off the balance sheet – in the denominator
3. Cannot be manipulated through leverage

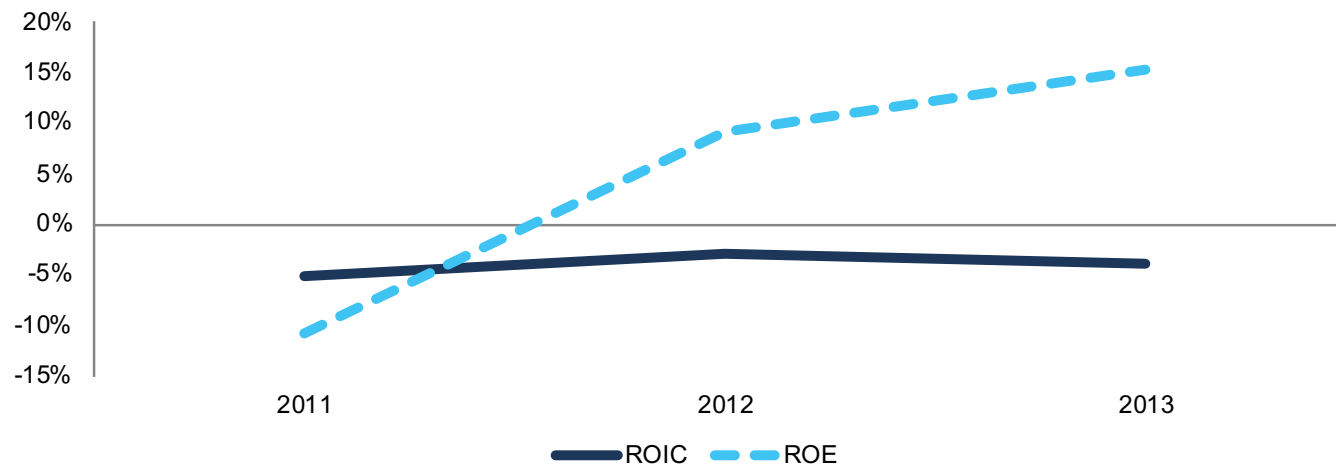
ROE- PITFALLS

Warned on [10/13/2014](#): Sierra Wireless (SWIR)

Sierra Wireless (SWIR)

1. From 2011-2013, ROE improved from -11% to 15%
2. Over the same time, ROIC was consistently negative
3. Gain on sale of assets produced the illusion of accounting profits in 2012-2013
4. Down 58% vs. S&P 500 up 45% since we warned investors on [10/13/2014](#), still rated Unattractive

ROE Misleads Investors



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Part III

Pitfalls of EV/EBITDA

EV/EBITDA= Enterprise Value/Earnings Before Interest, Taxes, Depreciation, and Amortization:

- Calculation:
 - Enterprise Value = Market Cap + Total Debt – Cash
 - EBITDA = Net Income + Tax Expense + Net Interest Expense + Depreciation & Amortization
- How to use:
 - Measure of valuation compared to cash profits
 - Commonly used by private equity firms evaluating potential takeovers

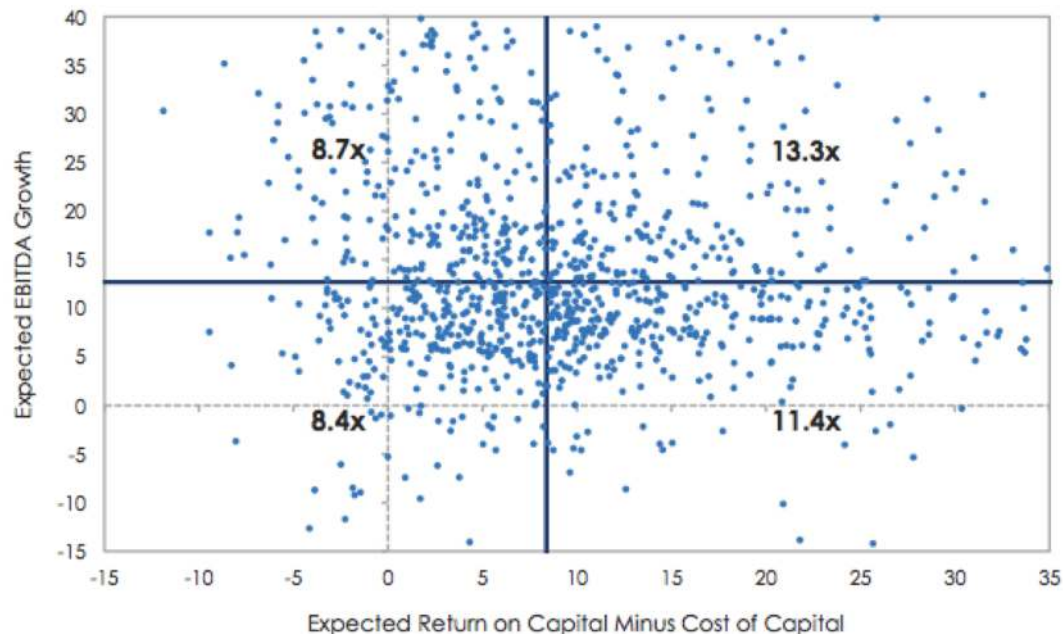
Blind Spot for EV/EBITDA: **Ignores Real Costs/Liabilities**

1. Starting point for EBITDA is still flawed GAAP earnings
2. Depreciation & Amortization are real expenses that require capital expenditures to replace
 - Warren Buffett: “I’ll look at that figure when you tell me you’ll make all of the future capital expenditures for me.”
3. Common measures of enterprise value also value ignore hidden liabilities, such as:
 - Operating leases
 - Deferred tax liabilities
 - Underfunded pensions
 - Employee stock options

EV/EBITDA - PITFALLS

A Shorthand for Valuation

1. Ratios are a shorthand for valuation, not an actual valuation process
2. Companies with different tax rates, ROIC's, and growth expectations will have different EV/EBITDA's
3. Michael Mauboussin shows that ROIC matters most for valuation



Source: Based on Credit Suisse Corporate Insights, "Managing the multiple: Weighing growth against profitability," First Quarter 2016.

*Source: [BlueMountain Capital](#)

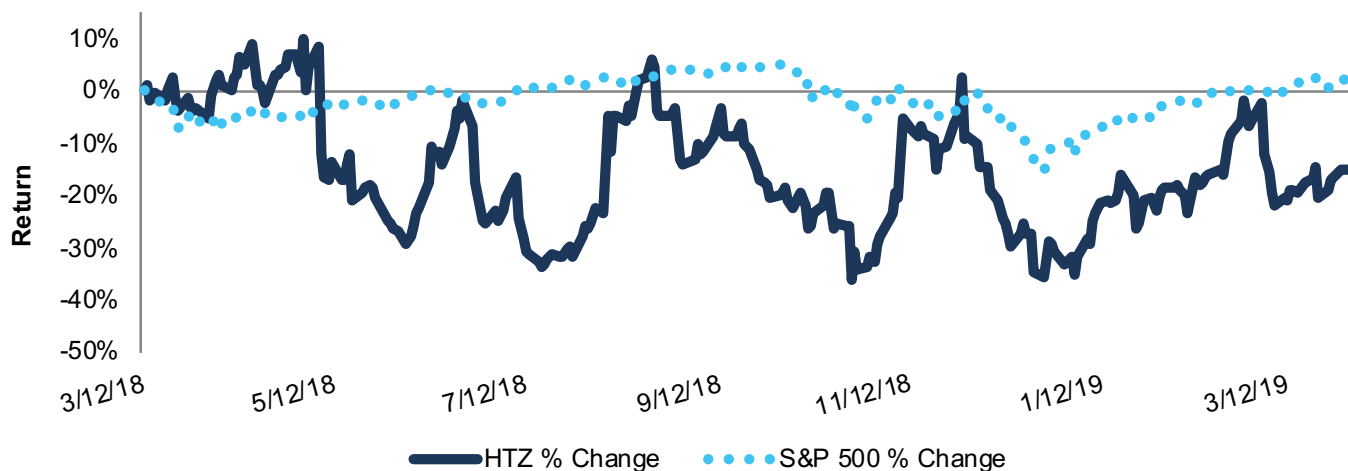
EV/EBITDA PITFALLS

Warned on [3/12/2018](#): Hertz (HTZ)

Hertz (HTZ)

1. Looked cheap with a reported EV/EBITDA of ~5.5
2. Highly capital intensive: Capex was \$3.1 billion in 2017, D&A \$3 billion.
3. Steady decline in ROIC from 5% in 2012 to 1% in 2017
4. Down 14% vs. S&P 500 up 4% since we warned investors on [3/12/18](#), still rated Unattractive

HTZ Underperformed SPY by 18%



*This graph was created based on information collected and analyzed by New Constructs, LLC. New Constructs regularly gathers information from over 3,000 companies' 10Ks, including the Notes to the Financial Statements and MD&A.

Part III

How do you protect yourself?

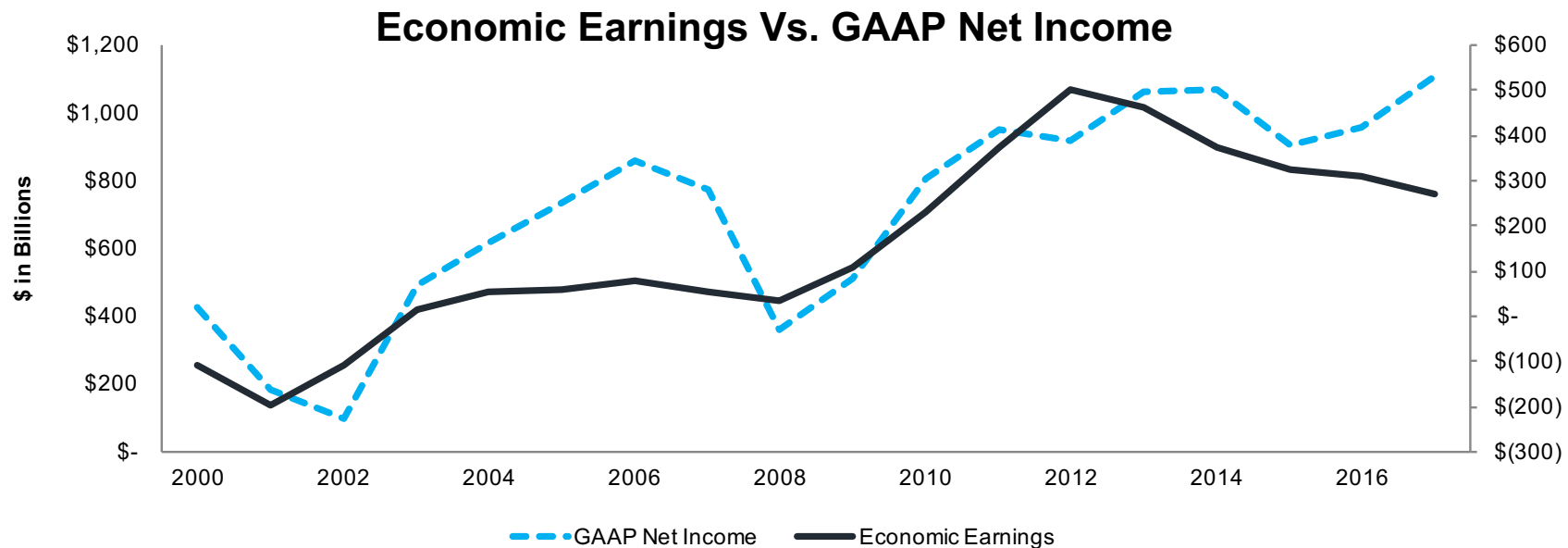
FOCUS ON ECONOMIC EARNINGS

(Unscrubbed) Earnings Trends Are Misleading

“Look at the financial footnotes in 10-K filings and the gains then disappear”

“Only 1 sector has experienced real earnings gains in the past 12 months”

– MarketWatch.com [5/4/17](#) & [2/28/18](#)



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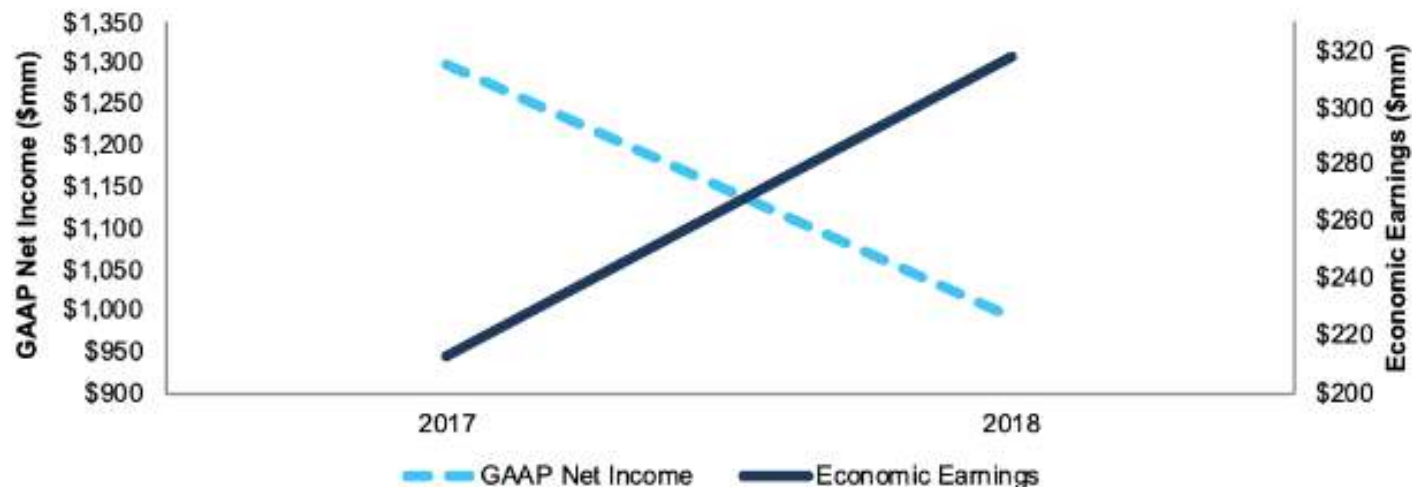
MAKING MONEY WITH ECONOMIC EARNINGS

Westlake (WLK) – reported earnings understate real earnings

Westlake Chemical (WLK)

- In 2018, GAAP net income fell by 24% YoY while economic earnings increased 49% YoY.
- Disconnect comes from \$44 million (4% of GAAP) in write-downs, \$33 million (3% of GAAP) in one-time acquisition costs.
- ROE fell from 27% to 18%, ROIC increased from 9% to 11%.
- Stock is underpriced at \$76/share, [price to economic book value \(PEBV\)](#) of 1 means the market expects zero growth.

WLK's Rising Economic Earnings



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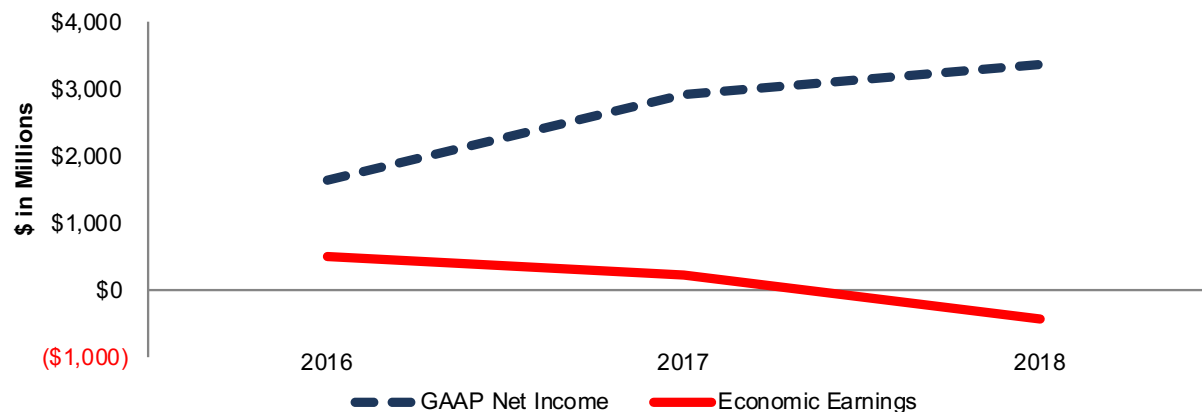
MAKING MONEY WITH ECONOMIC EARNINGS

Mondelez (MDLZ) – reported earnings OVERstate real earnings

Mondelez (MDLZ)

- From 2016-2018, GAAP net income grew by 43% compounded annually while economic earnings declined from \$508 million to -\$413 million
- ROE increased from 7% to 13% over the same time
- P/B of 2.8 compared to S&P 500 average of 3.4
- EV/EBITDA of 19 implies a high growth, highly profitable company. Instead, MDLZ is low growth and unprofitable.
- Potential [30% downside](#) from current \$50/share price if MDLZ maintains margins and grows in-line with industry

GAAP Net Income Masks True Losses



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Core Problem: GAAP is exploitable.

Only Solution: Read the Footnotes and MD&A.

Traditional P&L

Revenues
- operating expenses

= pretax earnings
- taxes

= Reported Profit

Economic P&L

Revenues
- operating expenses
- Hidden Incomes/Charges

= pretax earnings
- taxes

= Profit
- capital charge/hidden liabilities and assets

= Economic Profit

Scouring the Footnotes and MD&A of 10-Ks

- Hidden Expenses/Income
- Unrecorded Goodwill
- Impairments
- Unconsolidated Subsidiaries
- Minority Interests
- Unrealized Gains/Losses
- Changes in Accounting Rules
- Derivatives Exposure
- Customer Concentration
- FASB 159
- Employee Stock Options
- Option Valuation Assumptions
- Operating Leases
- Loan Loss/LIFO Reserves
- Pension Assumptions
- Excess Cash
- Pension Over/Under Funding
- Auditor's Opinions
- Carrying Value vs Fair Value
- Mid-year acquisitions

GETTING TO THE ECONOMICS

Measuring Key Results

- **NOPAT** → core operating earnings after-tax
- **Invested Capital** → all cash invested in the business
- **WACC** → rent management must pay for use of capital

Return on Invested Capital = NOPAT/Avg Invested Capital

Economic Earnings = (ROIC – WACC) * Invested Capital

- Aka: “EVA”, economic profit, residual income

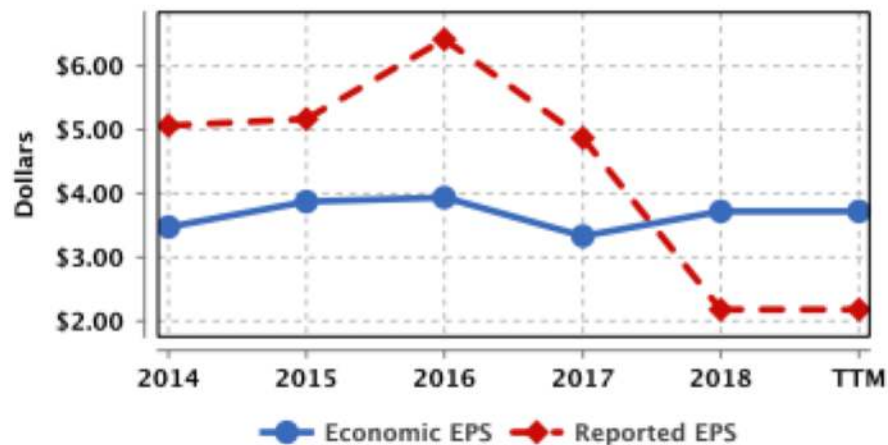
Part IV

Get Better Research – for free!

GET RESEARCH ON ECONOMIC EARNINGS

Compare reported vs economic results

Accounting vs Economic Earnings



Earnings & Valuation Diligence Summary

- ALV's accounting earnings understate its economic earnings, which equal $(ROIC - WACC) * \text{Average Invested Capital}$.
- For ALV, we made a total of \$3,302 million in income statement and balance sheet adjustments to convert accounting earnings to economic earnings in FY18.
- We made \$2,821 million in adjustments in our DCF valuation of the stock.
- See Appendix 1 for details on our calculations of key metrics and Appendices 2 and 3 for details on our [adjustments](#).

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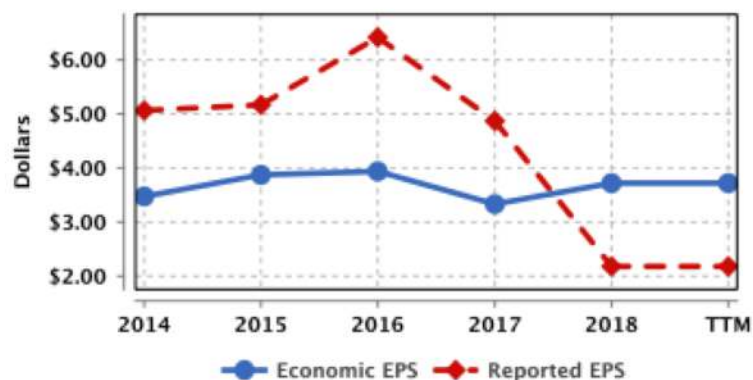
SEE HOW ECONOMIC EARNINGS AFFECT VALUATION

Get more details on drivers of value

Investment Rating Details

Risk/Reward Rating	Quality of Earnings		Valuation		
	Economic vs Reported EPS	Return on Invested Capital (ROIC)	FCF Yield	Price-to-EBV Ratio	Growth Appreciation Period (yrs)
Very Unattractive	Misleading Trend	Bottom Quintile	<-5%	> 3.5 or -1 < 0	> 50
Unattractive	False Positive	4th Quintile	-5%<-1%	2.4 < 3.5 or < -1	20 < 50
Neutral	Neutral EE	3rd Quintile	-1%<3%	1.6 < 2.4	10 < 20
Attractive	Positive EE	2nd Quintile	3%<10%	1.1 < 1.6	3 < 10
Very Attractive	Rising EE	Top Quintile	>10%	0 < 1.1	0 < 3
Actual Values	\$3.72 vs. \$2.18	12%	17%	0.9	< 1
Sector ETF (XLY)	Positive EE	17%	3%	4.3	37
S&P 500 ETF (SPY)	Positive EE	18%	2%	2.4	39

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Analyst Notes
 Updated from Attractive 2/22/19
 Cause: Improved Profitability
 New 10-K 2/22/19
 New Forecast 2/22/19
 Added to the Dividend Growth Model Portfolio
 Feb 2019

ROBO-ANALYST RESEARCH

Closing Price as of 02/27/2019: \$83.27
 Dividend Yield: 3.0%
 Period End Date: 12/31/2018

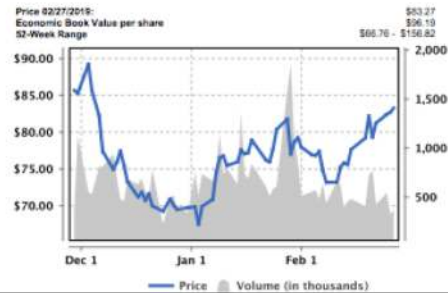
Autoliv Inc. (ALV)

NYSE - Consumer Cyclical

Investment Recommendation

- We strongly recommend investors buy ALV.
- ALV earns our Very Attractive rating. See Investment Rating Details below.
- A Very Attractive rating means this stock has superior upside potential with low downside risk.
- ALV ranks in the 99th percentile of the 2750+ stocks we cover.
- Ranks 3rd out of 433 Consumer Cyclical Sector stocks.

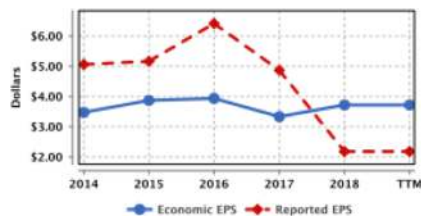
Very Attractive



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Stock Performance

Year to Date	19.5%
Last 30 Days	1.8%
Last 60 Days	19.8%
Last 90 Days	(2.8%)
Last Year	(41.7%)

Key Market Statistics

Enterprise Value (MM)	\$9,715
Market Value (MM)	\$7,257
EV/EBITDA	7.41
EBV per Share	\$96.19
Shares Outstanding (Thousands)	87,149
P/E (TTM)	38.18

About New Constructs

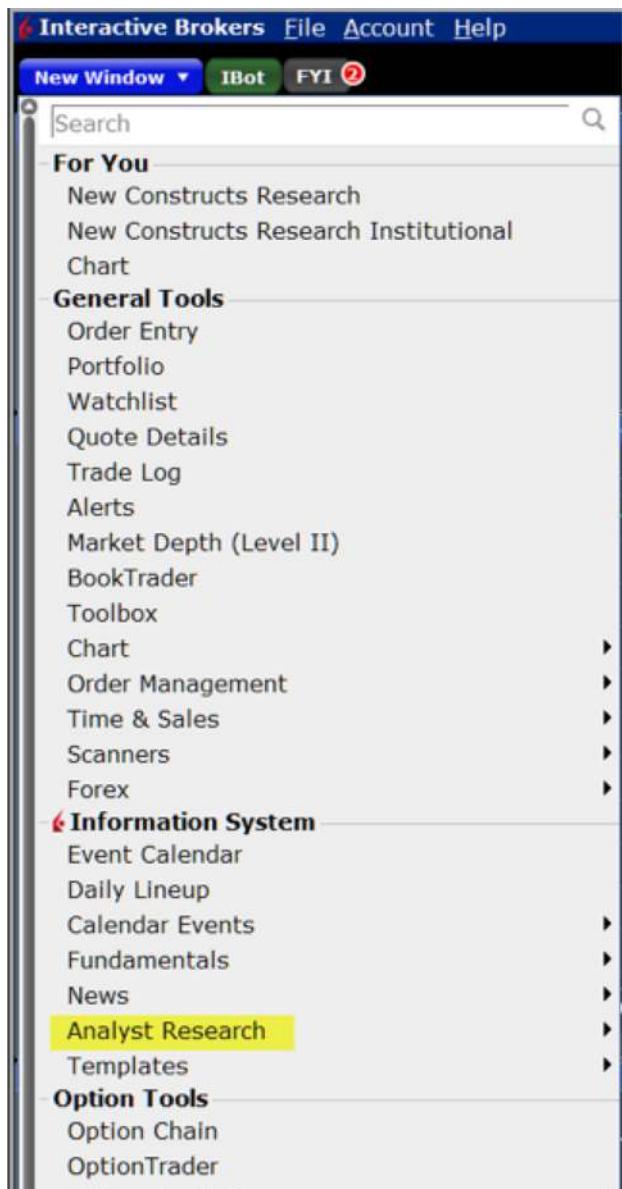
New Constructs is an independent equity research firm powered by machine learning. Ernst & Young demonstrated the superiority of our ROIC methodology, data & models. See our website for details.

www.newconstructs.com

GET OUR RESEARCH ON IBKR

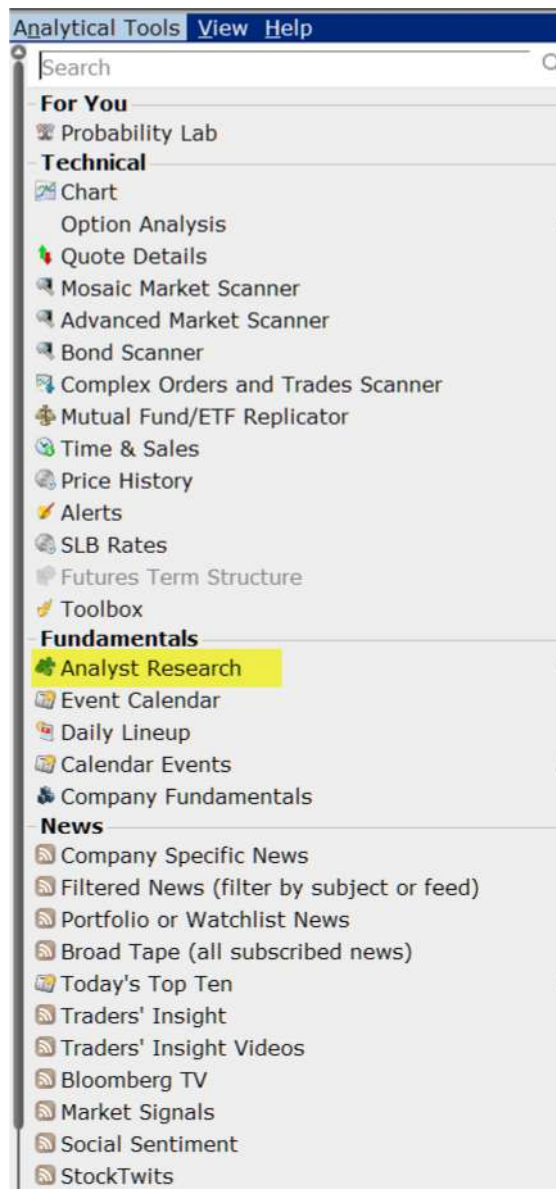
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Mosaic



Source: Trader Workstation, Interactive Brokers

Classic Analyst



Source: Trader Workstation, Interactive Brokers

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Symbol	Report Title	Date
MEIGX	Upgrade: Fundamental Value Research & Predictive Rating	01/10/19
MITGX	Upgrade: Fundamental Value Research & Predictive Rating	01/10/19
MRLSX	Downgrade: Fundamental Value Research & Predictive Rating	01/10/19
MVCAX	Downgrade: Fundamental Value Research & Predictive Rating	01/10/19
NSCCX	Upgrade: Fundamental Value Research & Predictive Rating	01/10/19
PEIJX	Upgrade: Fundamental Value Research & Predictive Rating	01/10/19
PMVAX	Fundamental Value Research & Predictive Rating	01/10/19
PWDIX	Downgrade: Fundamental Value Research & Predictive Rating	01/10/19
RICAX	Upgrade: Fundamental Value Research & Predictive Rating	01/10/19
RTDAX	Fundamental Value Research & Predictive Rating	01/10/19
RYAWX	Fundamental Value Research & Predictive Rating	01/10/19
SCURX	Upgrade: Fundamental Value Research & Predictive Rating	01/10/19
SLCGX	Downgrade: Fundamental Value Research & Predictive Rating	01/10/19
SSUAX	Downgrade: Fundamental Value Research & Predictive Rating	01/10/19
TILGX	Downgrade: Fundamental Value Research & Predictive Rating	01/10/19
TWHIX	Fundamental Value Research & Predictive Rating	01/10/19
WEQCX	Downgrade: Fundamental Value Research & Predictive Rating	01/10/19
VFAIX	Upgrade: Fundamental Value Research & Predictive Rating	01/10/19
WPVLX	Downgrade: Fundamental Value Research & Predictive Rating	01/10/19
CSCO	Forensic Stock Earnings & Valuation	01/10/19
WTLVX	Upgrade: Fundamental Value Research & Predictive Rating	01/09/19

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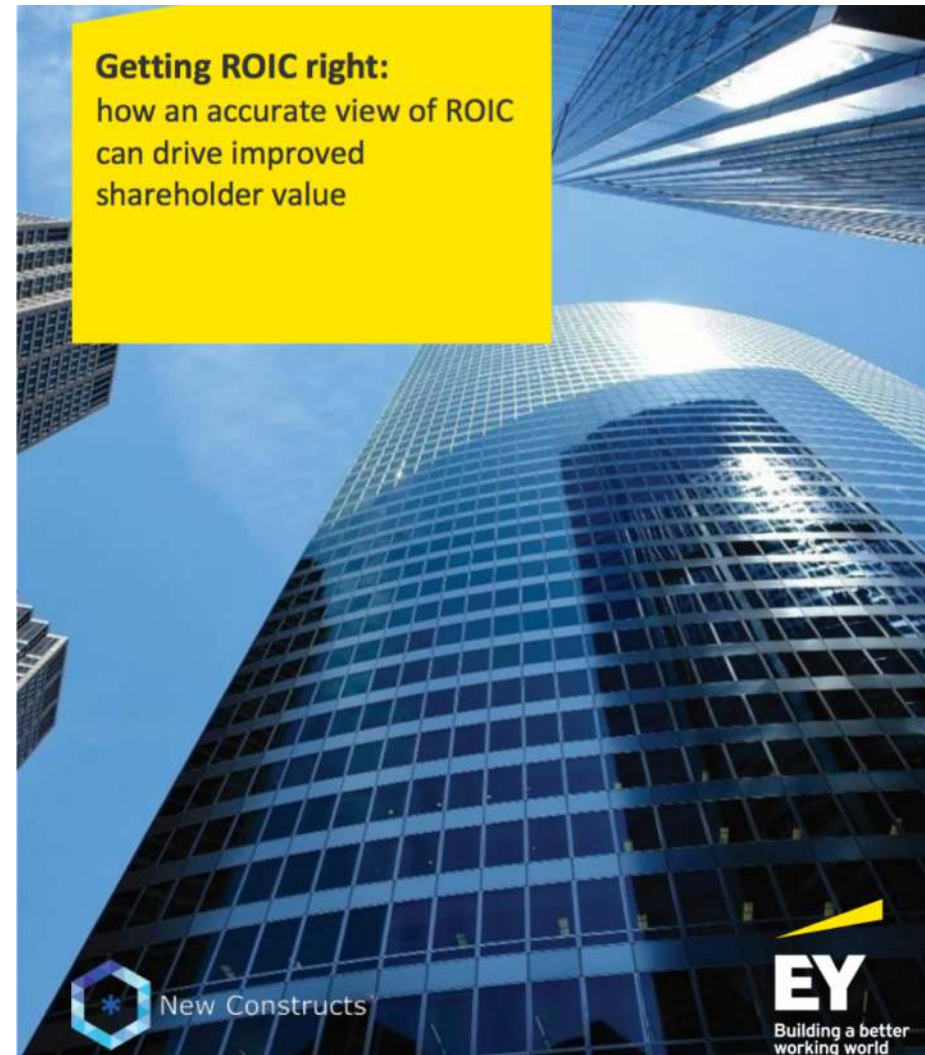
Source: Trader Workstation, Interactive Brokers

ERNST & YOUNG SHOWS OUR RIGOR MATTERS

White Paper: Investors Deserve Better Data

- It's not often that a big 4 accounting firm like E&Y features the material superiority of a research firm's analytics.
- The white paper provides specific examples for specific companies.
- Google "Revenue 48,778", "long-term debt 16,215" to see which company is "Peer 1".

Click [here](#) for a copy.



POWERFUL RESEARCH AUTOMATION HAS ARRIVED

Technology Provides Only Solution Big Data



Harvard Business School Case Study features our Research Automation technology. “Disrupting Fundamental Analysis with Robo-Analysts”

Click [here](#) for a copy.



New Constructs: Disrupting Fundamental Analysis with Robo-Analysts

CEO David Trainer and COO Lee Moneta-Koehler of New Constructs had just met with a potential client. Their pitch was simple: New Constructs “leverages the only parsing technology capable of reviewing every detail of every 10-K and 10-Q” to deliver quality fundamental analysis at scale. After the presentation, the client responded, “You know, you might be right. Your data probably is better. But, as long as everybody’s using the same bad data, I’m OK with that.” This was a familiar response to Trainer and Moneta-Koehler: they were frustrated by investors who did not see the value of New Constructs’ data or technology. They were concerned about the role of quality fundamental analysis in a market increasingly focused on more technical and other short-term trading strategies.

New Constructs

Trainer began working on Wall Street at Credit Suisse First Boston (CSFB) as a stock analyst in 1996, where he honed his skills in financial modeling and fundamental analysis. At CSFB, he spearheaded an effort to develop a consistent framework for measuring, comparing, and analyzing the economic earnings and profitability across all firms and industries globally. After reading through thousands of corporate filings, he realized that “the complexities of what’s going on in modern day business are so much greater than what the current accounting standards can capture in the income statement and balance sheet.” To construct a more accurate economic picture of the firm and to facilitate more meaningful comparisons of performance, his financial models incorporated quantitative details hidden in footnotes and the management’s discussion and analysis (MD&A) section, such as operating lease obligations or components of income or expenses that are transitory in nature.

Although these adjustments were often meaningful to his overall assessment of a firm’s operating performance and valuation, integrating these details into financial models was not the norm among many sell-side analysts. Trainer believed this was due to a few reasons. For one, the increasing length and complexity of corporate filings and the differences in the application of accounting rules across firms for similar transactions made the execution of such detailed financial models impractical. Even for Trainer, this mode of analysis was difficult to scale.

Professor Charles C.Y. Wang and Research Associate Kyle Thomas prepared this case. It was reviewed and approved before publication by a company designate. Funding for the development of this case was provided by Harvard Business School and not by the company. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

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THE TECHNOLOGY WORKS = DILIGENCE WITH SCALE

3rd-Party Validation By Harvard Business School & MIT Sloan

The Relation between Earnings and Future Cash Flows: A New Perspective*

Ethan Rouen

Harvard Business School

Eric So

Massachusetts Institute of Technology

Sloan School of Management

Charles C.Y. Wang

Harvard Business School

July 2018

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Abstract

We provide new evidence on the usefulness of financial accounting in valuation analysis. A fundamental assumption in the use of GAAP financial statements for valuation is that accrual-based measures of firms' performance convey information about future cash flows incremental to current cash flows. However, recent evidence casts doubt on this assumption. We revisit this issue using a novel dataset that details *all* quantitative disclosures in firms' annual reports and identifies non-core revenues and expenses from net income, including those reported on the income statement and those hidden in the footnotes or the MD&A. Using these data to adjust GAAP net income, we show the resulting measure of core earnings offers forecasting power for future cash flows and earnings that are incremental to traditional measures of performance. These adjustments also better explain contemporaneous market prices and returns. Together, our results suggest that accounting information remains relevant for valuation and highlight the importance of careful accounting analysis for distilling information relevant for forecasting future performance.

Quotes from the initial draft of the paper:

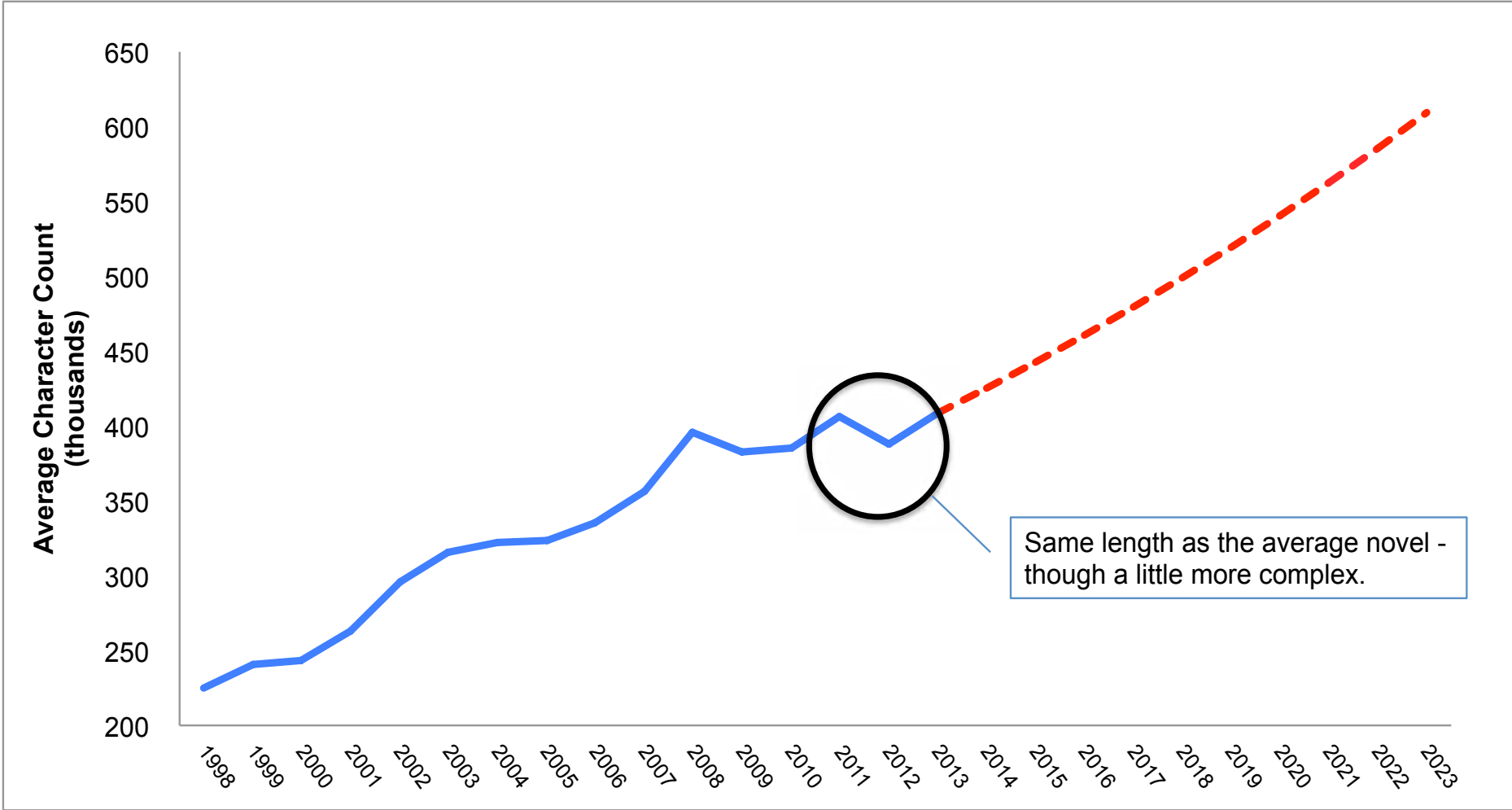
- “this paper serves as a warning for researchers seeking to examine the value relevance of earnings.”
- “Data aggregators like Compustat do not appear to collect and provide data on many non-operating or less persistent income-related items, even when managers make these adjustments in non-GAAP disclosures.”
- “We find that, in many instances, Compustat does not report these disclosures— which can appear on the income statement as a separate line item or in the footnotes or the MD&A—in any of its fields.”
- “These shortcomings make it difficult for users to construct a complete picture of a firm’s earnings, but taking additional steps to adjust to GAAP net income can provide valuable insights.”

Part V

Why you need protection now more than ever.

FILINGS GETTING LONGER & LONGER

Keeping Up With Disclosures Is Nearly Impossible



*This graph was created based on information collected and analyzed by New Constructs, LLC. New Constructs regularly gathers information from over 3,000 companies' 10Ks, including the Notes to the Financial Statements and MD&A.

DISCLOSURE TRENDS ARE NOT YOUR FRIEND

More Data, More Noise, More Complexity

- Filings have grown to **200+ pages**
(That's longer than the average novel.)
- Increasingly complex and time-consuming work
- Accounting rules are constantly changing



RISE ABOVE RECORD LEVELS OF NOISE

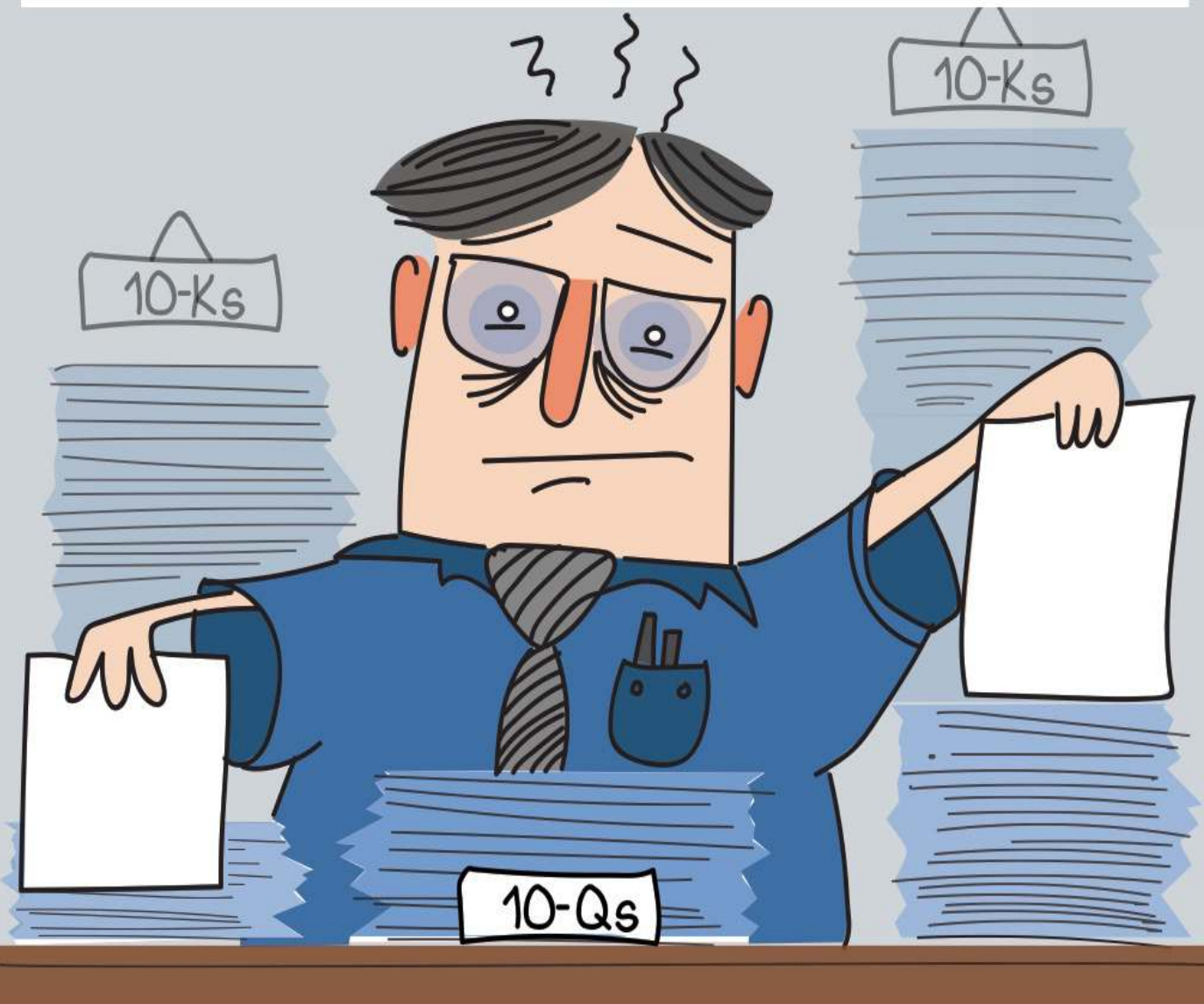
Superior Research Gives You an Edge



TECHNOLOGY TO CLOSE THE RESEARCH GAP

Machine are better than humans at some things

WHO HAS TIME TO READ 200+ PAGE FILINGS?



MACHINE LEARNING FROM EXPERTS

Human-Validated Parsing Instructions from 140,000+ Filings

OUR FORENSIC EXPERTS USE CUTTING-EDGE TECH TO SHINE A LIGHT IN THE DARK CORNERS OF FINANCIAL FOOTNOTES.

FINANCIAL FOOTNOTES
→ MATTER ←
DILIGENCE MATTERS

DATA
QUALITY

—VALUE INVESTING 2.0—
MACHINE LEARNING FROM EXPERTS

GET THE DILIGENCE YOU DESERVE

LEVERAGE THE LATEST TECHNOLOGY AND GET AN EDGE
WITH OUR RESEARCH ON STOCKS, ETFS AND MUTUAL FUNDS



Appendix

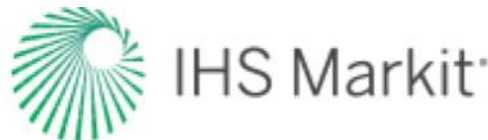
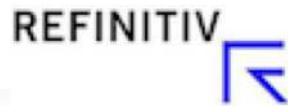
SUCCESS WITH ELITE INSTITUTIONAL CLIENTS

Self-Directed Clients Are Natural Fit for Simpler Products

- Top hedge fund and institutional money managers
- Top wealth management firms
- Top advisors
- Top accounting, insurance & consulting firms



Harvard Business School
 &
 MIT Sloan



HOW THE WEALTH INDUSTRY WORKS WITH US

Multiple models, Great Flexibility

- **Institutions:** full access to models and tool, including database feeds. Directly access thru our website



- **Advisors/RIAs:** firm or group-wide access to unlimited research. Direct access via our website or thru partners.



- **Retail:** individual sign up for Gold, Platinum or Pro subscriptions. Direct access via our website or thru partners.

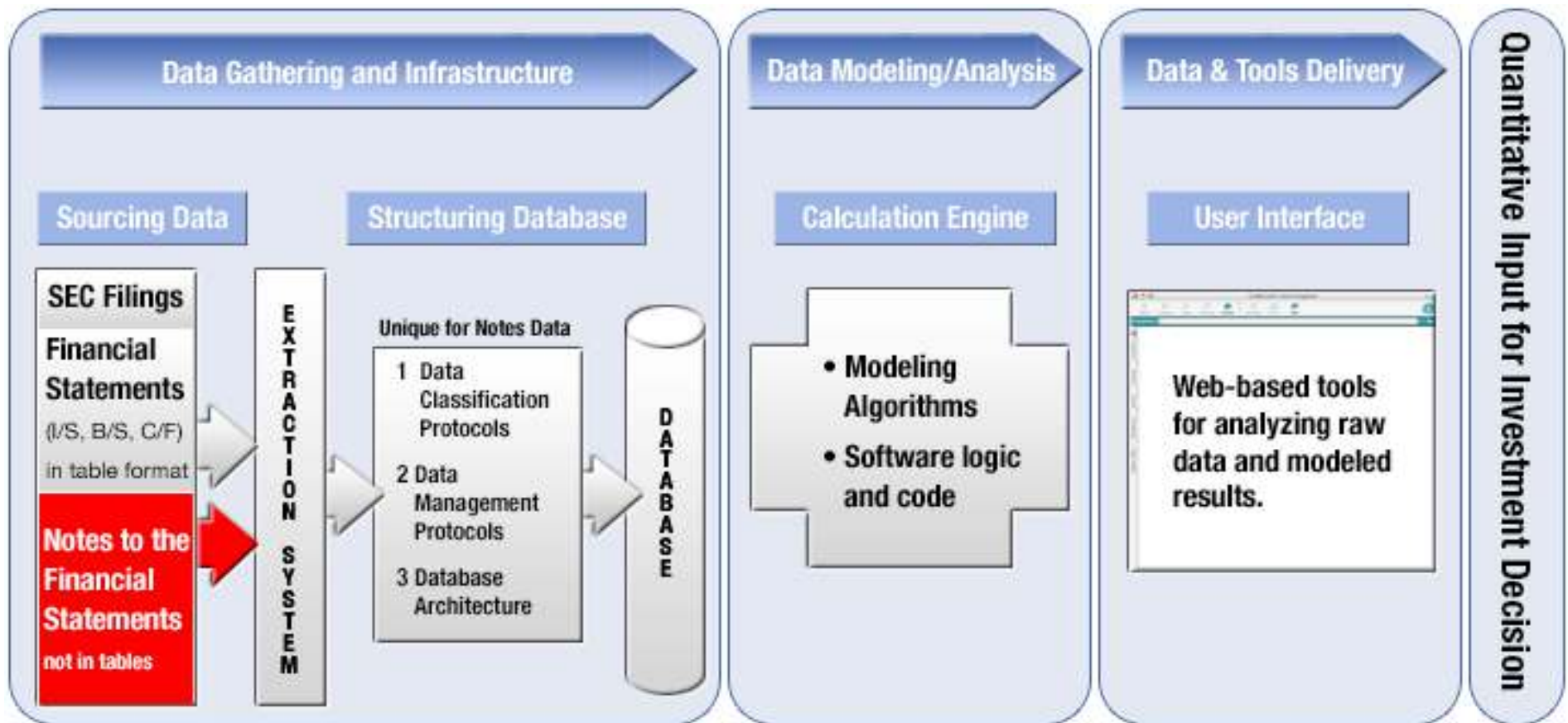


- **Consultants/Corporates:** custom engagements focused on enterprise value optimization and investor relations strategy. Direct access via our website along with custom work and consultation via partners.



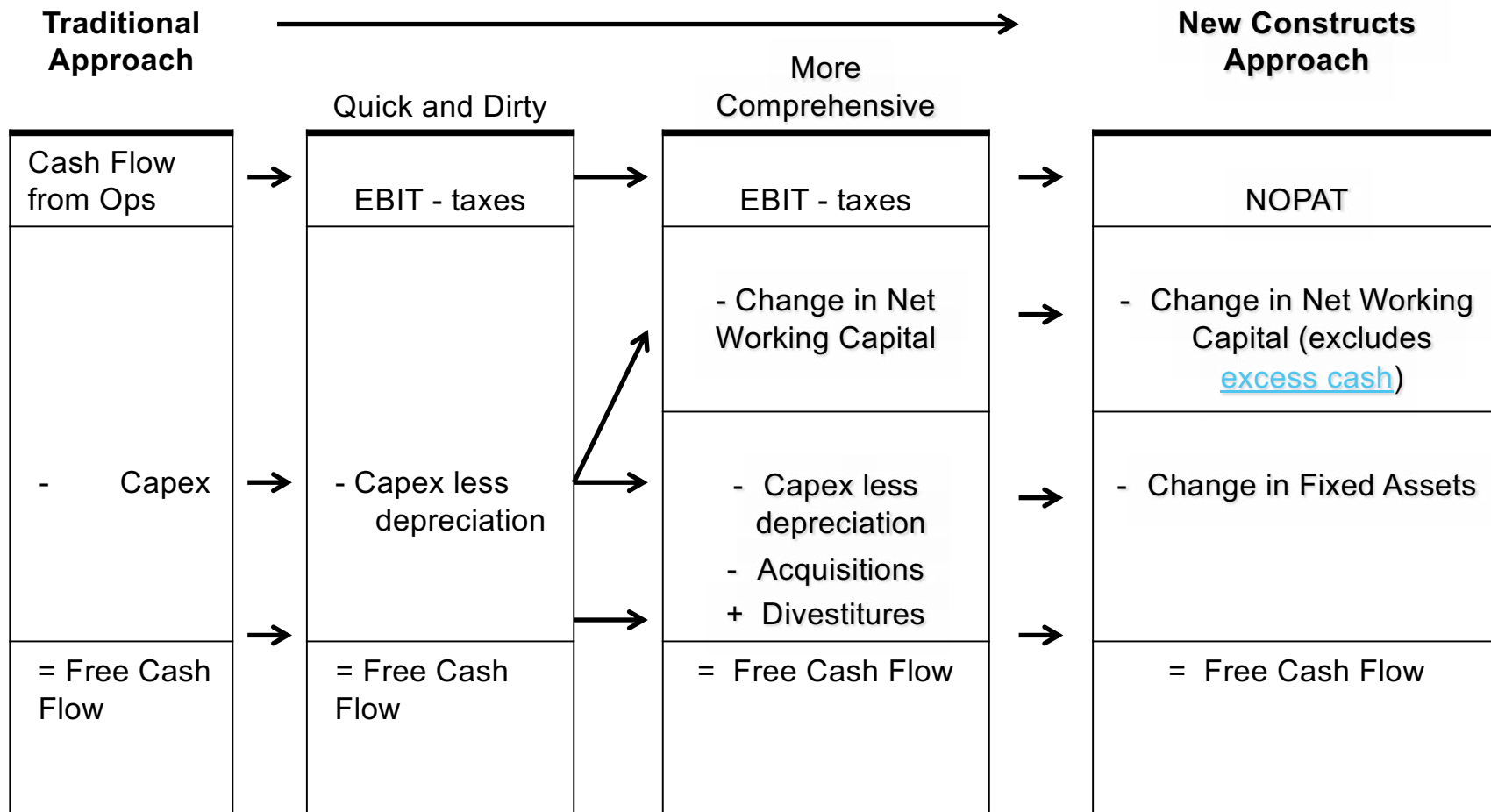
RESEARCH TECHNOLOGY PLATFORM

Data Collection & Modeling Under One Roof



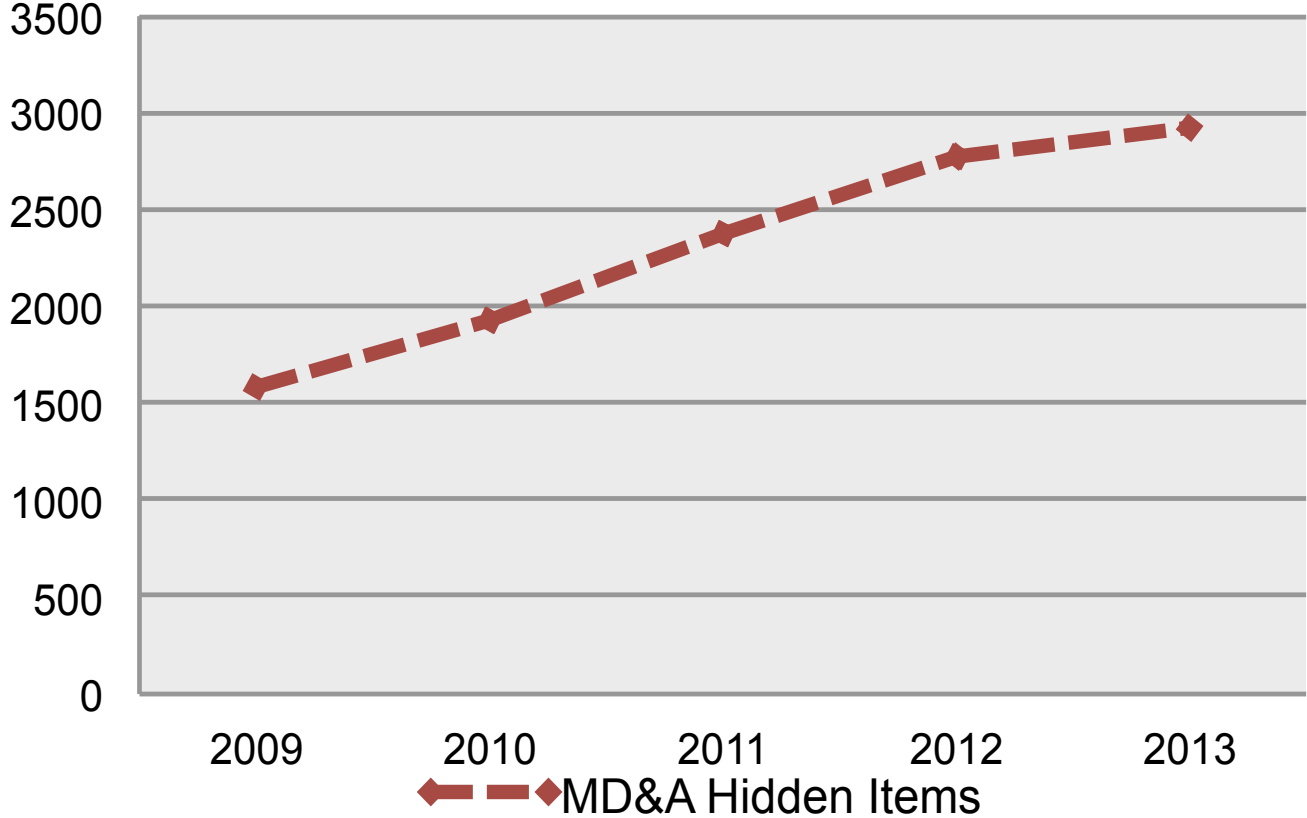
We created our own data collection technology to provide high integrity models to clients. Traditional data feeds are not trustworthy for sophisticated financial modeling.

Free Cash Flow: NOPAT minus Change in Invested Capital *How We Compare to traditional approaches to FCF*



BIGGER HAYSTACKS, MORE NEEDLES

Material Hidden Items 16% CAGR



Items found only in the MD&A (e.g. gains, charges, deferred items, etc) that distort income statement results are rising rapidly.

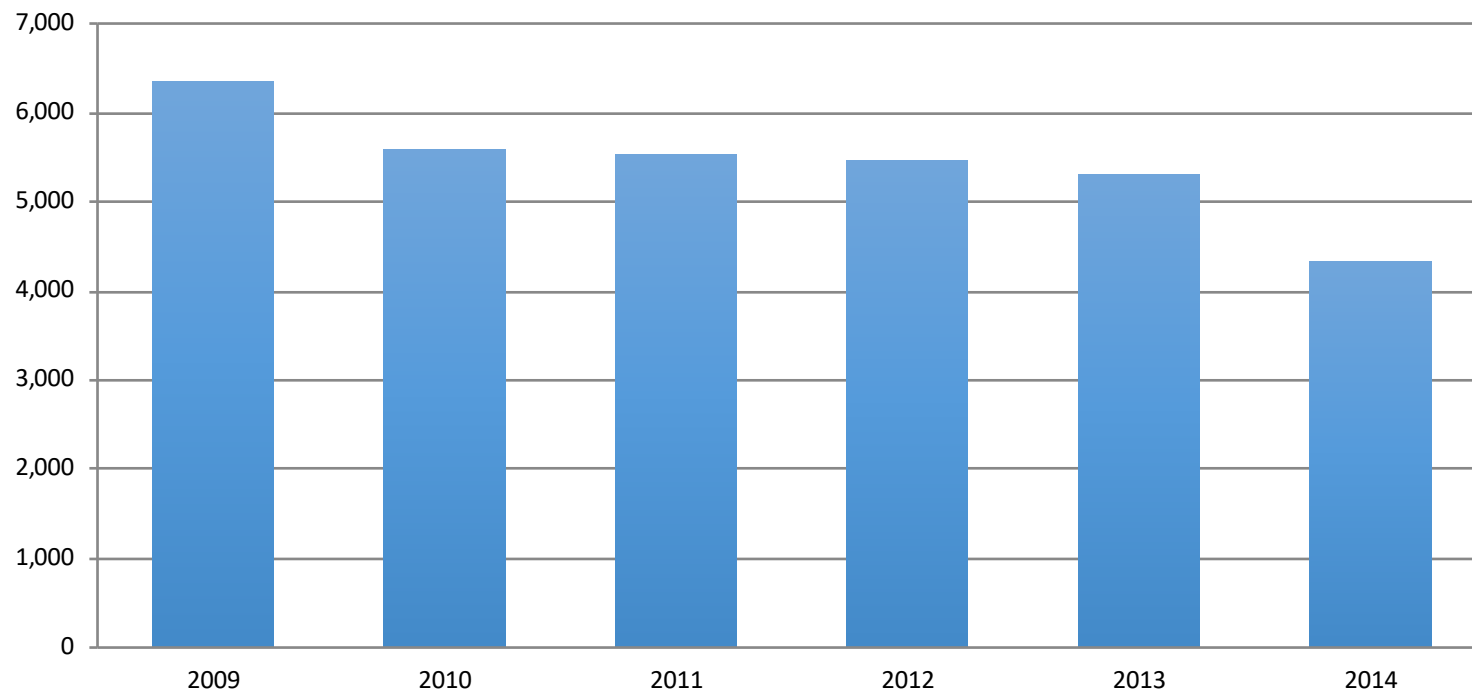
*This graph was created based on information collected and analyzed by New Constructs, LLC. New Constructs regularly gathers information from over 3,000 companies' 10Ks, including the Notes to the Financial Statements and MD&A.

ASSET WRITE-DOWNS ARE A RED FLAG

32,583

Over the last 5+ Years, we found 32,583 write-downs.

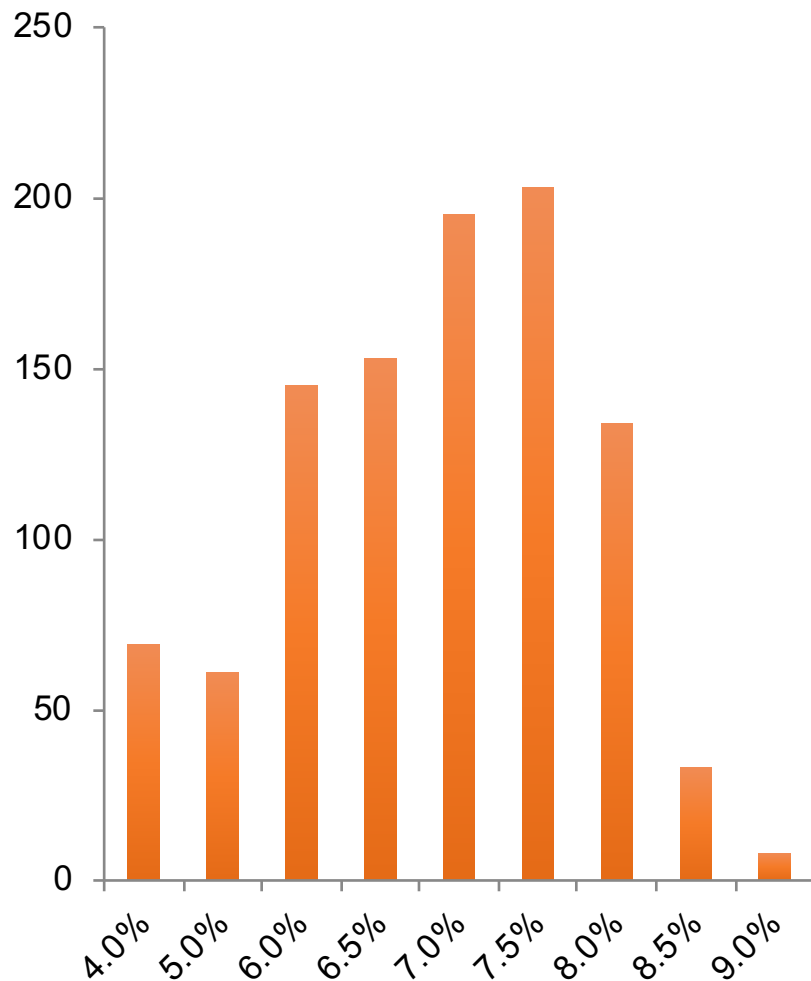
of Write-Downs



■ Total - 3000+ companies

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Distribution of Return On Plan Asset Assumptions



Auditors & investors need to know this data.

- Raising the expected Return on Plan Assets (EROPA) reduces reported pension expense.
- The mean EROPA for 2014 was 6.5%. Roughly 55% of companies expect a long-term return on plan assets between 6.5% and 7.5%.
- Virtusa Corp (VRTU) has the most aggressive assumptions, with EROPA of 10.38%, followed by Exlservice Holdings (EXLS) at 9%.

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New Constructs has no trading, corporate or banking ties – no conflicts.

- *Morningstar gets paid by fund companies. Fund companies must license ratings from Morningstar to use them in marketing materials.*

New Constructs = unadulterated expertise in accounting, finance and SEC filings.

HOW HAS INVESTING CHANGED OVER THE YEARS?

Shorter Holding Periods for Stocks

- Until mid-1960' s average holding period was seven years
- Today, average holding period is less than one year and annual portfolio turnover is more than 100%¹

Major Reactions to Quarterly Earnings

- Stock prices make large moves in response to earnings surprises
- Suggests that long-term cash flows are less important

Amateur Individual Investors - Growth Market

- Schwab, TD Waterhouse, Scottrade
- Day trading

Media - Growth Market

- TV: Mad Money, CNBC Squawk Box, and Squawk on the Street
- Print: Wall Street Journal, Investors Business Daily, local newspapers
- Web: Motley Fool, TheStreet.Com, CBS MarketWatch

¹Rappaport, Alfred. "The Economics of Short-Term Performance Obsession." *Financial Analysts Journal*, vol. 61, no. 3 (May/June): 65-79.

Speculator

“If you are a speculator, your decision to buy or sell is based on what you believe about the near-term direction of price.”
- Ben Graham

“...speculation is the activity of forecasting the psychology of the market.”
- John Maynard Keynes

Vs.

Investor

“If you are an investor, your decision to buy and sell is based on the underlying economics of the stock you own.”
- Ben Graham

“Investing is an activity of forecasting the yield on assets over the life of the asset...”
- John Maynard Keynes

ONLY 3 WAYS TO BEAT THE MARKET

Better Data - difficult and expensive to obtain

- Gathering and analyzing data from the Notes to the Financial Statements provides a competitive advantage.

Better Analysis - not just your neighbor, one must out-think the entire market

- Better data means better models.
- Better models provide better analysis.

Better Discipline - stick to your guns, don't follow the herd.

- Long and short strategy is built on specific, quantifiable thresholds derived from a model we can trust.
- Our models do all the number crunching to supply our human capital with superior information and decision-making capabilities.

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